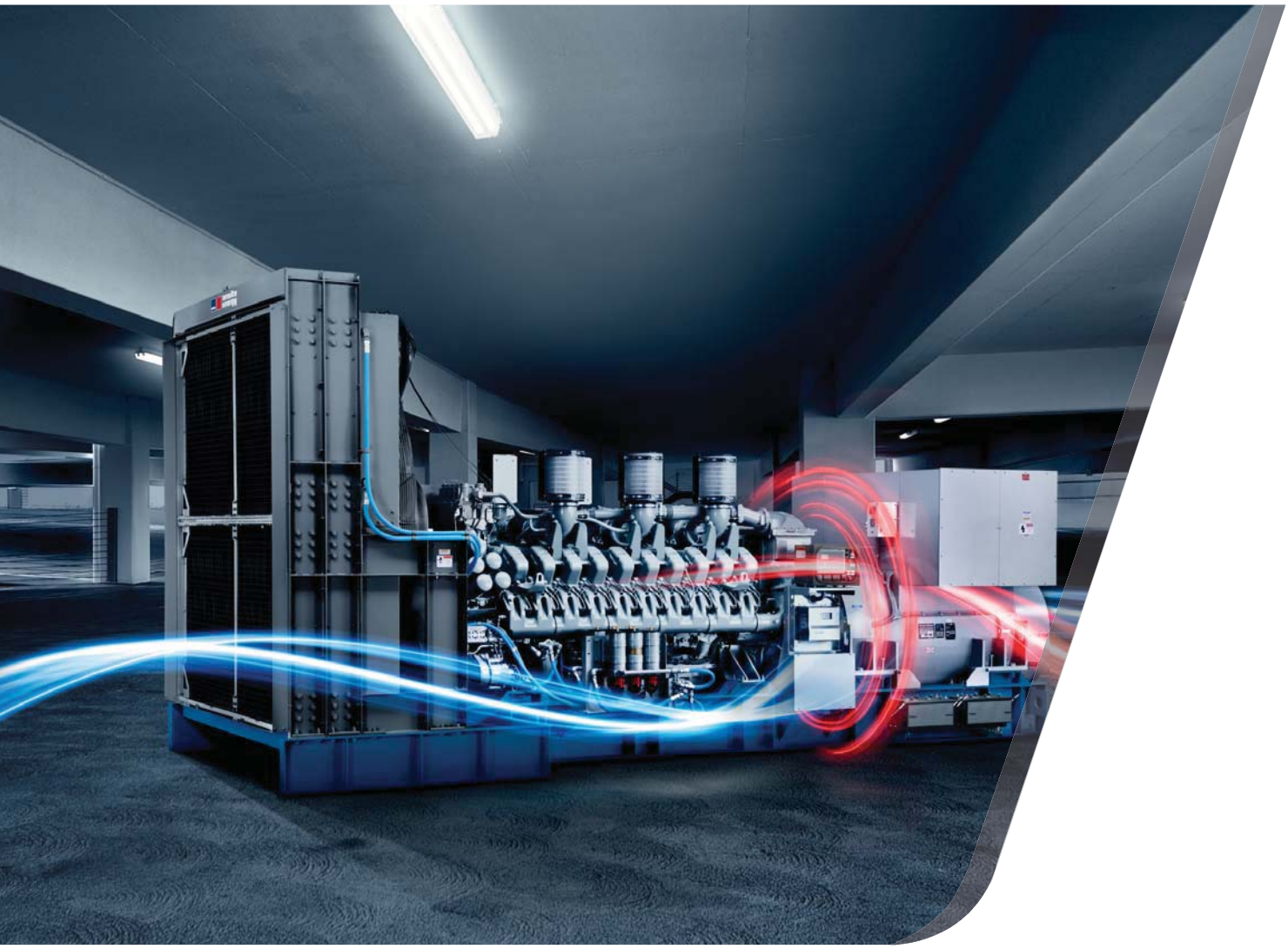
ENGINEER'S GUIDEBOOK

A COMPLETE PRODUCT LISTING

mtu onsite energy



MTU Onsite Energy
A Rolls-Royce Power Systems Brand

www.mtuonsiteenergy.com

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Consider It Done.

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// 60 Hz Generator Sets - Diesel Prime (continued)

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// 50 Hz Generator Sets – Diesel Prime

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// Version History

Engineer’s Guidebook Version History

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Overview

The Engineer's Guidebook is a collection of product specification sheets, component data, and warranty information for the MTU Onsite Energy portfolio of products and accessories. It is available in electronic or hardcopy format and can be delivered in a printed hardcopy from MTU Onsite Energy, electronically on flash drive or CD, or as a download from the MTU Business Portal or public website.

Ordering in Hardcopy, Flash Drive, or CD from MTU Onsite Energy

The Engineer's Guidebook can be ordered in hardcopy, on flash drive, or CD by contacting the MTU Onsite Energy Parts Dept. as noted below:

- Email: mankato_spareparts@mtu-online.com
- Phone : +1 507 625 7973, and ask for the Parts Dept.

You can order the Engineer's Guidebook as you would any other part by using the following part numbers:

Part Number	Description	Price (USD)*
SUA100686	Engineer's Guidebook - Color	$75.00
SUA100687	Engineer's Guidebook - Black and White	$25.00
SUA100688	Engineer's Guidebook - 2 GB Flash Drive	$15.00
SUA105192	Engineer's Guidebook - CD	$15.00

***** Prices do not include applicable shipping fees. The cost of the Engineer's Guidebook is eligible for 100% Co-op reimbursement.

For any questions regarding the Engineer's Guidebook, please contact your MTU Onsite Energy Account Manager.

Downloading an Electronic Version from the MTU Business Portal or Website

For your convenience, the Engineer's Guidebook can be downloaded from the following areas:

- MTU Business Portal (http://partner.mtu-online.com/irj/portal)
- General Public Website (www.mtuonsiteenergy.com)

There is no fee for downloading the guidebook directly from these locations. Please refer to the directions that follow for instruction.

To download from the General Public Website www.mtuonsiteenergy.com

There are two general areas where the Engineer's Guidebook can be downloaded from the public website. They include:

- From a Product page
- From the Technical Info page

To download the Engineer's Guidebook from a Product page

1. Access the website at http://www.mtuonsiteenergy.com.
2. Click **Log In/Register** and log in. (Note: If you are not already registered, you will need to register before you can log in.)
3. Under the **PRODUCTS** heading, select **Diesel Generator Sets** or **Gas Generator Sets**.
4. Select a product series.
5. Scroll down the left navigation pane. Under **Downloads**, click **Engineers Guidebook [PDF].**
6. Follow the directions displayed on the screen.
7. To save the document, click **File > Save As**.
8. Select the location where you wish to save the document.
9. Click **Save**. The document will be saved in your chosen location.

To download the Engineer's Guidebook from the Technical Info page

1. Access the website at http://www.mtuonsiteenergy.com.
2. Click **Log In/Register** and log in. (Note: If you are not already registered, you will need to register before you can log in.)
3. Under the **TECHNICAL INFO** heading, select **Tools and Downloads**.
4. Click **Engineer's Guidebook**.
5. Click the link to download the document and follow the directions displayed on the screen.
6. To save the document, click **File > Save As**.
7. Select the location where you wish to save the document.
8. Click **Save**. The document will be saved in your chosen location.

To download from the MTU Business Portal (for MTU Onsite Energy Distributors only)

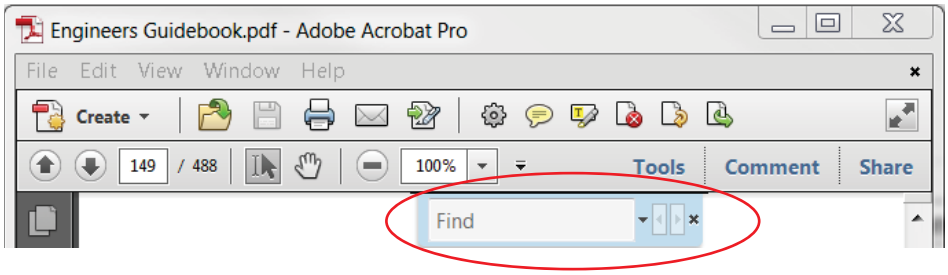
1. Access the MTU Business Portal at http://partner.mtu-online.com/irj/portal.
2. Click **MTU OED Information**.
3. In the **Tools** column, select **Engineer's Guidebook**.
4. Click the **Engineers Guidebook.pdf** link. The guidebook will open.
5. To save the document, click **File > Save As**.
6. Select the location where you wish to save the document.
7. Click **Save**. The document will be saved in your chosen location.

Searching the Engineer's Guidebook (Electronic Format Only)

The electronic version of the Engineer's Guidebook is searchable. Whether in the form of a flash drive, CD, or download from the MTU Business Portal or public website, the Engineer's Guidebook opens in Adobe Acrobat Reader as a default.

To search the Engineer's Guidebook:

1. On the toolbar menu, select **Edit** then **Find**, or **click Ctl + F**. A box similar to the following will display:



2. Enter the search criteria in the box, and press **Enter** to begin the document search.

Tip: To find multiple instances within the file, select the **Advanced Search** option from the **Edit** menu.

Keeping the Guidebook Up-To-Date Between Releases

Documents contained within the Engineer's Guidebook are updated intermittently between releases. If you ordered a print version of the Engineer's Guidebook from MTU Onsite Energy or printed a copy yourself, please refer to the following documents to stay informed of changes. These documents can be used as a guideline to keep already printed guidebooks up-to-date.

Document	Purpose	Where to Find It
Specification Sheet Change List	Provides a list of all spec sheet updates for the specified year Compare the version ID of the printed spec sheet (found on the last page of each spec sheet) to those listed on the Spec Sheet Change History to determine whether updates have been made.	MTU Business Portal: *Home Page > MTU OED Information* Under the **Technical Data** column, select **Spec Sheets > Spec Sheet Change History**
Engineer's Guidebook Version History	Provides a list of all Engineer's Guidebook updates since the last release	At the end of the Engineer's Guidebook

Printing

Printing the Electronic Version of the Engineer's Guidebook

Depending on the length of the document included in the Engineer's Guidebook, MTU Onsite Energy prints on various sized sheets of paper which are *typically* as follows:

Document to Print	Paper Size
Cover	8.5 x 11 cardstock
History/Enclosures/Accessories and Components/Warranty Information	8.5 x 11, duplexed
Spec Sheets	11 x 17, duplexed, saddle fold booklet

If you wish to have the Engineer's Guidebook in the format that MTU Onsite Energy prints it, you can place an order with MTU Onsite Energy (refer to *Ordering in Hardcopy, Flash Drive, or CD from MTU Onsite Energy*), or you can print as desired at your office based on your own printing specifications.

To print specific pages of the Engineer's Guidebook, click **File** and then **Print**. Follow the instructions in the dialog box to choose the pages.

Additional Tools are offered with the printed version of the Engineer's Guidebook. They are also available electronically on the MTU Business Portal at the locations below.

Document	Location
MTU Onsite Energy Diesel Product Brochure	*MTU OED Information > Tools > Marketing Resources*
AMP Chart	*MTU OED Information > Tools > Engineer's Guidebook*
CD Label (MTU Onsite Energy)	*MTU OED Information > Tools > Engineer's Guidebook*

Printing the Engineer's Guidebook CD Label

If you wish to download the Engineer's Guidebook from any one of the online locations and save it on a CD, MTU Onsite Energy has provided a template for labeling the CD. It is located on the MTU Business Portal at the path provided above. To print the labels from the template provided, Avery 5931/8931 CD Labels are required. Click the **CD Label MTU Onsite Energy** link and follow the instructions included with the labels.

ONE OF THE NEWEST NAMES IN POWER GENERATION IS ALSO ONE OF THE OLDEST

The name MTU Onsite Energy may be new to you, but behind this name is a global manufacturing organization with more than 100 years of innovative engine manufacturing and 60 years of power generation packaging. Industry legends such as Maybach, Daimler-Benz, Detroit Diesel, Katolight and Rolls-Royce are all integral parts of MTU Onsite Energy's heritage of experience and expertise. MTU Onsite Energy has gained strength from each of these different companies.

Today, MTU Onsite Energy is one of the leaders in the power generation industry, with a comprehensive power generation product portfolio and unmatched customer service. Our network of nearly 300 North American service locations means you're never far from an authorized distributor with a knowledgeable sales staff and EGSA-certified technicians to answer all your power needs.

COMPLETE POWER GENERATION SOLUTIONS

Power generation systems from MTU Onsite Energy are ideal for emergency standby and prime power in the most demanding commercial and industrial applications. As a single-source supplier, MTU Onsite Energy provides generator sets, automatic transfer switches, digital paralleling switchgear, fuel tanks and enclosures for complete onsite power solutions. With reliable MTU engines, MTU Onsite Energy delivers the benefits of vertical integration to its power generation customers.

MEETING CUSTOMER NEEDS

Backed by more than a century of technological innovation in engines and power generation components, MTU Onsite Energy is a vertically-integrated global manufacturing organization focused on meeting customers' distributed energy needs. With engines and power generation systems manufactured around the world, MTU Onsite Energy has a distinct advantage in being able to deliver power systems on time and on budget anywhere in the world. We have just one goal in mind: to deliver the best onsite power solution whenever and wherever you need it.

PRODUCTS FROM MTU ONSITE ENERGY

- Diesel-powered generator sets 30 kW to 3,250 kW
- Gas-powered generator sets 30 kW to 400 kW
- Natural gas cogeneration systems
- Automatic transfer switches 30 amps to 4,000 amps
- Paralleling switchgear and digital master control systems
- Demand response and load management programs

Features

- 50 Hz and 60 Hz models
- UL2200 listing available on most models
- Cutting-edge emissions technology
- Advanced monitoring and communications technology
- Digital engine controls for superior performance
- Proven reliability and durability
- Unexcelled transient response and one-step load acceptance
- 85% 24-hour average load factor standard on most models
- IBC seismic certification and OSHPD approval available

MTU Onsite Energy history

1909
Karl and Wilhelm Maybach form Maybach Engines in Germany to power the first Zeppelin airships, eventually producing automobiles and off-highway engines.

1960s
Maybach merges with the off-highway division of Daimler-Benz to form MTU, originally an acronym for "Motor and Turbine Union."

1994
MTU and Detroit Diesel form a partnership to develop the Series 2000 and Series 4000 engine families.

2000
MTU merges with the off-highway operations of Detroit Diesel, under the name of MTU Detroit Diesel.

2006
Tognum GmbH is formed as the parent company of MTU and MTU Detroit Diesel; the Tognum Group holding company is headquartered in Friedrichshafen, Germany.

2007
Tognum acquires Katolight Corporation, a generator set manufacturer and packager founded in 1952 and based in Mankato, Minnesota.

2008
MTU Onsite Energy is formed as the global power generation brand for Tognum, and Katolight Corporation is renamed MTU Onsite Energy Corporation.

2011
Daimler AG and Rolls-Royce Holdings PLC become majority shareholders of Tognum AG.

2014
Tognum America becomes MTU America, a wholly owned subsidiary of Rolls-Royce Power Systems AG.

MTU Onsite Energy Corporation
A Rolls-Royce Power Systems Company
www.mtuonsiteenergy.com

Quality Policy

MTU Onsite Energy provides superior products and service in power generation through continual system improvement and employee development, in order to meet or exceed customer requirements and expectations.

Mission Statement

The basic mission of MTU Onsite Energy is to provide, at an optimal growth and profit, power generation products and services to our customers around the world. This will be accomplished by emphasizing Competitive prices, Superior quality, Service and support to customers, employees and communities.

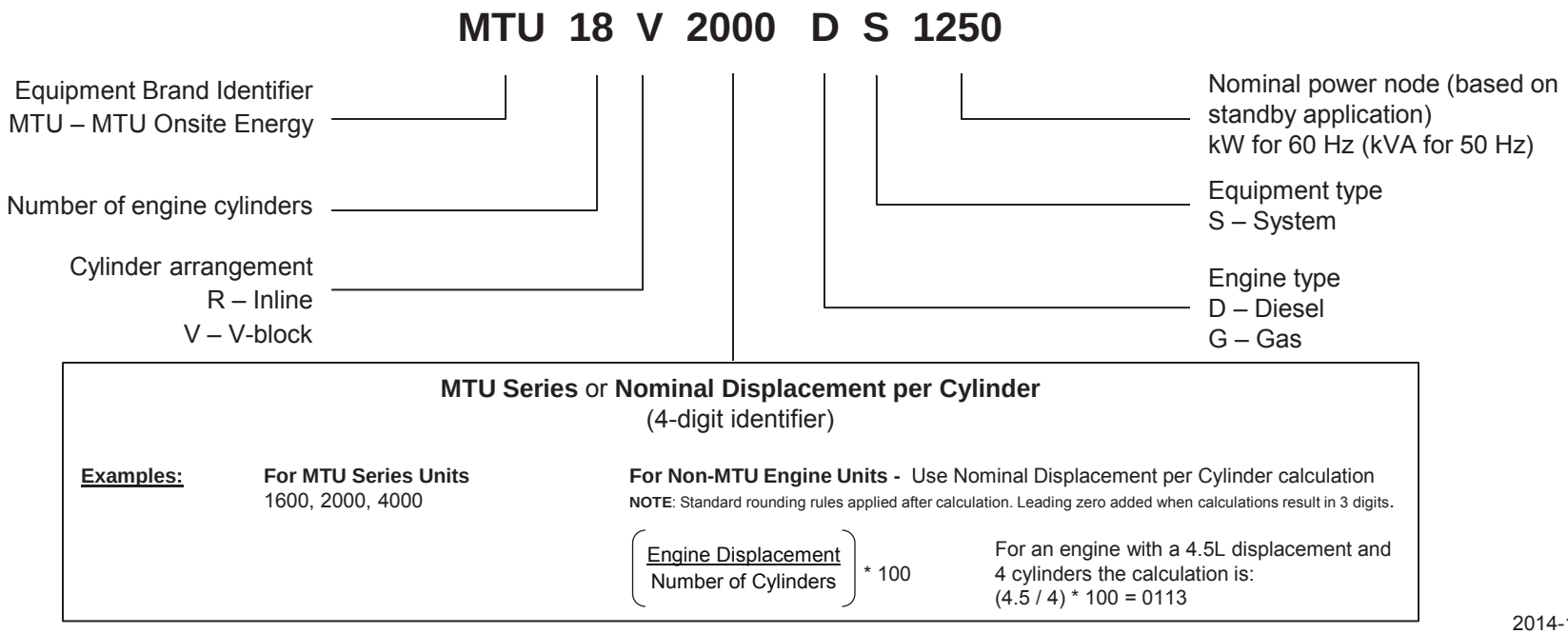
100 Power Drive - PO Box 3229 - Mankato, MN 56002-3229
Ph: (507) 625-7973 Fax: (507) 625-2968

SALES NOMENCLATURE
Structure Definition

Purpose: For referencing generator set models for MTU Onsite Energy's globally standardized product line.

Effective August 1, 2014, the following sales nomenclature replaces all previous MTU Onsite Energy generator set model number definitions.

Example: MTU 18V2000 DS1250



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MTU ONSITE ENERGY
TRAINING, PARTS & SERVICE

MTU Onsite Energy offers a variety of technical training and certification courses. Factory training includes comprehensive courses ranging from Basic Power Generation Systems to Advanced Power Generation. MTU Onsite Energy also offers custom training to fit your needs. Our trainers have decades of experience in power generation. MTU Onsite Energy offers Sales, SERVICE I, and SERVICE II courses to our partners which create a competitve advantage in today's changing marketplace.

MTU Onsite Energy's reputation for a quality parts and service support is admired throughout the distributed power industry. MTU Onsite Energy maintains a world wide network of experienced distributor and service centers. Knowledgeable training, parts, and service resources support the continual operation of MTU Onsite Energy standby and prime engine generator sets.

A Rolls-Royce Power Systems Company

MTU Onsite Energy / 100 Power Drive / Mankato / Minnesota 56001
Phone 507 625 7973 / Fax 507 625 2968 / Toll Free 800 325 5450

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TRAINING BY MTU ONSITE ENERGY

Reasons to Attend

// Increase knowledge of MTU Onsite Energy products
// Gain a competitive edge
// Reduce cost/time on a job site
// Industry updates keep you current
// MTU Onsite Energy certification
// Strategies for preventing problems
// Learn tools and solutions for troubleshooting

Who Should Attend SERVICE I

// New and experienced technicians
// Sales staff
// Spec writers
// Engineering support staff

Who Should Attend SERVICE II

// Staff who have completed SERVICE I
// Experienced technicians
// Experienced engineering support staff
// Technicians seeking certification

Who Should Attend MTU Onsite Energy Sales Class

// Staff members who are new to MTU Onsite Energy products, services, or the power generation industry
// Those who desire a creative selling edge
// Those wanting to update their product knowledge

What You Can Expect To Gain

// Product, service, and sales knowledge
// Maximize sales opportunities
// Competitive sales edge

Training courses are only available to MTU Onsite Energy partners. Visit the MTU Business Portal at http://partner.mtu-online.com to view upcoming training dates and couse outlines for MTU Onsite Energy Sales, SERVICE I, and SERVICE II.

MTU Onsite Energy can deliver training on site to save you time and money. If you require custom training for your staff, please contact our training department for a quote.

Contact details:
E-mail: producttraining@mtu-online.com
Phone: 734-561-2085

PARTS/SERVICE

MTU Onsite Energy strives to be your preferred source for quality parts through understanding customer needs and building strong partner relationships. We support all of your parts needs with genuine OEM replacement parts. We guarantee same day shipment on stock parts orders and if you have an after hours emergency our parts service team will work to provide timely solutions.

24 hours a day, 365 days a year
MTU Onsite Energy partners and service centers offer a variety of service agreements that offer preventive maintenance solutions throughout the year. Members of MTU Onsite Energy's emergency parts and service response team are available 24 hours a day, 365 days a year.

A Rolls-Royce Power Systems Company

MTU Onsite Energy / 100 Power Drive / Mankato / Minnesota 56001
Phone 507 625 7973 / Fax 507 625 2968 / Toll Free 800 325 5450

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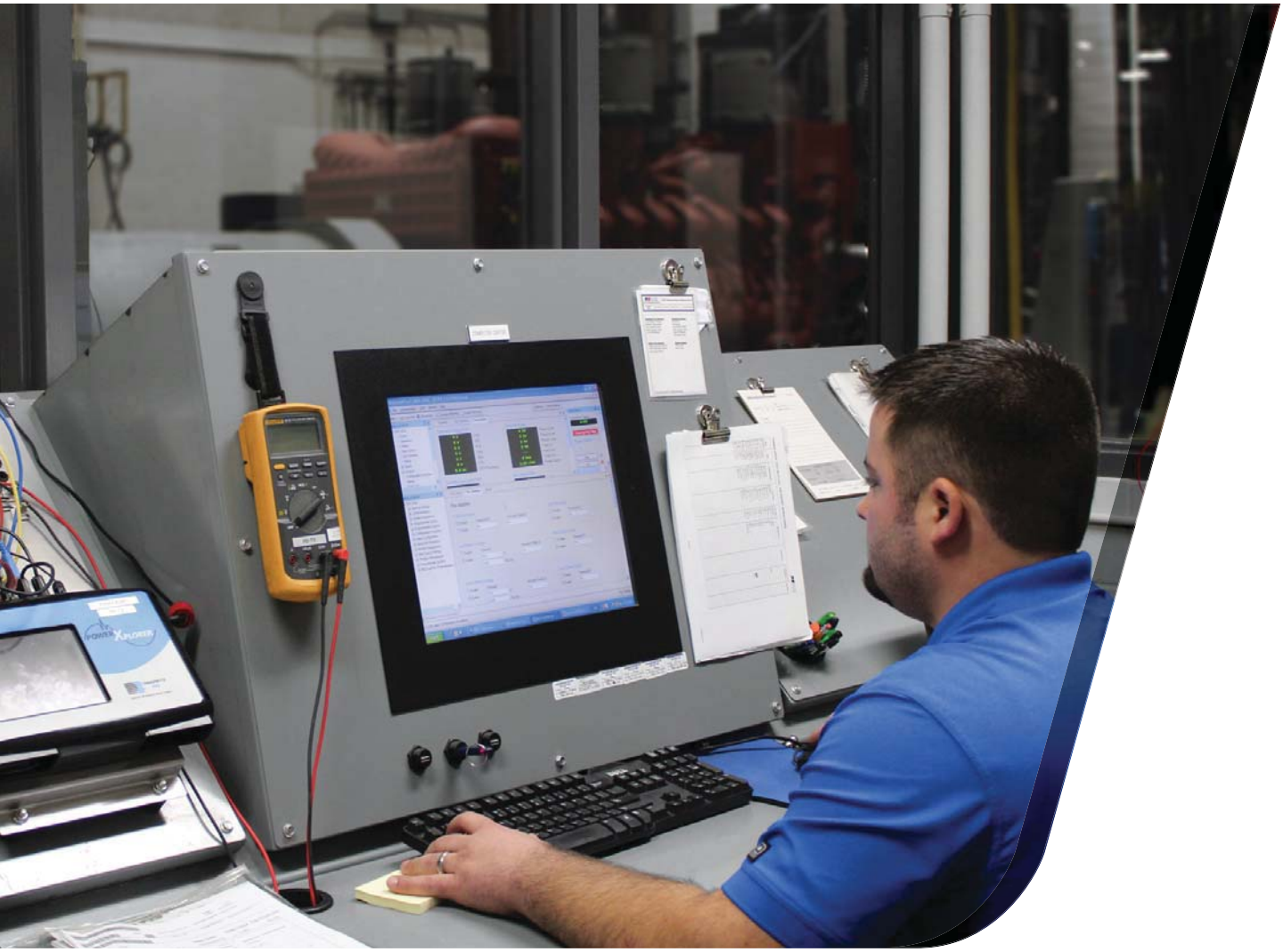


PERFORMANCE ASSURANCE CERTIFICATION

mtu onsite energy

PROTOTYPE TEST
PROCEDURES AND METHODS

MTU Onsite Energy has been producing superior engine-generator sets for more than six decades. We understand the importance of reliable cost-effective products, and have developed industry-leading test procedures to ensure we exceed this criteria. Our testing program confirms that our customers will receive products of the highest quality.

The Performance Assurance Certification provided by MTU Onsite Energy certifies that every engine-generator set undergoes rigorous prototype testing including the following:

Prototype test procedures

- **Rated Load** (NFPA 110)
  MTU Onsite Energy certifies that all engine-generator set models will produce the name-plated load within the design tolerance of the generator set.
- **Extended-run Testing**
  MTU Onsite Energy certifies that all engine-generator set prototypes have been subjected to extended run-time testing.
- **Transient Response Analysis** (ISO 8528-5)
  MTU Onsite Energy certifies that all new generator set models have undergone transient response analysis per ISO 8528-5.
- **Torsional Analysis**
  MTU Onsite Energy certifies that all engine-generator-set models have undergone torsional stress analysis.
- **Engine Cooling System**
  MTU Onsite Energy certifies that all generator set models will cool sufficiently within the ambient design conditions per each model.
- **Anticipatory Alarms and Shutdowns**
  MTU Onsite Energy certifies that the pre-alarms and alarms function appropriately to protect the engine-generator set from any foreseen unnecessary failures.
- **Vibrational Analysis** (ISO 8528-9)
  MTU Onsite Energy certifies that all new engine-generator-set models have undergone vibration analysis to ensure that each engine-generator coupling is balanced and that there is no destructive resonant vibration.
- **Noise Analysis** (ISO 8528-10)
  MTU Onsite Energy certifies that all engine-generator sets undergo airborne noise analysis using the enveloping surface method.

Test standards

MTU Onsite Energy engine-generator sets are compliant with many different codes and standards. MTU Onsite Energy's validation philosophy and performance are regularly reviewed to ensure continuity with these codes and standards: *UL2200, CSA, EPA, NFPA 99–Health Care Facilities, NFPA 70–National Electrical Code, NFPA 110–Standard for Emergency and Standby Power Systems, Department of Labor and Industry, NEMA MG 1–Motors and Generators, and MIL-STD-705-c.*

FACTORY ACCEPTANCE TESTING PROCEDURES

MTU Onsite Energy's factory testing is performed with the same extreme diligence and attention to detail that is given to the prototype testing process. Every engine-generator set receives a complete factory acceptance test that certifies and ensures that the set will function in accordance to every specific application.

Test metering will have an accuracy of 1.3% or better. This metering is calibrated a minimum of once per year and is directly traceable to the Bureau of Standards.

Factory acceptance testing procedures:

- **Insulation Resistance Inspection** (301.1c)*
- **High Potential Test** (302.1b)*
- **Alternator Overspeed** (1 min.)*
- **Engine Inspection**
- **Generator Inspection**
- **Resistances Inspection** (401.1b)
  - Exciter Field Stator
  - Alternator Armatures
- **Mounting and Coupling Inspection**
- **Engine Fuel Oil System Inspection**
- **Engine Lube Oil System Inspection**
- **Engine Cooling System Inspection**
- **DC Charging System Inspection**
- **Circuit Breaker Inspection**
- **Anticipatory Alarms and Shutdowns Inspection** (505.2b, 515.1b, 515.2b)
- **Optional Equipment Inspection** (513.2a)
- **Load Test Inspection**
  - Full Name-plate Rated Load
  - Regulator Range Test (511.1d)
  - No Load Inspection
  - MAX Load @ 1.0 P.F. (640.1d)
  - MAX Load @ 0.8 P.F.
  - Block Loads @ 0–25%, 0–50%, 0–75%, 0–100%
- **Phase Balance and Sequence Inspection** (507.1d, 508.1d, 516.1a)

* Performed by Alternator OEM

Rating Tolerance

MTU Onsite Energy certifies that all generator set models will produce the name-plated load at the standard conditions within the design tolerance (see table below) of the generator set.

Diesel Genset Product Family	Rating Tolerance
MTU 3R0096 DS30 to MTU 6R0120 DS200	+/- 5%
MTU 6R1600 DS230 to MTU 12V1600 DS600	+/- 2%
MTU 12V2000 DS650 to MTU 20V4000 DS3250	+/- 2%

Gas Genset Product Family	Rating Tolerance
MTU 4R0075 GS30 to MTU 8V0071 GS60	+/- 5%
MTU 10V0068 GS75 to MTU 10V0068 GS125	+/- 3%
MTU 6R0135 GS150 to MTU 12V0183 GS400	+/- 5%

OPTIONAL TEST PROCEDURES

Extended-run factory acceptance testing:
In some cases, extended-run testing may be requested. Unless specified otherwise, extended-run testing will be performed in the following manner.

// **Full name-plate rated load**
// **Standard readings taken every 15 minutes**

STANDARD READINGS RECORDED DURING LOAD TEST INSPECTION

// Run Time	// Frequency
// AC Voltage	// Exciter Field Voltage
// AC Amperage	// Exciter Field Current
// kVA	// Lube Oil Pressure
// kWe	// Engine Coolant Temperature
// Power Factor	// Ambient Temperature

Witnessed factory acceptance testing
Witnessed factory tests must be scheduled and approved at least four weeks prior to the engine-generator set's scheduled shipping date. Any requests for witnessed factory testing after this four-week period must be approved by the Regional Sales Manager and are subject to additional fees.

Witnessed extended-run factory acceptance testing
Witnessed extended-run tests must be scheduled and approved at least four weeks prior to the engine-generator set's scheduled ship date. Any requests for witnessed extended-run testing after this four-week period must be approved by the Regional Sales Manager and are subject to additional fees.

Additional factory acceptance testing
Additional testing is available upon request. The following is a list of supplementary tests which can be performed on MTU Onsite Energy engine-generator sets. Non-standard testing is subject to additional charges.

Additional test methods:

// **Start and Stop Test** (MIL-STD-705c 503.1c)
// **Remote Start and Stop Test** (MIL-STD-705c 503.2c)
// **Overspeed Protective Device Test** (MIL-STD-705c 505.2b)
// **Circulating Current Test** (MIL-STD-705c 505.2b)
// **Insulation Resistance Test** (MIL-STD-705c 301.1c)*
// **Open Circuit Saturation Curve Test** (MIL-STD-705c 410.1b)
// **Temperature Rise Test** (MIL-STD-705c 680.1c)
// **Frequency Range Adjust Test** (MIL-STD-705c 511.2c)
// **Low Oil Pressure Protective Device Test** (MIL-STD-705c 515.1b)
// **Over-temperature Protective Device Test** (MIL-STD-705c 515.2b)
// **Controls, Direction, and Rotation Test** (MIL-STD-705c 516.1a)
// **Frequency and Voltage Regulation, Stability, and Transient Response** (MIL-STD-705c 608.1b)
// **Voltage and Frequency Regulation** (MIL-STD-705c 614.1b)
// **Voltage Dip and Rise for Rated Load Test** (MIL-STD-705c 619.2c)
// **Maximum Power Test** (MIL-STD-705c 640.1d)
// **Fuel Consumption Test**
// **Vibration and Mechanical Balance Test** (ISO 8528-9)
// **Sound Test** (ISO 8528-10)

* Testing conducted by generator OEM

A Rolls-Royce Power Systems Company

MTU Onsite Energy Corporation / 100 Power Drive / Mankato / Minnesota 56001
Phone 507 625 7973 / Fax 507 625 2968 / Toll Free 800 325 5450

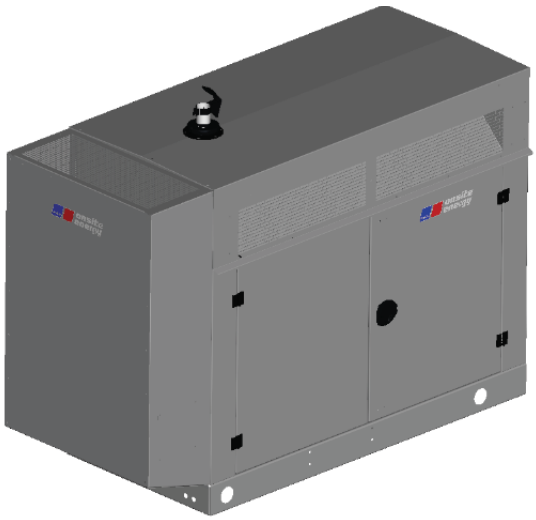
www.mtuonsiteenergy.com

ENCLOSURE AND SOUND DATA SHEET - DIESEL

60 Hz: 30-60 kW Standby / 27-55 kW Prime

50 Hz: 34-55 kVA Standby / 30-50 kVA Prime

Level 1 Enclosure (pictured)*



Level 3 Enclosure (pictured)*

ENCLOSURE LEVEL IDENTIFICATION	
Level 1	Basic weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 190 mph wind load rating. Skid-mounted enclosure consists of a bolted and welded construction with unit-mounted internal muffler. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Enhanced weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 190 mph wind load rating. Skid-mounted enclosure consists of a bolted and welded construction with unit-mounted internal muffler. Hinged, lockable double-door access on both sides of enclosure. UL 94 HF-1 compliant,1.5" thick sound attenuated foam insulation installed inside enclosure walls where applicable.
Level 3	Level 2 enclosure with air exhaust scoop with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed where applicable.

CERTIFICATIONS AND STANDARDS

- UL 2200
- CSA
- ISO 9001:2008

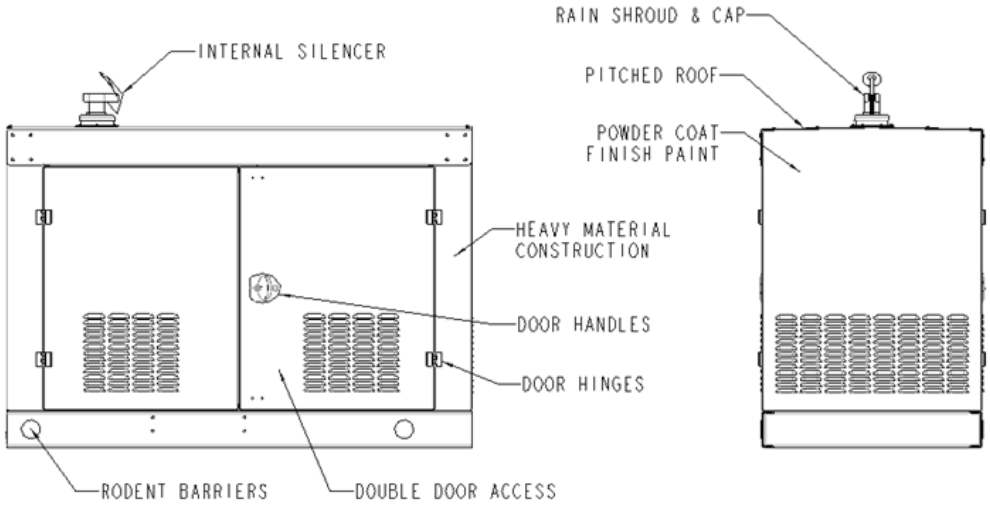
STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel Enclosure: 14 gauge or greater
  - Aluminum Enclosure: 0.09” thick or greater
- 190 mph wind rating
- Serviceability access
  - Double door access gives ease of serviceability to all components
- Pitched roof
- Rain shroud and rain cap
- Rodent barriers
- Exhaust scoop access panel and drain
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Powder Coat Finish Paint: ANSI 61 Grey standard
  - Custom colors available upon request
- Internal silencer
  - Insulated mufflers
  - Level 1: Industrial Grade
  - Level 2/3: Hospital Grade

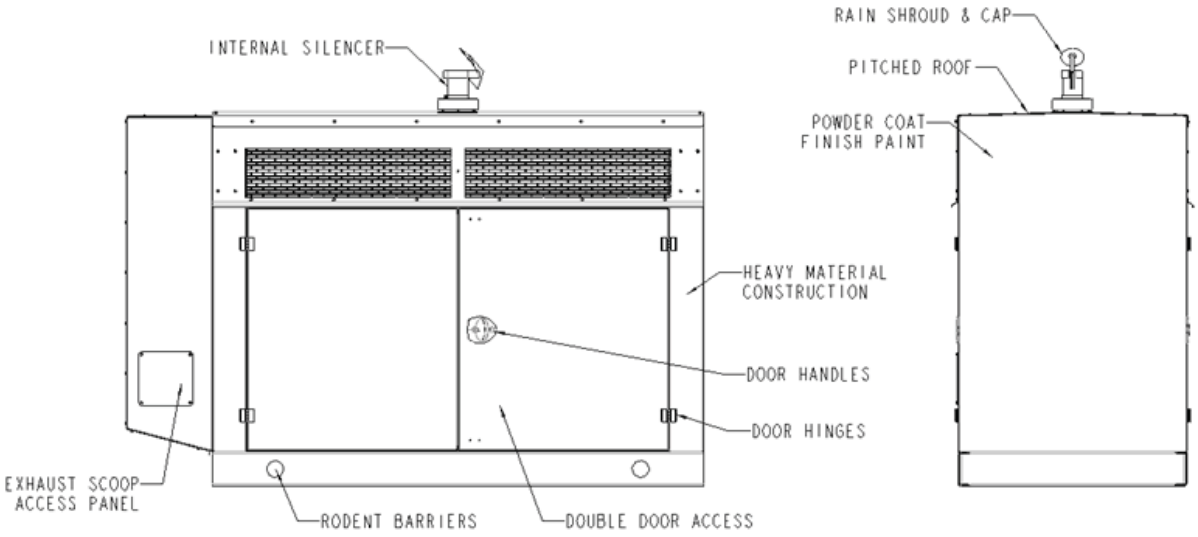
ENCLOSURE AND SOUND DATA SHEET - DIESEL

60 Hz: 30-60 kW Standby / 27-55 kW Prime

50 Hz: 34-55 kVA Standby / 30-50 kVA Prime



Level 1 Enclosure (pictured)*



Level 3 Enclosure (pictured)*

OPTIONAL FEATURES (LEVEL 2 AND LEVEL 3 ONLY)

- Door restraints
- LED light package
- Gravity exhaust louvers
- Enclosure space heater
- Motorized intake louvers
- For other custom options, please consult factory.

ENCLOSURE AND SOUND DATA SHEET - DIESEL

60 Hz: 30-60 kW Standby / 27-55 kW Prime

50 Hz: 34-55 kVA Standby / 30-50 kVA Prime

ENGINE EXHAUST SOUND RATINGS dB(A) AT 1 METER
OPU SOUND RATINGS dB(A) AT 1 METER
ENCLOSURE SOUND RATINGS dB(A) AT 7 METERS

			1 Meter		7 Meters		
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU[1]**	**Level 1[2]**	**Level 2[2]**	**Level 3[2]**
60 Hz Standby	MTU 3R0096 DS30	30 kW	101.6	84.1	79.2	72.4	69.6
	MTU 4R0113 DS40	40 kW	C/F	C/F	84.3	77	71
	MTU 4R0113 DS50	50 kW	105.1	91.6	84.6	76.7	71.5
	MTU 4R0113 DS60	60 kW	107	87.6	83.9	77.2	73.4
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU[1]**	**Level 1[2]**	**Level 2[2]**	**Level 3[2]**
60 Hz Prime	MTU 3R0096 DS30	27 kW	92.1	82.6	79.2	72.4	69.6
	MTU 4R0113 DS40	40 kW	C/F	C/F	84.3	77	71
	MTU 4R0113 DS50	45 kW	104.3	89.3	84.6	76.7	71.5
	MTU 4R0113 DS60	55 kW	103.7	88.4	83.9	77.2	73.4
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU[1]**	**Level 1[1]**	**Level 2[1]**	**Level 3[1]**
50 Hz Standby	MTU 3R0096 DS34	34 kVA	96.9	78.6	70.5	64.8	64.5
	MTU 4R0113 DS44	44 kVA	93.3	89.3	76.2	70.4	62.6
	MTU 4R0113 DS55	55 kVA	104.5	88.9	74.4	68.2	65.7
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU[1]**	**Level 1[1]**	**Level 2[1]**	**Level 3[1]**
50 Hz Prime	MTU 3R0096 DS34	30 kVA	92.9	76.8	70.4	65.1	63.8
	MTU 4R0113 DS44	40 kVA	94.7	89.5	75.7	70.1	62.2
	MTU 4R0113 DS55	50 kVA	98.9	87.9	74.1	68	65.6

(1) Measurement with infinite exhaust connection
(2) Measurement includes exhaust noise

NOTE:

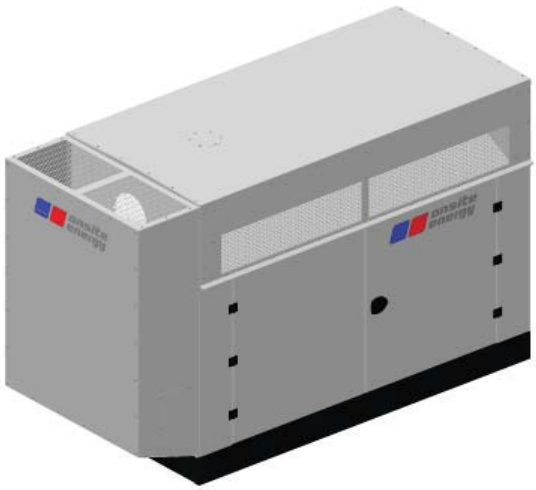
- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- Sound pressure levels subject to instrumentation, measurement, installation, and generator set variability
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package

C/F = Consult Factory

* **Note**: Visual appearance may differ between power nodes.

ENCLOSURE AND SOUND DATA SHEET - DIESEL
80-200 kW Standby / 72-180 kW Prime

Level 1 Enclosure (pictured)*



Level 3 Enclosure (pictured)*

ENCLOSURE LEVEL IDENTIFICATION	
Level 1	Skid-mounted weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 190 mph wind load rating. Enclosure consists of a bolted and welded construction with unit-mounted internal muffler. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Level 1 enclosure with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
Level 3**	Level 2 enclosure with air exhaust scoop. UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed in scoop.

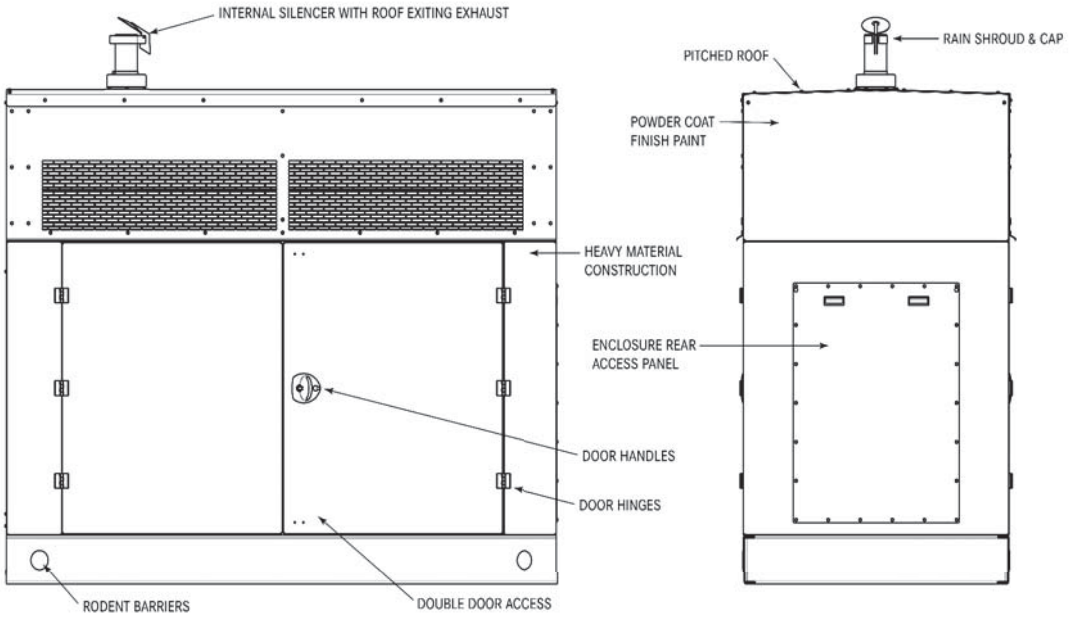
CERTIFICATIONS AND STANDARDS

- UL 2200
- CSA
- ISO 9001:2008
- CE Marking Provided

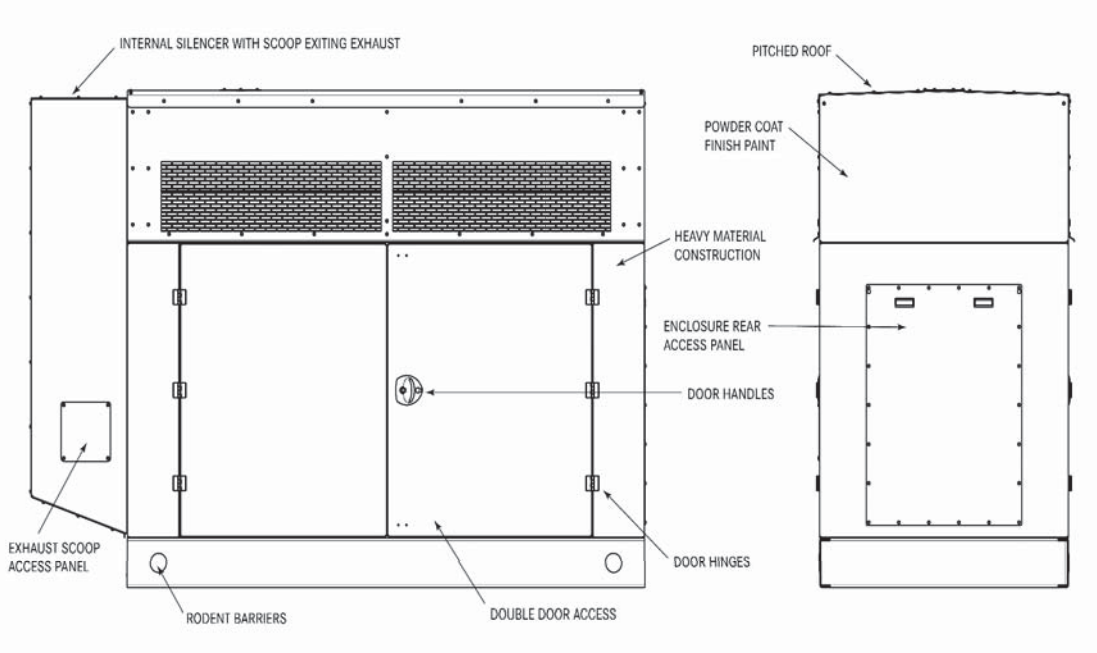
STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel Enclosure: 14 gauge or greater
  - Aluminum Enclosure: 0.09” thick or greater
- 190 mph wind rating
- Serviceability access
  - Double door access gives ease of serviceability to all components
- Pitched roof
- Rain shroud
- Rain cap (Level 1 and 2 only)
- Rodent barriers
- Exhaust scoop access panel and drain
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Powder Coat Finish Paint: ANSI 61 Grey standard
  - Custom colors available upon request
- Internal silencer (Hospital Grade)
  - Insulated muffler
  - Stainless steel flexible exhaust connections (where applicable)

ENCLOSURE AND SOUND DATA SHEET - DIESEL
80-200 kW Standby / 72-180 kW Prime



Level 1 Enclosure (pictured)*



Level 3 Enclosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- LED light package
- Motorized intake louvers
- Gravity exhaust louvers
- For other custom options, please consult factory.

ENCLOSURE AND SOUND DATA SHEET - DIESEL
80-200 kW Standby / 72-180 kW Prime

ENGINE EXHAUST SOUND RATINGS dB(A) AT 1 METER
OPU SOUND RATINGS dB(A) AT 1 METER
ENCLOSURE SOUND RATINGS dB(A) AT 7 METERS

			1 Meter		7 Meters		
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU[1]**	**Level 1[2]**	**Level 2[2]**	**Level 3[2]****
60 Hz Standby	MTU 4R0120 DS80	80 kW	105.2	93.6	82.2	81.5	73.7
	MTU 4R0120 DS100	100 kW	108.3	93.6	82.2	81.3	74.4
	MTU 4R0120 DS125	125 kW	112.4	93.8	82.2	81.8	74.5
	MTU 6R0120 DS150	150 kW	109.1	99.6	91.2	88.4	72.8
	MTU 6R0120 DS180	180 kW	110.8	99.6	91.2	88.7	73.0
	MTU 6R0120 DS200	200 kW	111.5	99.7	91.2	88.7	73.1
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU[1]**	**Level 1[2]**	**Level 2[2]**	**Level 3[2]****
60 Hz Prime	MTU 4R0120 DS80	72 kW	104.4	93.9	82.0	81.7	73.6
	MTU 4R0120 DS100	90 kW	106.7	94.2	82.1	81.8	74.1
	MTU 4R0120 DS125	111 kW	110.0	94.2	82.7	81.8	74.4
	MTU 6R0120 DS150	135 kW	108.8	99.5	91.1	88.7	72.5
	MTU 6R0120 DS180	163 kW	109.7	99.6	91.1	88.7	72.7
	MTU 6R0120 DS200	180 kW	110.8	99.6	91.1	88.7	73.0

(1) Measurement with infinite exhaust connection
(2) Measurement includes exhaust noise

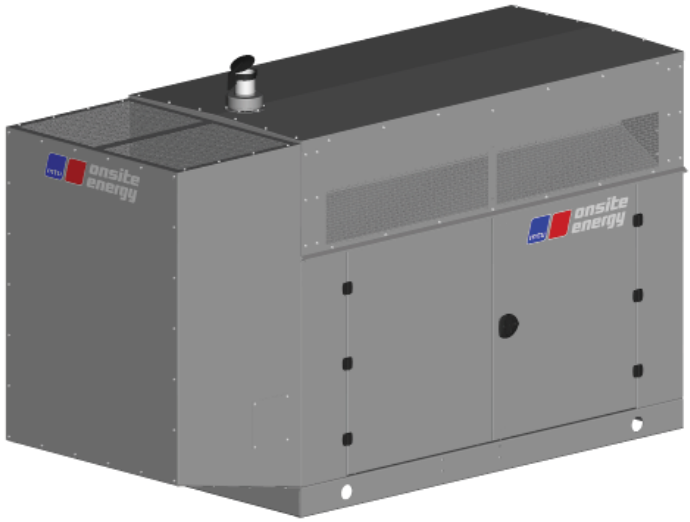
NOTE:

- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- Sound pressure levels subject to instrumentation, measurement, installation, and generator set variability
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package

* **Note**: Visual appearance may differ between power nodes.

** 80-125 kW: Without foam in scoop.
150-200 kW: Foam in scoop is standard.

ENCLOSURE AND SOUND DATA SHEET - DIESEL
80-300 kW Standby / 80-275 kW Prime



Level 3 Enclosure (pictured)*

ENCLOSURE LEVEL IDENTIFICATION	
Level 1	Skid-mounted weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 130 mph wind load rating. Enclosure consists of a bolted and welded construction with unit-mounted internal muffler. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Level 1 enclosure with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
Level 3**	Level 2 enclosure with air exhaust scoop with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed in scoops where applicable.
Level 3 with Exhaust Scoop Sound Attenuation Kit***	Level 3 enclosure with 1.5" thick sound attenuated foam insulation installed in scoop (80-100 kW only).

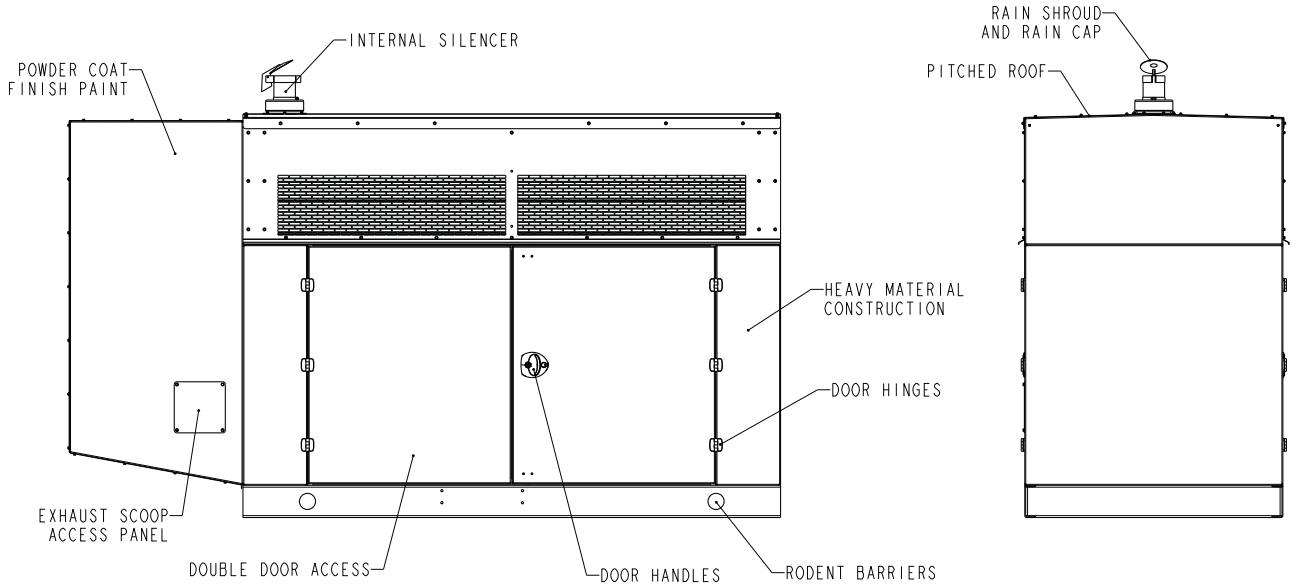
CERTIFICATIONS AND STANDARDS

- UL 2200
- CSA
- ISO 9001:2008
- IBC / OSHPD

STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel Enclosure: 14 gauge or greater
  - Aluminum Enclosure: 0.09” thick or greater
- 130 mph wind rating
- Serviceability access
  - Double door access gives ease of serviceability to all components
- Pitched roof
- Rain shroud and rain cap
- Rodent barriers
- Exhaust scoop access panel and drain
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Powder Coat Finish Paint: ANSI 61 Grey standard
  - Custom colors available upon request
- Internal silencer (Critical grade or better)
  - Insulated or wrapped mufflers and exhaust pipes
  - Stainless steel flexible exhaust connections (where applicable)

ENCLOSURE AND SOUND DATA SHEET - DIESEL
80-300 kW Standby / 80-275 kW Prime



Level 3 Enclosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- AC or DC light package
- Motorized / gravity louvers (where available)
- 190 mph wind rating
- For other custom options, please consult factory.

ENGINE EXHAUST SOUND RATINGS dB(A) AT 1 METER
OPU SOUND RATINGS dB(A) AT 1 METER
ENCLOSURE SOUND RATINGS dB(A) AT 7 METERS

			1 Meter		7 Meters			
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU (1)**	**Level 1 (1)**	**Level 2 (1)**	**Level 3 (1)****	**Level 3 with Exhaust Scoop Sound Attenuation Kit (1)*****
60 Hz Standby	MTU 4R0113 DS80	80 kW	C/F	92	78.9	75.2	70.9	66.7
	MTU 4R0113 DS100	100 kW	C/F	95.3	80.2	77.1	73.4	69.1
	MTU 4R0113 DS125	125 kW	C/F	98	83.5	81.7	73.1	N/A
	MTU 6R0113 DS150	150 kW	C/F	96	84.4	83	74.1	N/A
	MTU 6R0113 DS180	180 kW	C/F	98	85.1	83.3	74.6	N/A
	MTU 6R0113 DS200	200 kW	C/F	98	85.1	83.2	74.4	N/A

ENCLOSURE AND SOUND DATA SHEET - DIESEL
80-300 kW Standby / 80-275 kW Prime

			1 Meter		7 Meters			
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU [1]**	**Level 1 [2]**	**Level 2 [2]**	**Level 3 [2]****	**Level 3 with Exhaust Scoop Sound Attenuation Kit [2]*****
60 Hz Standby	MTU 6R1600 DS230	230 kW	101.3	97.2	87.1	86.7	85.2	N/A
	MTU 6R1600 DS250	250 kW	101.3	97.3	87.7	87	85.4	N/A
	MTU 6R1600 DS275	275 kW	101.3	97.6	88.5	87.5	86.5	N/A
	MTU 6R1600 DS300	300 kW	104.9	98	88.7	87.7	86.9	N/A
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU [1]**	**Level 1 [1]**	**Level 2 [1]**	**Level 3 [1]****	**Level 3 with Exhaust Scoop Sound Attenuation Kit [1]*****
60 Hz Prime	MTU 4R0113 DS80	80 kW	C/F	92	78.9	75.2	70.9	66.7
	MTU 4R0113 DS100	90 kW	C/F	95	80.4	76.8	73.3	69
	MTU 4R0113 DS125	111 kW	C/F	97.9	83.3	81.8	72.9	N/A
	MTU 6R0113 DS150	135 kW	C/F	96.6	84.2	82.8	73.6	N/A
	MTU 6R0113 DS180	180 kW	C/F	98.1	85.1	83.3	74.6	N/A
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU [1]**	**Level 1 [2]**	**Level 2 [2]**	**Level 3 [2]****	**Level 3 with Exhaust Scoop Sound Attenuation Kit [2]*****
60 Hz Prime	MTU 6R1600 DS230	210 kW	C/F	C/F	86.2	85.6	83.9	N/A
	MTU 6R1600 DS250	230 kW	C/F	97.2	87.1	86.7	85.2	N/A
	MTU 6R1600 DS275	250 kW	C/F	97.3	87.7	87	85.4	N/A
	MTU 6R1600 DS300	275 kW	101.3	97.6	88.5	87.5	86.5	N/A

[1] Measurement with infinite exhaust connection
[2] Measurement includes exhaust noise

NOTE:

- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- Sound pressure levels subject to instrumentation, measurement, installation, and generator set variability
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package

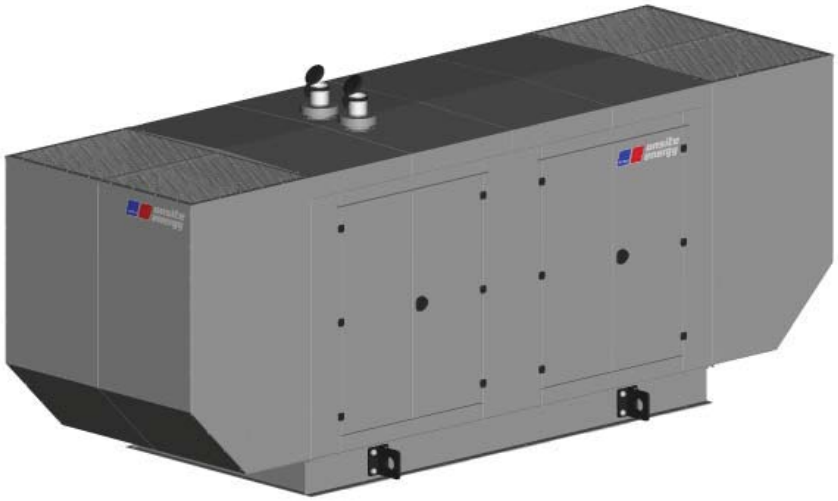
C/F = Consult Factory
N/A = Not Available

* **Note**: Visual appearance may differ between power nodes.

** 80-100 kW: Without foam in scoop, however it is optional. Refer to Level 3 w/exhaust scoop sound attenuation kit.
125-300 kW: Foam in scoop is standard.

*** The Level 3 w/exhaust scoop sound attenuation kit is only available for 80-100 kW range.

ENCLOSURE AND SOUND DATA SHEET - DIESEL
350-600 kW Standby / 325-550 kW Prime



Level 3 Enclosure (pictured)*

ENCLOSURE LEVEL IDENTIFICATION	
Level 1	Weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 130 mph wind load rating. Enclosure consists of a bolted and welded construction with unit-mounted internal muffler included. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Level 1 enclosure with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
Level 3	Level 2 enclosure with air intake and exhaust scoops with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed in scoops.

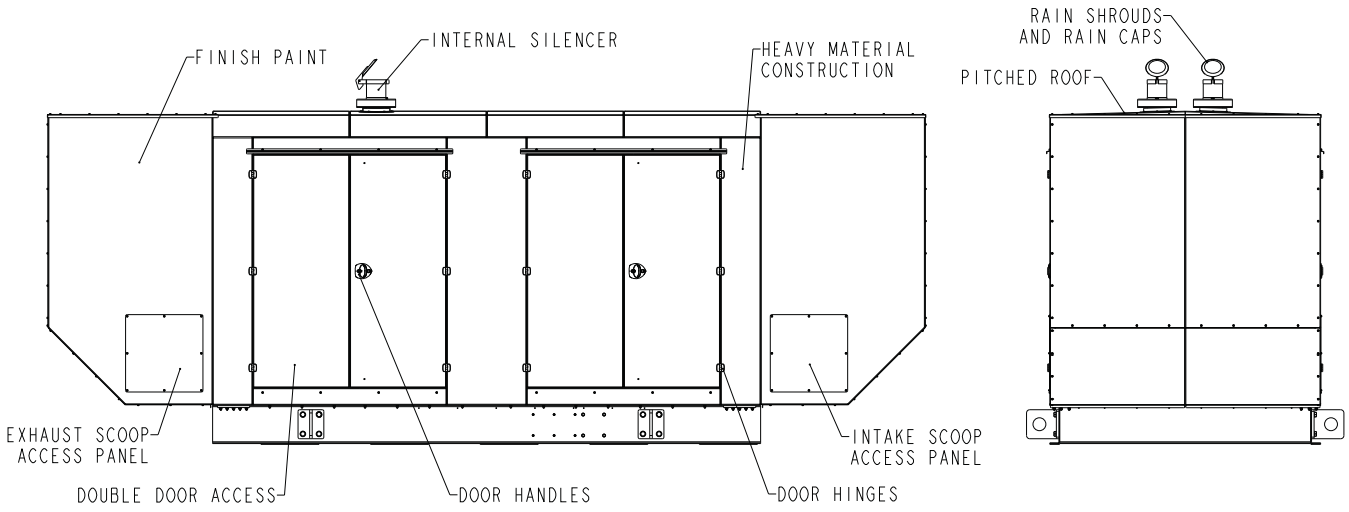
CERTIFICATIONS AND STANDARDS

- UL 2200
- CSA
- ISO 9001:2008
- IBC / OSHPD

STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel Enclosure: 14 gauge or greater
  - Aluminum Enclosure: 0.09” thick or greater
- 130 mph wind rating
- Serviceability access
  - Double door access gives ease of serviceability to all components
- Pitched roof
- Rain shroud and rain cap
- Rodent barriers
- Scoop access panels and drain
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Finish Paint: ANSI 61 Grey standard
  - Custom colors available upon request
- Internal silencer (Critical grade or better)
  - Insulated or wrapped mufflers and exhaust pipes
  - Stainless steel flexible exhaust connections (where applicable)

ENCLOSURE AND SOUND DATA SHEET - DIESEL
350-600 kW Standby / 325-550 kW Prime



Level 3 Enclosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- AC or DC light package
- Motorized / gravity louvers (where available)
- 190 mph wind rating
- For other custom options, please consult factory.

ENGINE EXHAUST SOUND RATINGS dB(A) AT 1 METER
OPU SOUND RATINGS dB(A) AT 1 METER
ENCLOSURE SOUND RATINGS dB(A) AT 7 METERS

			1 Meter		7 Meters		
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU (1)**	**Level 1 (2)**	**Level 2 (2)**	**Level 3 (2)****
60 Hz Standby	MTU 8V1600 DS350	350 kW	109.3	98	91.6	90.4	77.2
	MTU 8V1600 DS400	400 kW	109.6	98	91.5	90.6	77.6
	MTU 10V1600 DS450	450 kW	104	C/F	91	89.2	77.9
	MTU 10V1600 DS500	500 kW	106	102.8	91	89.6	78.3
	MTU 12V1600 DS550	550 kW	108.9	100.5	92.9	91.1	84.7
	MTU 12V1600 DS600	600 kW	109.9	100.5	92.8	91.1	84.2
Application	**Model**	**Power Node**	**Engine Exhaust**	**OPU (1)**	**Level 1 (2)**	**Level 2 (2)**	**Level 3 (2)****
60 Hz Prime	MTU 8V1600 DS350	325 kW	108	C/F	91.4	90.4	76.8
	MTU 8V1600 DS400	365 kW	109.3	C/F	91.5	90.4	77.2
	MTU 10V1600 DS450	400 kW	C/F	101.8	90.7	89.4	77.5
	MTU 10V1600 DS500	450 kW	104	102.8	91	89.2	77.9
	MTU 12V1600 DS550	500 kW	107.6	100.1	92.8	91.7	C/F
	MTU 12V1600 DS600	550 kW	108.8	100.3	92.9	91.1	C/F

(1) Measurement with infinite exhaust connection
(2) Measurement includes exhaust noise

ENCLOSURE AND SOUND DATA SHEET - DIESEL
350-600 kW Standby / 325-550 kW Prime

NOTE:

- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- Sound pressure levels subject to instrumentation, measurement, installation, and generator set variability
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package

C/F = Consult Factory

* **Note**: Visual appearance may differ between power nodes.

ENCLOSURE AND SOUND DATA SHEET - DIESEL

650-2,000 kW Standby / 615-1,800 kW Prime
1,250-2,000 Data Center Continuous Power (DCCP)

Weatherproof Enclosure (pictured)*

ENCLOSURE LEVEL IDENTIFICATION	
Weatherproof Enclosure (WPE)	Weatherproof enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels. Enclosure consists of a bolted and welded construction with factory-mounted external muffler or internal muffler where applicable. Hinged, lockable double-door access on both sides of the enclosure.
Weatherproof (WPE) with Sound Attenuation Kit	Weatherproof enclosure with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
Ultra Quiet Enclosure (UQE)	Weatherproof foamed enclosure with additional air intake and exhaust scoops for redirecting noise and air flow upward.

CERTIFICATIONS AND STANDARDS

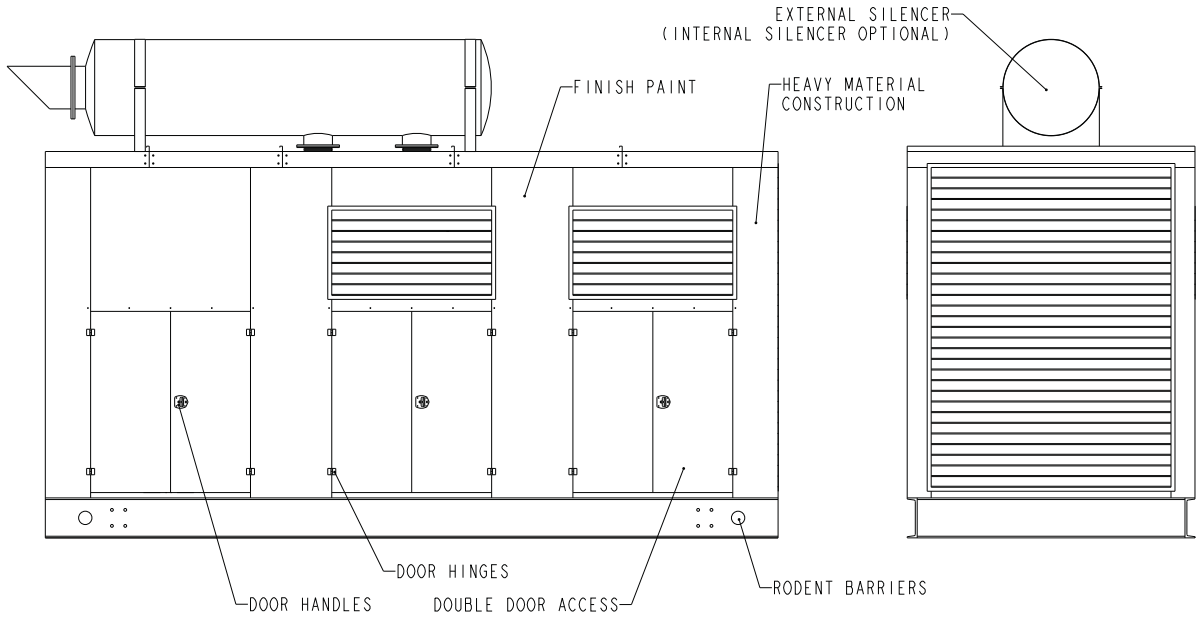
- UL 2200
- CSA
- ISO 9001:2008

STANDARD FEATURES FOR ALL LEVELS

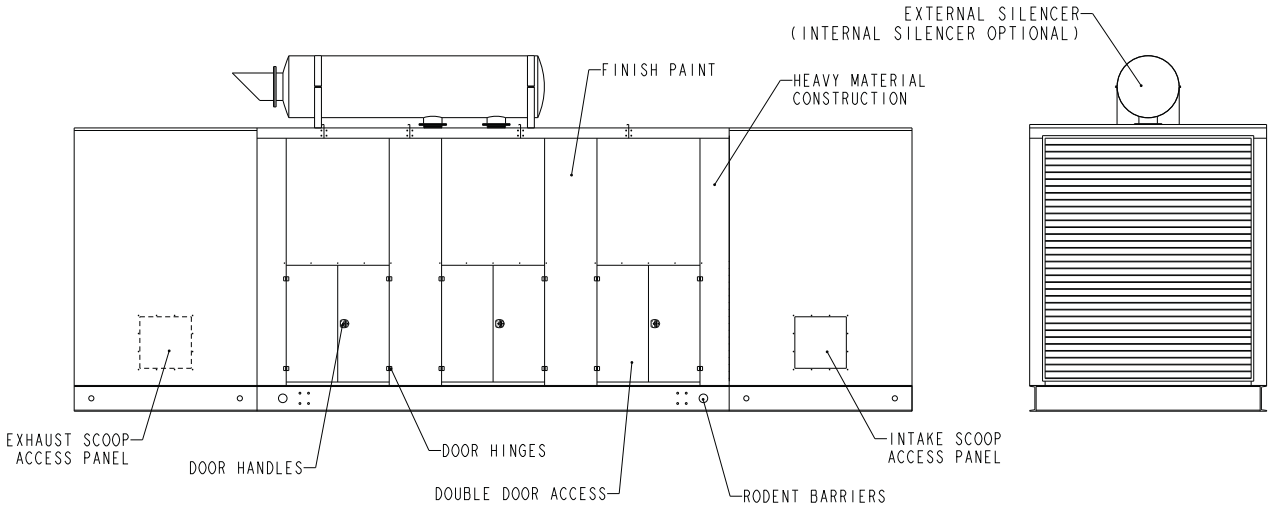
- Heavy material construction
  - Steel Enclosure: 14 gauge or greater
  - Aluminum Enclosure: 0.09” thick or greater
- Serviceability access
  - Double door access gives ease of serviceability to all components
- Rain shroud and rain cap
- Rodent barriers
- Scoop access panels
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Finish Paint: ANSI 61 Grey standard
  - Custom colors available upon request
- External silencer (Industrial grade or better)
  - Stainless steel flexible exhaust connections (where applicable)

ENCLOSURE AND SOUND DATA SHEET - DIESEL

650-2,000 kW Standby / 615-1,800 kW Prime
1,250-2,000 Data Center Continuous Power (DCCP)



Weatherproof Enclosure (pictured)*



Ultra Quiet Enclosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- AC or DC light package
- Motorized / gravity louvers (where available)
- Internal silencer (Critical grade or better)
  - Insulated mufflers
  - Stainless steel flexible exhaust connections (where applicable)
- For other custom options, please consult factory.

ENCLOSURE AND SOUND DATA SHEET - DIESEL

650-2,000 kW Standby / 615-1,800 kW Prime
1,250-2,000 Data Center Continuous Power (DCCP)

SOUND RATINGS dB(A) AT 7 METERS

Application	Model	Power Node	Weatherproof Enclosure (WPE)	Weatherproof (WPE) with Sound Attenuation Kit	Ultra Quiet Enclosure (UQE)
Standby	MTU 12V2000 DS650	650 kW	89	86.4	71.9
	MTU 12V2000 DS750	750 kW	89	86.4	71.9
	MTU 12V2000 DS800	800 kW	86.1	82	76
	MTU 16V2000 DS900	900 kW	89.5	86.5	80.5
	MTU 16V2000 DS1000	1,000 kW	93	91.7	81.5
** Includes Data Center Continuous Power (DCCP) ratings	MTU 12V4000 DS1250**	1,250 kW	C/F	88	75.9
	MTU 12V4000 DS1500**	1,500 kW	C/F	89.2	76.2
	MTU 12V4000 DS1750**	1,750 kW	C/F	90.2	77.2
	MTU 16V4000 DS2000**	2,000 kW	C/F	91.8	84
Prime	MTU 12V2000 DS650	615 kW	C/F	C/F	C/F
	MTU 12V2000 DS750	680 kW	C/F	C/F	C/F
	MTU 12V2000 DS800	725 kW	86	82.1	C/F
	MTU 16V2000 DS900	800 kW	C/F	C/F	C/F
	MTU 16V2000 DS1000	900 kW	C/F	C/F	C/F
	MTU 12V4000 DS1250	1,125 kW	C/F	C/F	C/F
	MTU 12V4000 DS1500	1,400 kW	C/F	C/F	C/F
	MTU 12V4000 DS1750	1,600 kW	C/F	C/F	C/F
	MTU 16V4000 DS2000	1,800 kW	C/F	C/F	C/F

NOTE:

- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- Sound pressure levels subject to instrumentation, measurement, installation, and generator set variability
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package
  - Infinite exhaust connection

Refer to the MTU Business Portal *Acoustics Data* for exhaust noise ratings.

C/F = Consult Factory

* **Note**: Visual appearance may differ between power nodes.

ENCLOSURE AND SOUND DATA SHEET - GAS
30-60 kW Standby

Level 1 Enclosure (pictured)*

ENCLOSURE LEVEL IDENTIFICATION	
Level 1	Enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels. Enclosure consists of a bolted and welded construction with factory-mounted external muffler or internal muffler where applicable. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Level 1 enclosure with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
Level 3	Enclosure designed for maximum sound attenuation with air intakes above doors and additional baffles to reduce noise. Exhaust scoops utilized for redirecting noise and air flow upward. Enclosure fully lined with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.

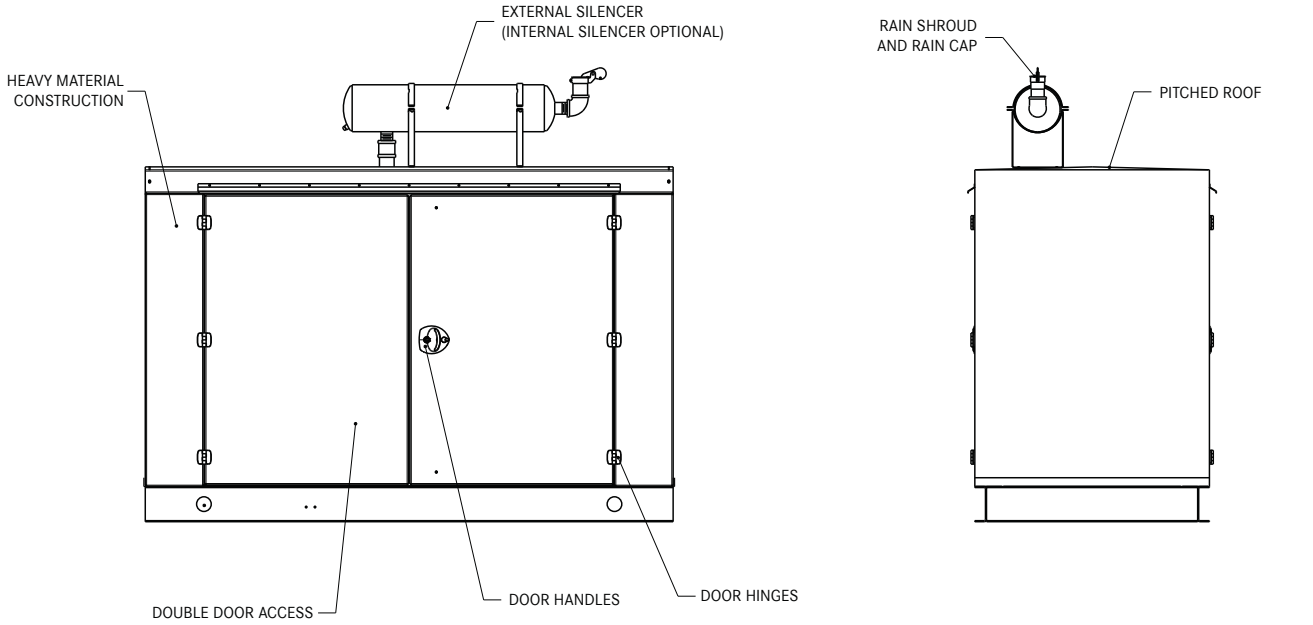
CERTIFICATIONS AND STANDARDS

- UL 2200
- CSA
- ISO 9001:2008

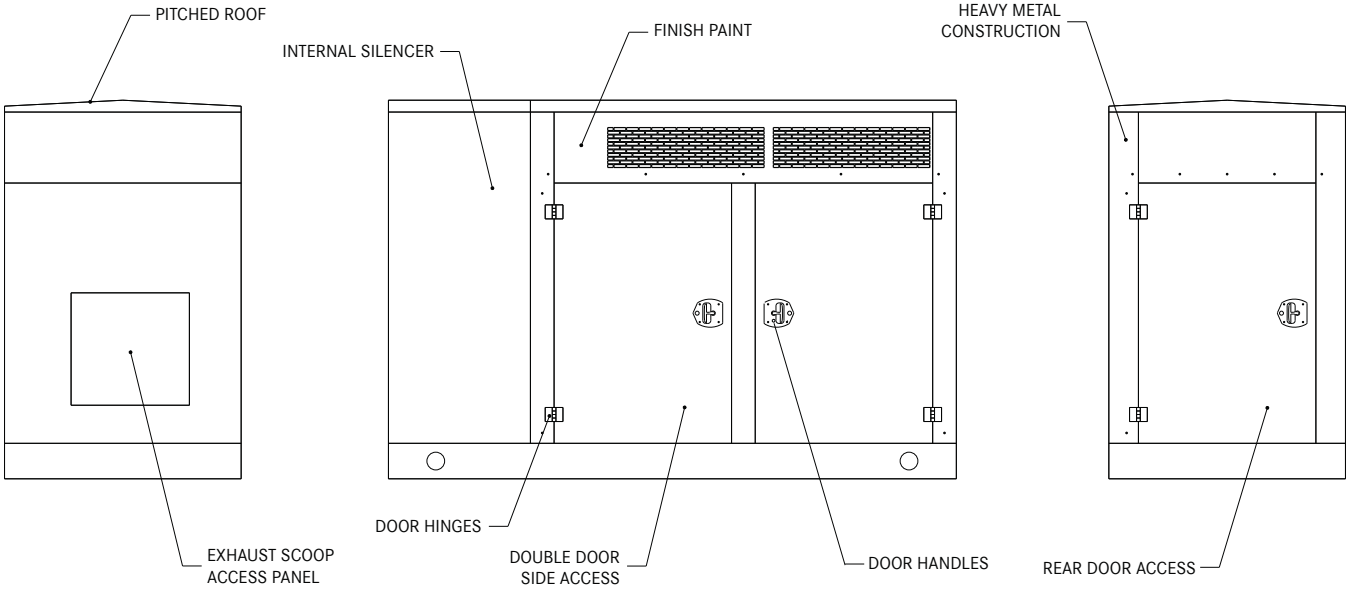
STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel Enclosure: 14 gauge or greater
  - Aluminum Enclosure: 0.09” thick or greater
- Serviceability access
  - Multiple door access gives ease of serviceability to all components
- Rain shroud and rain cap
- Rodent barriers
- Scoop access panels (where applicable)
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Finish Paint: ANSI 61 Grey standard
  - Custom colors available upon request
- External or internal silencer
  - Stainless steel flexible exhaust connections

ENCLOSURE AND SOUND DATA SHEET - GAS
30-60 kW Standby



Level 1 and 2 Enclosure (pictured)*



Level 3 Enclosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- LED light package
- Motorized / gravity louvers (where available)
- Enclosure space heater
- For other custom options, please consult factory.

ENCLOSURE AND SOUND DATA SHEET - GAS
30-60 kW Standby

SOUND RATINGS dB(A) AT 7 METERS

Application	Model	Power Node	Level 1	Level 2	Level 3
Standby (Natural Gas)	MTU 4R0075 GS30	30 kW	C/F	71.6	57.5
	MTU 6V0072 GS40	40 kW	C/F	C/F	C/F
	MTU 8V0063 GS50	50 kW	C/F	C/F	61.1
	MTU 8V0071 GS60	60 kW	C/F	C/F	C/F
Standby (LP)	MTU 4R0075 GS30	30 kW	C/F	72.3	57.5
	MTU 6V0072 GS40	40 kW	C/F	70.7	C/F
	MTU 8V0063 GS50	50 kW	C/F	C/F	C/F
	MTU 8V0071 GS60	60 kW	C/F	69.4	59

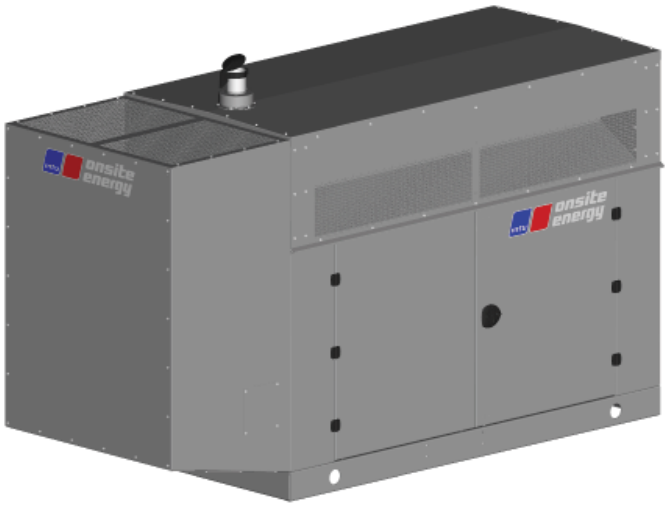
NOTE:

- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- Sound pressure levels subject to instrumentation, measurement, installation, and generator set variability
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package
  - Infinite exhaust connection

C/F = Consult Factory

* **Note**: Visual appearance may differ between power nodes.

ENCLOSURE AND SOUND DATA SHEET - GAS
75-125 kW Standby



Level 3 Enclosure (pictured)*

ENCLOSURE LEVEL IDENTIFICATION	
Level 1	Skid-mounted weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 190 mph wind load rating. Enclosure consists of a bolted and welded construction with unit-mounted internal muffler. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Level 1 enclosure with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
Level 3	Level 1 enclosure with air exhaust scoop with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed in scoop only.
Level 3 with Housing Sound Attenuation Kit	Level 3 enclosure with 1.5" thick sound attenuated foam insulation installed inside enclosure walls.

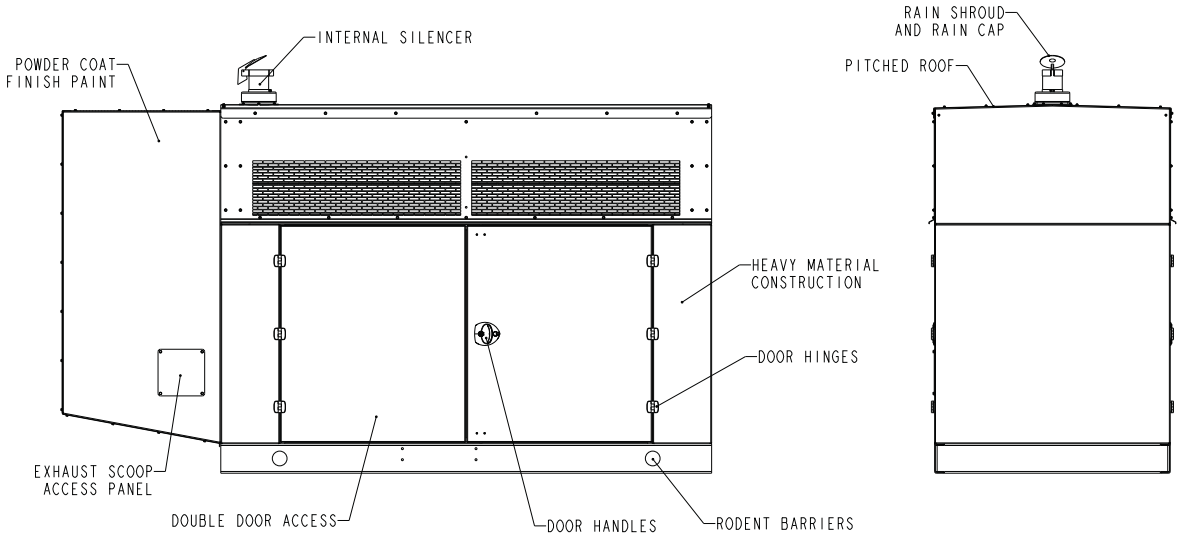
CERTIFICATIONS AND STANDARDS

- UL 2200
- CSA
- ISO 9001:2008

STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel Enclosure: 14 gauge or greater
  - Aluminum Enclosure: 0.09” thick or greater
- 190 mph wind rating
- Serviceability access
  - Double door access gives ease of serviceability to all components
- Pitched roof
- Rain shroud and rain cap
- Rodent barriers
- Exhaust scoop access panel and drain
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Powder Coat Finish Paint: ANSI 61 Grey standard
  - Custom colors available upon request
- Internal silencer (Critical grade or better)
  - Insulated muffler
  - Stainless steel flexible exhaust connections (where applicable)

ENCLOSURE AND SOUND DATA SHEET - GAS
75-125 kW Standby



Level 3 Enclosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- AC or DC light package
- Motorized / gravity louvers (where available)
- For other custom options, please consult factory.

SOUND RATINGS dB(A) AT 7 METERS

Application	Model	Power Node	Level 1	Level 2	Level 3	Level 3 with Housing Sound Attenuation Kit
Standby (Natural Gas)	MTU 10V0068 GS75	70 kW	73	71.8	67.8	61.5
	MTU 10V0068 GS100	100 kW	76.8	72.8	70.5	62.8
	MTU 10V0068 GS125	125 kW	79.6	79.4	74.7	67.1
Standby (Liquid Propane)	MTU 10V0068 GS75	75 kW	73.3	72	68.1	61.6
	MTU 10V0068 GS100	100 kW	75	72.3	70.5	62.9
	MTU 10V0068 GS125	125 kW	79.6	79.2	74.3	67.6

NOTE:

- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- Sound pressure levels subject to instrumentation, measurement, installation, and generator set variability
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package
  - Infinite exhaust connection

* **Note**: Visual appearance may differ between power nodes.

ENCLOSURE AND SOUND DATA SHEET - GAS
150-200 kW Standby / 130-175 kW Prime

Level 3 Enclosure (pictured)*

ENCLOSURE LEVEL IDENTIFICATION	
Level 1	Weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 130 mph wind load rating. Enclosure consists of a bolted construction with factory-mounted internal or external muffler. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Level 1 enclosure with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
Level 3	Level 2 enclosure with air intake and exhaust scoops with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam.

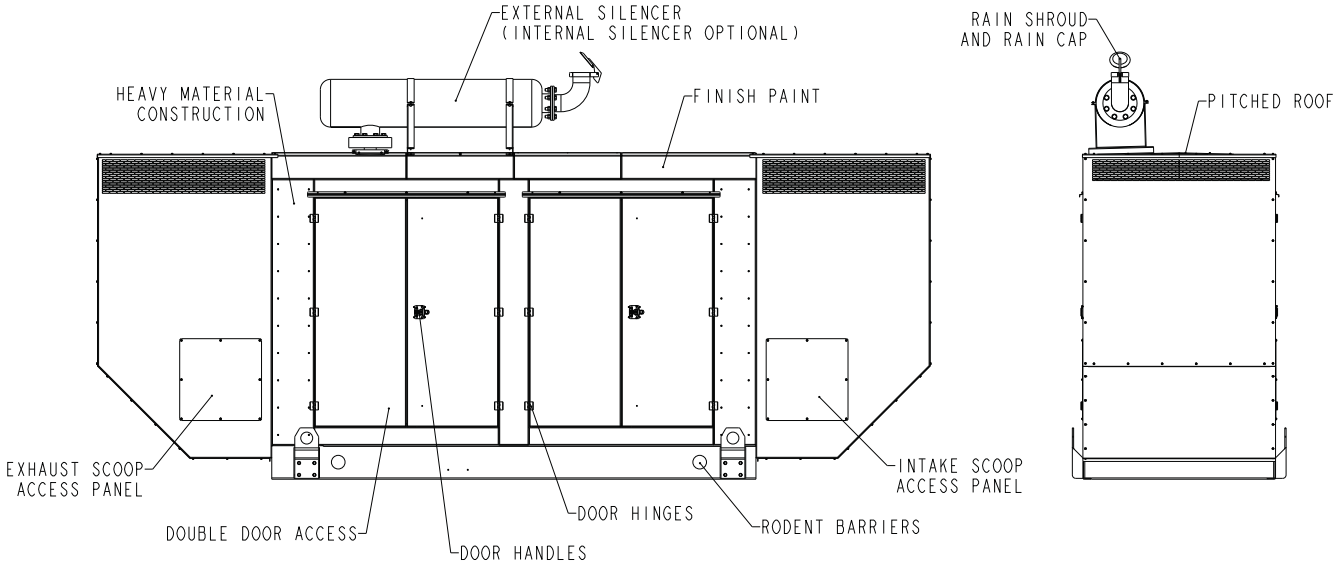
CERTIFICATIONS AND STANDARDS

- UL 2200
- CSA
- ISO 9001:2008

STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel Enclosure: 14 gauge or greater
  - Aluminum Enclosure: 0.09” thick or greater
- 130 mph wind rating
- Serviceability access
  - Double door access gives ease of serviceability to all components
- Pitched roof
- Rain shroud and rain cap
- Rodent barriers
- Scoop access panels and drain
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Finish Paint: ANSI 61 Grey standard
  - Custom colors available upon request
- External silencer (Industrial grade or better)
  - Wrapped exhaust pipes and catalyst
  - Stainless steel flexible exhaust connections (where applicable)

ENCLOSURE AND SOUND DATA SHEET - GAS
150-200 kW Standby / 130-175 kW Prime



Level 3 Enlosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- AC or DC light package
- Motorized / gravity louvers (where available)
- Internal silencer (Critical grade)
  - Insulated or wrapped mufflers, catalyst, and exhaust pipes
  - Stainless steel flexible exhaust connections (where applicable)
- For other custom options, please consult factory.

SOUND RATINGS dB(A) AT 7 METERS

Application	Model	Power Node	Level 1	Level 2	Level 3
Standby (Natural Gas)	MTU 6R0135 GS150	150 kW	79	77.3	70.4
	MTU 6R0185 GS200	200 kW	84.1	82.8	71.4
Standby (Liquid Propane)	MTU 6R0135 GS150	100 kW	78	77.8	70
	MTU 6R0185 GS200	130 kW	83.9	83.1	71.6
Prime (Natural Gas)	MTU 6R0135 GS150	130 kW	78.7	77.5	70.3
	MTU 6R0185 GS200	175 kW	84.7	82.8	71

ENCLOSURE AND SOUND DATA SHEET - GAS
150-200 kW Standby / 130-175 kW Prime

NOTE:

- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- Sound pressure levels subject to instrumentation, measurement, installation, and generator set variability
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package
  - Infinite exhaust connection

* **Note**: Visual appearance may differ between power nodes.

ENCLOSURE AND SOUND DATA SHEET - GAS
260-400 kW Standby / 235-355 kW Prime

Level 3 Enclosure (pictured)*

ENCLOSURE LEVEL IDENTIFICATION	
Level 1	Weather-protective enclosure constructed of heavy gauge steel or aluminum with fixed stormproof panels designed for 130 mph wind load rating. Enclosure consists of a bolted construction with factory-mounted external muffler. Hinged, lockable double-door access on both sides of the enclosure.
Level 2	Level 1 enclosure with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam insulation installed inside enclosure walls.
Level 3	Level 2 enclosure with exhaust scoop with UL 94 HF-1 compliant, 1.5" thick sound attenuated foam. Internal silencers available.

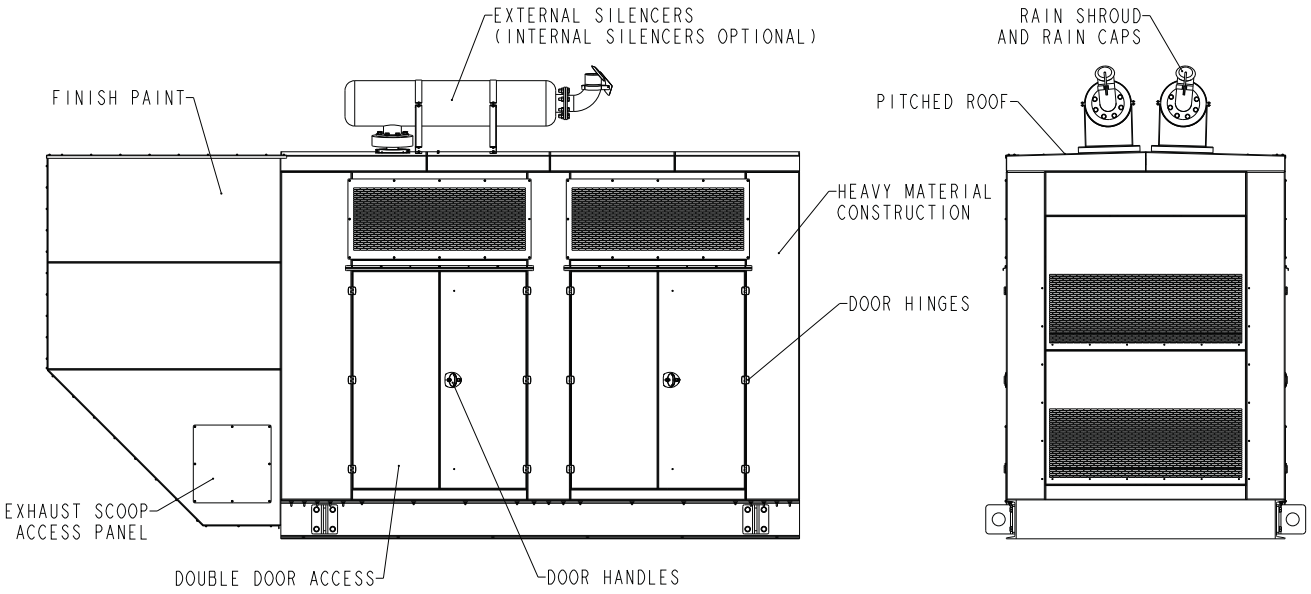
CERTIFICATIONS AND STANDARDS

- UL 2200
- CSA
- ISO 9001:2008

STANDARD FEATURES FOR ALL LEVELS

- Heavy material construction
  - Steel Enclosure: 14 gauge or greater
  - Aluminum Enclosure: 0.09” thick or greater
- 130 mph wind rating
- Serviceability access
  - Double door access gives ease of serviceability to all components
- Pitched roof
- Rain shroud and rain cap
- Rodent barriers
- Scoop access panels and drain
- Hardware
  - Powder coated hinges with stainless steel pins
  - Key-lockable and pad-lockable powder coated door handles
- Finish Paint: ANSI 61 Grey standard
  - Custom colors available upon request
- External silencer (Industrial grade or better)
  - Stainless steel flexible exhaust connections (where applicable)

ENCLOSURE AND SOUND DATA SHEET - GAS
260-400 kW Standby / 235-355 kW Prime



Level 3 Enclosure (pictured)*

OPTIONAL FEATURES

- Door restraints
- AC or DC light package
- Motorized / gravity louvers (where available)
- Internal silencer (Critical grade)
  - Insulated or wrapped mufflers, catalyst, and exhaust pipes
  - Stainless steel flexible exhaust connections (where applicable)
- 190 mph wind rating
- For other custom options, please consult factory.

SOUND RATINGS dB(A) AT 7 METERS

Application	Model	Power Node	Level 1	Level 2	Level 3
Standby (Natural Gas)	MTU 8V0183 GS260	260 kW	80.6	80.1	72.7
	MTU 10V0183 GS350	350 kW	83.9	80.9	73.9
	MTU 12V0183 GS400	400 kW	83.9	81.4	73.6
Standby (Liquid Propane)	MTU 8V0183 GS260	160 kW	81.2	80	72.9
	MTU 10V0183 GS350	245 kW	83.7	80.8	74.5
	MTU 12V0183 GS400	295 kW	83.7	81.3	75.1
Prime (Natural Gas)	MTU 8V0183 GS260	235 kW	80.6	80	72.8
	MTU 10V0183 GS350	300 kW	83.8	80.8	72.3
	MTU 12V0183 GS400	355 kW	83.6	81.2	73

ENCLOSURE AND SOUND DATA SHEET - GAS
260-400 kW Standby / 235-355 kW Prime

NOTE:

- Aluminum enclosure sound levels are approximately 2 dB(A) higher than listed sound levels for steel enclosures
- Sound pressure levels subject to instrumentation, measurement, installation, and generator set variability
- Sound power levels per ISO 8528-10 and ANSI S1.13-2005
- Sound data measured with:
  - Full-rated load
  - Standard radiator package
  - Infinite exhaust connection

* **Note**: Visual appearance may differ between power nodes.

LED ENCLOSURE LIGHTING
Data Sheet

DESCRIPTION

MTU Onsite Energy's ideal lighting solution for generator enclosures is a general purpose LED light. It capitalizes on the intense brightness of LEDs, while using a fraction of the electrical current required for standard incandescent lights. In the event that utility power is disrupted, the generator set starting battery will power the LED light bar. If battery cables are disconnected for scheduled maintenance or other reasons, the lights will operate from AC to DC power supply. The changeover from one power source to the other takes place automatically with no disruption in illumination.

FEATURES

- Low-profile, space-saving design
- Rugged, water-resistant environmental rating
- Clear, shatterproof lens for maximum brightness
- European-style wiring uses daisy chain connections to power multiple lights (up to four lights in series)
- Bright, closely-spaced LEDs enhance light quality
- Automatic temperature protection built into the unit
- Momentary pushbutton switch activates time delay; lights turn off automatically
- Adjustable time delay is factory set for 30 minutes
- Standard AC and DC power supplies
  - Best source selector uses whichever power source is available
  - System starting battery for DC power
  - High efficiency, regulated power supply for AC to DC power
- Sturdy aluminum housing

SPECIFICATIONS

LED Light Bar

- **Electrical Characteristics**
  - Operating voltage: 12 to 30 VDC
  - Typical current: 0.66 A at 12 VDC; 0.30 A at 24 VDC
  - Maximum current: 0.8 A
  - Supply protection circuitry: Protected against reverse polarity and transient voltages

- **Light Characteristics**
  - Lumen output: 650 (± 5%) per light bar, typical at 25 °C (77 °F)
  - Luminous efficacy: 90 lumens/watt typical at 24 VDC at 25 °C (77 °F)
  - Lighted length: 285 mm (11.2 in)
  - Color: Cool White
  - LED Lifetime: Lumen output will decrease less than 30% after 50,000 hours

- **Environmental Rating**
  - IEC IP67 / IP69K per DIN 40050
  - NEMA 6

LED ENCLOSURE LIGHTING
Data Sheet

Pushbutton Switch

- Industrial pilot duty
- Flush 22 mm (0.87 in) green-colored button cap

DC Power Supply

• Fuse	Automotive blade-type
• Voltage rating	12 or 24 VDC nominal
• Fuse current rating	3 A max

AC to DC Power Supply

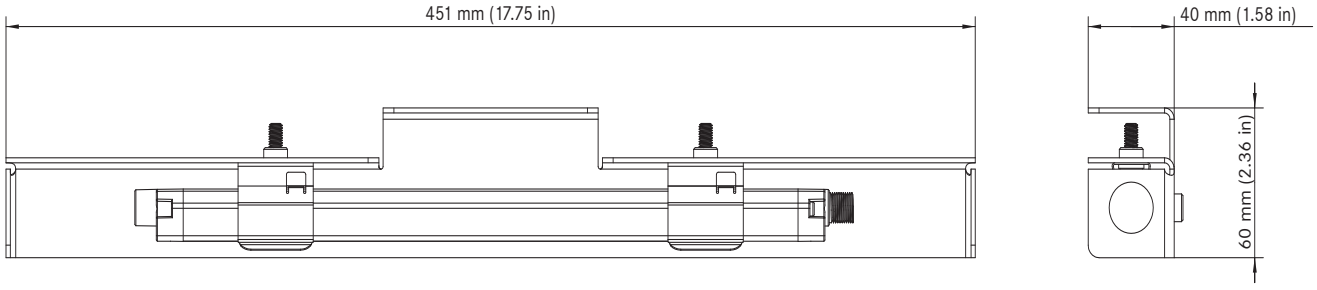
• Input voltage	100 to 240 VAC
• Input frequency	45 to 65 Hz
• Input current	1 A max
• Output voltage	12 VDC
• Output current	4.6 A

Best Source Selector

• Blocking diodes	Type 1N5408

Time Delay Relay

- Activated by pushbutton switch
- Adjustable from 6 to 60 minutes in 10% increments



LED Enclosure Lighting Dimensions

GAS GENERATOR SET
MTU 4R0075 GS30

30 kWe / 60 Hz / Standby
208 - 600V

SYSTEM RATINGS

Standby

Voltage (L-L)	240V*	240V*	208V*	240V*	480V*	600V*
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	117	117	104	90	45	36
Natural Gas Ratings: kW/kVA	28/28	28/28	30/37.5	30/37.5	30/37.5	30/37.5
LP Gas Ratings: Amps	125	125	104	90	45	36
LP Gas Ratings: kW/kVA	30/30	30/30	30/37.5	30/37.5	30/37.5	30/37.5
skVA@30% Voltage Dip	48	85	92	92	123	122
Generator Model	284PSL1708	283PSL1718	283PSL1707	283PSL1707	283PSL1707	284PSL1752
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 3.0L Engine
- 3.0 Liter Displacement
- 4-Cycle
// Optional Fuels: LP Liquid and Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	GM
Model	3.0L
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	3 (181)
Bore: cm (in)	10.2 (4)
Stroke: cm (in)	9.1 (3.6)
Compression Ratio	9.25:1
Rated RPM	1,800
Engine Governor	Bosch
Max. Power (NG): kWm (bhp)	37.9 (50.8)
Max. Power (LP): kWm (bhp)	38.4 (51.5)
Speed Regulation	C/F
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	4.9 (1.3)
Engine Jacket Water Capacity: L (gal)	3.8 (1)
System Coolant Capacity: L (gal)	14.8 (3.9)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel Inlet

Fuel Supply Connection Size	3/4" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	10.2 (361)	4.5 (159)
At 75% of Power Rating: m^3/hr (ft^3/hr)	7.7 (270)	3.4 (120)
At 50% of Power Rating: m^3/hr (ft^3/hr)	5.4 (189)	2.4 (84)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	64.4 (17)
Heat Rejection to Coolant: kW (BTUM)	25.3 (1,436)
Heat Radiated to Ambient: kW (BTUM)	15.6 (886)
Fan Power: kW (hp)	2.2 (3)

// Air Requirements

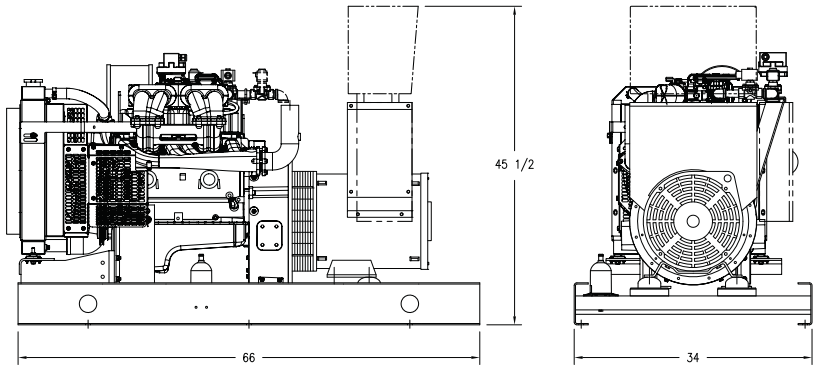
	NG and LPG
Aspirating: *m^3/min (SCFM)	2.7 (94.3)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	81.6 (2,882.39)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat For a Max. of 25 °F Rise: *m^3/min (SCFM)	56.6 (1,998)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	704.4 (1,300)
Gas Volume at Stack Temp: m^3/min (CFM)	8.6 (304.53)
Max. Allowable Back Pressure: kPa (in. H_20)	10 (40)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	1,676 x 864 x 1,156 mm (66 x 34 x 45.5 in)	458 kg (1,010 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	C/F
WPE - No Sound Attenuation dB(A)	C/F
CQE dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	5.39	21.98
Liquid Propane	7.41	24.36

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 6V0072 GS40

40 kWe / 60 Hz / Standby
208 - 600V

SYSTEM RATINGS

Standby

Voltage (L-L)	240V*	240V*	208V*	240V*	480V*	600V*
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	167	167	139	120	60	48
Natural Gas Ratings: kW/kVA	40/40	40/40	40/50	40/50	40/50	40/50
LP Gas Ratings: Amps	167	167	139	120	60	48
LP Gas Ratings: kW/kVA	40/40	40/40	40/50	40/50	40/50	40/50
skVA@30% Voltage Dip	128	116	125	125	167	92
Generator Model	362CSL1604	361CSL1612	284PSL1742	284PSL1742	284PSL1742	361PSL1632
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4.3L Engine
- 4.3 Liter Displacement
- 4-Cycle
// Optional Fuels: LP Liquid and Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
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Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	GM
Model	4.3L
Type	4-Cycle
Arrangement	6-V
Displacement: L (in^3)	4.3 (262)
Bore: cm (in)	10.2 (4)
Stroke: cm (in)	8.8 (3.5)
Compression Ratio	9.4:1
Rated RPM	1,800
Engine Governor	Bosch
Max. Power (NG): kWm (bhp)	49.6 (66.5)
Max. Power (LP): kWm (bhp)	53.2 (71.4)
Speed Regulation	C/F
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	4.2 (1.1)
Engine Jacket Water Capacity: L (gal)	7.2 (1.9)
System Coolant Capacity: L (gal)	21.6 (5.7)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel Inlet

Fuel Supply Connection Size	3/4" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	13.9 (489)	6.1 (216)
At 75% of Power Rating: m^3/hr (ft^3/hr)	10.4 (368)	4.6 (163)
At 50% of Power Rating: m^3/hr (ft^3/hr)	7.3 (256)	3.2 (113)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	117.3 (31)
Heat Rejection to Coolant: kW (BTUM)	39 (2,220)
Heat Radiated to Ambient: kW (BTUM)	16.5 (938)
Fan Power: kW (hp)	3.4 (4.5)

// Air Requirements

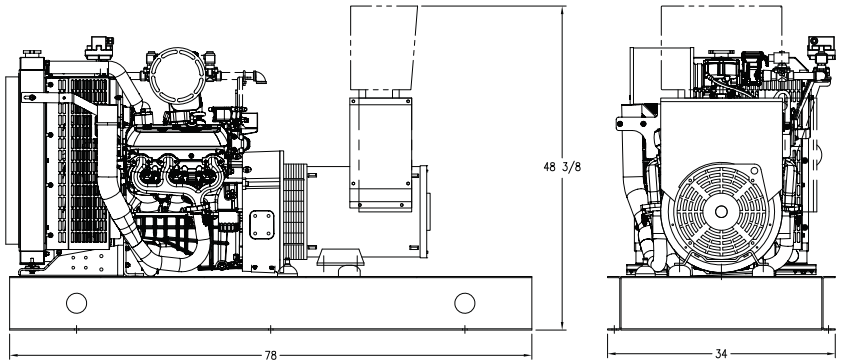
	NG and LPG
Aspirating: *m^3/min (SCFM)	3.9 (136.5)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	211.4 (7,464)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat For a Max. of 25 °F Rise: *m^3/min (SCFM)	59.9 (2,114)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	704.4 (1,300)
Gas Volume at Stack Temp: m^3/min (CFM)	12.5 (440.8)
Max. Allowable Back Pressure: kPa (in. H_20)	10 (40)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	1,981 x 864 x 1,229 mm (78 x 34 x 48.38 in)	572 kg (1,260 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	C/F
WPE - No Sound Attenuation dB(A)	C/F
CQE dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	5.24	16.38
Liquid Propane	6.09	23.89

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 8V0063 GS50

50 kWe / 60 Hz / Standby
208 - 600V

SYSTEM RATINGS

Standby

Voltage (L-L)	240V*	240V*	208V*	240V*	480V*	600V*
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	188	188	173	150	75	60
Natural Gas Ratings: kW/kVA	45/45	45/45	50/62.5	50/62.5	50/62.5	50/62.5
LP Gas Ratings: Amps	208	208	173	150	75	60
LP Gas Ratings: kW/kVA	50/50	50/50	50/62.5	50/62.5	50/62.5	50/62.5
skVA@30% Voltage Dip	127	118	200	200	266	138
Generator Model	362CSL1606	361CSL1612	361CSL1602	361CSL1602	361CSL1602	361PSL1633
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 5.0L Engine
- 5.0 Liter Displacement
- 4-Cycle
// Optional Fuels: LP Liquid and Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
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UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	GM
Model	5.0L
Type	4-Cycle
Arrangement	8-V
Displacement: L (in^3)	5 (305)
Bore: cm (in)	9.5 (3.75)
Stroke: cm (in)	8.8 (3.48)
Compression Ratio	9.4:1
Rated RPM	1,800
Engine Governor	Bosch
Max. Power (NG): kWm (bhp)	62.2 (83.4)
Max. Power (LP): kWm (bhp)	65.8 (88.3)
Speed Regulation	C/F
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	4.9 (1.3)
Engine Jacket Water Capacity: L (gal)	8.7 (2.3)
System Coolant Capacity: L (gal)	22.7 (6)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel Inlet

Fuel Supply Connection Size	1 1/2" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	17 (600)	7.5 (265)
At 75% of Power Rating: m^3/hr (ft^3/hr)	12.8 (452)	5.7 (200)
At 50% of Power Rating: m^3/hr (ft^3/hr)	9 (317)	4 (140)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	113.6 (30)
Heat Rejection to Coolant: kW (BTUM)	59.8 (3,400)
Heat Radiated to Ambient: kW (BTUM)	8.2 (466)
Fan Power: kW (hp)	3.4 (4.5)

// Air Requirements

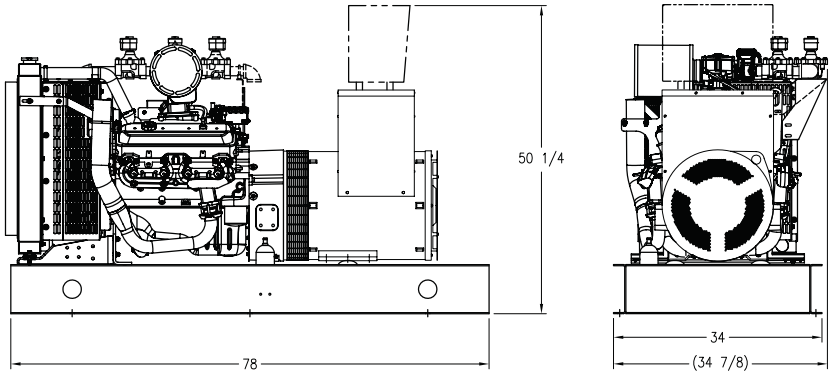
	NG and LPG
Aspirating: *m^3/min (SCFM)	4.5 (158.9)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	209.4 (7,396)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat For a Max. of 25 °F Rise: *m^3/min (SCFM)	29.8 (1,051)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	704.4 (1,300)
Gas Volume at Stack Temp: m^3/min (CFM)	14.5 (513)
Max. Allowable Back Pressure: kPa (in. H_20)	10 (40)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	1,981 x 864 x 1,276 mm (78 x 34 x 50.25 in)	658 kg (1,450 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	C/F
WPE - No Sound Attenuation dB(A)	C/F
CQE dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	5.76	23.55
Liquid Propane	6.48	29.6

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 8V0071 GS60

60 kWe / 60 Hz / Standby
208 - 600V

SYSTEM RATINGS

Standby

Voltage (L-L)	240V*	240V*	208V*	240V*	480V*	600V*
Phase	1	1	3	3	3	3
PF	1.	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	229	229	208	180	90	72
Natural Gas Ratings: kW/kVA	55/55	55/55	60/75	60/75	60/75	60/75
LP Gas Ratings: Amps	250	250	208	180	90	72
LP Gas Ratings: kW/kVA	60/60	60/60	60/75	60/75	60/75	60/75
skVA@30% Voltage Dip	127	230	200	200	172	140
Generator Model	362CSL1606	362CSL1615	361CSL1602	361CSL1602	361CSL1601	361PSL1633
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 5.7L Engine
- 5.7 Liter Displacement
- 4-Cycle
// Optional Fuels: LP Liquid and Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	GM
Model	5.7L
Type	4-Cycle
Arrangement	8-V
Displacement: L (in^3)	5.7 (350)
Bore: cm (in)	10.2 (4)
Stroke: cm (in)	8.8 (3.5)
Compression Ratio	9.4:1
Rated RPM	1,800
Engine Governor	Bosch
Max. Power (NG): kWm (bhp)	78.1 (104.7)
Max. Power (LP): kWm (bhp)	84.4 (113.2)
Speed Regulation	C/F
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	4.9 (1.3)
Engine Jacket Water Capacity: L (gal)	8.7 (2.3)
System Coolant Capacity: L (gal)	22.7 (6)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel Inlet

Fuel Supply Connection Size	1 1/2" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	20.3 (717)	9 (317)
At 75% of Power Rating: m^3/hr (ft^3/hr)	15.3 (541)	6.8 (239)
At 50% of Power Rating: m^3/hr (ft^3/hr)	10.6 (376)	4.7 (166)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	113.6 (30)
Heat Rejection to Coolant: kW (BTUM)	59.8 (3,400)
Heat Radiated to Ambient: kW (BTUM)	17.5 (993.2)
Fan Power: kW (hp)	3.4 (4.5)

// Air Requirements

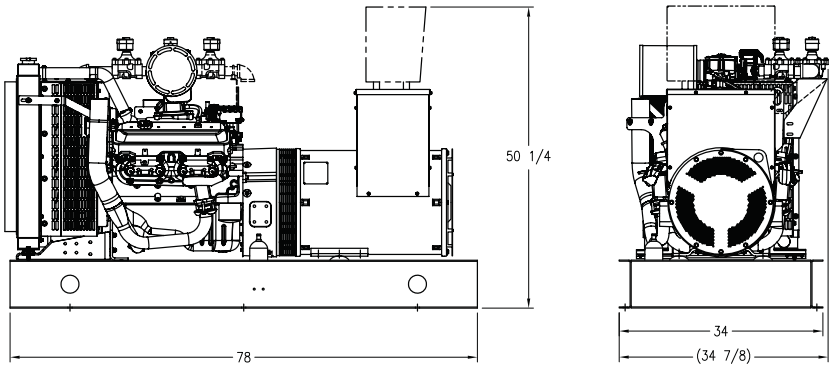
	NG and LPG
Aspirating: *m^3/min (SCFM)	5.2 (182.3)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	209.4 (7,396)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat For a Max. of 25 °F Rise: *m^3/min (SCFM)	63.4 (2,240)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	704.4 (1,300)
Gas Volume at Stack Temp: m^3/min (CFM)	16.7 (588.7)
Max. Allowable Back Pressure: kPa (in. H_20)	10 (40)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	1,981 x 864 x 1,276 mm (78 x 34 x 50.25 in)	658 kg (1,450 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	C/F
WPE - No Sound Attenuation dB(A)	C/F
CQE dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	5.77	19.94
Liquid Propane	7.21	22.09

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 10V0068 GS75

75 kWe / 60 Hz / Standby
208 - 600V

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	292	292	243	210	105	84
Natural Gas Ratings: kW/kVA	70/70	70/70	70/87.5	70/87.5	70/87.5	70/87.5
LP Gas Ratings: Amps	313	313	260	226	113	90
LP Gas Ratings: kW/kVA	75/75	75/75	75/93.75	75/93.75	75/93.75	75/93.75
skVA@30% Voltage Dip	311	107	216	216	288	235
Generator Model	363CSL1617	431CSL6202	362CSL1604	362CSL1604	362CSL1604	362PSL1635
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 LEAD	12 LEAD ZIG-ZAG	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered
Note: This unit is available with a dual fuel configuration.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6.8L Engine
- 6.8 Liter Displacement
- 4-Cycle
// Optional Fuels: LP Liquid and Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability
// Digital Control Panel
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Heavy Duty Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Rack & Cables
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Ford
Model	6.8L V10
Type	4-Cycle
Aspiration	Naturally Aspirated
Arrangement	10-V
Displacement: L (in^3)	6.8 (415)
Bore: cm (in)	9 (3.55)
Stroke: cm (in)	10.6 (4.17)
Compression Ratio	9:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	85.6 (114.8)
Maximum Power (LP): kWm (bhp)	89.4 (119.9)
Speed Regulation	C/F
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	5.7 (1.5)
Engine Jacket Water Capacity: L (gal)	5.9 (1.55)
System Coolant Capacity: L (gal)	25.58 (6.75)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel Inlet

Fuel Supply Connection Size	1 1/2" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	27.2 (960)	11.4 (403)
At 75% of Power Rating: m^3/hr (ft^3/hr)	21.5 (759)	9.3 (328)
At 50% of Power Rating: m^3/hr (ft^3/hr)	15.6 (551)	6.8 (239)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	123 (32.5)
Heat Rejection to Coolant: kW (BTUM)	78.2 (4,448)
Heat Radiated to Ambient: kW (BTUM)	19.1 (1,086)
Fan Power: kW (hp)	2.8 (3.8)

// Air Requirements

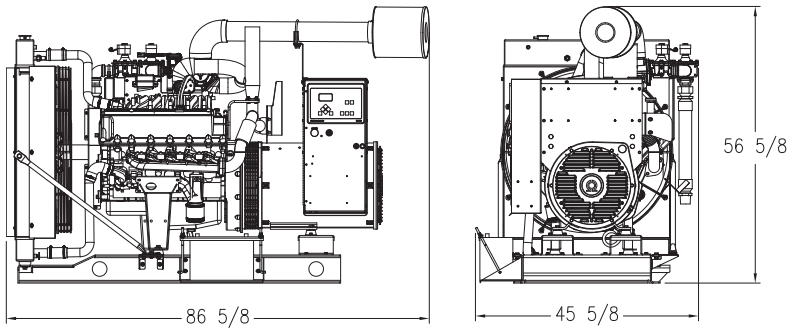
	NG and LPG
Aspirating: *m^3/min (SCFM)	4.54 (160.5)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	303.4 (10,715)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat For a Max of 25 °F Rise: *m^3/min (SCFM)	103 (3,369)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	660 (1,220)
Gas Volume at Stack Temp: m^3/min (CFM)	15.3 (539)
Maximum Allowable Back Pressure: kPa (in. H_20)	4.98 (20)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	2,199 x 1,158 x 1,438 mm (86.6 x 45.6 x 56.6 in)	1,125 kg (2,481 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load (NG)	Standby Full Load (LP)
Level 0: Open Power Unit dB(A)	75.5	76.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	7.53	30.49
Liquid Propane	7.65	47.95

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 10V0068 GS100

100 kWe / 60 Hz / Standby
208 - 600V

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	417	417	347	301	151	120
Natural Gas Ratings: kW/kVA	100/100	100/100	100/125	100/125	100/125	100/125
LP Gas Ratings: Amps	417	417	347	301	151	120
LP Gas Ratings: kW/kVA	100/100	100/100	100/125	100/125	100/125	100/125
skVA@30% Voltage Dip	311	130	258	258	344	277
Generator Model	363CSL1617	431CSL6204	362CSL1606	362CSL1606	362CSL1606	362PSL1636
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 LEAD	12 LEAD ZIG-ZAG	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

Note: This unit is available with a dual fuel configuration.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6.8L Engine
- 6.8 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Optional Fuels: LP Liquid and Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Heavy Duty Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Rack & Cables
Flexible Exhaust Connection
Liquid Cooled, Ball Bearing Turbocharger
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Ford
Model	6.8L V10
Type	4-Cycle
Aspiration	Turbocharged
Arrangement	10-V
Displacement: L (in^3)	6.8 (415)
Bore: cm (in)	9 (3.55)
Stroke: cm (in)	10.6 (4.17)
Compression Ratio	9:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	132 (177)
Maximum Power (LP): kWm (bhp)	132 (177)
Speed Regulation	C/F
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	5.7 (1.5)
Engine Jacket Water Capacity: L (gal)	6 (1.6)
System Coolant Capacity: L (gal)	27.47 (7.25)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel Inlet

Fuel Supply Connection Size	1 1/2" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	31.15 (1,100)	14.49 (511.5)
At 75% of Power Rating: m^3/hr (ft^3/hr)	23.67 (835.9)	11.32 (400)
At 50% of Power Rating: m^3/hr (ft^3/hr)	16.2 (520.1)	8.07 (284.8)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	123 (32.5)
Heat Rejection to Coolant: kW (BTUM)	81.29 (4,623)
Heat Radiated to Ambient: kW (BTUM)	41.54 (2,362)
Fan Power: kW (hp)	4.1 (5.5)

// Air Requirements

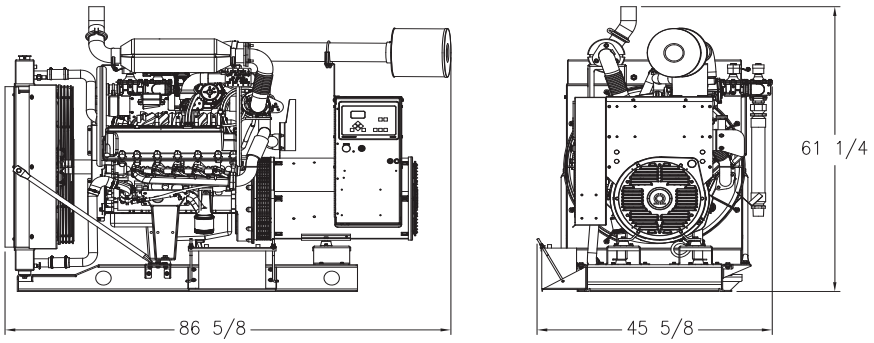
	NG and LPG
Aspirating: *m^3/min (SCFM)	5.91 (208.7)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	254.9 (9,001.7)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat For a Max of 25 °F Rise: *m^3/min (SCFM)	150.9 (5,329)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	716.1 (1,321)
Gas Volume at Stack Temp: m^3/min (CFM)	20.2 (713.4)
Maximum Allowable Back Pressure: kPa (in. H_20)	6.23 (25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	2,199 x 1,158 x 1,556 mm (86.6 x 45.6 x 61.25 in)	1,163.9 kg (2,566 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load (NG)	Standby Full Load (LP)
Level 0: Open Power Unit dB(A)	77.2	77.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.44	0.2
Liquid Propane	0.12	0.09

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 10V0068 GS125

125 kWe / 60 Hz / Standby
208 - 600V

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	521	521	434	376	188	151
Natural Gas Ratings: kW/kVA	125/125	125/125	125/156.25	125/156.25	125/156.25	125/156.25
LP Gas Ratings: Amps	521	521	434	376	188	151
LP Gas Ratings: kW/kVA	125/125	125/125	125/156.25	125/156.25	125/156.25	125/156.25
skVA@30% Voltage Dip	196	130	323	323	430	331
Generator Model	431PSL6224	431CSL6204	363CSL1607	363CSL1607	363CSL1607	363PSL1658
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 LEAD	12 LEAD ZIG-ZAG	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

Note: This unit is available with a dual fuel configuration.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6.8L Engine
- 6.8 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Optional Fuels: LP Liquid and Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability
// Digital Control Panel
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Heavy Duty Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Rack & Cables
Flexible Exhaust Connection
Liquid Cooled, Ball Bearing Turbocharger
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Ford
Model	6.8L V10
Type	4-Cycle
Aspiration	Turbocharged, Intercooled
Arrangement	10-V
Displacement: L (in^3)	6.8 (415)
Bore: cm (in)	9 (3.55)
Stroke: cm (in)	10.6 (4.17)
Compression Ratio	9:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	154 (207)
Maximum Power (LP): kWm (bhp)	154 (207)
Speed Regulation	C/F
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	5.7 (1.5)
Engine Jacket Water Capacity: L (gal)	6.1 (1.6)
System Coolant Capacity: L (gal)	35.04 (9.25)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel Inlet

Fuel Supply Connection Size	1 1/2" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	41.4 (1,463)	18.1 (640)
At 75% of Power Rating: m^3/hr (ft^3/hr)	32.9 (1,161)	14.3 (505)
At 50% of Power Rating: m^3/hr (ft^3/hr)	24 (849)	10.4 (366)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	123 (32.5)
Heat Rejection to Coolant: kW (BTUM)	85.3 (4,850)
Heat Radiated to Ambient: kW (BTUM)	39.82 (2,265)
Heat Rejected to Charge Air Cooler: kW (BTUM)	14.1 (800)
Fan Power: kW (hp)	9.1 (12.2)

* Installation of enclosures reduces the ambient capacity of the cooling system by 3 °C (5.4 °F).

// Air Requirements

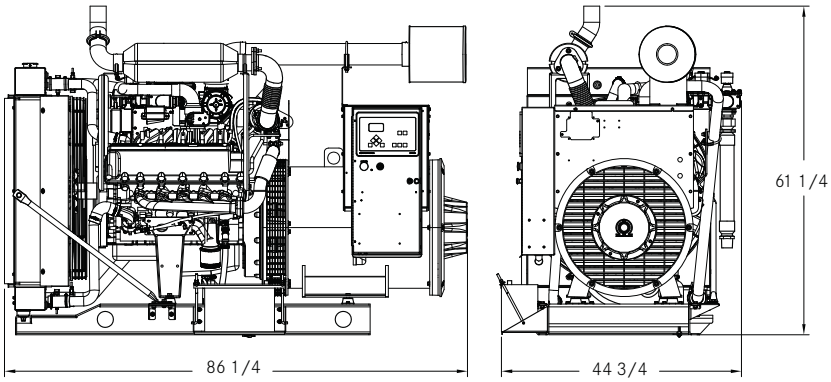
	NG and LPG
Aspirating: *m^3/min (SCFM)	7.8 (275)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	256 (9,056)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat For a Max of 25 °F Rise: *m^3/min (SCFM)	144.6 (5,107)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	649 (1,200)
Gas Volume at Stack Temp: m^3/min (CFM)	25.1 (886)
Maximum Allowable Back Pressure: kPa (in. H_20)	6.2 (25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	2,191 x 1,137 x 1,556 mm (86.25 x 44.75 x 61.25 in)	1, 293 kg (2,850 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load (NG)	Standby Full Load (LP)
Level 0: Open Power Unit dB(A)	83	83

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.4	0.04
Liquid Propane	0.11	0.16

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 6R0135 GS150

150 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R0135 GS150 (130 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	625	625	520	451	225	180
Natural Gas Ratings: kW/kVA	150/150	150/150	150/187	150/187	150/187	150/187
LP Gas Ratings: Amps	416	416	346	300	150	120
LP Gas Ratings: kW/kVA	100/100	100/100	100/125	100/125	100/125	100/125
skVA@30% Voltage Dip	250	360	433	433	577	380
Generator Model*	432PSL6212	432PSL6228	431PSL6206	431PSL6206	431PSL6206	431PSL6242
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8.1 L Turbo Engine Charge Air Cooling
- 8.1 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Optional Fuel System: NG and LP Vapor Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self Ventilated and Drip-proof
Superior Voltage Waveform
Solid State, Volts-per-hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
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Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	8.1L CAC
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	8.1 (492)
Bore: cm (in)	11.1 (4.37)
Stroke: cm (in)	13.9 (5.97)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	177 (237)
Maximum Power (LP): kWm (bhp)	122 (164)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	27.5 (7.2)
Engine Jacket Water Capacity: L (gal)	22.7 (5)
System Coolant Capacity: L (gal)	240 (63)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	1 1/2" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	43.6 (1,539)	14.7 (517)
At 75% of Power Rating: m^3/hr (ft^3/hr)	33.7 (1,191)	11.1 (390)
At 50% of Power Rating: m^3/hr (ft^3/hr)	23.9 (845)	8 (283)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	240 (63)
Heat Rejection to Coolant: kW (BTUM)	164.4 (9,357)
Heat Radiated to Ambient: kW (BTUM)	65.2 (3,710)
Fan Power: kW (hp)	5.6 (7.5)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

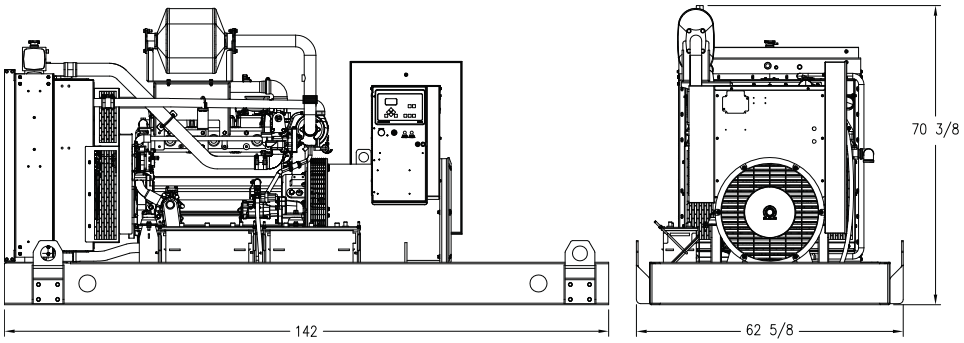
	NG and LPG
Aspirating: *m^3/min (SCFM)	9.3 (317)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	428 (15,100)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	147 (5.175)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	660 (1.220)
Gas Volume at Stack Temp: m^3/min (CFM)	29.7 (1,050)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,607 x 1,591 x 1,788 mm (142 x 62.63 x 70.38 in)	2,562 kg (5,647 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load (NG)	Standby Full Load (LP)
Level 0: Open Power Unit dB(A)	82	81.7

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.64	0.13
Liquid Propane	0.08	0.4

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Production tolerances in engines and installed components can account for power variations. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 6R0185 GS200

200 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R0185 GS200 (175 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	750	750	694	601	300	240
Natural Gas Ratings: kW/kVA	180/180	180/180	200/250	200/250	200/250	200/250
LP Gas Ratings: Amps	541	541	451	390	195	156
LP Gas Ratings: kW/kVA	130/130	130/130	130/162	130/162	130/162	130/162
skVA@30% Voltage Dip	425	370	608	608	809	720
Generator Model*	433CSL6216	432PSL6228	432CSL6210	432CSL6210	432CSL6210	432PSL6246
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 11.1 L Turbo Engine Charge Air Cooling
- 11.1 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Optional Fuel System: NG and LP Vapor Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self Ventilated and Drip-proof
Superior Voltage Waveform
Solid State, Volts-per-hertz Regulator
±1% Voltage Regulation No load to full load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
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Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	11.1L CAC
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	11.1 (673)
Bore: cm (in)	12.3 (4.84)
Stroke: cm (in)	15.5 (6.1)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	225 (302)
Maximum Power (LP): kWm (bhp)	155 (208)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	28.5 (8)
Engine Jacket Water Capacity: L (gal)	25 (5.5)
System Coolant Capacity: L (gal)	149 (32.8)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	2" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	59.9 (2,115)	19.9 (704)
At 75% of Power Rating: m^3/hr (ft^3/hr)	46.7 (1,648)	17 (600)
At 50% of Power Rating: m^3/hr (ft^3/hr)	32.8 (1,157)	11.5 (404)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	310 (82)
Heat Rejection to Coolant: kW (BTUM)	194.6 (11,071)
Heat Radiated to Ambient: kW (BTUM)	40.4 (2,295)
Fan Power: kW (hp)	10.4 (13.9)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

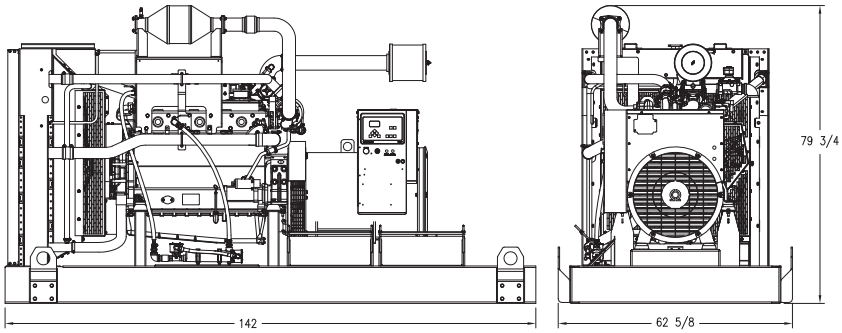
	NG and LPG
Aspirating: *m^3/min (SCFM)	11.7 (400)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	631 (22,300)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	237 (8,365)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	694 (1,281)
Gas Volume at Stack Temp: m^3/min (CFM)	38.8 (1,371)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	3,607 x 1,591 x 2,026 mm (142 x 62.6 x 79.75 in)	3,096 kg (6,258 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load (NG)	Standby Full Load (LP)
Level 0: Open Power Unit dB(A)	86.3	86.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	2.25	0.26
Liquid Propane	0.08	0.25

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Production tolerances in engines and installed components can account for power variations of ±5%. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 8V0183 GS260

260 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 8V0183 GS260 (235 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	208V**	240V**	480V**	600V**
Phase	1	3	3	3	3
PF	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60
Natural Gas Ratings: Amps	1063	902	782	391	313
Natural Gas Ratings: kW/kVA	255/255	260/325	260/325	260/325	260/325
LP Gas Ratings: Amps	625	555	481	241	192
LP Gas Ratings: kW/kVA	150/150	160/200	160/200	160/200	160/200
skVA@30% Voltage Dip	520	608	608	809	740
Generator Model	572RSL4031	432PSL6210	432PSL6210	432PSL6210	432PSL6246
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 14.6 L Turbo Engine Charge Air Cooling
- 14.6 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Optional Fuel System: NG and LP Vapor Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with PMG
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (with PMG only)
Self Ventilated and Drip-proof
Superior Voltage Waveform
Solid State, Volts-per-hertz Regulator (Digital when PMG is Standard)
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	14.6L CAC
Type	4-Cycle
Arrangement	8-V
Displacement: L (in^3)	14.6 (892)
Bore: cm (in)	12.8 (5.04)
Stroke: cm (in)	14.2 (5.59)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	300 (402)
Maximum Power (LP): kWm (bhp)	189 (253)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	38.1 (10.1)
Engine Jacket Water Capacity: L (gal)	43.2 (9.5)
System Coolant Capacity: L (gal)	227 (50)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8°C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	3" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	85 (3,000)	24.3 (858)
At 75% of Power Rating: m^3/hr (ft^3/hr)	64.6 (2,280)	17.9 (633)
At 50% of Power Rating: m^3/hr (ft^3/hr)	44.7 (1,580)	13.3 (468)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	680 (180)
Heat Rejection to Coolant: kW (BTUM)	285 (16,189)
Heat Radiated to Ambient: kW (BTUM)	80.5 (4,580)
Fan Power: kW (hp)	16.4 (22)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

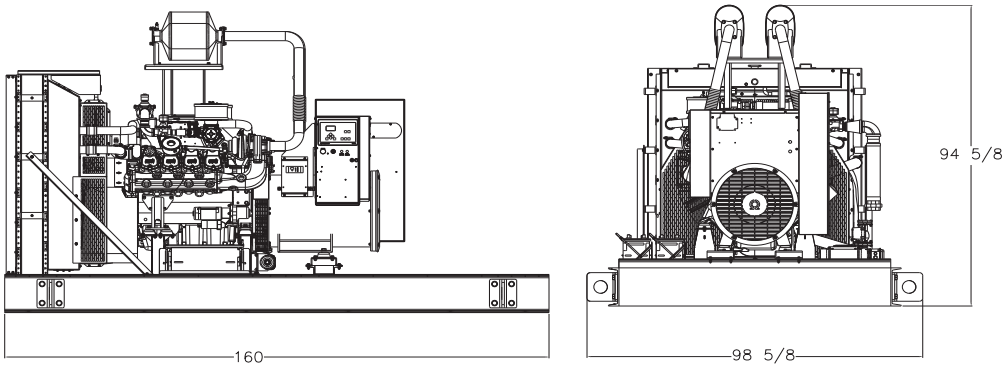
	NG and LPG
Aspirating: *m^3/min (SCFM)	15.6 (532)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	849 (30,000)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	293 (10,330)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	554 (1,030)
Gas Volume at Stack Temp: m^3/min (CFM)	44.2 (1,560)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	4,064 x 2,506 x 2,404 mm (160 x 98.63 x 94.63 in)	4,055 kg (8,939 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load (NG)	Standby Full Load (LP)
Level 0: Open Power Unit dB(A)	83.1	83

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.22	0.06
Liquid Propane	0.07	0.11

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Production tolerances in engines and installed components can account for power variations. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 10V0183 GS350

350 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 10V0183 GS350 (300 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	208V**	240V**	480V**	600V**
Phase	1	3	3	3	3
PF	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60
Natural Gas Ratings: Amps	1438	1214	1052	526	421
Natural Gas Ratings: kW/kVA	345/345	350/437	350/437	350/437	350/437
LP Gas Ratings: Amps	1000	850	737	368	295
LP Gas Ratings: kW/kVA	240/240	245/306	245/306	245/306	245/306
skVA@30% Voltage Dip	700	930	930	1238	1100
Generator Model*	573RSL4035	433CSL6216	433CSL6216	433CSL6216	433PSL6248
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 18.3 L Turbo Engine Charge Air Cooling
- 18.3 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Optional Fuel System: NG and LP Vapor Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with PMG
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (with PMG only)
Self Ventilated and Drip-proof
Superior Voltage Waveform
Solid State, Volts-per-hertz Regulator (Digital when PMG is Standard)
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	18.3L CAC
Type	4-Cycle
Arrangement	10-V
Displacement: L (in^3)	18.3 (1,115)
Bore: cm (in)	12.8 (5.04)
Stroke: cm (in)	14.2 (5.59)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	400 (536)
Maximum Power (LP): kWm (bhp)	297 (398)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	42.1 (11.1)
Engine Jacket Water Capacity: L (gal)	50 (11)
System Coolant Capacity: L (gal)	289 (63.5)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8°C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	3" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	99.1 (3,498.8)	32.5 (1,145.9)
At 75% of Power Rating: m^3/hr (ft^3/hr)	77.2 (2,726.7)	27.7 (977.1)
At 50% of Power Rating: m^3/hr (ft^3/hr)	54.2 (1,913.7)	18.7 (658.5)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	660 (174)
Heat Rejection to Coolant: kW (BTUM)	365 (20,784)
Heat Radiated to Ambient: kW (BTUM)	88.5 (5,030)
Fan Power: kW (hp)	20.9 (28)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

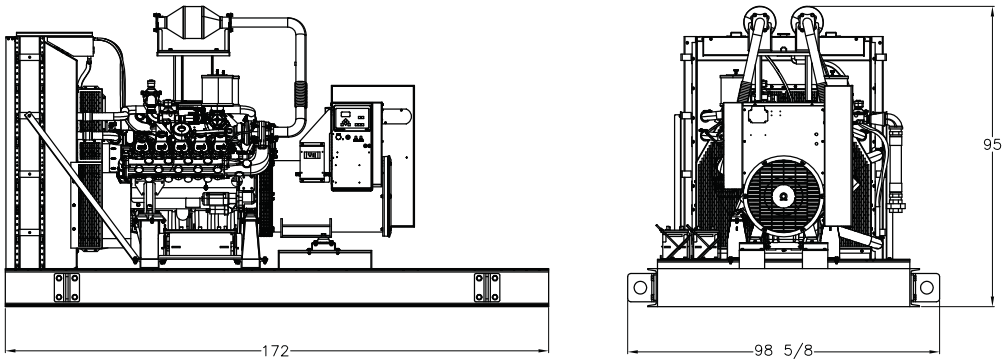
	NG and LPG
Aspirating: *m^3/min (SCFM)	19.4 (664)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	1,019 (36,000)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	321 (11,350)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	607 (1,125)
Gas Volume at Stack Temp: m^3/min (CFM)	58.6 (2,070)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	4,369 x 2,506 x 2,413 mm (172 x 98.63 x 95 in)	4,741 kg (10,452 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load (NG)	Standby Full Load (LP)
Level 0: Open Power Unit dB(A)	85.1	84.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.59	0.21
Liquid Propane	0.07	0.15

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Production tolerances in engines and installed components can account for power variations. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 12V0183 GS400

400 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 12V0183 GS400 (355kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	208V**	240V**	480V**	600V**
Phase	1	3	3	3	3
PF	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60
Natural Gas Ratings: Amps	1604	1388	1203	601	481
Natural Gas Ratings: kW/kVA	385/385	400/500	400/500	400/500	400/500
LP Gas Ratings: Amps	1187	1023	887	443	355
LP Gas Ratings: kW/kVA	285/285	295/368	295/368	295/368	295/368
skVA@30% Voltage Dip	760	1500	1500	1500	1080
Generator Model*	574RSL4037	572RSL4029	572RSL4029	572RSL4029	433RSS4266
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 21.9 L Turbo Engine Charge Air Cooling
- 21.9 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Optional Fuel System: NG and LP Vapor Dual Fuel
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self Ventilated and Drip-proof
Superior Voltage Waveform
Digital, Volts-per-hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	21.9L CAC
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	21.9 (1,338)
Bore: cm (in)	12.8 (5.04)
Stroke: cm (in)	14.2 (5.59)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	456 (612)
Maximum Power (LP): kWm (bhp)	351 (471)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	47.1 (12.4)
Engine Jacket Water Capacity: L (gal)	52.3 (11.5)
System Coolant Capacity: L (gal)	291 (64)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	3" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3 / LP-2500 BTU/ft^3)

	NG	LPG
At 100% of Power Rating: m^3/hr (ft^3/hr)	119.8 (4,230)	39.9 (1,407)
At 75% of Power Rating: m^3/hr (ft^3/hr)	93.4 (3,297)	34 (1,200)
At 50% of Power Rating: m^3/hr (ft^3/hr)	65.5 (2,314)	22.9 (808)

// Cooling - Radiator System

	NG and LPG
Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	660 (174)
Heat Rejection to Coolant: kW (BTUM)	453 (25,760)
Heat Radiated to Ambient: kW (BTUM)	118.2 (6,720)
Fan Power: kW (hp)	31.3 (42)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

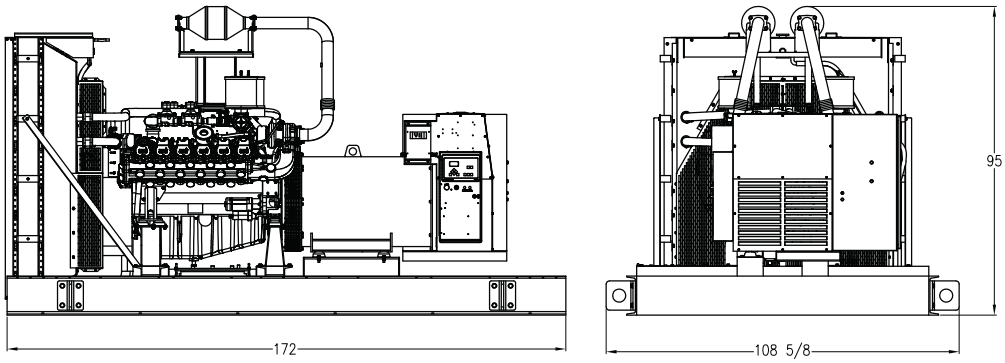
	NG and LPG
Aspirating: *m^3/min (SCFM)	24.6 (841)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	1,333 (40,000)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	429 (15,160)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

	NG and LPG
Gas Temp. (Stack): °C (°F)	582 (1,080)
Gas Volume at Stack Temp: m^3/min (CFM)	72.2 (2,550)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	4,369 x 2,760 x 2,413 mm (172 x 108.63 x 95 in)	5,228 kg (11,500 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load (NG)	Standby Full Load (LP)
Level 0: Open Power Unit dB(A)	86.2	85.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.39	0.1
Liquid Propane	0.06	0.25

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Production tolerances in engines and installed components can account for power variations. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 6R0135 GS150

130 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R0135 GS150 (150 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	542	542	421	391	195	156
Natural Gas Ratings: kW/kVA	130/130	130/130	130/162	130/162	130/162	130/162
skVA@30% Voltage Dip	265	305	339	339	451	370
Generator Model	432PSL6210	431PSL6226	431PSL6204	431PSL6204	431PSL6204	431PSL6242
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8.1 L Turbo Engine Charge Air Cooling
- 8.1 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self Ventilated and Drip-proof
Superior Voltage Waveform
Solid State, Volts-per-hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	8.1L CAC
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	8.1 (492)
Bore: cm (in)	11.1 (4.37)
Stroke: cm (in)	13.9 (5.97)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power: kWm (bhp)	149 (199)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	27.5 (7.2)
Engine Jacket Water Capacity: L (gal)	22.7 (5)
System Coolant Capacity: L (gal)	240 (63)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	1 1/2" NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3)

At 100% of Power Rating: m^3/hr (ft^3/hr)	39.7 (1,400)
At 75% of Power Rating: m^3/hr (ft^3/hr)	30.7 (1,084)
At 50% of Power Rating: m^3/hr (ft^3/hr)	21.8 (769)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	240 (63)
Heat Rejection to Coolant: kW (BTUM)	164.4 (9,357)
Heat Radiated to Ambient: kW (BTUM)	65.2 (3,710)
Fan Power: kW (hp)	5.6 (7.5)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

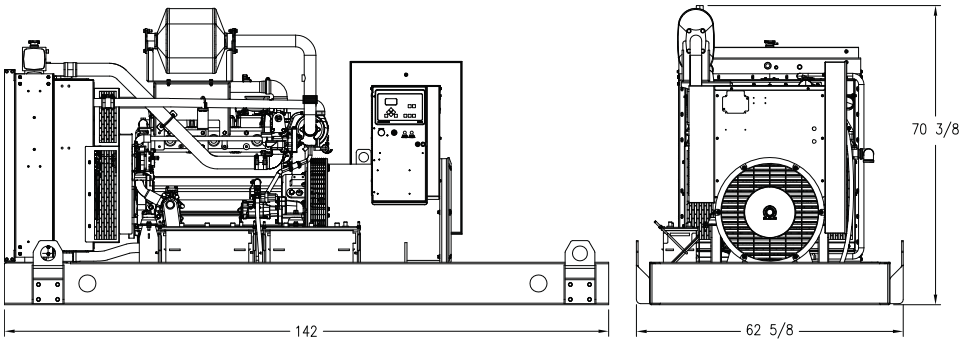
Aspirating: *m^3/min (SCFM)	9.3 (317)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	428 (15,100)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	147 (5,175)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

Gas Temp. (Stack): °C (°F)	660 (1,220)
Gas Volume at Stack Temp: m^3/min (CFM)	29.7 (1,050)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	3,607 x 1,591 x 1,788 mm (142 x 62.63 x 70.38 in)	2,562 kg (5,647 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load (NG)	Prime Full Load (LP)
Level 0: Open Power Unit dB(A)	81.7	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.64	0.13

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%. For limited running time and base load ratings, consult the factory.

// Deration Factor:
Production tolerances in engines and installed components can account for power variations. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 6R0185 GS200

175 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R0185 GS200 (200 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
Natural Gas Ratings: Amps	C/F	C/F	600	520	261	210
Natural Gas Ratings: kW/kVA	C/F	C/F	173/216	173/216	174/217	175/218
skVA@30% Voltage Dip	425	370	608	608	809	720
Generator Model	433CSL6216	432PSL6228	432CSL6210	432CSL6210	432CSL6210	432PSL6246
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 11.1 L Turbo Engine Charge Air Cooling
- 11.1 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self Ventilated and Drip-proof
Superior Voltage Waveform
Solid State, Volts-per-hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	11.1L CAC
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	11.1 (673)
Bore: cm (in)	12.3 (4.84)
Stroke: cm (in)	15.5 (6.1)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power: kWm (bhp)	203 (272)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	28.5 (8)
Engine Jacket Water Capacity: L (gal)	25 (5.5)
System Coolant Capacity: L (gal)	149 (32.8)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	2” NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3)

At 100% of Power Rating: m^3/hr (ft^3/hr)	56.1 (1,980)
At 75% of Power Rating: m^3/hr (ft^3/hr)	42.5 (1,500)
At 50% of Power Rating: m^3/hr (ft^3/hr)	30.4 (1,075)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	310 (82)
Heat Rejection to Coolant: kW (BTUM)	194.6 (11,071)
Heat Radiated to Ambient: kW (BTUM)	40.4 (2,295)
Fan Power: kW (hp)	10.4 (13.9)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

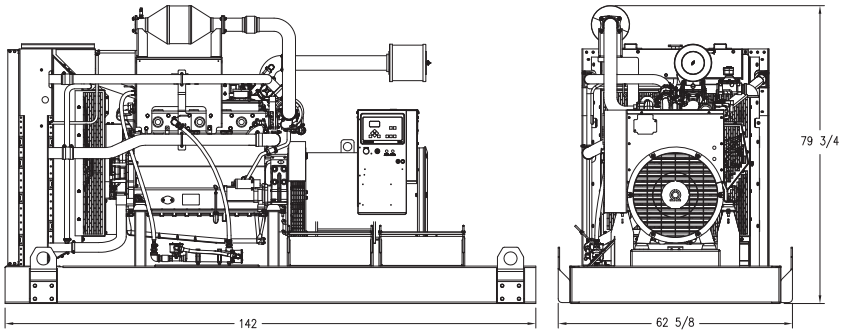
Aspirating: *m^3/min (SCFM)	11.7 (400)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	631 (22,300)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	237 (8,365)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

Gas Temp. (Stack): °C (°F)	694 (1,281)
Gas Volume at Stack Temp: m^3/min (CFM)	38.8 (1,371)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	3,607 x 1,591 x 2,026 mm (142 x 62.6 x 79.75 in)	3,096 kg (6,258 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load (NG)	Prime Full Load (LP)
Level 0: Open Power Unit dB(A)	86.3	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	2.25	0.26

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%. For limited running time and base load ratings, consult the factory.

// Deration Factor:
Production tolerances in engines and installed components can account for power variations. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 8V0183 GS260

235 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 8V0183 GS260 (260 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	208V**	240V**	480V**	600V**
Phase	1	3	3	3	3
PF	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60
Natural Gas Ratings: Amps	958	815	707	353	283
Natural Gas Ratings: kW/kVA	230/230	235/293	235/293	235/293	235/293
skVA@30% Voltage Dip	520	608	608	809	740
Generator Model	572RSL4031	432PSL6210	432PSL6210	432PSL6210	432PSL6246
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested
- Accepts Rated Load in One Step Per NFPA 110

// **Power Rating**

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 14.6 L Turbo Engine Charge Air Cooling
- 14.6 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with PMG
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (with PMG only)
Self Ventilated and Drip-proof
Superior Voltage Waveform
Solid State, Volts-per-hertz Regulator (Digital when PMG is Standard)
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	14.6L CAC
Type	4-Cycle
Arrangement	8-V
Displacement: L (in^3)	14.6 (892)
Bore: cm (in)	12.8 (5.04)
Stroke: cm (in)	14.2 (5.59)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	270 (302)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	38.1 (10.1)
Engine Jacket Water Capacity: L (gal)	43.2 (9.5)
System Coolant Capacity: L (gal)	227 (50)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	3” NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3)

At 100% of Power Rating: m^3/hr (ft^3/hr)	78.2 (2,760)
At 75% of Power Rating: m^3/hr (ft^3/hr)	58 (2,050)
At 50% of Power Rating: m^3/hr (ft^3/hr)	40.8 (1,440)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	680 (180)
Heat Rejection to Coolant: kW (BTUM)	285 (16,189)
Heat Radiated to Ambient: kW (BTUM)	80.5 (4,580)
Fan Power: kW (hp)	16.4 (22)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

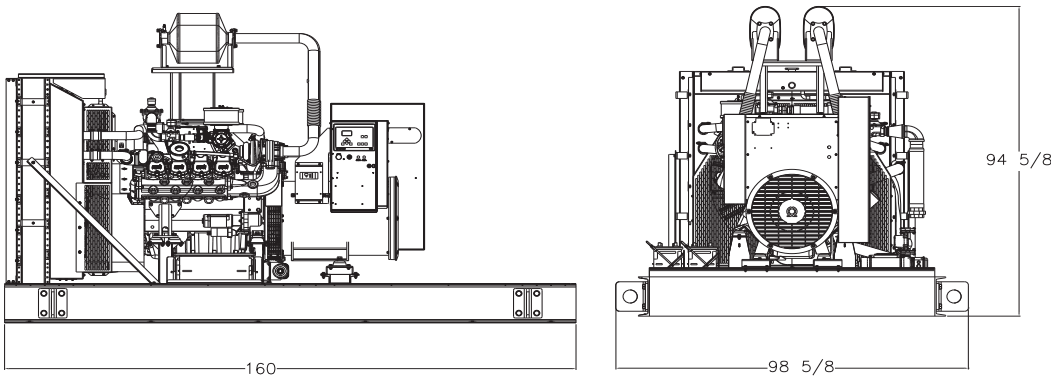
Aspirating: *m^3/min (SCFM)	15.6 (532)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	849 (30,000)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	293 (10,330)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

Gas Temp. (Stack): °C (°F)	554 (1,030)
Gas Volume at Stack Temp: m^3/min (CFM)	44.2 (1,560)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	4,064 x 2,506 x 2,404 mm (160 x 98.63 x 94.63 in)	4,055 kg (8,939 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load (NG)	Prime Full Load (LP)
Level 0: Open Power Unit dB(A)	83.1	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.22	0.06

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

- // Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.
- // Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528/1, ISO-3046/1, BS 5514, and AS 2789. Average load factor: ≤ 75%. For limited running time and base load ratings, consult the factory.
- // Deration Factor:
  Production tolerances in engines and installed components can account for power variations. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 10V0183 GS350

300 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 10V0183 GS350 (350 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	208V**	240V**	480V**	600V**
Phase	1	3	3	3	3
PF	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60
Natural Gas Ratings: Amps	1250	1041	902	451	361
Natural Gas Ratings: kW/kVA	300/300	300/375	300/375	300/375	300/375
skVA@30% Voltage Dip	700	959	959	1277	1100
Generator Model	573RSL4035	433CSL6220	433CSL6220	433CSL6220	433PSL6248
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 18.3 L Turbo Engine Charge Air Cooling
- 18.3 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with PMG
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (with PMG only)
Self Ventilated and Drip-proof
Superior Voltage Waveform
Solid State, Volts-per-hertz Regulator (Digital when PMG is Standard)
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	18.3L CAC
Type	4-Cycle
Arrangement	10-V
Displacement: L (in^3)	18.3 (1,115)
Bore: cm (in)	12.8 (5.04)
Stroke: cm (in)	14.2 (5.59)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	340 (456)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	42.1 (11.1)
Engine Jacket Water Capacity: L (gal)	50 (11)
System Coolant Capacity: L (gal)	289 (63.5)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	3” NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3)

At 100% of Power Rating: m^3/hr (ft^3/hr)	92 (3,247.5)
At 75% of Power Rating: m^3/hr (ft^3/hr)	71.5 (2,524.8)
At 50% of Power Rating: m^3/hr (ft^3/hr)	51.9 (1,831.7)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	660 (174)
Heat Rejection to Coolant: kW (BTUM)	365 (20,784)
Heat Radiated to Ambient: kW (BTUM)	88.5 (5,030)
Fan Power: kW (hp)	20.9 (28)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

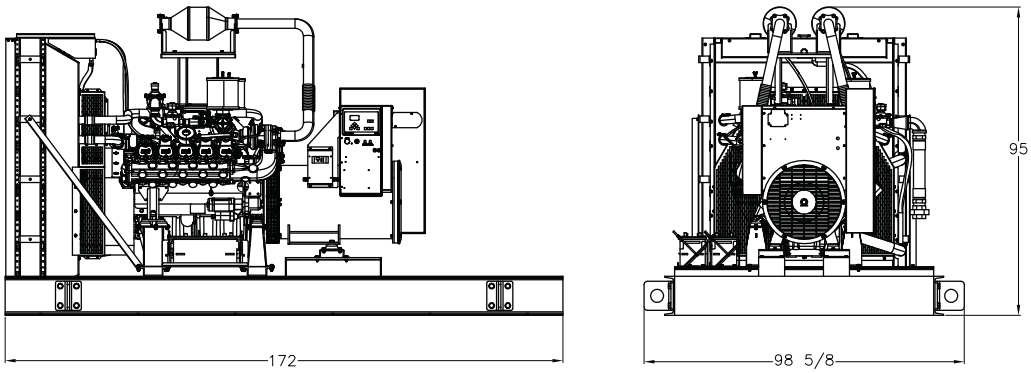
Aspirating: *m^3/min (SCFM)	19.4 (664)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	1,019 (36,000)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	321 (11,350)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

Gas Temp. (Stack): °C (°F)	607 (1,125)
Gas Volume at Stack Temp: m^3/min (CFM)	58.6 (2,070)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	4,369 x 2,506 x 2,413 mm (172 x 98.63 x 95 in)	4,741 kg (10,452 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load (NG)	Prime Full Load (LP)
Level 0: Open Power Unit dB(A)	84.7	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.59	0.21

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO-8528/1, ISO-3046/1, BS 5514, and AS 2789. Average load factor: ≤ 75%. For limited running time and base load ratings, consult the factory.

// Deration Factor:
Production tolerances in engines and installed components can account for power variations. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

GAS GENERATOR SET
MTU 12V0183 GS400

355 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 12V0183 GS400 (400 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	208V**	240V**	480V**	600V**
Phase	1	3	3	3	3
PF	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60
Natural Gas Ratings: Amps	1458	1232	1068	534	427
Natural Gas Ratings: kW/kVA	350/350	355/443	355/443	355/443	355/443
skVA@30% Voltage Dip	760	1500	1500	1500	1450
Generator Model	574RSL4037	572RSL4029	572RSL4029	572RSL4029	572RSS4272
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 21.9 L Turbo Engine Charge Air Cooling
- 21.9 Liter Displacement
- 4-Cycle
// 3-Way Catalyst
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self Ventilated and Drip-proof
Superior Voltage Waveform
Digital, Volts-per-hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Doosan
Model	21.9L CAC
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	21.9 (1,338)
Bore: cm (in)	12.8 (5.04)
Stroke: cm (in)	14.2 (5.59)
Compression Ratio	10.5:1
Rated RPM	1,800
Engine Governor	Bosch
Maximum Power (NG): kWm (bhp)	410 (550)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	47.1 (12.4)
Engine Jacket Water Capacity: L (gal)	52.3 (11.5)
System Coolant Capacity: L (gal)	291 (64)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel Inlet

Fuel Supply Connection Size	3” NPT
Fuel Supply Pressure: mm H_20 (in. H_20)	178–279 (7–11)

// Fuel Consumption (NG-1000 BTU/ft^3)

At 100% of Power Rating: m^3/hr (ft^3/hr)	109.3 (3,861)
At 75% of Power Rating: m^3/hr (ft^3/hr)	84.1 (2,970)
At 50% of Power Rating: m^3/hr (ft^3/hr)	61.7 (2,178)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)*
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	660 (174)
Heat Rejection to Coolant: kW (BTUM)	453 (25,760)
Heat Radiated to Ambient: kW (BTUM)	118.2 (6,720)
Fan Power: kW (hp)	31.3 (42)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

// Air Requirements

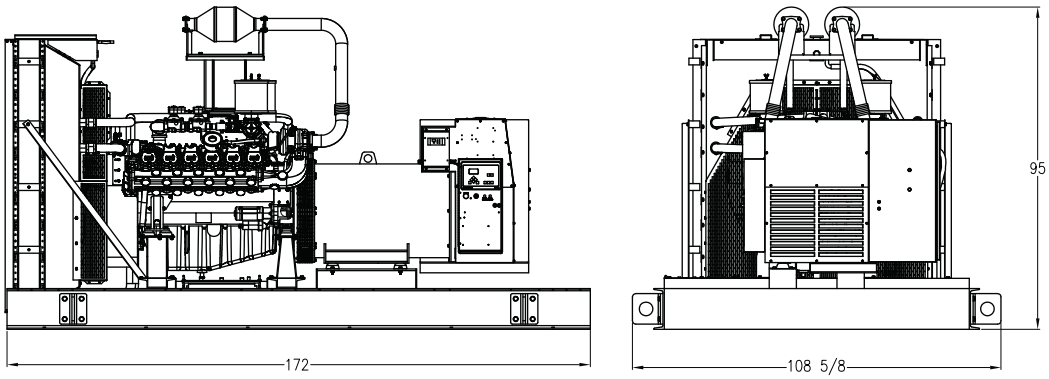
Aspirating: *m^3/min (SCFM)	24.6 (841)
Air Flow Required for Rad. Cooled Unit: **m^3/min (SCFM)	1,133 (40,000)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	429 (15,160)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)
** At 0.25 kPa (1 in. H_20) static pressure and 52 °C (125 °F) at radiator

// Exhaust System

Gas Temp. (Stack): °C (°F)	582 (1,080)
Gas Volume at Stack Temp: m^3/min (CFM)	72.2 (2,550)
Maximum Allowable Back Pressure: kPa (in. H_20)	2.5 (10.25)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry)
Open Power Unit (OPU)	4,369 x 2,760 x 2,413 mm (172 x 108.63 x 95 in)	5,228 kg (11,500 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load (NG)	Prime Full Load (LP)
Level 0: Open Power Unit dB(A)	85.5	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

Fuel Type	THC + NO_x	CO
Natural Gas	0.39	0.1

All units are in g/hp-hr and are EPA weighted cycle values. Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Ambient capability factor at 984 ft (300 m). Consult your local MTU Onsite Energy Power Generation Distributor for other altitudes.

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%. For limited running time and base load ratings, consult the factory.

// Deration Factor:
Production tolerances in engines and installed components can account for power variations. Altitude, temperature and excessive exhaust and intake restrictions should be applied to power calculations. Consult your local MTU Onsite Energy Power Generation Distributor for derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 3R0096 DS30

30 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 3R0096 DS30 (27 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	208V**	240V**	380V**	480V**	600V**
Phase	1	3	3	3	3	3
PF	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	30	30	30	30	30	30
kVA	30	37	37	37	37	37
Amps	125	104	90	57	45	36
skVA@30% Voltage Dip	65	142	142	187	187	142
Generator Model	285PSL1700	285PSL1700	285PSL1700	285PSL1700	285PSL1700	284PSL5252
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 4 Interim Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **UL 2200 / CSA – Optional**
– UL 2200 Listed
– CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 3029TFG89 Diesel Engine
- 2.9 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	3029TFG89
Type	4-Cycle
Arrangement	3-Inline
Displacement: L (in^3)	2.9 (177)
Bore: cm (in)	10.6 (4.2)
Stroke: cm (in)	11 (4.3)
Compression Ratio	17.2:1
Rated RPM	1,800
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	35 (47)
Speed Regulation	±1%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	8 (2.1)
Engine Jacket Water Capacity: L (gal)	5.7 (1.5)
System Coolant Capacity: L (gal)	11.4 (3)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	5/16" ID/-6 JIC
Fuel Return Connection Size	5/16" ID/-6 JIC
Max. Fuel Lift: m (ft)	2 (6.6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	111.3 (29.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	9.9 (2.6)
At 75% of Power Rating: L/hr (gal/hr)	7.5 (2)
At 50% of Power Rating: L/hr (gal/hr)	5.2 (1.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)*
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	110 (29)
Heat Rejection to Coolant: kW (BTUM)	20.1 (1,144)
Heat Radiated to Ambient: kW (BTUM)	4.3 (245)
Fan Power: kW (hp)	0.70 (0.94)

*Installation of a gravity exhaust louver in a Level 3 enclosure will reduce the ambient capacity of the cooling system by 5 °C (9 °F).

// Air Requirements

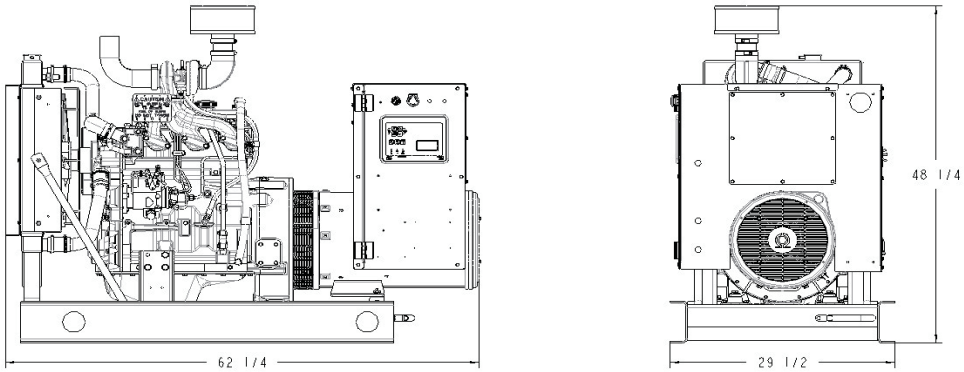
Aspirating: *m^3/min (SCFM)	3.6 (127)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	46.7 (1,636)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	15.8 (553)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	580 (1,076)
Gas Volume at Stack Temp: m^3/min (CFM)	8.3 (293)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,581 x 749 x 1,226 mm (62.25 x 29.5 x 48.25 in)	727 kg (1,600 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	72.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.41	0.44	0.11

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS40

40 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 4R0113 DS40 (40 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	208V**	240V**	380V**	480V**	600V**
Phase	1	3	3	3	3	3
PF	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	40	40	40	40	40	40
kVA	40	50	50	50	50	50
Amps	166	138	120	76	60	48
skVA@30%						
Voltage Dip	63	129	129	112	172	92
Generator Model	361CSL1601	361CSL1601	361CSL1601	361CSL1601	361CSL1601	361PSL1632
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **UL 2200 / CSA – Optional**
– UL 2200 Listed
– CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045TF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045TF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19.0:1
Rated RPM	1,800
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	63 (85)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	18.9 (5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	62.5 (16.5)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	17.4 (4.6)
At 75% of Power Rating: L/hr (gal/hr)	13.6 (3.6)
At 50% of Power Rating: L/hr (gal/hr)	9.5 (2.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	36 (2,049)
Heat Radiated to Ambient: kW (BTUM)	6.8 (384)
Fan Power: kW (hp)	1.6 (2.2)

// Air Requirements

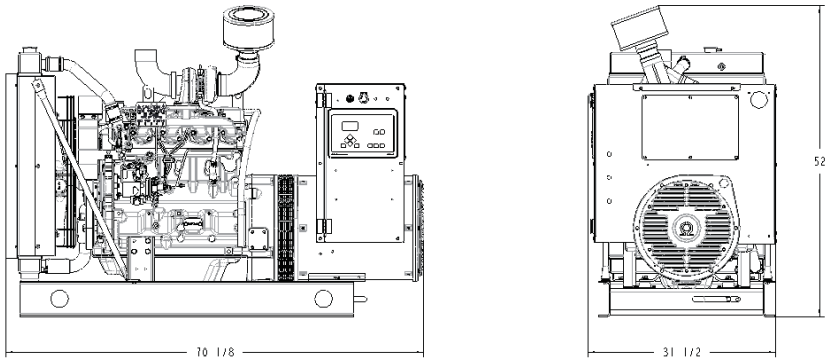
Aspirating: *m^3/min (SCFM)	5.3 (187)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	117 (4,088)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	25 (867)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	579 (1,074)
Gas Volume at Stack Temp: m^3/min (CFM)	19.2 (679)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,781 x 800 x 1,321 mm (70.13 x 31.5 x 52 in)	872 kg (1,920 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	80.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.8	0.69	0.22

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS50

50 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 4R0113 DS50 (45 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	380V**	480V**	600V**
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	50	50	50	50	50	50	50
kVA	50	50	62	62	62	62	62
Amps	208	208	173	150	95	75	60
skVA@30% Voltage Dip	127	130	129	129	112	172	138
Generator Model	362CSL1604	361CSL1613	361CSL1601	361CSL1601	361CSL1601	361CSL1601	361PSL1633
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **UL 2200 / CSA – Optional**
– UL 2200 Listed
– CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045TF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045TF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19.0:1
Rated RPM	1,800
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	63 (85)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	18.9 (5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	62.5 (16.5)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	17.4 (4.6)
At 75% of Power Rating: L/hr (gal/hr)	13.6 (3.6)
At 50% of Power Rating: L/hr (gal/hr)	9.5 (2.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	36 (2,049)
Heat Radiated to Ambient: kW (BTUM)	8.7 (495)
Fan Power: kW (hp)	1.6 (2.2)

// Air Requirements

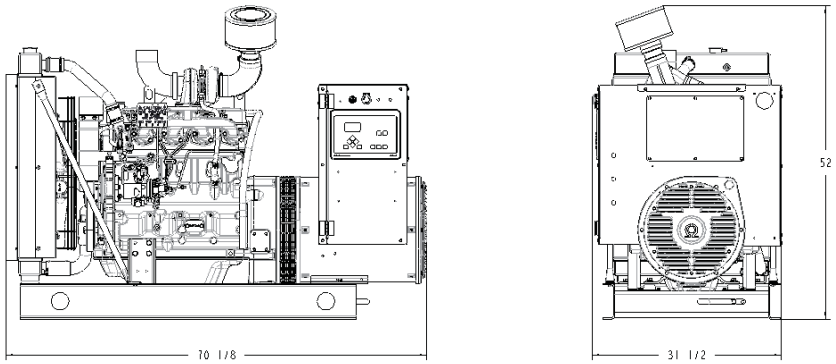
Aspirating: *m^3/min (SCFM)	5.3 (187)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	117 (4,088)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	32 (1,117)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	579 (1,074)
Gas Volume at Stack Temp: m^3/min (CFM)	19.2 (679)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,781 x 800 x 1,321 mm (70.13 x 31.5 x 52 in)	872 kg (1,920 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	80.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.8	0.69	0.22

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

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C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS60

60 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 4R0113 DS60 (55 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	380V**	480V**	600V**
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	60	60	60	60	60	60	60
kVA	60	60	75	75	75	75	75
Amps	250	250	208	180	114	90	72
skVA@30% Voltage Dip	127	130	200	200	172	172	172
Generator Model	362CSL1604	361CSL1613	361CSL1602	361CSL1602	361CSL1602	361CSL1601	361PSL1633
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **UL 2200 / CSA – Optional**
– UL 2200 Listed
– CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
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// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
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UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19.0:1
Rated RPM	1,800
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	74 (99)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	16.7 (4.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	113 (29.9)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	19.3 (5.1)
At 75% of Power Rating: L/hr (gal/hr)	14.8 (3.9)
At 50% of Power Rating: L/hr (gal/hr)	10.6 (2.8)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	35 (1,979)
Heat Rejection to Air to Air: kW (BTUM)	5 (278)
Heat Radiated to Ambient: kW (BTUM)	10.9 (619)
Fan Power: kW (hp)	1.16 (1.55)

// Air Requirements

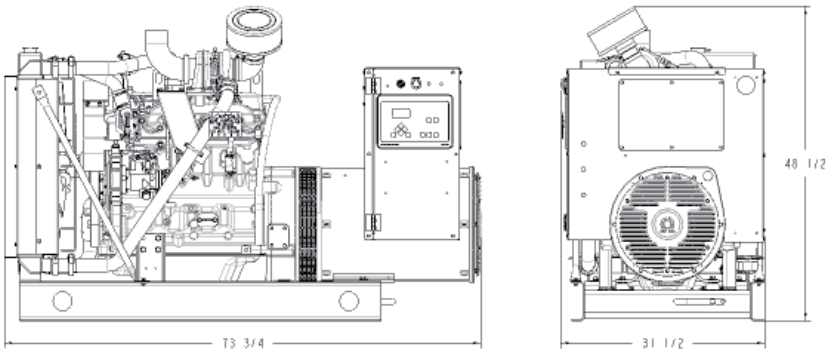
Aspirating: *m^3/min (SCFM)	5.4 (191)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	91 (3,162)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	40 (1,396)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	545 (1,013)
Gas Volume at Stack Temp: m^3/min (CFM)	14.4 (508)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,873 x 800 x 1,232 mm (73.75 x 31.5 x 48.5 in)	964 kg (2,120 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	73

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.5	0.97	0.32

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS80

80 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 4R0113 DS80 (80 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	80	80	80	80	80	80
kVA	80	80	100	100	100	100
Amps	333	333	278	241	120	96
skVA@30% Voltage Dip	157	310	216	216	288	235
Generator Model	363CSL1607	363CSL1617	362CSL1604	362CSL1604	362CSL1604	362PSL1635
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF285 Diesel Engine
- 4.5 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF285
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	118 (158)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	12 (3.2)
Engine Jacket Water Capacity: L (gal)	12.5 (3.3)
System Coolant Capacity: L (gal)	20.1 (5.3)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	74.6 (19.7)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	23.1 (6.1)
At 75% of Power Rating: L/hr (gal/hr)	18.5 (4.9)
At 50% of Power Rating: L/hr (gal/hr)	13.2 (3.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Allowable Static Pressure on Rad. Exhaust: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	180 (48)
Heat Rejection to Coolant: kW (BTUM)	56 (3,190)
Heat Rejection to Air to Air: kW (BTUM)	17.6 (1,002)
Heat Radiated to Ambient: kW (BTUM)	10.5 (596)
Fan Power: kW (hp)	6.5 (8.7)

// Air Requirements

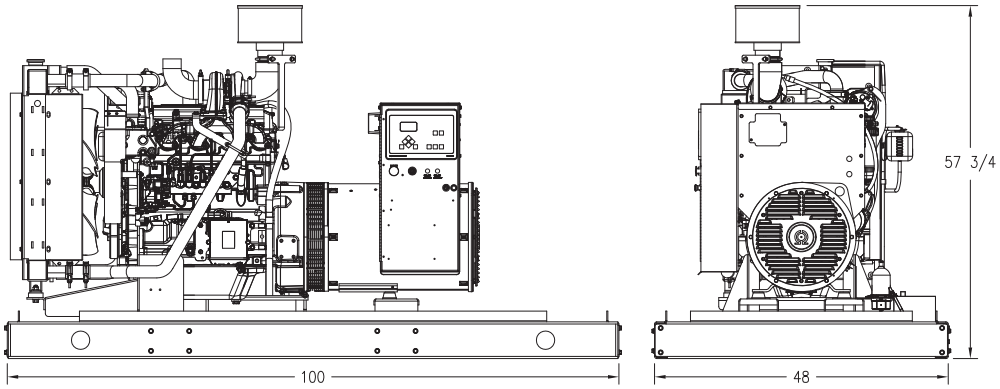
Aspirating: *m^3/min (SCFM)	7.7 (273)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	187 (6,587)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	38 (1,343)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	560 (1,040)
Gas Volume at Stack Temp: m^3/min (CFM)	21.2 (750)
Maximum Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,540 x 1,219 x 1,467 mm (100 x 48 x 57.75 in)	867 kg (1,912 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	83.6

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.97	0.72	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0120 DS80

80 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 4R0120 DS80 (72 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	80	80	80	80	80	80	80
kVA	80	80	100	100	100	100	100
Amps	333	333	278	241	151	120	96
skVA@30% Voltage Dip	145	311	216	216	165	288	236
Generator Model	363CSL1607	363CSL1617	362CSL1604	362CSL1604	362CSL1606	362CSL1604	362PSL1635
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM924LA Diesel Engine
- 4.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM924LA
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.8 (293)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	147 (197)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	15.8 (4.2)
Engine Jacket Water Capacity: L (gal)	7 (1.8)
System Coolant Capacity: L (gal)	20.8 (5.5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.7 (9)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	328.2 (86.7)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	19.3 (5.1)
At 75% of Power Rating: L/hr (gal/hr)	14 (3.7)
At 50% of Power Rating: L/hr (gal/hr)	9.8 (2.6)

* Based on 362CSL1604 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	37.5 (2,133)
Heat Rejection to Air to Air: kW (BTUM)	23.6 (1,342)
Heat Radiated to Ambient: kW (BTUM)	24.8 (1,410)
Fan Power: kW (hp)	3.3 (4.4)

// Air Requirements

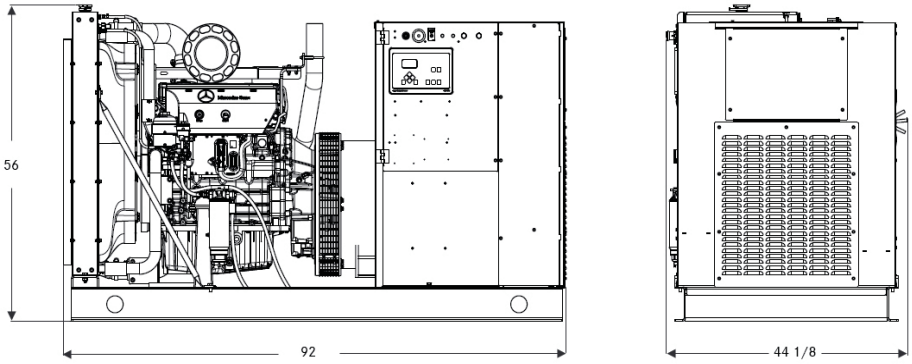
Aspirating: *m^3/min (SCFM)	8.6 (304)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	209 (7,381)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	90.7 (3,203)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	354 (669)
Gas Volume at Stack Temp: m^3/min (CFM)	21.6 (763)
Max. Allowable Back Pressure: kPa (in. H_20)	6.5 (26)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,336 x 1,121 x 1,422 mm (92 x 44.13 x 56 in)	1,769 kg (3,900 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	83

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.61	1.42	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS100

100 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 4R0113 DS100 (90 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	100	100	100	100	100	100
kVA	100	100	125	125	125	125
Amps	417	417	347	301	150	120
skVA@30% Voltage Dip	136	311	258	258	344	270
Generator Model	431CSL6204	363CSL1617	362CSL1606	362CSL1606	362CSL1606	362PSL1636
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF285 Diesel Engine
- 4.5 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
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UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF285
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	118 (158)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	12 (3.2)
Engine Jacket Water Capacity: L (gal)	12.5 (3.3)
System Coolant Capacity: L (gal)	20.1 (5.3)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	74.6 (19.7)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	31 (8.2)
At 75% of Power Rating: L/hr (gal/hr)	25 (6.6)
At 50% of Power Rating: L/hr (gal/hr)	17.8 (4.7)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	180 (48)
Heat Rejection to Coolant: kW (BTUM)	62 (3,544)
Heat Rejection to Air to Air: kW (BTUM)	19.8 (1,127)
Heat Radiated to Ambient: kW (BTUM)	16.2 (919)
Fan Power: kW (hp)	6.5 (8.7)

// Air Requirements

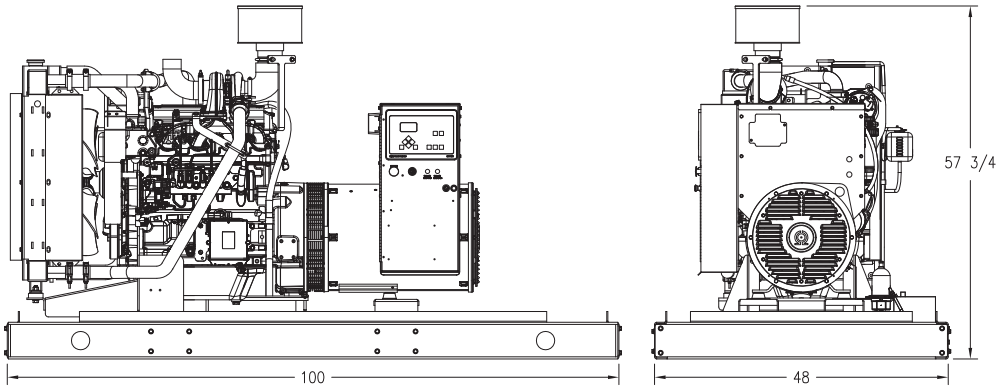
Aspirating: *m^3/min (SCFM)	8.2 (288)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	187 (6,587)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	59 (2,074)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	580 (1,076)
Gas Volume at Stack Temp: m^3/min (CFM)	22.8 (805)
Maximum Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,540 x 1,219 x 1,473 mm (100 x 48 x 58 in)	908 kg (2,002 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	83.6

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.97	0.72	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0120 DS100

100 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 4R0120 DS100 (90 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	100	100	100	100	100	100	100
kVA	100	100	125	125	125	125	125
Amps	417	417	347	301	190	150	120
skVA@30% Voltage Dip	107	311	258	258	268	344	272
Generator Model	431CSL6202	363CSL1617	362CSL1606	362CSL1606	363CSL1607	362CSL1606	362PSL1636
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM924LA Diesel Engine
- 4.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM924LA
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.8 (293)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	147 (197)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	15.8 (4.2)
Engine Jacket Water Capacity: L (gal)	7 (1.8)
System Coolant Capacity: L (gal)	20.8 (5.5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8“ ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8“ ID
Max. Fuel Lift: m (ft)	2.7 (9)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	328.2 (86.7)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	23.9 (6.3)
At 75% of Power Rating: L/hr (gal/hr)	17.4 (4.6)
At 50% of Power Rating: L/hr (gal/hr)	11.7 (3.1)

* Based on 362CSL1606 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5))
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	46.3 (2,633)
Heat Rejection to Air to Air: kW (BTUM)	26.9 (1,530)
Heat Radiated to Ambient: kW (BTUM)	27.1 (1,541)
Fan Power: kW (hp)	3.3 (4.4)

// Air Requirements

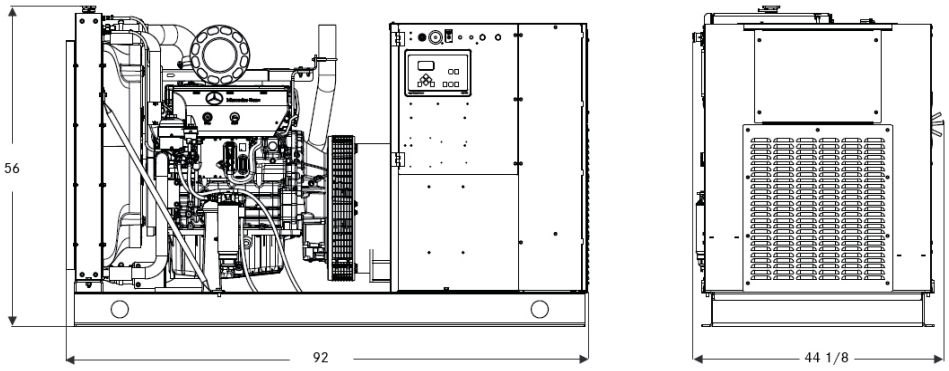
Aspirating: *m^3/min (SCFM)	9.1 (321)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	209 (7,381)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	99.1 (3,500)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	404 (759)
Gas Volume at Stack Temp: m^3/min (CFM)	24.1 (851)
Max. Allowable Back Pressure: kPa (in. H_20)	6.5 (26)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,336 x 1,121 x 1,422 mm (92 x 44.13 x 56 in)	1,769 kg (3,900 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	83

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.61	1.42	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS125

125 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 4R0113 DS125 (111 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	125	125	125	125	125	125
kVA	125	125	156	156	156	156
Amps	520	520	433	375	188	150
skVA@30% Voltage Dip	187	192	323	323	430	333
Generator Model	431PSL6206	431PSL6224	363CSL1607	363CSL1607	363CSL1607	363PSL1658
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF285 Diesel Engine
- 4.58 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF285
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	147 (197)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.2)
System Coolant Capacity: L (gal)	24 (6.2)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	90.1 (23.8)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	37.3 (9.9)
At 75% of Power Rating: L/hr (gal/hr)	28.8 (7.6)
At 50% of Power Rating: L/hr (gal/hr)	19.3 (5.1)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Allowable Static Pressure on Rad. Exhaust: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	180 (48)
Heat Rejection to Coolant: kW (BTUM)	72.1 (4,098)
Heat Rejection to Air to Air: kW (BTUM)	26.5 (1,508)
Heat Radiated to Ambient: kW (BTUM)	19.9 (1,134)
Fan Power: kW (hp)	10.6 (14.2)

// Air Requirements

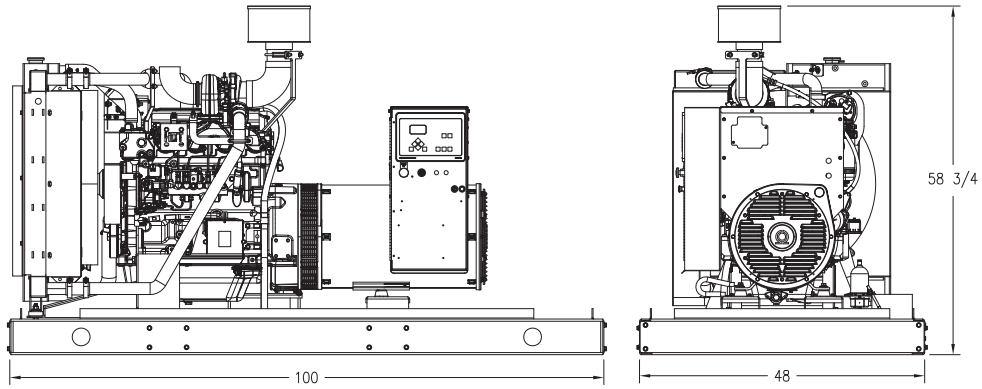
Aspirating: *m^3/min (SCFM)	9.7 (341)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	433 (15,303)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	71 (2,520)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	580 (1,076)
Gas Volume at Stack Temp: m^3/min (CFM)	27 (953)
Maximum Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,540 x 1,219 x 1,499 mm (100 x 48 x 59 in)	971 kg (2,140 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	86.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.02	0.16	0.01

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Availabler

DIESEL GENERATOR SET
MTU 4R0120 DS125

125 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 4R0120 DS125 (111 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	125	125	125	125	125	125	125
kVA	125	125	156	156	156	156	156
Amps	521	521	434	376	237	188	150
skVA@30% Voltage Dip	184	196	323	323	191	430	334
Generator Model	431PSL6208	431PSL6224	363CSL1607	363CSL1607	431CSL6202	363CSL1607	363PSL1658
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM924LA Diesel Engine
- 4.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
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UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM924LA
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.8 (293)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	147 (197)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	15.8 (4.2)
Engine Jacket Water Capacity: L (gal)	7 (1.8)
System Coolant Capacity: L (gal)	20.8 (5.5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.7 (9)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	328.2 (86.7)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	28.8 (7.6)
At 75% of Power Rating: L/hr (gal/hr)	21.6 (5.7)
At 50% of Power Rating: L/hr (gal/hr)	14.8 (3.8)

* Based on 363CSL1607 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	54 (3,071)
Heat Rejection to Air to Air: kW (BTUM)	28.5 (1,621)
Heat Radiated to Ambient: kW (BTUM)	29.3 (1,666)
Fan Power: kW (hp)	3.3 (4.4)

// Air Requirements

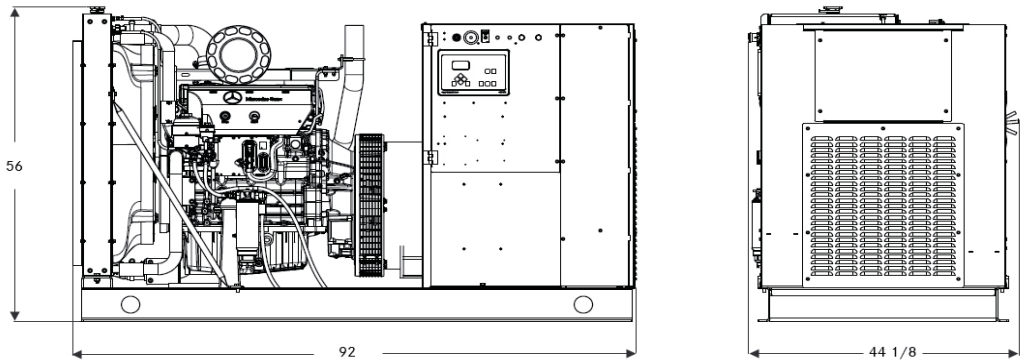
Aspirating: *m^3/min (SCFM)	9.3 (328)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	209 (7,381)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	107 (3,779)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	470 (877)
Gas Volume at Stack Temp: m^3/min (CFM)	26.3 (929)
Max. Allowable Back Pressure: kPa (in. H_20)	6.5 (26)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,336 x 1,121 x 1,422 mm (92 x 44.13 x 56 in)	1,769 kg (3,900 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	83.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.61	1.42	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0113 DS150

150 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R0113 DS150 (135 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	150	150	150	150	150	150
kVA	150	150	187	187	187	187
Amps	625	625	520	451	225	180
skVA@30% Voltage Dip	182	195	296	296	394	315
Generator Model	431CSL6208	431PSL6224	431CSL6202	431CSL6202	431CSL6202	431PSL6240
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6068HF285 Diesel Engine
- 6.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	6068HF285
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	6.8 (415)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	177 (237)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	20 (5.28)
Engine Jacket Water Capacity: L (gal)	12.3 (3.25)
System Coolant Capacity: L (gal)	22.7 (6)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	107.2 (28.3)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	44.7 (11.8)
At 75% of Power Rating: L/hr (gal/hr)	34.8 (9.2)
At 50% of Power Rating: L/hr (gal/hr)	25.4 (6.7)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Allowable Static Pressure on Rad. Exhaust: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	180 (48)
Heat Rejection to Coolant: kW (BTUM)	93.5 (5,324)
Heat Rejection to Air to Air: kW (BTUM)	32 (1,821)
Heat Radiated to Ambient: kW (BTUM)	25.7 (1,461)
Fan Power: kW (hp)	10.7 (14.3)

// Air Requirements

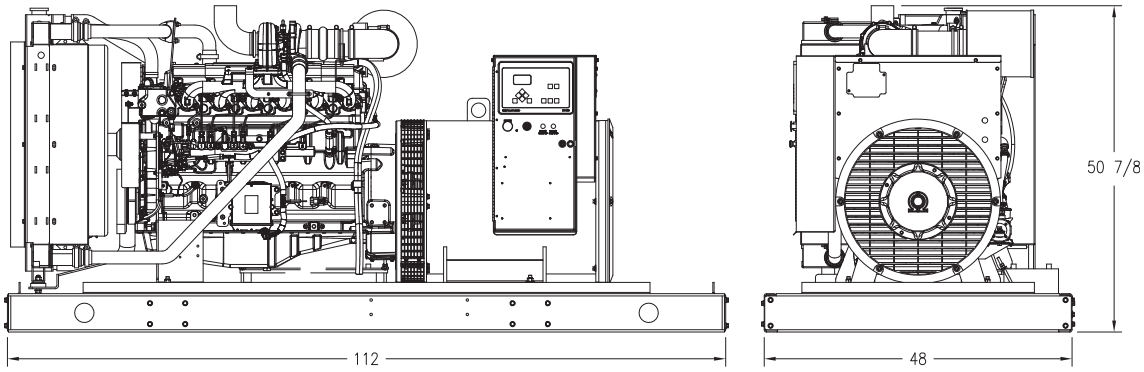
Aspirating: *m^3/min (SCFM)	13.6 (480)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	304 (10,732)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	94 (3,295)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	505 (941)
Gas Volume at Stack Temp: m^3/min (CFM)	34 (1,201)
Maximum Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,845 x 1,219 x 1,283 mm (112 x 48 x 50.5 in)	1,592 kg (3,510 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	85.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.77	0.4	0.06

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0120 DS150

150 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R0120 DS150 (135 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	150	150	150	150	150	150	150
kVA	150	150	187	187	187	187	187
Amps	625	625	520	451	285	226	180
skVA@30% Voltage Dip	188	196	296	296	282	394	316
Generator Model	431CSL6206	431PSL6224	431CSL6202	431CSL6202	431CSL6204	431CSL6202	431PSL6240
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM926LA Diesel Engine
- 7.2 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM926LA
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	7.2 (439)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	247 (331)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	29 (7.7)
Engine Jacket Water Capacity: L (gal)	10 (2.6)
System Coolant Capacity: L (gal)	24.1 (6.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.6 (8.5)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	330.5 (87.3)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	40.5 (10.7)
At 75% of Power Rating: L/hr (gal/hr)	30 (7.9)
At 50% of Power Rating: L/hr (gal/hr)	20.4 (5.4)

* Based on 431CSL6202 480 Volt generator set)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	77.8 (4,424)
Heat Rejection to Air to Air: kW (BTUM)	50.8 (2,889)
Heat Radiated to Ambient: kW (BTUM)	29.4 (1,672)
Fan Power: kW (hp)	15.6 (22.1)

// Air Requirements

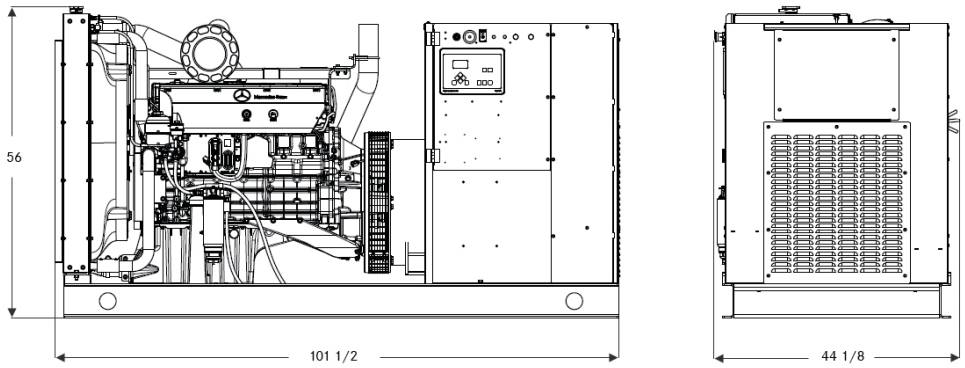
Aspirating: *m^3/min (SCFM)	13.4 (473)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	408 (14,408)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	107 (3,779)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	434 (813)
Gas Volume at Stack Temp: m^3/min (CFM)	39.1 (1,381)
Max. Allowable Back Pressure: kPa (in. H_20)	10.5 (42)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,580 x 1,121 x 1,422 mm (101.57 x 44.13 x 56 in)	1,905 kg (4,200 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.7

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.93	1.2	0.06

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0113 DS180

180 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R0113 DS180 (180 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	180	180	180	180	180	180
kVA	180	180	225	225	225	225
Amps	750	750	625	541	271	217
skVA@30% Voltage Dip	267	370	433	433	451	510
Generator Model	432CSL6210	432PSL6228	431CSL6206	431CSL6206	431CSL6204	431PSL6243
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6068HFG85 Diesel Engine
- 6.8 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	6068HFG85
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	6.8 (415)
Bore: cm (in)	10.6 (4.2)
Stroke: cm (in)	12.7 (5)
Compression Ratio	17:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	235 (315)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	32.2 (8.5)
Engine Jacket Water Capacity: L (gal)	11.9 (3.3)
System Coolant Capacity: L (gal)	29.3 (7.75)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	93 (24.5)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	51.9 (13.5)
At 75% of Power Rating: L/hr (gal/hr)	40.5 (10.7)
At 50% of Power Rating: L/hr (gal/hr)	27.6 (7.3)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	265 (70)
Heat Rejection to Coolant: kW (BTUM)	83.7 (4,766)
Heat Rejection to Air to Air: kW (BTUM)	40 (2,298)
Heat Radiated to Ambient: kW (BTUM)	24.2 (1,378)
Fan Power: kW (hp)	8.6 (11.5)

// Air Requirements

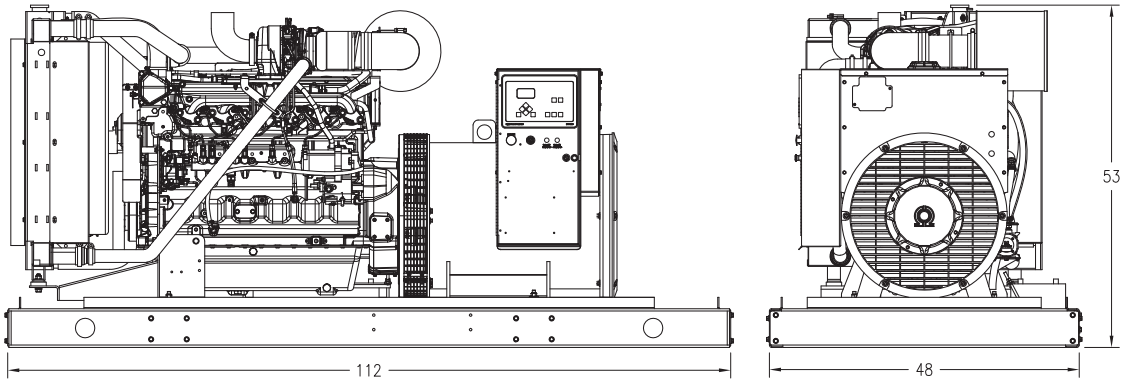
Aspirating: *m^3/min (SCFM)	14.7 (520)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	412 (14,537)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	89 (3,108)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	528 (982)
Gas Volume at Stack Temp: m^3/min (CFM)	38.8 (1,371)
Maximum Allowable Back Pressure: kPa (in. H_20)	10 (40)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,845 x 1,219 x 1,346 mm (112 x 48 x 53 in)	1,720 kg (3,755 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	87.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.63	0.49	0.09

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0120 DS180

180 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R0120 DS180 (163 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	180	180	180	180	180	180	180
kVA	180	180	225	225	225	225	225
Amps	750	750	625	541	342	271	217
skVA@30% Voltage Dip	268	366	433	433	362	451	375
Generator Model	432CSL6210	432PSL6228	431CSL6206	431CSL6206	431CSL6206	431CSL6204	431PSL6242
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM926LA Diesel Engine
- 7.2 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM926LA
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	7.2 (439)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	247 (331)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	29 (7.7)
Engine Jacket Water Capacity: L (gal)	10 (2.6)
System Coolant Capacity: L (gal)	24.1 (6.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.6 (8.5)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	330.5 (87.3)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	50 (13.2)
At 75% of Power Rating: L/hr (gal/hr)	36 (9.5)
At 50% of Power Rating: L/hr (gal/hr)	23.9 (6.3)

* Based on 431CSL6204 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	88.8 (5,430)
Heat Rejection to Air to Air: kW (BTUM)	54 (3,071)
Heat Radiated to Ambient: kW (BTUM)	38.3 (2,178)
Fan Power: kW (hp)	15.6 (22.1)

// Air Requirements

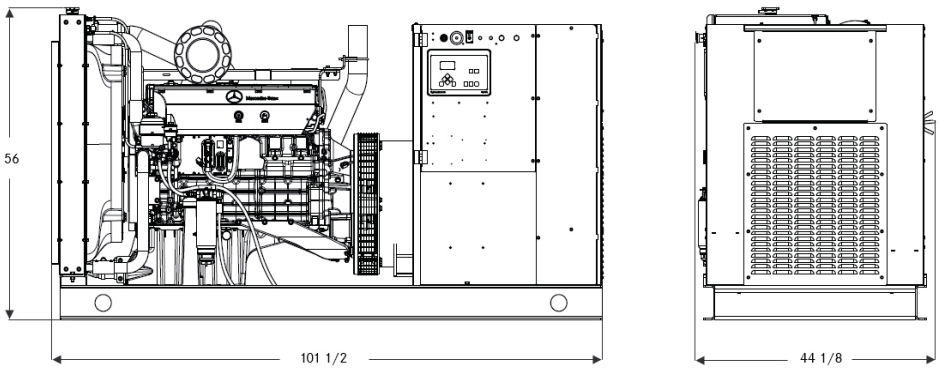
Aspirating: *m^3/min (SCFM)	14.3 (505)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	408 (14,408)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	139.9 (4,941)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	491 (916)
Gas Volume at Stack Temp: m^3/min (CFM)	43 (1,519)
Max. Allowable Back Pressure: kPa (in. H_20)	10.5 (42)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,580 x 1,121 x 1,422 mm (101.57 x 44.13 x 56 in)	1,905 kg (4,200 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.93	1.2	0.06

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0113 DS200

200 kWe / 60 Hz / Standby
208 - 600V

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	200	200	200	200	200	200
kVA	200	200	250	250	250	250
Amps	833	833	694	601	301	241
skVA@30% Voltage Dip	265	370	433	433	577	510
Generator Model	432CSL6210	432PSL6228	431CSL6206	431CSL6206	431CSL6206	431PSL6243
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6068HFG85 Diesel Engine
- 6.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	6068HFG85
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	6.8 (415)
Bore: cm (in)	10.6 (4.2)
Stroke: cm (in)	12.7 (5)
Compression Ratio	17:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	235 (315)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	32.2 (8.5)
Engine Jacket Water Capacity: L (gal)	11.9 (3.3)
System Coolant Capacity: L (gal)	29.3 (7.75)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	93 (24.5)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	58.6 (15.5)
At 75% of Power Rating: L/hr (gal/hr)	42.9 (11.3)
At 50% of Power Rating: L/hr (gal/hr)	30 (7.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	265 (70)
Heat Rejection to Coolant: kW (BTUM)	94.9 (5,404)
Heat Rejection to Air to Air: kW (BTUM)	57 (3,264)
Heat Radiated to Ambient: kW (BTUM)	30 (1,703)
Fan Power: kW (hp)	8.6 (11.5)

// Air Requirements

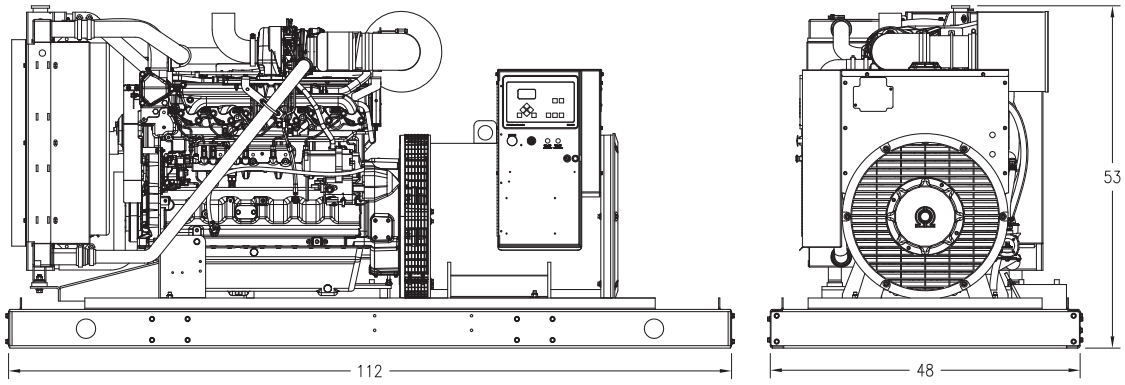
Aspirating: *m^3/min (SCFM)	17.5 (619)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	412 (14,537)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	109 (3,842)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	485 (905)
Gas Volume at Stack Temp: m^3/min (CFM)	42.9 (1,514)
Maximum Allowable Back Pressure: kPa (in. H_20)	10 (40)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,845 x 1,219 x 1,346 mm (112 x 48 x 53 in)	1,751 kg (3,860 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	87.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.63	0.49	0.09

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0120 DS200

200 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R0120 DS200 (180 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	200	200	200	200	200	200	200
kVA	200	200	250	250	250	250	250
Amps	833	833	694	601	380	301	241
skVA@30% Voltage Dip	268	366	433	433	373	577	512
Generator Model	432CSL6210	432PSL6228	431CSL6206	431CSL6206	431CSL6208	431CSL6206	431PSL6243
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM926LA Diesel Engine
- 7.2 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM926LA
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	7.2 (439)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	247 (331)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	29 (7.7)
Engine Jacket Water Capacity: L (gal)	10 (2.6)
System Coolant Capacity: L (gal)	24.1 (6.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.6 (8.5)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	330.5 (87.3)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	55.3 (14.6)
At 75% of Power Rating: L/hr (gal/hr)	40.5 (10.7)
At 50% of Power Rating: L/hr (gal/hr)	26.5 (7)

* Based on 431CSL6206 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	95.5 (5,431)
Heat Rejection to Air to Air: kW (BTUM)	55.3 (3,145)
Heat Radiated to Ambient: kW (BTUM)	40.8 (2,322)
Fan Power: kW (hp)	15.6 (22.1)

// Air Requirements

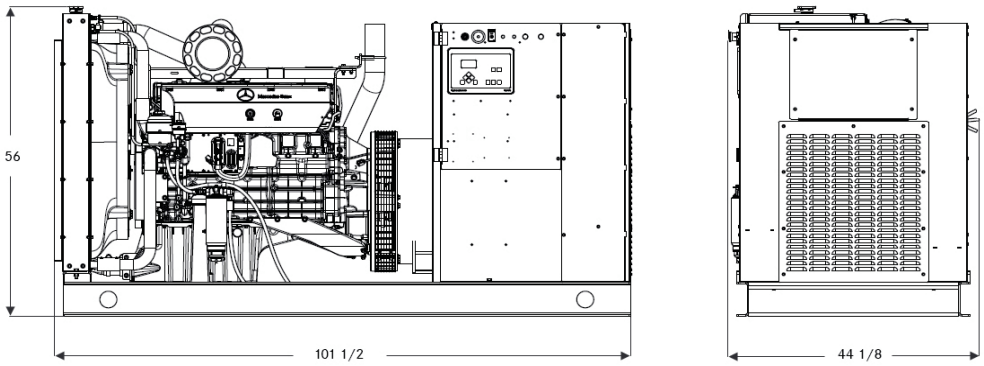
Aspirating: *m^3/min (SCFM)	14.8 (523)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	408 (14,408)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	149.2 (5,269)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	520 (968)
Gas Volume at Stack Temp: m^3/min (CFM)	44.8 (1,582)
Max. Allowable Back Pressure: kPa (in. H_20)	10.5 (42)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,580 x 1,121 x 1,422 mm (101.57 x 44.13 x 56 in)	1,905 kg (4,200 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.93	1.2	0.06

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS230

230 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R1600 DS230 (210 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	230	230	230	230	230	230
kVA	287	287	287	287	287	287
Amps	798	692	437	377	346	277
skVA@30%						
Voltage Dip	608	608	430	580	809	510
Generator Model	432CSL6210	432CSL6210	432CSL6210	432CSL6210	432CSL6210	431PSL6243
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G70S
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	ECU 8
Max. Power: kWm (bhp)	312 (418)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	198 (60.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	66 (17.5)
At 75% of Power Rating: L/hr (gal/hr)	54 (14.2)
At 50% of Power Rating: L/hr (gal/hr)	39 (10.2)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	143 (8,132)
Heat Rejection to After Cooler: kW (BTUM)	84 (4,777)
Heat Radiated to Ambient: kW (BTUM)	27.5 (1,564)
Fan Power: kW (hp)	14.9 (20)

// Air Requirements

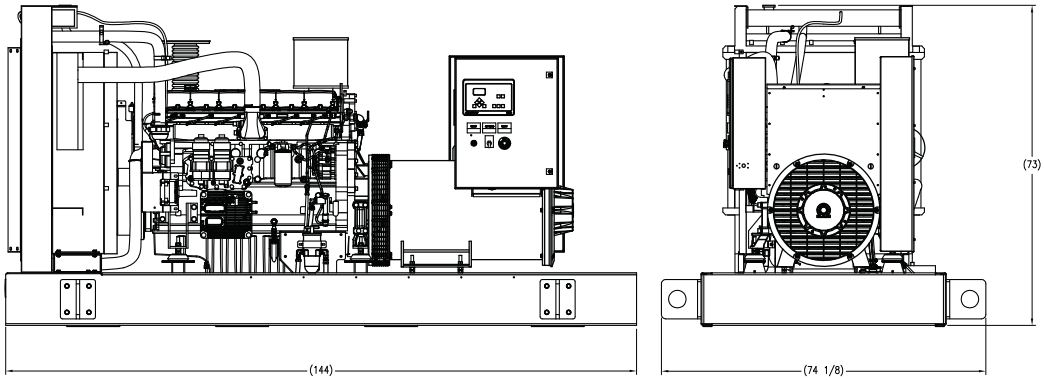
Aspirating: *m^3/min (SCFM)	30 (1,059)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	396 (13,985)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	99.9 (3,527)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	430 (806)
Gas Volume at Stack Temp: m^3/min (CFM)	72 (2,542)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,883 x 1,855 mm (144 x 74.13 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	86.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.54	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS250

250 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R1600 DS250 (230 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	250	250	250	250	250	250
kVA	312	312	312	312	312	312
Amps	867	752	475	410	376	301
skVA@30% Voltage Dip	608	608	430	580	809	720
Generator Model	432CSL6210	432CSL6210	432CSL6210	432CSL6210	432CSL6210	432PSL6246
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G70S
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	ECU 8
Max. Power: kWm (bhp)	312 (418)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	198 (60.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	70 (18.5)
At 75% of Power Rating: L/hr (gal/hr)	57 (15.2)
At 50% of Power Rating: L/hr (gal/hr)	42 (11)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	143 (8,132)
Heat Rejection to After Cooler: kW (BTUM)	84 (4,777)
Heat Radiated to Ambient: kW (BTUM)	30.2 (1,717)
Fan Power: kW (hp)	14.9 (20)

// Air Requirements

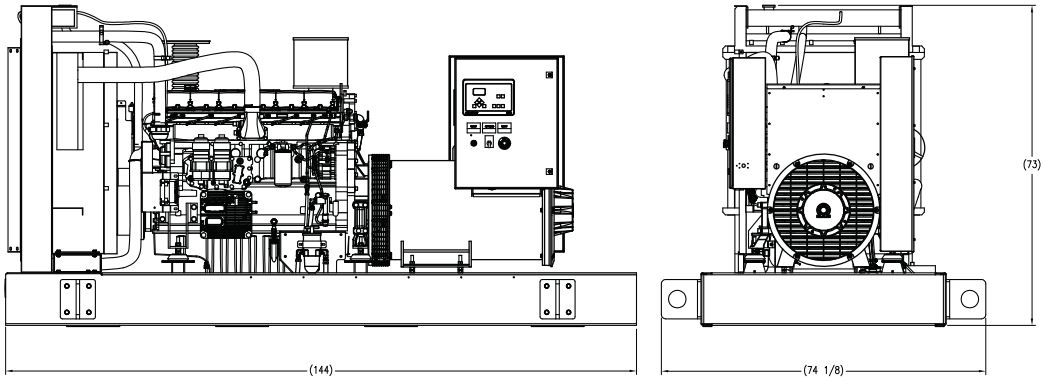
Aspirating: *m^3/min (SCFM)	30 (1,059)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	396 (13,985)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	109.7 (3,873)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	430 (806)
Gas Volume at Stack Temp: m^3/min (CFM)	72 (2,542)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,883 x 1,855 mm (144 x 74.13 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	86.6

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.54	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS275

275 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R1600 DS275 (250 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	275	275	275	275	275	275
kVA	343	343	343	343	343	343
Amps	954	827	522	451	413	331
skVA@30% Voltage Dip	930	930	640	860	809	720
Generator Model	433CSL6216	433CSL6216	433CSL6216	433CSL6216	432CSL6210	432PSL6246
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
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Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G70S
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	ECU 8
Max. Power: kWm (bhp)	312 (418)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	198 (60.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	74 (19.7)
At 75% of Power Rating: L/hr (gal/hr)	60 (15.9)
At 50% of Power Rating: L/hr (gal/hr)	46 (12.2)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	143 (8,132)
Heat Rejection to After Cooler: kW (BTUM)	84 (4,777)
Heat Radiated to Ambient: kW (BTUM)	34.1 (1,939)
Fan Power: kW (hp)	14.9 (20)

// Air Requirements

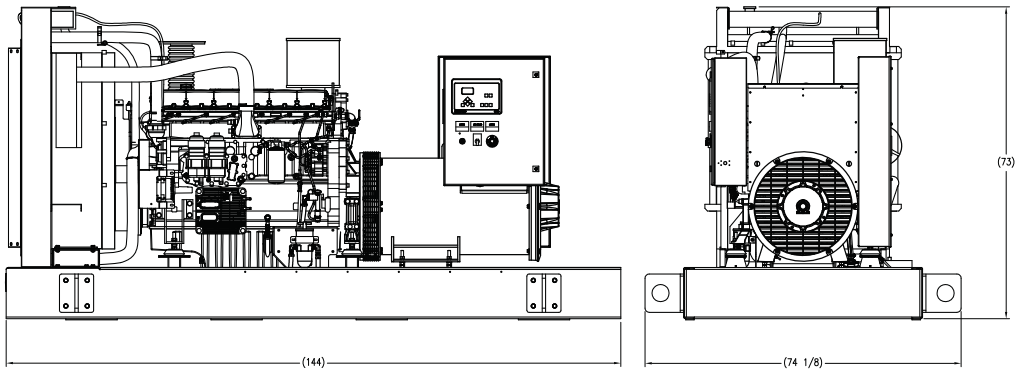
Aspirating: *m^3/min (SCFM)	30 (1,059.4)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	396 (13,985)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	123.8 (4,374)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	430 (806)
Gas Volume at Stack Temp: m^3/min (CFM)	72 (2,542.7)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,883 x 1,855 mm (144 x 74.13 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	86.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.54	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS300

300 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 6R1600 DS300 (275 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	300	300	300	300	300	300
kVA	375	375	375	375	375	375
Amps	1041	902	570	492	451	361
skVA@30% Voltage Dip	930	930	640	860	820	720
Generator Model	433CSL6216	433CSL6216	433CSL6216	433CSL6216	432CSL6212	432PSL6246
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G80S
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	ECU 8
Max. Power: kWm (bhp)	343 (460)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	198 (60.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	82 (21.6)
At 75% of Power Rating: L/hr (gal/hr)	66 (17.5)
At 50% of Power Rating: L/hr (gal/hr)	51 (15.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	154 (8,758)
Heat Rejection to After Cooler: kW (BTUM)	90 (5,118)
Heat Radiated to Ambient: kW (BTUM)	36.9 (2,099)
Fan Power: kW (hp)	14.9 (20)

// Air Requirements

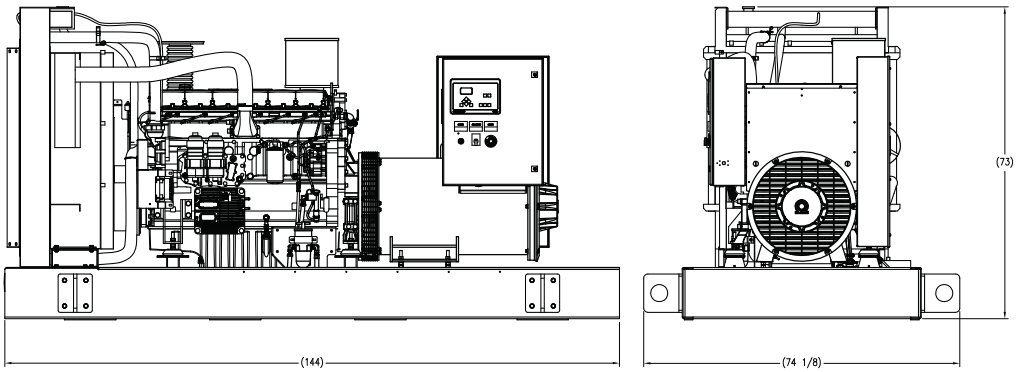
Aspirating: *m^3/min (SCFM)	30 (1,059.4)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	396 (13,985)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	134 (4,733)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	440 (824)
Gas Volume at Stack Temp: m^3/min (CFM)	72 (2,542.7)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,883 x 1,855 mm (144 x 74.13 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	87.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.14	0.52	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS350

350 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 8V1600 DS350 (325 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	350	350	350	350	350	350
kVA	438	438	438	438	438	438
Amps	1214	1052	665	574	526	421
skVA@30% Voltage Dip	930	930	635	850	1238	1100
Generator Model	433CSL6216	433CSL6216	433CSL6216	433CSL6216	433CSL6216	433PSL6248
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation (570 frame)
±1% Voltage Regulation (430 frame)
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G70S
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	408 (547)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	402 (106)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	99 (26.1)
At 75% of Power Rating: L/hr (gal/hr)	81 (21.3)
At 50% of Power Rating: L/hr (gal/hr)	60 (15.8)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	205 (11,658)
Heat Rejection to After Cooler: kW (BTUM)	120 (6,824)
Heat Radiated to Ambient: kW (BTUM)	44.3 (2,519)
Fan Power: kW (hp)	16.9 (22.6)

// Air Requirements

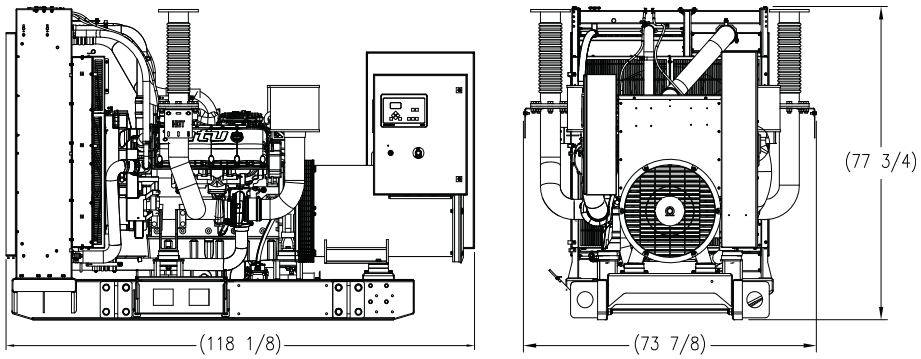
Aspirating: *m^3/min (SCFM)	31.8 (1,124)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	160.9 (5,682)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	475 (887)
Gas Volume at Stack Temp: m^3/min (CFM)	84 (2,966)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (61)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,001 x 1,877 x 1,975 mm (118.13 x 73.88 x 77.75 in)	3,652 kg (8,050 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.06	0.52	0.05

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS400

400 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 8V1600 DS400 (365 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	400	400	400	400	400	400
kVA	500	500	500	500	500	500
Amps	1388	1203	760	656	601	481
skVA@30% Voltage Dip	800	820	640	920	1277	1100
Generator Model	572RSL4025	572RSL4025	572RSL4025	433CSL6220	433CSL6220	433PSL6248
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation (570 frame)
±1% Voltage Regulation (430 frame)
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G80S
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	448 (601)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	402 (106)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	106 (28)
At 75% of Power Rating: L/hr (gal/hr)	87 (23)
At 50% of Power Rating: L/hr (gal/hr)	66 (17.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	205 (11,658)
Heat Rejection to After Cooler: kW (BTUM)	120 (6,824)
Heat Radiated to Ambient: kW (BTUM)	48.1 (2,735)
Fan Power: kW (hp)	16.9 (22.6)

// Air Requirements

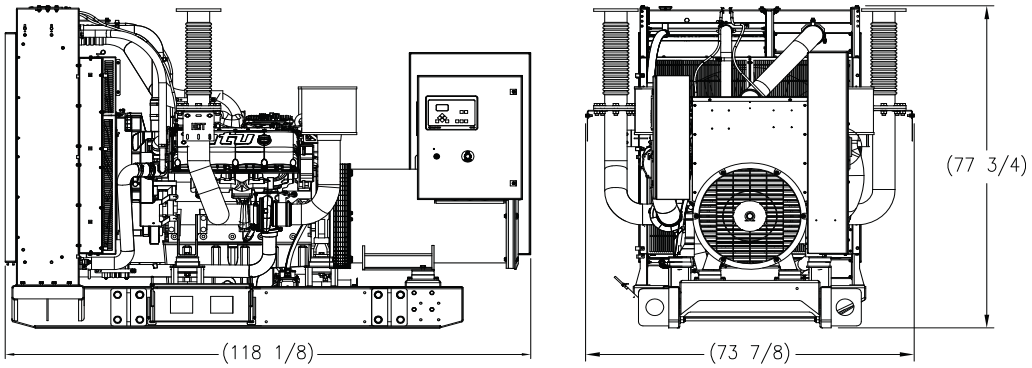
Aspirating: *m^3/min (SCFM)	30 (1,060)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	174.7 (6,169)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	478 (892)
Gas Volume at Stack Temp: m^3/min (CFM)	78 (2,755)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (61)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,001 x 1,877 x 1,975 mm (118.13 x 73.88 x 77.75 in)	3,652 kg (8,050 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.6

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.01	0.52	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS450

450 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 10V1600 DS450 (400 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	450	450	450	450	450	450
kVA	563	563	563	563	563	563
Amps	1561	1353	855	738	677	541
skVA@30% Voltage Dip	900	900	850	900	1090	1040
Generator Model	572RSL4027	572RSL4027	572RSL4029	572RSL4025	572RSL4025	572RSS4270
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality, and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	10V1600G70S
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	511 (685)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	401.3 (106)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	112 (29.6)
At 75% of Power Rating: L/hr (gal/hr)	90 (23.7)
At 50% of Power Rating: L/hr (gal/hr)	65 (17.2)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	466 (123)
Heat Rejection to Coolant: kW (BTUM)	235 (13,364)
Heat Rejection to After Cooler: kW (BTUM)	118 (6,710)
Heat Radiated to Ambient: kW (BTUM)	58.6 (3,332)
Fan Power: kW (hp)	17.9 (24)

// Air Requirements

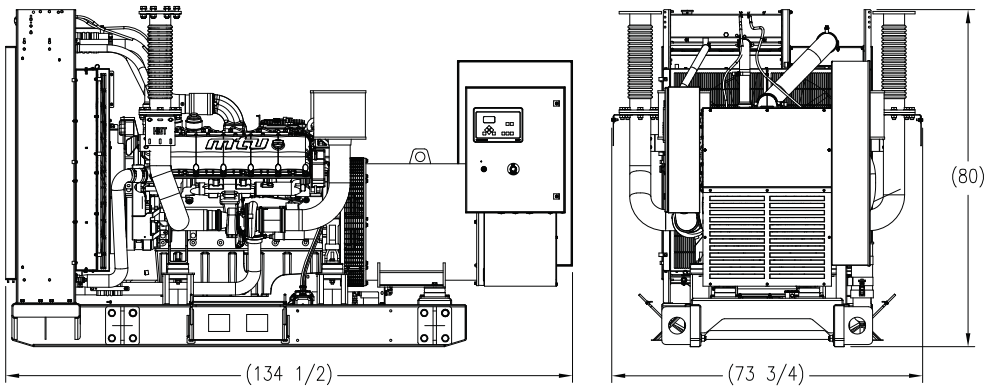
Aspirating: *m^3/min (SCFM)	35 (1,250)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	642 (22,672)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	213 (7,516)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	461 (862)
Gas Volume at Stack Temp: m^3/min (CFM)	103 (3,623)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,525 kg (9,975 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	93.4

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.31	0.37	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS500

500 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 10V1600 DS500 (450 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	500	500	500	500	500	500
kVA	625	625	625	625	625	625
Amps	1735	1504	950	820	752	601
skVA@30% Voltage Dip	1040	1040	980	1040	1290	1040
Generator Model	572RSL4029	572RSL4029	573RSL4033	572RSL4027	572RSL4027	572RSS4270
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	10V1600G80S
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	561 (752)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	401.3 (106)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	125 (33.1)
At 75% of Power Rating: L/hr (gal/hr)	97 (25.6)
At 50% of Power Rating: L/hr (gal/hr)	74 (19.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	466 (123)
Heat Rejection to Coolant: kW (BTUM)	235 (13,364)
Heat Rejection to After Cooler: kW (BTUM)	118 (6,710)
Heat Radiated to Ambient: kW (BTUM)	58.6 (3,332)
Fan Power: kW (hp)	17.9 (24)

// Air Requirements

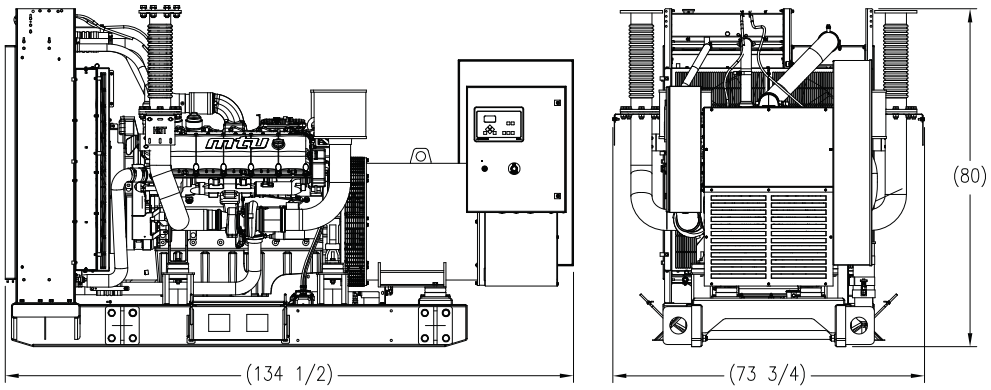
Aspirating: *m^3/min (SCFM)	35 (1,250)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	642 (22,672)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	213 (7,516)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	461 (862)
Gas Volume at Stack Temp: m^3/min (CFM)	103 (3,623)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,552 kg (10,035 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	93.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
6.9	0.45	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS550

550 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 12V1600 DS550 (500 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	550	550	550	550	550	550
kVA	687	687	687	687	687	687
Amps	1908	1654	1045	902	827	662
skVA@30% Voltage Dip	1200	1200	1230	1160	1500	1430
Generator Model	573RSL4033	573RSL4033	573RSL4033	572RSL4031	572RSL4029	572RSS4272
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
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Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V1600G70S
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	613 (821)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	402 (106.2)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	140.4 (37.1)
At 75% of Power Rating: L/hr (gal/hr)	106 (28)
At 50% of Power Rating: L/hr (gal/hr)	75.3 (19.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	517 (137)
Heat Rejection to Coolant: kW (BTUM)	242 (13,762)
Heat Rejection to After Cooler: kW (BTUM)	150 (8,530)
Heat Radiated to Ambient: kW (BTUM)	62.2 (3,537)
Fan Power: kW (hp)	23.1 (31)

// Air Requirements

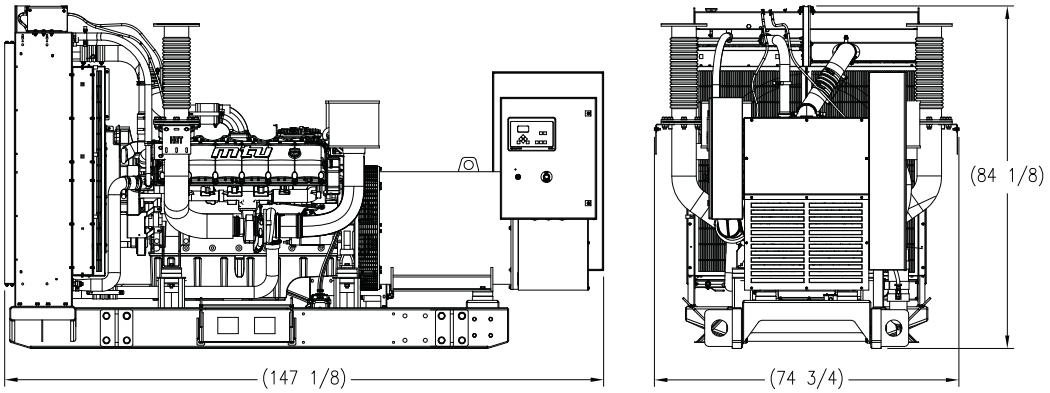
Aspirating: *m^3/min (SCFM)	52 (1,844)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	756 (26,700)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	226 (7,977)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	413 (775)
Gas Volume at Stack Temp: m^3/min (CFM)	126 (4,450)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	4,936 kg (10,880 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	91.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.12	0.3	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS600

600 kWe / 60 Hz / Standby
208 - 600V

Reference MTU 12V1600 DS600 (550 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	600	600	600	600	600	600
kVA	750	750	750	750	750	750
Amps	2082	1804	1140	984	902	722
skVA@30% Voltage Dip	1200	1200	1200	1400	1430	1430
Generator Model	573RSL4033	573RSL4033	573RSL4035	573RSL4033	572RSL4031	572RSS4272
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V1600G80S
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	668 (896)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	402 (106.2)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	151.4 (40)
At 75% of Power Rating: L/hr (gal/hr)	114.3 (30.2)
At 50% of Power Rating: L/hr (gal/hr)	80.2 (21.2)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	517 (137)
Heat Rejection to Coolant: kW (BTUM)	270 (15,354)
Heat Rejection to After Cooler: kW (BTUM)	170 (9,667)
Heat Radiated to Ambient: kW (BTUM)	67.1 (3,816)
Fan Power: kW (hp)	23.1 (31)

// Air Requirements

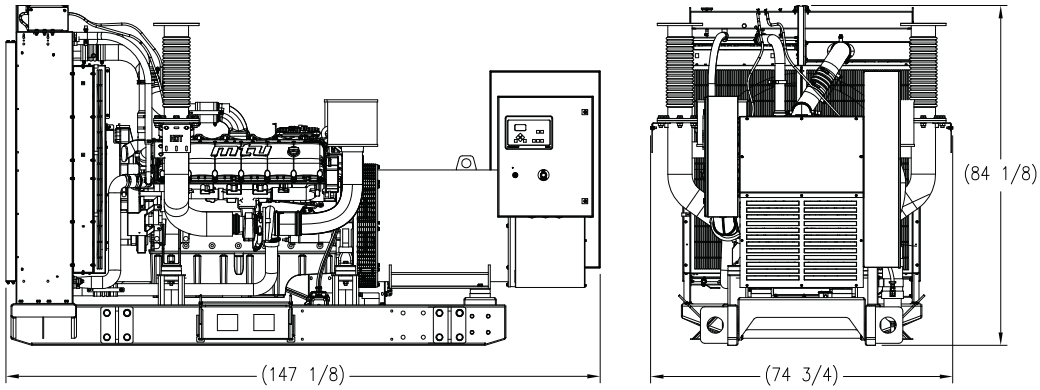
Aspirating: *m^3/min (SCFM)	54 (1,907)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	756 (26,700)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	244 (8,606)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	425 (797)
Gas Volume at Stack Temp: m^3/min (CFM)	132 (4,662)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	4,967 kg (10,950 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	91.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.36	0.3	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V2000 DS650

650 kWe / 60 Hz / Standby
208 - 4160V

Reference MTU 12V2000 DS650 (615 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	650	650	650	650	650	650
kVA	812	812	812	812	812	812
Amps	2255	1954	1234	977	781	112
skVA@30% Voltage Dip	1750	1750	1600	1750	1350	1850
Generator Model*	573RSL4033	573RSL4033	574RSL4037	573RSL4033	573RSS4274	574FSM4358
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	12 LEAD HI WYE	4 LEAD WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 2000 Diesel Engine
- 23.9 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories

// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 2000 G45 TB
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	23.9 (1,457)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	780 (1,046)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	77 (20.3)
Engine Jacket Water Capacity: L (gal)	110 (29.1)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	274 (72.4)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	3/4” NPT
Fuel Return Connection Size	1/4” NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	192.7 (50.9)
At 75% of Power Rating: L/hr (gal/hr)	145 (38.3)
At 50% of Power Rating: L/hr (gal/hr)	98.4 (26)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	270 (15,354)
Heat Rejection to After Cooler: kW (BTUM)	235 (13,364)
Heat Radiated to Ambient: kW (BTUM)	76.4 (4,345)
Fan Power: kW (hp)	37.9 (50.8)

// Air Requirements

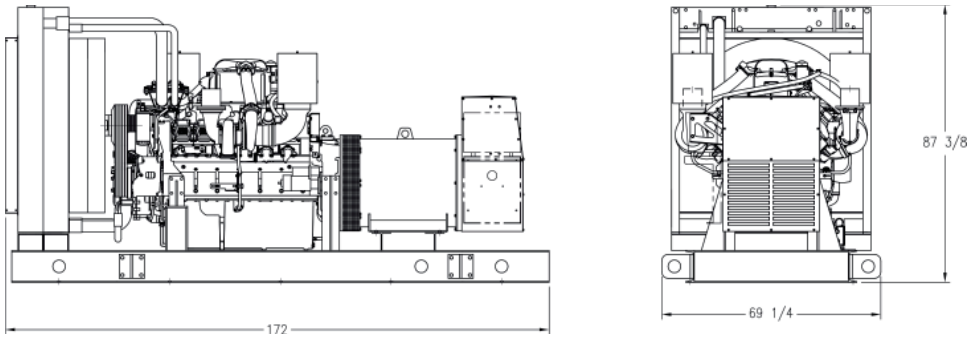
Aspirating: *m^3/min (SCFM)	63 (2,225)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	784 (27,687)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	277 (9,798)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	550 (1,022)
Gas Volume at Stack Temp: m^3/min (CFM)	159 (5,615)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	4,369 x 1,759 x 2,219 mm (172 x 69.3 x 87.4 in)	5,492 kg (12,108 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	92

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.45	0.37	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V2000 DS750

750 kWe / 60 Hz / Standby
208 - 4160V

Reference MTU 12V2000 DS750 (680 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	750	750	750	750	750	750
kVA	937	937	937	937	937	937
Amps	2602	2255	1424	1127	902	130
skVA@30% Voltage Dip	2600	2600	1850	2120	3050	1850
Generator Model*	574RSL4037	574RSL4037	575RSL4044	573RSL4035	574RSS4278	574FSM4358
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	4 BAR WYE	12 LEAD HI WYE	4 LEAD WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 2000 Diesel Engine
- 23.9 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
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Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 2000 G85 TB
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	23.9 (1,457)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	890 (1,193)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	77 (20.3)
Engine Jacket Water Capacity: L (gal)	110 (29.1)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	274 (72.4)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	3/4" NPT
Fuel Return Connection Size	1/4" NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480.7 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	218.8 (57.8)
At 75% of Power Rating: L/hr (gal/hr)	164.6 (43.5)
At 50% of Power Rating: L/hr (gal/hr)	111.3 (29.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	315 (17,913)
Heat Rejection to After Cooler: kW (BTUM)	270 (15,354)
Heat Radiated to Ambient: kW (BTUM)	84.5 (4,805)
Fan Power: kW (hp)	38 (50.9)

// Air Requirements

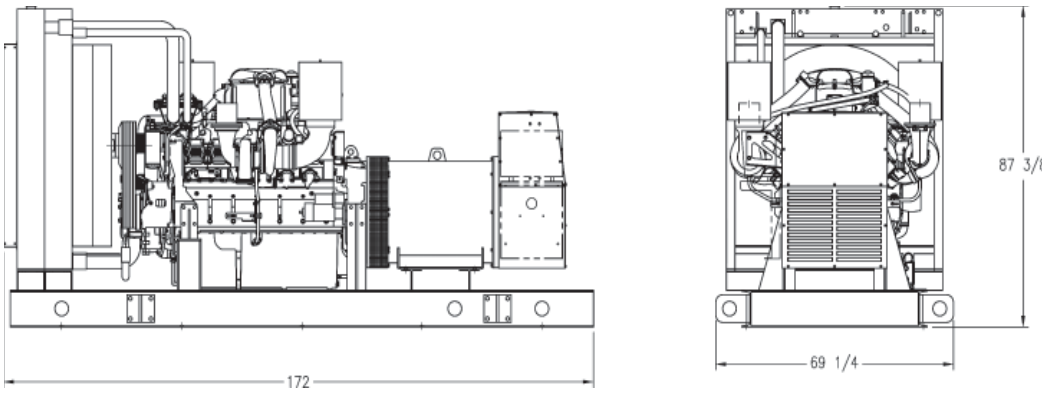
Aspirating: *m^3/min (SCFM)	66 (2,331)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	828 (29,248)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	307 (10,840)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	580 (1,076)
Gas Volume at Stack Temp: m^3/min (CFM)	174 (6,145)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	4,369 x 1,759 x 2,219 mm (172 x 69.3 x 87.4 in)	5,592 kg (12,328 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	92

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.66	0.45	0.01

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V2000 DS800

800 kWe / 60 Hz / Standby
208 - 4160V

Reference MTU 12V2000 DS800 (725 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	800	800	800	800	800	800
kVA	1000	1000	1000	1000	1000	1000
Amps	2779	2408	1521	1204	963	138
skVA@30% Voltage Dip	1800	1800	1850	2500	2825	2600
Generator Model*	741RSL4045	741RSL4045	575RSL4044	574RSL4038	574RSS4280	742FSM4364
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	4 BAR WYE	4 LEAD WYE	4 LEAD WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 2000 Diesel Engine
- 23.9 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 2000 G85 TB
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	23.9 (1,457)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	890 (1,193)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	77 (20.3)
Engine Jacket Water Capacity: L (gal)	110 (29.1)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	316 (83.5)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#12 JIC 37° Female 3/4" NPT Adapter Provided
Fuel Return Connection Size	#4 JIC 37° Female 1/4" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480.7 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	218.8 (57.8)
At 75% of Power Rating: L/hr (gal/hr)	164.6 (43.5)
At 50% of Power Rating: L/hr (gal/hr)	111.3 (29.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	315 (17,913)
Heat Rejection to After Cooler: kW (BTUM)	270 (15,354)
Heat Radiated to Ambient: kW (BTUM)	84.5 (4,805)
Fan Power: kW (hp)	38 (51)

// Air Requirements

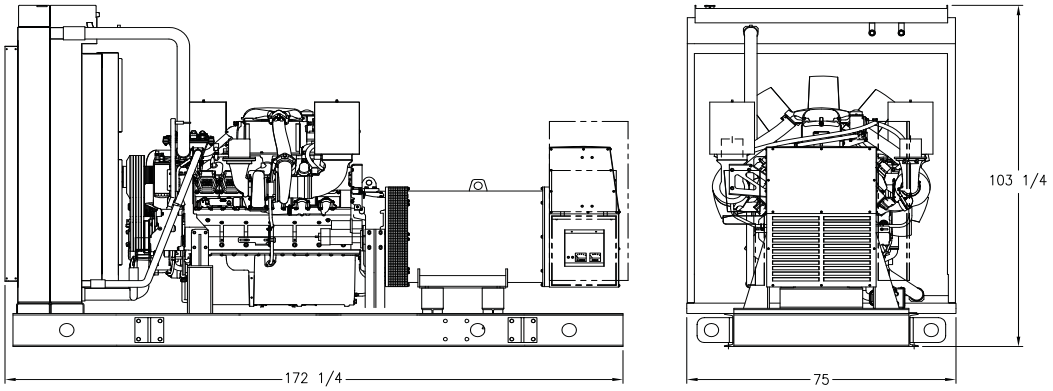
Aspirating: *m^3/min (SCFM)	66 (2,331)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,164 (41,090)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	307 (10,840)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	580 (1,076)
Gas Volume at Stack Temp: m^3/min (CFM)	174 (6,145)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	4,375 x 1,905 x 2,623 mm (172.25 x 75 x 103.25 in)	5,737 kg (12,648 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.66	0.45	0.01

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V2000 DS900

900 kWe / 60 Hz / Standby
208 - 4160V

Reference MTU 16V2000 DS900 (800 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	900	900	895	900	900	900
kVA	1125	1125	1118	1125	1125	1125
Amps	3123	2706	1699	1353	1083	156
skVA@30% Voltage Dip	2600	2600	1850	2500	2850	1950
Generator Model*	741RSL4045	741RSL4045	740RSL4046	574RSL4038	574RSS4280	741FSM4360
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	4 BAR WYE	4 LEAD WYE	4 LEAD WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V 2000 Diesel Engine
- 31.8 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories

// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V 2000 G45 TB
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	31.8 (1,943)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,010 (1,354)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	102 (26.9)
Engine Jacket Water Capacity: L (gal)	130 (34.3)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	415 (110)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	3/4" NPT
Fuel Return Connection Size	1/4" NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480.7 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	243.4 (64.3)
At 75% of Power Rating: L/hr (gal/hr)	186.2 (49.2)
At 50% of Power Rating: L/hr (gal/hr)	126.4 (33.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	355 (20,188)
Heat Rejection to After Cooler: kW (BTUM)	290 (16,491)
Heat Radiated to Ambient: kW (BTUM)	97.4 (5,539)
Fan Power: kW (hp)	55.6 (74.5)

// Air Requirements

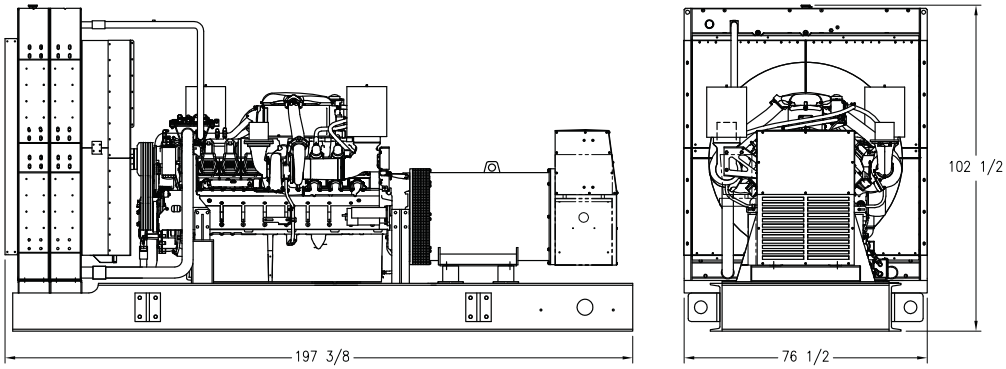
Aspirating: *m^3/min (SCFM)	84 (2,966)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,198 (42,303)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	354 (12,490)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	530 (986)
Gas Volume at Stack Temp: m^3/min (CFM)	210 (7,416)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	5,010 x 1,940 x 2,600 mm (197.4 x 76.5 x 102.5 in)	7,733 kg (17,047 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	92.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.4	0.37	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V2000 DS1000

1000 kWe / 60 Hz / Standby
208 - 4160V

Reference MTU 16V2000 DS1000 (900 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	1000	1000	995	1000	1000	1000
kVA	1250	1250	1243	1250	1250	1250
Amps	3470	3007	1889	1504	1203	173
skVA@30% Voltage Dip	2600	2600	1850	3200	1550	2600
Generator Model*	741RSL4045	741RSL4045	742RSL4048	575RSL4044	741RSS4282	742FSM4364
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V 2000 Diesel Engine
- 31.8 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories

// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V 2000 G85 TB
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	31.8 (1,943)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,115 (1,495)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	102 (26.9)
Engine Jacket Water Capacity: L (gal)	130 (34.3)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	415 (110)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	3/4" NPT
Fuel Return Connection Size	1/4" NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480.7 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	268.7 (71)
At 75% of Power Rating: L/hr (gal/hr)	203.6 (53.8)
At 50% of Power Rating: L/hr (gal/hr)	138.9 (36.7)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	400 (22,747)
Heat Rejection to After Cooler: kW (BTUM)	320 (18,197)
Heat Radiated to Ambient: kW (BTUM)	95.4 (5,425)
Fan Power: kW (hp)	55.6 (74.5)

// Air Requirements

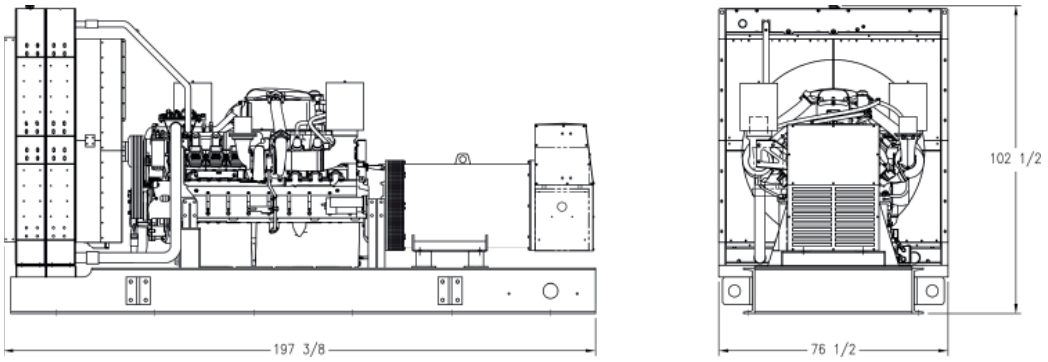
Aspirating: *m^3/min (SCFM)	87 (3,072)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,198 (42,303)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	346 (12,240)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	550 (1,022)
Gas Volume at Stack Temp: m^3/min (CFM)	222 (7,840)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	5,013 x 1,943 x 2,603 mm (197.4 x 76.5 x 102.5 in)	8,077 kg (17,807 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	97.7

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.6	0.37	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 18V2000 DS1200

Voltages:
1180 kWe / 60 Hz / Standby - 480V

SYSTEM RATINGS

Standby

Voltage (L-L)	480V
Phase	3
PF	0.8
Hz	60
kW	1180
kVA	1475
Amps	1776
skVA@30% Voltage Dip	3100
Generator Model	742RSL4048
Temp Rise	130 °C/40 °C
Connection	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 18V 2000 Diesel Engine
- 35.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability
// Digital Control Panel
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set - Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Rack & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine
60 Hz

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	18V 2000 G85 TD
Type	4-Cycle
Arrangement	18-V
Displacement: L (Cu In)	35.8 (2,186)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max Power: 110% kWm (bhp)	1,310 (1,755)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	130 (34.3)
Engine Jacket Water Capacity: L (gal)	120 (31.7)
System Coolant Capacity: L (gal)	209 (56)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	3/4” NPT
Fuel Return Connection Size	1/4” NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480 (146)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	315 (83)
At 75% of Power Rating: L/hr (gal/hr)	245 (65)
At 50% of Power Rating: L/hr (gal/hr)	165 (44)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Max. Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	867 (229)
Heat Rejection to Coolant: kW (BTUM)	510 (29,003)
Heat Rejection to After Cooler: kW (BTUM)	360 (20,473)
Heat Radiated to Ambient: kW (BTUM)	50 (2,841)
Fan Power: kW (hp)	58 (77.8)

// Air Requirements

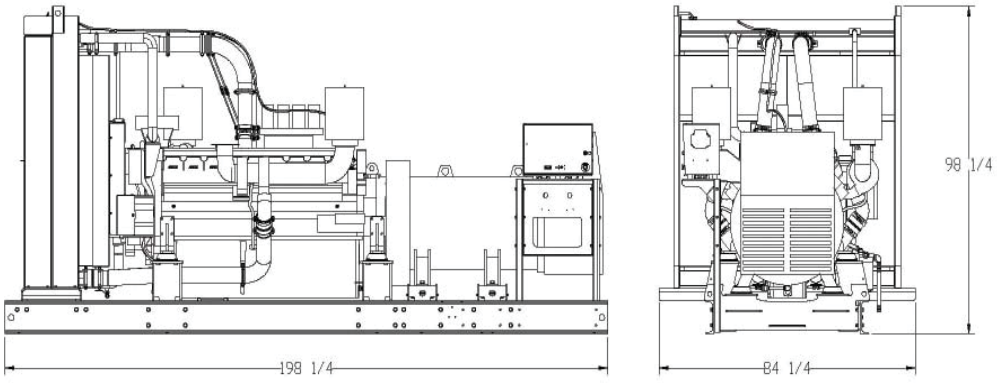
Aspirating: *(m3/min) SCFM	108 (3,814)
Air Flow Required for Rad. Cooled Unit: *(m3/min) SCFM	1,716 (60,600)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *(m3/min) SCFM	N/A

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	530 (986)
Gas Volume at Stack Temp: m^3/min (CFM)	264 (9.323)
Maximum Allowable Back Pressure: kPa (in. H_20)	9 (34)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	5,036 x 2,140 x 2,496 mm (198.25 x 84.25 x 98.25 in)	9,135 kg (20,139 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.11	0.45	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 18V2000 DS1250

1250 kWe / 60 Hz / Standby
380 - 4160V

Reference MTU 18V2000 DS1250 (1000 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V**	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1250	1250	1250	1250
kVA	1562	1562	1562	1562
Amps	2374	1879	1503	216
skVA@30%				
Voltage Dip	2700	3100	4650	3100
Generator Model*	743RSL4052	742RSL4048	743RSS4288	742FSM4366
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality, and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 18V 2000 Diesel Engine
- 40.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator Resilient Mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Rack & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	18V 2000 G76S
Type	4-Cycle
Arrangement	18-V
Displacement: L (in^3)	40.2 (2,448)
Bore: cm (in)	13.5 (5.3)
Stroke: cm (in)	15.6 (6.15)
Compression Ratio	17.5
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,371 (1,838)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	122 (32.2)
Engine Jacket Water Capacity: L (gal)	73 (19.3)
System Coolant Capacity: L (gal)	185 (48.9)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#12 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#12 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,380 (365)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	329 (87)
At 75% of Power Rating: L/hr (gal/hr)	251 (66)
At 50% of Power Rating: L/hr (gal/hr)	171 (45)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.13 (0.5)
Water Pump Capacity: L/min (gpm)	950 (251)
Heat Rejection to Coolant: kW (BTUM)	515 (29,288)
Heat Rejection to After Cooler: kW (BTUM)	340 (19,335)
Heat Radiated to Ambient: kW (BTUM)	117.3 (6,671)
Fan Power: kW (hp)	33.5 (44.9)

// Air Requirements

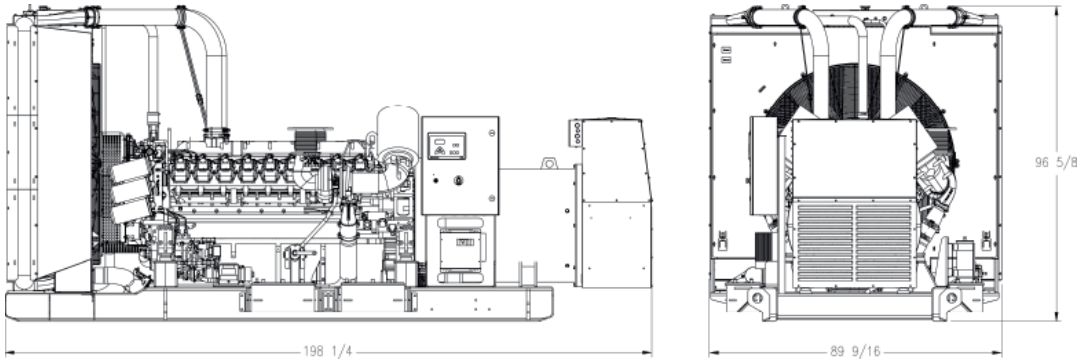
Aspirating: *m^3/min (SCFM)	102 (3,602)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,512 (53,396)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	428 (15,224)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	480 (896)
Gas Volume at Stack Temp: m^3/min (CFM)	252 (8,899)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	5,036 x 2,275 x 2,454 mm (198.3 x 89.6 x 96.6 in)	9,525 kg (21,000 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.4

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.78	0.135	0.013

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary as a function of ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data provided are laboratory results from one engine representing this rating. The data was obtained under controlled environmental conditions with calibrated instrumentation traceable to the United States National Bureau of Standards and in compliance with US EPA regulations found within 40 CFR Part 89. The weighted cycle value (not shown) from each engine is guaranteed to be below the US EPA Standards at the US EPA defined conditions.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V4000 DS1250

1250 kWe / 60 Hz / Standby
380 - 4160V

Reference MTU 12V4000 DS1250 (1125 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1250	1250	1250	1250
kVA	1562	1562	1562	1562
Amps	2374	1879	1503	216
skVA@30%				
Voltage Dip	2700	3100	4650	3100
Generator Model*	743RSL4052	742RSL4048	743RSS4288	742FSM4366
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 4000 Diesel Engine
- 57.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 4000 G43
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	57.2 (3,491)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,736 (2,328)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	260 (68.7)
Engine Jacket Water Capacity: L (gal)	160 (42.3)
After Cooler Water Capacity: L (gal)	40 (10.6)
System Coolant Capacity: L (gal)	583 (154)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	960 (254)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	341 (90)
At 75% of Power Rating: L/hr (gal/hr)	268 (70.8)
At 50% of Power Rating: L/hr (gal/hr)	192 (50.7)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,117 (295)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	576 (32,757)
Heat Rejection to After Cooler: kW (BTUM)	396 (22,520)
Heat Radiated to Ambient: kW (BTUM)	144 (8,165)
Fan Power: kW (hp)	36.7 (49.2)

// Air Requirements

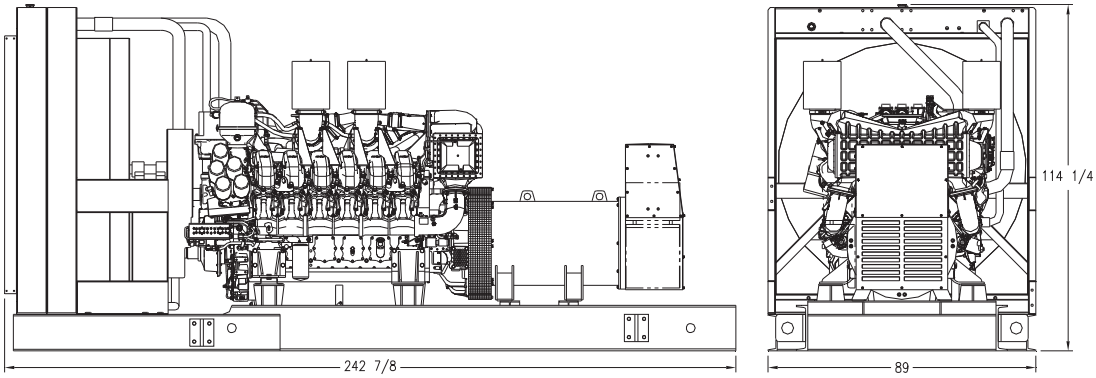
Aspirating: *m^3/min (SCFM)	138 (4,873)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,416 (49,997)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	525 (18,414)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	425 (797)
Gas Volume at Stack Temp: m^3/min (CFM)	336 (11,866)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,170 x 2,260 x 2,900 mm (242.88 x 89 x 114.25 in)	13,786 kg (30,392 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	91.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.26	0.45	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V4000 DS1500

1500 kWe / 60 Hz / Standby
380 - 4160V

Reference MTU 12V4000 DS1500 (1400 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1500	1500	1500	1500
kVA	1875	1875	1875	1875
Amps	2852	2255	1804	260
skVA@30% Voltage Dip	3350	3500	4800	3900
Generator Model*	744RSL4054	742RSL4050	743RSS4290	743FSM4368
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 4000 Diesel Engine
- 57.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 4000 G43
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	57.2 (3,491)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,736 (2,328)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	260 (68.7)
Engine Jacket Water Capacity: L (gal)	160 (42.3)
After Cooler Water Capacity: L (gal)	40 (10.6)
System Coolant Capacity: L (gal)	583 (154)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	960 (254)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	420 (111)
At 75% of Power Rating: L/hr (gal/hr)	323 (85.3)
At 50% of Power Rating: L/hr (gal/hr)	226 (59.6)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,117 (295)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	640 (36,396)
Heat Rejection to After Cooler: kW (BTUM)	440 (25,022)
Heat Radiated to Ambient: kW (BTUM)	154 (8,755)
Fan Power: kW (hp)	36.7 (49.2)

// Air Requirements

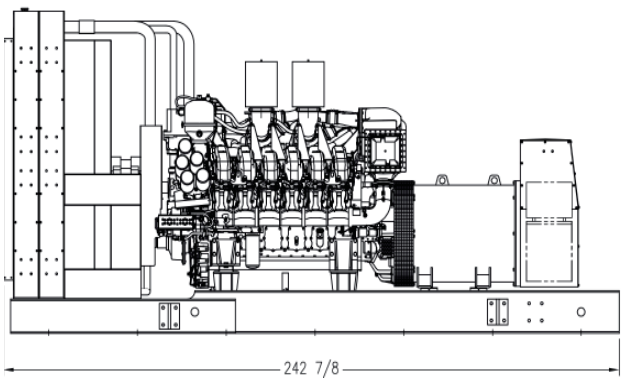
Aspirating: *m^3/min (SCFM)	144 (5,085)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,416 (49,997)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	563 (19,745)

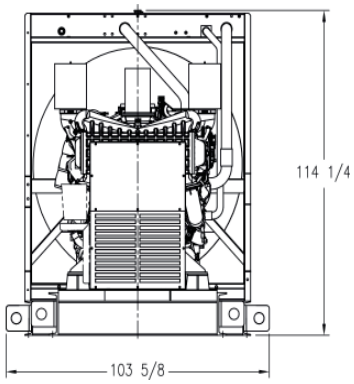
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	435 (815)
Gas Volume at Stack Temp: m^3/min (CFM)	342 (12,078)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS





Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,169 x 2,632 x 2,902 mm (242.9 x 103.6 x 114.3 in)	14,207 kg (31,322 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	92.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.26	0.45	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V4000 DS1750

1750 kWe / 60 Hz / Standby
380 - 4160V

Reference MTU 12V4000 DS1750 (1600 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1750	1750	1750	1750
kVA	2187	2187	2187	2187
Amps	3323	2631	2105	303
skVA@30%				
Voltage Dip	4200	4700	3600	4000
Generator Model*	744RSL4056	743RSL4052	744RSS4292	743FSM4370
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 4000 Diesel Engine
- 57.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories

// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 4000 G83
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	57.2 (3,491)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,910 (2,561)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	260 (68.7)
Engine Jacket Water Capacity: L (gal)	160 (42.3)
After Cooler Water Capacity: L (gal)	40 (10.6)
System Coolant Capacity: L (gal)	583 (154)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	960 (254)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	466 (123)
At 75% of Power Rating: L/hr (gal/hr)	352 (93)
At 50% of Power Rating: L/hr (gal/hr)	246 (65)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,117 (295)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	700 (39,808)
Heat Rejection to After Cooler: kW (BTUM)	500 (28,435)
Heat Radiated to Ambient: kW (BTUM)	157 (8,955)
Fan Power: kW (hp)	48.7 (65.3)

// Air Requirements

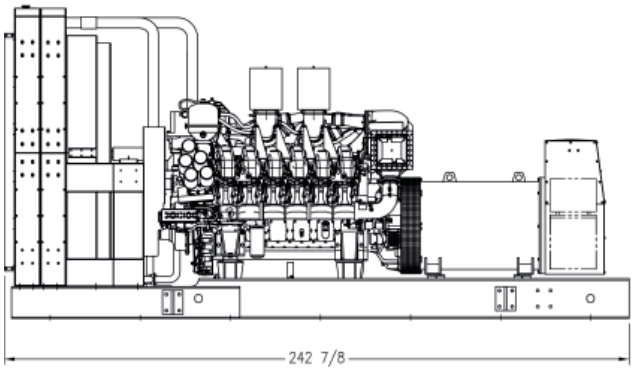
Aspirating: *m^3/min (SCFM)	144 (5,085)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,574 (55,587)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	575 (20,196)

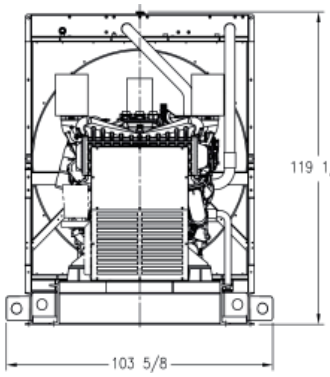
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	465 (869)
Gas Volume at Stack Temp: m^3/min (CFM)	366 (12,925)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS





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System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,169 x 2,632 x 3,029 mm (242.9 x 103.6 x 119.3 in)	14,511 kg (31,992 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	93.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.39	0.52	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V4000 DS2000

2000 kWe / 60 Hz / Standby
380 - 13.8kV

Reference MTU 16V4000 DS2000 (1800 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2000	2000	2000	2000	2000	2000	2000
kVA	2500	2500	2500	2500	2500	2500	2500
Amps	3803	3007	2406	347	116	109	105
skVA@30% Voltage Dip	4300	5800	3600	5100	3900	4250	4583
Generator Model	744RSL4176	744RSL4054	744RSS4292	744FSM4374	1020FDH1242	1020FDH1242	1020FDH1242
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V4000 Diesel Engine
- 76.3 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V4000G43
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	76.3 (4,656)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,280 (3,058)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	300 (79.3)
Engine Jacket Water Capacity: L (gal)	175 (46.2)
After Cooler Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	651 (172)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,200 (317)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	558 (147.3)
At 75% of Power Rating: L/hr (gal/hr)	426 (112.6)
At 50% of Power Rating: L/hr (gal/hr)	299 (78.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,350 (357)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	840 (47,770)
Heat Rejection to After Cooler: kW (BTUM)	610 (34,690)
Heat Radiated to Ambient: kW (BTUM)	184 (10,478)
Fan Power: kW (hp)	99.4 (133.2)

// Air Requirements

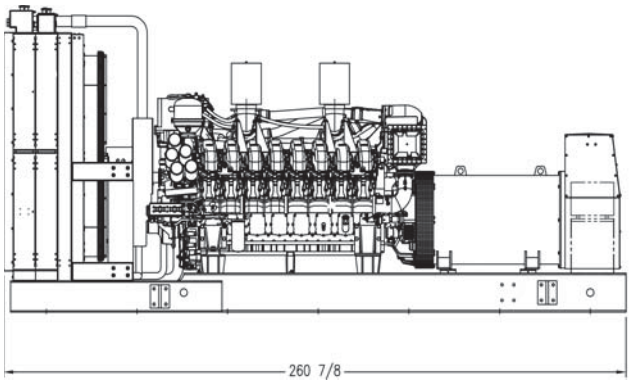
Aspirating: *m^3/min (SCFM)	186 (6,569)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,072 (73,173)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	673 (23,631)

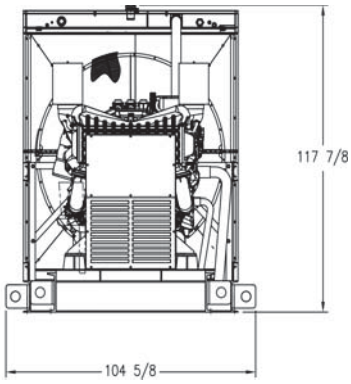
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	480 (896)
Gas Volume at Stack Temp: m^3/min (CFM)	456 (16,103)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS





Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,626 x 2,657 x 2,994 mm (260.9 x 104.6 x 117.9 in)	16,477 kg (36,326 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	94.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.38	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V4000 DS2250

2250 kWe / 60 Hz / Standby
380 - 13.8kV

Reference MTU 16V4000 DS2250 (2045 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2250	2250	2250	2250	2250	2250	2250
kVA	2812	2812	2812	2812	2812	2812	2812
Amps	4273	3383	2706	390	130	123	117
skVA@30% Voltage Dip	3625	8400	3900	5000	4120	4120	4900
Generator Model	1020FDL1102	744RSL4058	1020FDS1120	744FSM4376	1020FDH1246	1020FDH1244	1020FDH1246
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	4 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V4000 Diesel Engine
- 76.3 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V4000G83
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	76.3 (4,656)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,500 (3,351)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	300 (79.3)
Engine Jacket Water Capacity: L (gal)	175 (46.2)
After Cooler Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	651 (172)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,200 (317)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	617 (163)
At 75% of Power Rating: L/hr (gal/hr)	467 (123)
At 50% of Power Rating: L/hr (gal/hr)	325 (86)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,350 (357)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	930 (52,888)
Heat Rejection to After Cooler: kW (BTUM)	680 (38,671)
Heat Radiated to Ambient: kW (BTUM)	206 (11,711)
Fan Power: kW (hp)	99.4 (133.2)

// Air Requirements

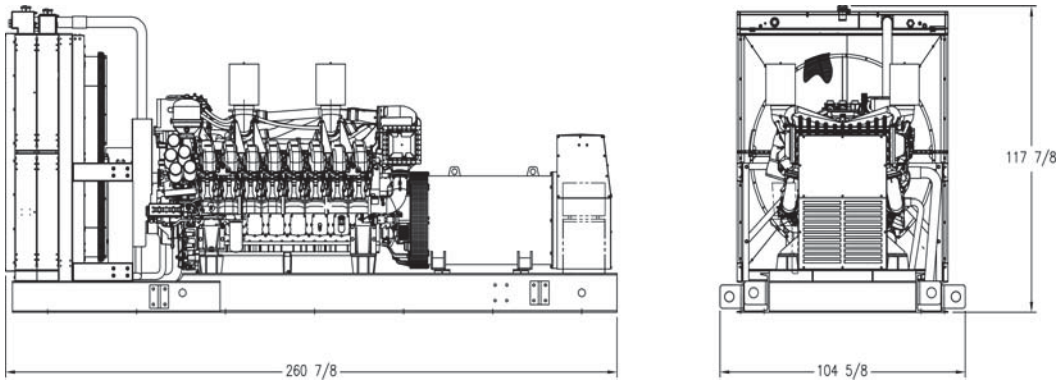
Aspirating: *m^3/min (SCFM)	192 (6,780)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,041 (72,064)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	752 (26,412)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	505 (941)
Gas Volume at Stack Temp: m^3/min (CFM)	504 (17,799)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,626 x 2,657 x 2,994 mm (260.9 x 104.6 x 117.9 in)	16,994 kg (37,466 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	93.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.07	0.52	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V4000 DS2500

2500 kWe / 60 Hz / Standby
380 - 13.8kV

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2500	2500	2500	2500	2500	2500	2500
kVA	3125	3125	3125	3125	3125	3125	3125
Amps	4754	3759	3007	434	145	137	131
skVA@30% Voltage Dip	3400	4625	5200	5800	4300	4750	5350
Generator Model	1020FDL1104	1020FDL1102	1020FDS1122	1020FDM1180	1020FDH1248	1020FDH1248	1030FDH1250
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V4000 Diesel Engine
- 76.3 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
2 Bearings, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V4000G83L
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	76.3 (4,656)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,740 (3,673)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	300 (79.3)
Engine Jacket Water Capacity: L (gal)	458 (121)
After Cooler Water Capacity: L (gal)	254 (67)
System Coolant Capacity: L (gal)	712 (188)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,200 (317)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	693 (183)
At 75% of Power Rating: L/hr (gal/hr)	515 (136)
At 50% of Power Rating: L/hr (gal/hr)	356 (94)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	43 (110)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,350 (357)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	1,115 (63,408)
Heat Rejection to After Cooler: kW (BTUM)	750 (42,653)
Heat Radiated to Ambient: kW (BTUM)	209 (11,537)
Fan Power: kW (hp)	108.4 (145.3)

// Air Requirements

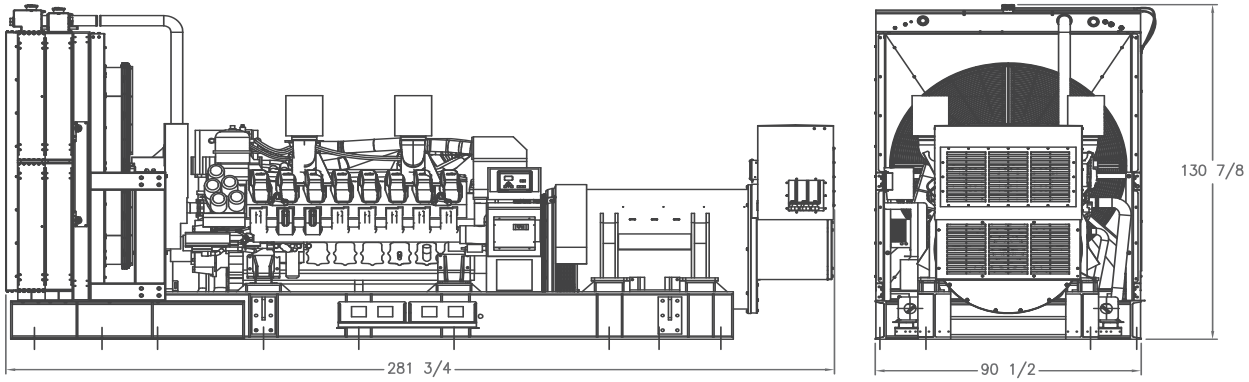
Aspirating: *m^3/min (SCFM)	222 (7,840)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,457 (86,760)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	741 (26,340)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	515 (959)
Gas Volume at Stack Temp: m^3/min (CFM)	600 (21,189)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	7,156 x 2,299 x 3,324 mm (281.75 x 90.5 x 130.88 in)	22,045 kg (48,600 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	93.6

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.95	0.67	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS2500

2500 kWe / 60 Hz / Standby
380 - 13.8kV

Reference MTU 20V4000 DS2500 (2250 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2500	2500	2500	2500	2500	2500	2500
kVA	3125	3125	3125	3125	3125	3125	3125
Amps	4754	3759	3007	434	145	137	131
skVA@30% Voltage Dip	3400	4625	5200	5800	4300	4750	5350
Generator Model	1020FDL1104	1020FDL1102	1020FDS1122	1020FDM1180	1020FDH1248	1020FDH1248	1030FDH1250
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
2 Bearings, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V4000G43 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,740 (3,673)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	814 (215)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	636 (168)
At 75% of Power Rating: L/hr (gal/hr)	507 (134)
At 50% of Power Rating: L/hr (gal/hr)	363 (96)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	54 (129)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	940 (53,456)
Heat Rejection to After Cooler: kW (BTUM)	630 (35,827)
Heat Radiated to Ambient: kW (BTUM)	209 (11,895)
Fan Power: kW (hp)	87.5 (117.3)

// Air Requirements

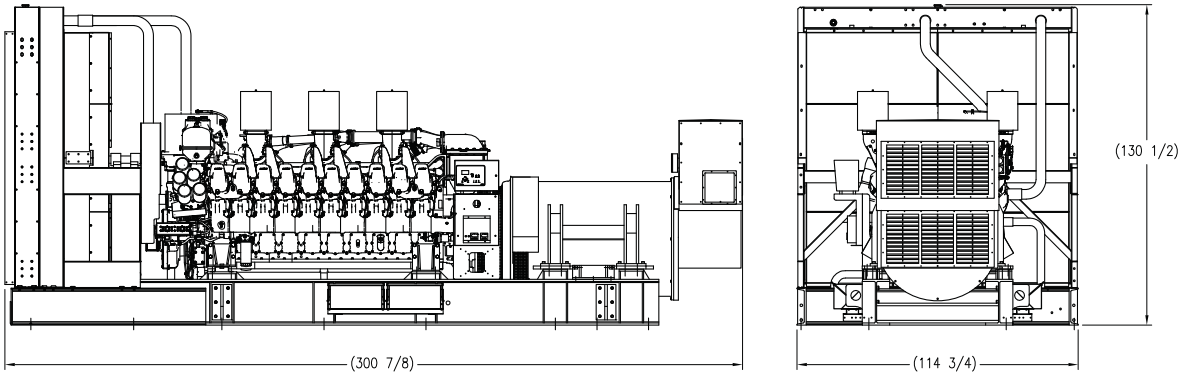
Aspirating: *m^3/min (SCFM)	225 (7,946)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,895 (102,247)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	784 (27,686)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	455 (851)
Gas Volume at Stack Temp: m^3/min (CFM)	540 (19,070)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	7,640 x 2,915 x 3,310 mm (300.88 x 114.75 x 130.5 in)	26,941 kg (59,394 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	97.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
6.12	0.37	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS2800

2800 kWe / 60 Hz / Standby
380 - 13.8kV

Reference MTU 20V4000 DS2800 (2500 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2800	2800	2800	2800	2800	2800	2800
kVA	3500	3500	3500	3500	3500	3500	3500
Amps	5324	4210	3368	486	162	153	146
skVA@30% Voltage Dip	4000	5400	5875	5250	5125	4875	6000
Generator Model	1030FDL1110	1020FDL1106	1020FDS1124	1020FDM1182	1030FDH1254	1030FDH1252	1030FDH1254
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
2 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V4000G83 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	3,010 (4,035)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	860 (227)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	704 (186)
At 75% of Power Rating: L/hr (gal/hr)	553 (146)
At 50% of Power Rating: L/hr (gal/hr)	394 (104)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	48 (118)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	1,040 (59,143)
Heat Rejection to After Cooler: kW (BTUM)	740 (42,083)
Heat Radiated to Ambient: kW (BTUM)	237 (13,475)
Fan Power: kW (hp)	60.6 (81.3)

// Air Requirements

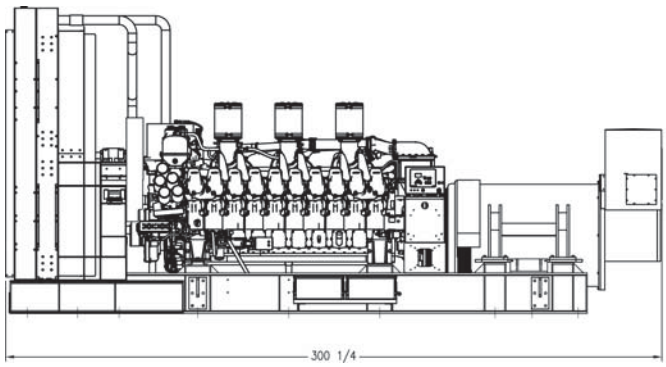
Aspirating: *m^3/min (SCFM)	240 (8,476)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	3,082 (108,843)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	843 (29,603)

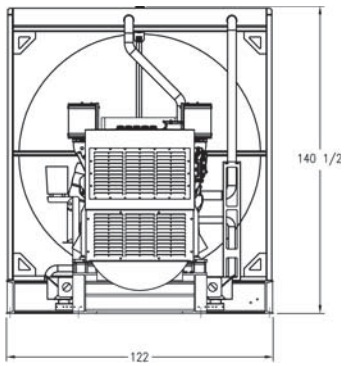
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	470 (878)
Gas Volume at Stack Temp: m^3/min (CFM)	594 (20,977)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS





Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	7,626 x 3,099 x 3,569 mm (300.3 x 122 x 140.5 in)	28,149 kg (62,056 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	97.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.95	0.37	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS3000

3000 kWe / 60 Hz / Standby
380 - 13.8kV

Reference MTU 20V4000 DS3000 (2800 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	3000	3000	3000	3000	3000	3000	3000
kVA	3750	3750	3750	3750	3750	3750	3750
Amps	5704	4511	3609	520	174	164	157
skVA@30% Voltage Dip	4000	5400	6125	5250	5125	5625	6000
Generator Model	1030FDL1110	1030FDL1108	1030FDS1126	1020FDM1184	1030FDH1254	1030FDH1254	1030FDH1254
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
2 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V4000G83L 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	3,490 (4,678)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	860 (227)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	784 (207)
At 75% of Power Rating: L/hr (gal/hr)	594 (157)
At 50% of Power Rating: L/hr (gal/hr)	413 (109)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	47 (117)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	1,300 (73,929)
Heat Rejection to After Cooler: kW (BTUM)	970 (55,162)
Heat Radiated to Ambient: kW (BTUM)	230 (13,080)
Fan Power: kW (hp)	60.6 (81.3)

// Air Requirements

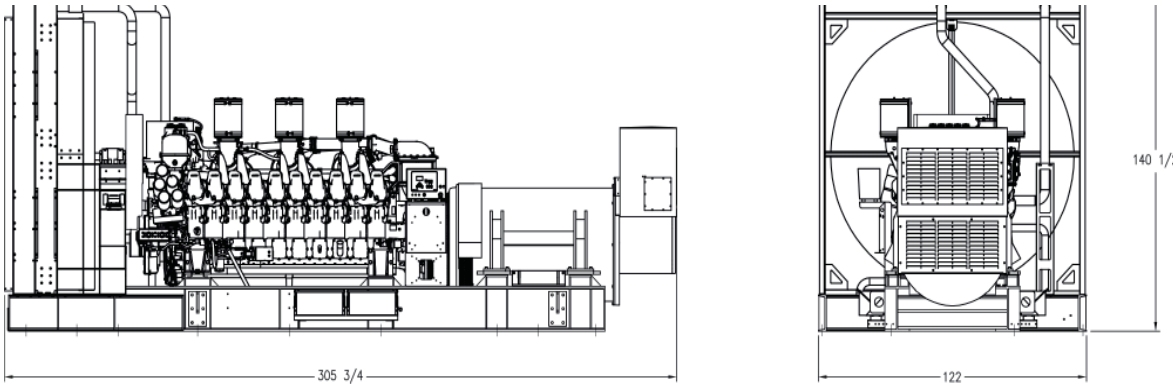
Aspirating: *m^3/min (SCFM)	264 (9,323)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	3,082 (108,843)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	888 (31,359)

* Air density = 1.184 kg/m (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	525 (977)
Gas Volume at Stack Temp: m^3/min (CFM)	702 (24,791)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	7,766 x 3,099 x 3,569 mm (305.8 x 122 x 140.5 in)	28,357 kg (62,515 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	94.6

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.1	0.6	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS3250

3250 kWe / 60 Hz / Standby
480 - 13.8kV

SYSTEM RATINGS

Standby

Voltage (L-L)	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	3250	3250	3250	3250	3250	3250
kVA	4062	4062	4062	4062	4062	4062
Amps	4886	3909	563	188	177	170
skVA@30% Voltage Dip	5500	6125	6300	6300	6850	7400
Generator Model	1030FDL1110	1030FDS1128	1030FDM1188	1040FDH1256	1040FDH1256	1040FDH1256
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
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// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
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Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Max. Standby Temperature Rise
2 Bearings, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V4000G83L 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	3,490 (4,678)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	860 (227)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	844 (223)
At 75% of Power Rating: L/hr (gal/hr)	644 (170)
At 50% of Power Rating: L/hr (gal/hr)	447 (118)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	43 (108)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	1,300 (73,929)
Heat Rejection to After Cooler: kW (BTUM)	970 (55,163)
Heat Radiated to Ambient: kW (BTUM)	237 (13,472)
Fan Power: kW (hp)	60.6 (81.3)

// Air Requirements

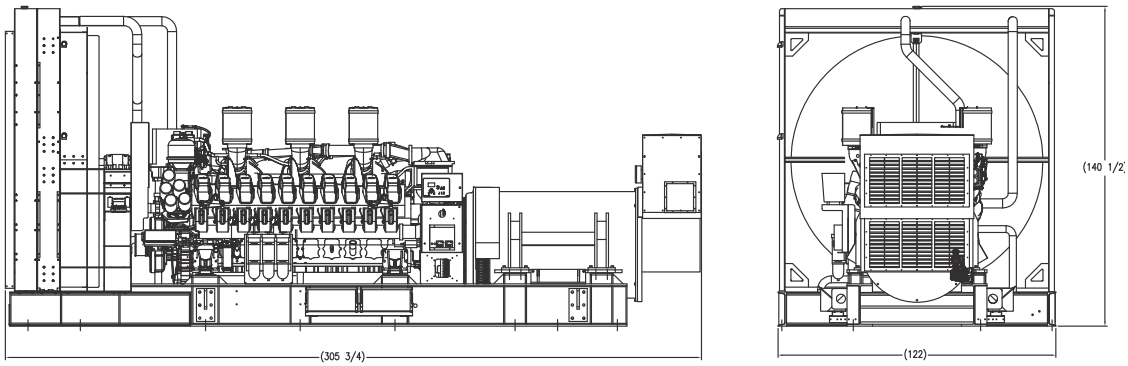
Aspirating: *m^3/min (SCFM)	264 (9,323)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	3,082 (108,843)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	866 (30,384)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	525 (977)
Gas Volume at Stack Temp: m^3/min (CFM)	702 (24,791)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	7,766 x 3,099 x 3,569 mm (305.75 x 122 x 140.5 in)	29,651 kg (65,369 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	95.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.1	0.6	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values).
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V4000 DS1250

1135 kWe / 60 Hz / Data Center Continuous Power
380 - 4160V

Reference: MTU 12V4000 DS1250 (1250 kWe) for Standby Rating Technical Data
MTU 12V4000 DS1250 (1125 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Data Center Continuous Power

Voltage (L-L)	380V	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1135	1135	1135	1135
kVA	1419	1419	1419	1419
Amps	2156	1707	1365	197
skVA@30% Voltage Dip	2700	3100	4650	3100
Generator Model*	743RSL4052	742RSL4048	743RSS4288	742FSM4366
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Data Center Continuous Power (DCCP) rating is optimized for data center applications
- Uptime Institute compliant for Tier III and IV data centers
- No runtime limitation
- 100% Load Factor
- 10% Overload Available
- Accepts Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 4000 Diesel Engine
- 57.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Centrifugal Oil Filtration
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 4000 G43
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	57.2 (3,491)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,520 (2,038)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	260 (68.7)
Engine Jacket Water Capacity: L (gal)	160 (42.3)
After Cooler Water Capacity: L (gal)	40 (10.6)
System Coolant Capacity: L (gal)	583 (154)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	960 (254)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	309 (81.5)
At 75% of Power Rating: L/hr (gal/hr)	238 (62.9)
At 50% of Power Rating: L/hr (gal/hr)	176 (46.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,117 (295)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	504 (28,662)
Heat Rejection to After Cooler: kW (BTUM)	333 (18,937)
Heat Radiated to Ambient: kW (BTUM)	133 (7,562)
Fan Power: kW (hp)	36.7 (49.2)

// Air Requirements

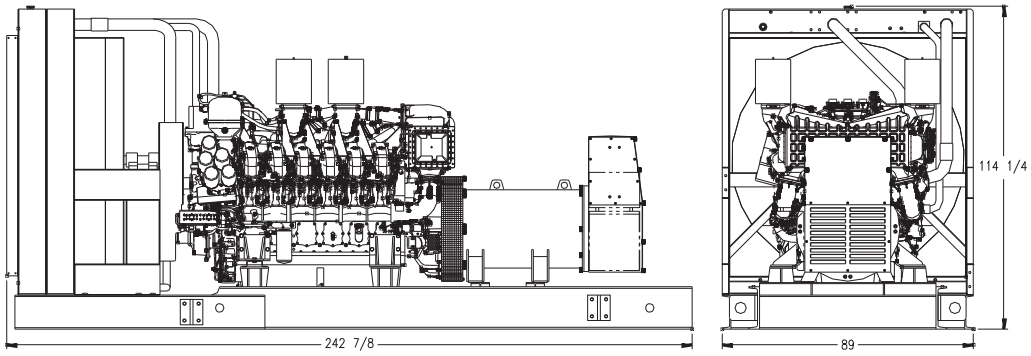
Aspirating: *m^3/min (SCFM)	126 (4,450)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,416 (49.997)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	486 (17,054)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	400 (752)
Gas Volume at Stack Temp: m^3/min (CFM)	306 (10,806)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,170 x 2,260 x 2,900 mm (242.88 x 89 x 114.25 in)	13,786 kg (30,392 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	DCCP Full Load
Level 0: Open Power Unit dB(A)	91.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.34	0.37	0.09

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Data Center Continuous Power (DCCP) ratings apply to data center installations where a utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 100%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V4000 DS1500

1400 kWe / 60 Hz / Data Center Continuous Power
380 - 4160V

Reference: MTU 12V4000 DS1500 (1500 kWe) for Standby Rating Technical Data
MTU 12V4000 DS1500 (1400 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Data Center Continous Power

Voltage (L-L)	380V	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1400	1400	1400	1400
kVA	1750	1750	1750	1750
Amps	2662	2105	1684	243
skVA@30% Voltage Dip	3350	3500	4800	3900
Generator Model*	744RSL4054	742RSL4050	743RSS4290	743FSM4368
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Data Center Continuous Power (DCCP) rating is optimized for data center applications
- Uptime Institute compliant for Tier III and IV data centers
- No runtime limitation
- 100% Load Factor
- 10% Overload Available
- Accepts Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 4000 Diesel Engine
- 57.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Centrifugal Oil Filtration
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 4000 G43
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	57.2 (3,491)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,520 (2,038)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	260 (68.7)
Engine Jacket Water Capacity: L (gal)	160 (42.3)
After Cooler Water Capacity: L (gal)	40 (10.6)
System Coolant Capacity: L (gal)	583 (154)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	960 (254)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	372 (98.2)
At 75% of Power Rating: L/hr (gal/hr)	285 (75.4)
At 50% of Power Rating: L/hr (gal/hr)	200 (52.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,117 (295)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	560 (31,847)
Heat Rejection to After Cooler: kW (BTUM)	370 (21,042)
Heat Radiated to Ambient: kW (BTUM)	144 (8,192)
Fan Power: kW (hp)	36.7 (49.2)

// Air Requirements

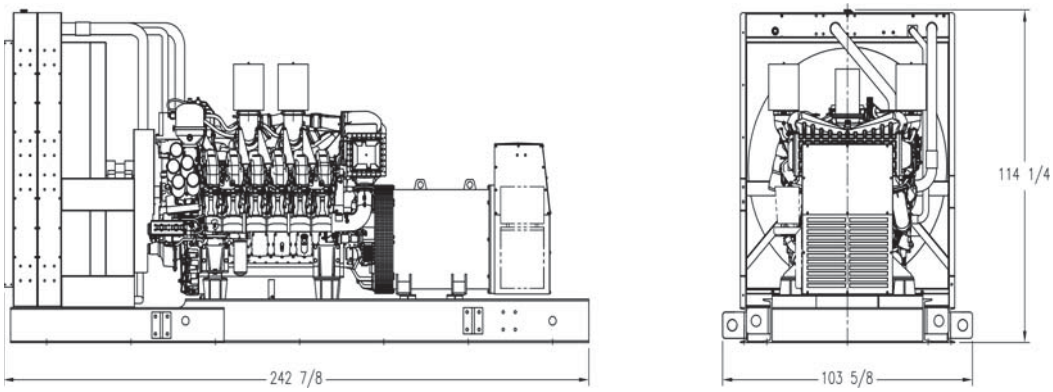
Aspirating: *m^3/min (SCFM)	132 (4,662)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,416 (49,997)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	526 (18,475)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	410 (770)
Gas Volume at Stack Temp: m^3/min (CFM)	312 (11,018)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,169 x 2,632 x 2,902 mm (242.9 x 103.6 x 114.3 in)	14,207 kg (31,322 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	DCCP Full Load
Level 0: Open Power Unit dB(A)	92.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.34	0.37	0.09

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Data Center Continuous Power (DCCP) ratings apply to data center installations where a utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 100%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V4000 DS1750

1600 kWe / 60 Hz / Data Center Continuous Power
380 - 4160V

Reference: MTU 12V4000 DS1750 (1750 kWe) for Standby Rating Technical Data
MTU 12V4000 DS1750 (1600 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Data Center Continuous Power

Voltage (L-L)	380V	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1600	1600	1600	1600
kVA	2000	2000	2000	2000
Amps	3042	2406	1925	278
skVA@30% Voltage Dip	4200	4700	3600	4000
Generator Model*	744RSL4056	743RSL4052	744RSS4292	743FSM4370
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Data Center Continuous Power (DCCP) rating is optimized for data center applications
- Uptime Institute compliant for Tier III and IV data centers
- No runtime limitation
- 100% Load Factor
- 10% Overload Available
- Accepts Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 4000 Diesel Engine
- 57.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Centrifugal Oil Filtration
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 4000 G83
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	57.2 (3,491)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,736 (2,328)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	260 (68.7)
Engine Jacket Water Capacity: L (gal)	160 (42.3)
After Cooler Water Capacity: L (gal)	40 (10.6)
System Coolant Capacity: L (gal)	583 (154)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	960 (254)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	420 (111)
At 75% of Power Rating: L/hr (gal/hr)	322 (85)
At 50% of Power Rating: L/hr (gal/hr)	227 (60)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,117 (295)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	640 (36,396)
Heat Rejection to After Cooler: kW (BTUM)	440 (25,022)
Heat Radiated to Ambient: kW (BTUM)	145.1 (8,254)
Fan Power: kW (hp)	48.7 (65.3)

// Air Requirements

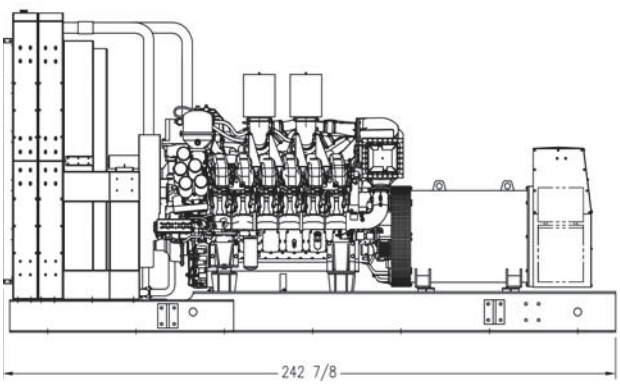
Aspirating: *m^3/min (SCFM)	138 (4,873)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,574 (55,587)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	530 (18,616)

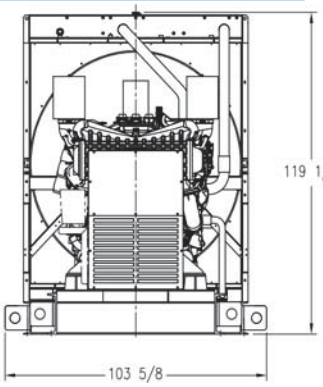
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	435 (815)
Gas Volume at Stack Temp: m^3/min (CFM)	342 (12,078)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS





Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,169 x 2,632 x 3,029 mm (242.9 x 103.6 x 119.3 in)	14,511 kg (31,992 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	DCCP Full Load
Level 0: Open Power Unit dB(A)	92.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.26	0.45	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Data Center Continuous Power (DCCP) ratings apply to data center installations where a utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 100%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V4000 DS2000

1825 kWe / 60 Hz / Data Center Continuous Power
380 - 13.8kV

Reference: MTU 16V4000 DS2000 (1825 kWe) for Standby Rating Technical Data
MTU 16V4000 DS2000 (1800 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Data Center Continuous Power

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	1825	1825	1825	1825	1825	1825	1825
kVA	2281	2281	2281	2281	2281	2281	2281
Amps	3466	2744	2195	317	106	100	95
skVA@30% Voltage Dip	4300	5800	3600	5100	3900	4250	4583
Generator Model	744RSL4176	744RSL4054	744RSS4292	744FSM4374	1020FDH1242	1020FDH1242	1020FDH1242
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Data Center Continuous Power (DCCP) rating is optimized for data center applications
- Uptime Institute compliant for Tier III and IV data centers
- No runtime limitation
- 100% Load Factor
- 10% Overload Available
- Accepts Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V4000 Diesel Engine
- 76.3 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Centrifugal Oil Filtration
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V4000G43
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	76.3 (4,656)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,020 (2,709)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	300 (79.3)
Engine Jacket Water Capacity: L (gal)	175 (46.2)
After Cooler Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	651 (172)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,200 (317)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	487 (128.6)
At 75% of Power Rating: L/hr (gal/hr)	381 (100.7)
At 50% of Power Rating: L/hr (gal/hr)	265 (69.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,350 (357)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	740 (42,083)
Heat Rejection to After Cooler: kW (BTUM)	520 (29,572)
Heat Radiated to Ambient: kW (BTUM)	173.6 (9,871)
Fan Power: kW (hp)	99.4 (133.2)

// Air Requirements

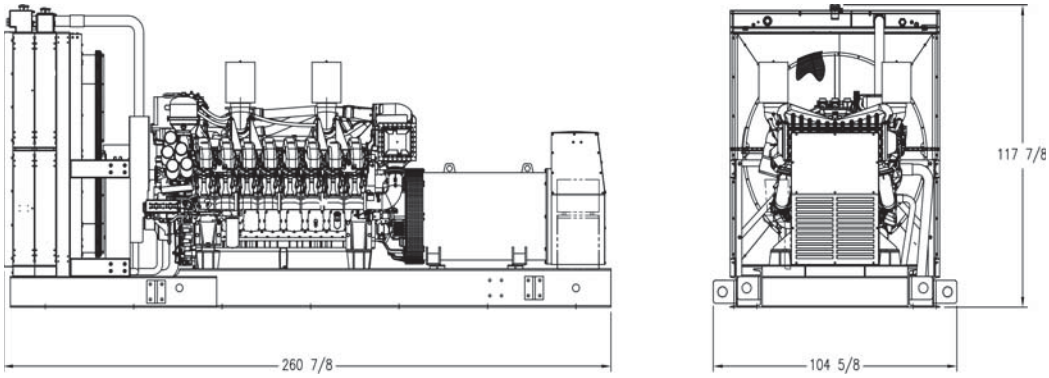
Aspirating: *m^3/min (SCFM)	180 (6,357)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,072 (73,173)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	634 (22,262)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	435 (815)
Gas Volume at Stack Temp: m^3/min (CFM)	426 (15,044)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,626 x 2,657 x 2,994 mm (260.9 x 104.6 x 117.9 in)	16,477 kg (36,326 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	DCCP Full Load
Level 0: Open Power Unit dB(A)	94.7

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.26	0.67	0.05

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values).
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Data Center Continuous Power (DCCP) ratings apply to data center installations where a utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 100%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V4000 DS2250

2045 kWe / 60 Hz / Data Center Continuous Power
380 - 13.8kV

Reference: MTU 16V4000 DS2250 (2250 kWe) for Standby Rating Technical Data
MTU 16V4000 DS2250 (2045 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Data Center Continuous Power

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2045	2045	2045	2045	2045	2045	2045
kVA	2556	2556	2556	2556	2556	2556	2556
Amps	3888	3078	2463	355	118	112	107
skVA@30% Voltage Dip	3625	8400	3900	5000	4120	4120	4900
Generator Model	1020FDL1102	744RSL4058	1020FDS1013	744FSM4376	1020FDH1246	1020FDH1244	1020FDH1246
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	4 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Data Center Continuous Power (DCCP) rating is optimized for data center applications
- Uptime Institute compliant for Tier III and IV data centers
- No runtime limitation
- 100% Load Factor
- 10% Overload Available
- Accepts Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V4000 Diesel Engine
- 76.3 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Centrifugal Oil Filtration
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V4000G83
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	76.3 (4,656)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,280 (3,056)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	300 (79.3)
Engine Jacket Water Capacity: L (gal)	175 (46.2)
After Cooler Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	651 (172)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,200 (317)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	558 (147)
At 75% of Power Rating: L/hr (gal/hr)	426 (113)
At 50% of Power Rating: L/hr (gal/hr)	299 (79)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,350 (357)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	840 (47,770)
Heat Rejection to After Cooler: kW (BTUM)	610 (34,690)
Heat Radiated to Ambient: kW (BTUM)	186.7 (10,615)
Fan Power: kW (hp)	99.4 (133.2)

// Air Requirements

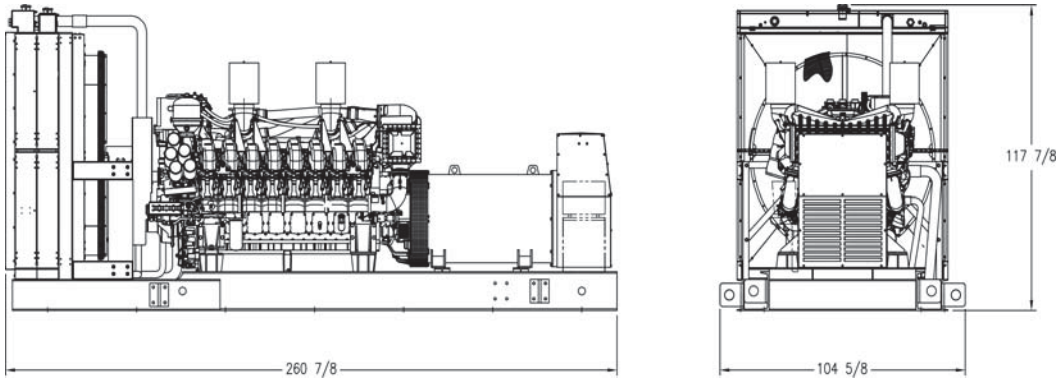
Aspirating: *m^3/min (SCFM)	180 (6,357)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,041 (72,064)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	682 (23,940)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	480 (896)
Gas Volume at Stack Temp: m^3/min (CFM)	456 (16,103)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	6,626 x 2,657 x 2,994 mm (260.9 x 104.6 x 117.9 in)	16,994 kg (37,466 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	DCCP Full Load
Level 0: Open Power Unit dB(A)	93.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.38	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Data Center Continuous Power (DCCP) ratings apply to data center installations where a utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 100%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS2500

2275 kWe / 60 Hz / Data Center Continuous Power
380 - 13.8kV

Reference: MTU 20V4000 DS2500 (2500 kWe) for Standby Rating Technical Data
MTU 20V4000 DS2500 (2250 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Data Center Continuous Power

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2275	2275	2275	2275	2275	2275	2275
kVA	2843	2843	2843	2843	2843	2843	2843
Amps	4320	3420	2736	394	131	124	119
skVA@30% Voltage Dip	3400	4625	5200	5800	4300	4750	5350
Generator Model	1020FDL1104	1020FDL1102	1020FDS1122	1020FDM1180	1020FDH1248	1020FDH1248	1020FDH1250
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Data Center Continuous Power (DCCP) rating is optimized for data center applications
- Uptime Institute compliant for Tier III and IV data centers
- No runtime limitation
- 100% Load Factor
- 10% Overload Available
- Accepts Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Centrifugal Oil Filtration
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
2 Bearings, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V4000G43 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,490 (3,338)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	814 (215)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	587 (155)
At 75% of Power Rating: L/hr (gal/hr)	462 (122)
At 50% of Power Rating: L/hr (gal/hr)	337 (89)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	54 (129)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	890 (50,613)
Heat Rejection to After Cooler: kW (BTUM)	580 (32,984)
Heat Radiated to Ambient: kW (BTUM)	203.6 (11,581)
Fan Power: kW (hp)	87.5 (117.3)

// Air Requirements

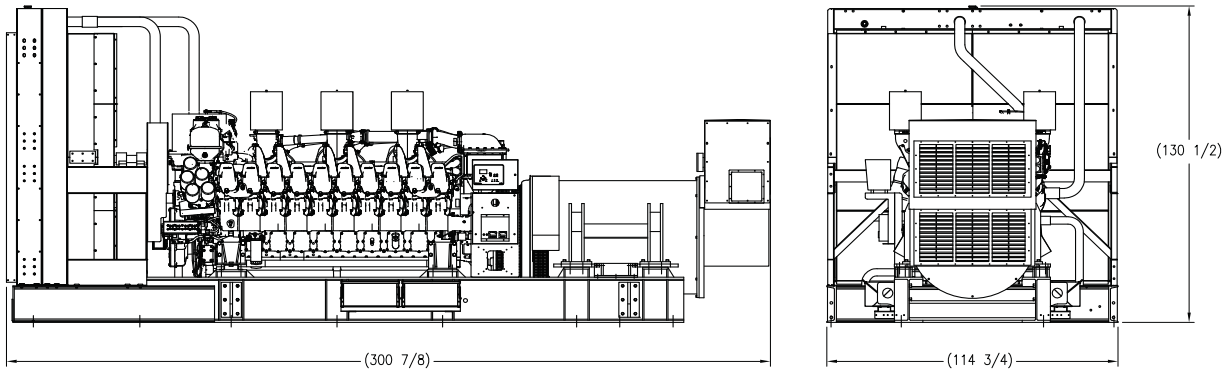
Aspirating: *m^3/min (SCFM)	228 (8,052)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,895 (102,247)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	744 (26,119)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	455 (851)
Gas Volume at Stack Temp: m^3/min (CFM)	534 (18,858)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	7,640 x 2,915 x 3,310 mm (300.88 x 114.75 x 130.5 in)	26,941 kg (59,394 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	DCCP Full Load
Level 0: Open Power Unit dB(A)	97.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
6.12	0.37	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values).
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Data Center Continuous Power (DCCP) ratings apply to data center installations where a utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 100%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS2800

2500 kWe / 60 Hz / Data Center Continuous Power
380 - 13.8kV

Reference: MTU 20V4000 DS2800 (2800 kWe) for Standby Rating Technical Data
MTU 20V4000 DS2800 (2500 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Data Center Continuous Power

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2500	2500	2500	2500	2500	2500	2500
kVA	3125	3125	3125	3125	3125	3125	3125
Amps	4754	3864	3091	446	149	141	134
skVA@30% Voltage Dip	4000	5400	5875	5250	5125	4875	6000
Generator Model	1030FDL1110	1020FDL1106	1020FDS1124	1020FDM1182	1030FDH1254	1030FDH1252	1030FDH1254
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Data Center Continuous Power (DCCP) rating is optimized for data center applications
- Uptime Institute compliant for Tier III and IV data centers
- No runtime limitation
- 100% Load Factor
- 10% Overload Available
- Accepts Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Centrifugal Oil Filtration
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
2 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V4000G83 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,740 (3,673)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	860 (227)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	647 (171)
At 75% of Power Rating: L/hr (gal/hr)	511 (135)
At 50% of Power Rating: L/hr (gal/hr)	367 (97)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	48 (118)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	970 (55,162)
Heat Rejection to After Cooler: kW (BTUM)	670 (38,102)
Heat Radiated to Ambient: kW (BTUM)	217.3 (12,360)
Fan Power: kW (hp)	60.6 (81.3)

// Air Requirements

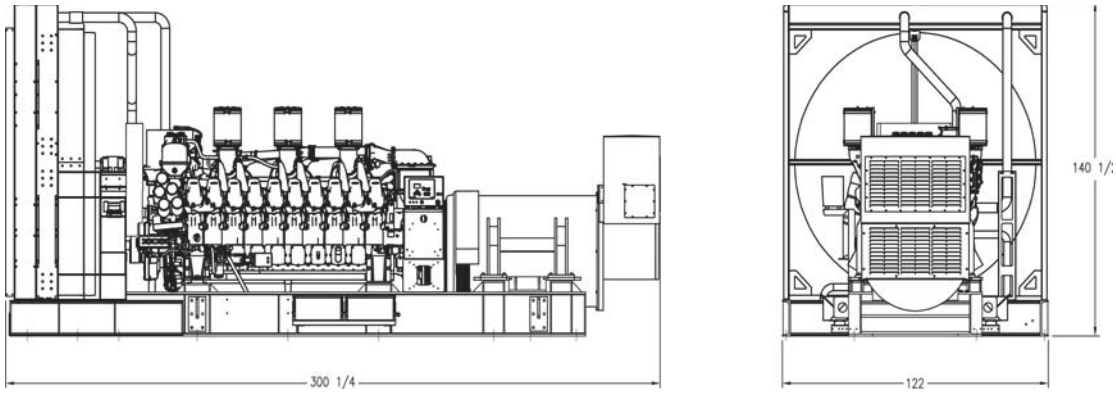
Aspirating: *m^3/min (SCFM)	240 (8,476)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	3,082 (108,843)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	794 (27,875)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	465 (869)
Gas Volume at Stack Temp: m^3/min (CFM)	576 (20,341)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	7,626 x 3,099 x 3,569 mm (300.3 x 122 x 140.5 in)	28,149 kg (62,056 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	DCCP Full Load
Level 0: Open Power Unit dB(A)	97.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.95	0.37	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values).
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Data Center Continuous Power (DCCP) ratings apply to data center installations where a utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 100%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS3000

2800 kWe / 60 Hz / Data Center Continuous Power
380 - 13.8kV

Reference: MTU 20V4000 DS3000 (3000 kWe) for Standby Rating Technical Data
MTU 20V4000 DS3000 (2800 kWe) for Prime Rating Technical Data

SYSTEM RATINGS

Data Center Continuous Power

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2800	2800	2800	2800	2800	2800	2800
kVA	3500	3500	3500	3500	3500	3500	3500
Amps	5324	4210	3368	486	162	153	146
skVA@30% Voltage Dip	4000	5400	6125	5250	5125	5625	6000
Generator Model	1030FDL1110	1030FDL1108	1030FDS1126	1020FDM1184	1030FDH1254	1030FDH1254	1030FDH1254
Temp Rise	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C	130 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Data Center Continuous Power (DCCP) rating is optimized for data center applications
- Uptime Institute compliant for Tier III and IV data centers
- No runtime limitation
- 100% Load Factor
- 10% Overload Available
- Accepts Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Centrifugal Oil Filtration
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
2 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V4000G83L 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	3,010 (4,035)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	860 (227)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	712 (188)
At 75% of Power Rating: L/hr (gal/hr)	553 (146)
At 50% of Power Rating: L/hr (gal/hr)	390 (103)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	47 (117)
Max. Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	1,040 (59,143)
Heat Rejection to After Cooler: kW (BTUM)	770 (43,789)
Heat Radiated to Ambient: kW (BTUM)	221.7 (12,606)
Fan Power: kW (hp)	60.6 (81.3)

// Air Requirements

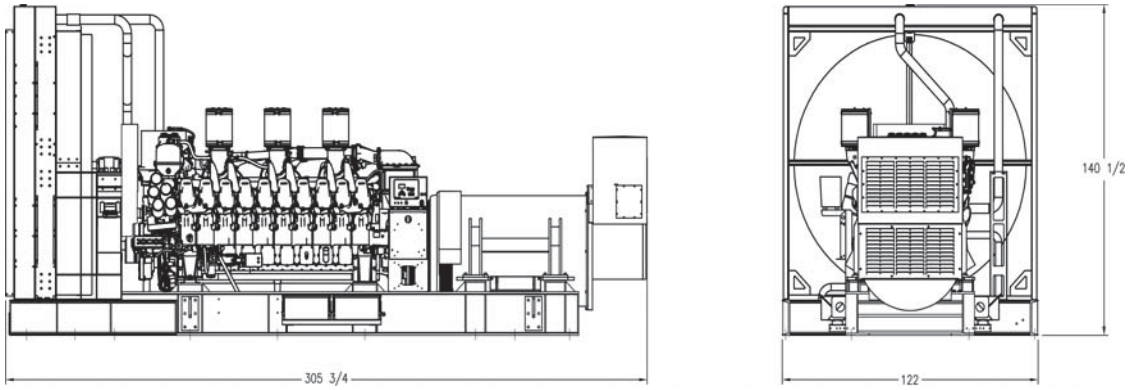
Aspirating: *m^3/min (SCFM)	252 (8,900)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	3,082 (108,843)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	799 (28,041)

* Air density = 1.184 kg/m (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	480 (896)
Gas Volume at Stack Temp: m^3/min (CFM)	624 (22,036)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	7,766 x 3,099 x 3,569 mm (305.8 x 122 x 140.5 in)	28,357 kg (62,515 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	DCCP Full Load
Level 0: Open Power Unit dB(A)	97.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.57	0.52	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values).
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Data Center Continuous Power (DCCP) ratings apply to data center installations where a utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 100%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 3R0096 DS30

27 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 3R0096 DS30 (30 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	208V**	240V**	380V**	480V**	600V**
Phase	1	3	3	3	3	3
PF	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	27	27	27	27	27	27
kVA	27	33	33	33	33	33
Amps	112.5	94	81	51	40	32
skVA@30% Voltage Dip	65	142	142	187	187	142
Generator Model	284PSL1700	284PSL1700	284PSL1700	284PSL1700	284PSL1700	284PSL5252
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 4 Interim Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **UL 2200 / CSA – Optional**
– UL 2200 Listed
– CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 3029TFG89 Diesel Engine
- 2.9 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	3029TFG89
Type	4-Cycle
Arrangement	3-Inline
Displacement: L (in^3)	2.9 (177)
Bore: cm (in)	10.6 (4.2)
Stroke: cm (in)	11 (4.3)
Compression Ratio	17.2:1
Rated RPM	1,800
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	31 (42)
Speed Regulation	±1%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	8 (2.1)
Engine Jacket Water Capacity: L (gal)	5.7 (1.5)
System Coolant Capacity: L (gal)	11.4 (3)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” ID/-6 JIC
Fuel Return Connection Size	1/4” ID/-6 JIC
Max. Fuel Lift: m (ft)	2 (6.6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	111.3 (29.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	9.1 (2.4)
At 75% of Power Rating: L/hr (gal/hr)	6.8 (1.8)
At 50% of Power Rating: L/hr (gal/hr)	4.9 (1.3)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)*
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	110 (29)
Heat Rejection to Coolant: kW (BTUM)	20.1 (1,144)
Heat Radiated to Ambient: kW (BTUM)	4.3 (245)
Fan Power: kW (hp)	0.70 (0.94)

*Installation of a gravity exhaust louver in a Level 3 enclosure will reduce the ambient capacity of the cooling system by 5 °C (9 °F).

// Air Requirements

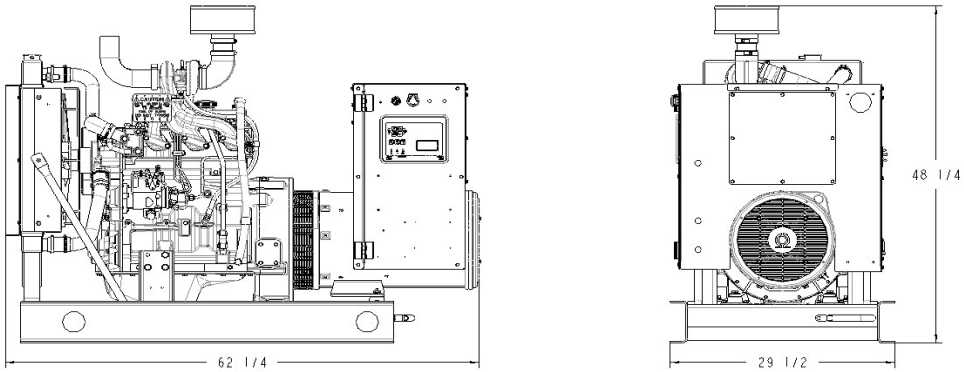
Aspirating: *m^3/min (SCFM)	3.6 (127)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	46.7 (1,636)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	15.8 (553)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	580 (1,076)
Gas Volume at Stack Temp: m^3/min (CFM)	8.3 (293)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,581 x 749 x 1,226 mm (62.25 x 29.5 x 48.25 in)	727 kg (1,600 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	71.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.41	0.44	0.11

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS40

40 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 4R0113 DS40 (40 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	208**	240V**	380V**	480V**	600V**
Phase	1	3	3	3	3	3
PF	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	40	40	40	40	40	40
kVA	40	50	50	50	50	50
Amps	167	139	120	76	60	48
skVA@30% Voltage Dip	63	128	128	128	172	92
Generator Model	361CSL1601	361CSL1601	361CSL1601	361CSL1601	361CSL1601	361PSL1632
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **UL 2200 / CSA – Optional**
– UL 2200 Listed
– CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045TF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045TF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19.0:1
Rated RPM	1,800
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	57 (76)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	18.9 (5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	56.4 (14.9)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	15.9 (4.2)
At 75% of Power Rating: L/hr (gal/hr)	12.5 (3.3)
At 50% of Power Rating: L/hr (gal/hr)	9.1 (2.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	33 (1,878)
Heat Radiated to Ambient: kW (BTUM)	5.8 (327)
Fan Power: kW (hp)	1.6 (2.2)

// Air Requirements

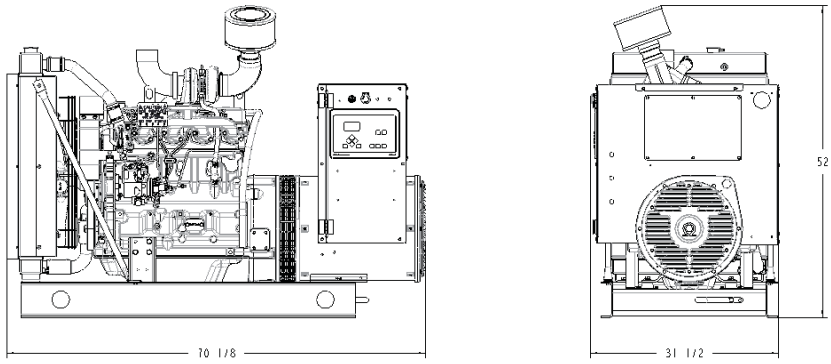
Aspirating: *m^3/min (SCFM)	5.1 (180)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	117 (4,088)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	21 (738)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	551 (1,024)
Gas Volume at Stack Temp: m^3/min (CFM)	18.3 (645)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,781 x 800 x 1,321 mm (70.13 x 31.5 x 52 in)	872 kg (1,920 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	80.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.8	0.69	0.22

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

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Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS50

45 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 4R0113 DS50 (50 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	240V**	208V**	240V**	380V**	480V**	600V**
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	45	45	45	45	45	45	45
kVA	45	45	56	56	56	56	56
Amps	187	187	156	135	85	67	54
skVA@30% Voltage Dip	127	117	129	129	172	172	92
Generator Model	362CSL1604	361CSL1612	361CSL1601	361CSL1601	361CSL1602	361CSL1601	361PSL1632
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **UL 2200 / CSA – Optional**
– UL 2200 Listed
– CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045TF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045TF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19:1
Rated RPM	1,800
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	57 (76)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	18.9 (5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	56.4 (14.9)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	15.9 (4.2)
At 75% of Power Rating: L/hr (gal/hr)	12.5 (3.3)
At 50% of Power Rating: L/hr (gal/hr)	9.1 (2.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	33 (1,878)
Heat Radiated to Ambient: kW (BTUM)	7.3 (415)
Fan Power: kW (hp)	1.6 (2.2)

// Air Requirements

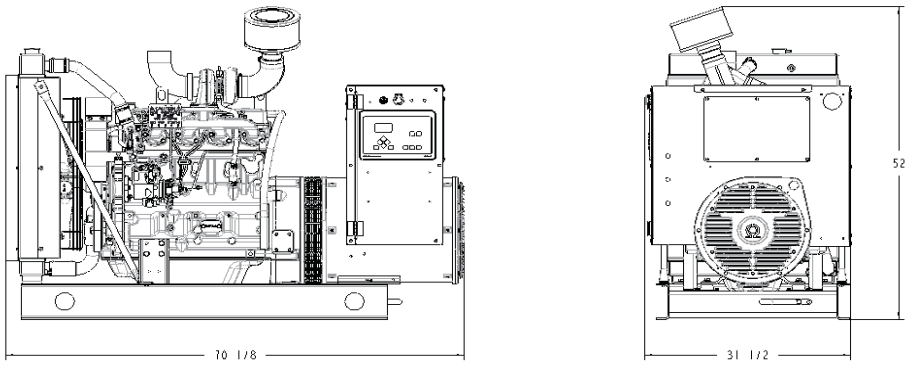
Aspirating: *m^3/min (SCFM)	5.1 (180)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	117 (4,088)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	27 (937)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	551 (1,024)
Gas Volume at Stack Temp: m^3/min (CFM)	18.3 (645)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,781 x 800 x 1,321 mm (70.13 x 31.5 x 52 in)	872 kg (1,920 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	80.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.8	0.69	0.22

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

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Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
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C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS60

55 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 4R0113 DS60 (60 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	240V**	240V**	208V**	240V**	380V**	480V**	600V**
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	55	55	55	55	55	55	55
kVA	55	55	68	68	68	68	68
Amps	229	229	190	165	104	82	66
skVA@30% Voltage Dip	127	130	200	200	172	172	172
Generator Model	362CSL1604	361CSL1613	361CSL1602	361CSL1602	361CSL1602	361CSL1601	361PSL1633
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **UL 2200 / CSA – Optional**
– UL 2200 Listed
– CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19.0:1
Rated RPM	1,800
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	67 (90)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	16.7 (4.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	113 (29.9)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	17.8 (4.7)
At 75% of Power Rating: L/hr (gal/hr)	13.6 (3.6)
At 50% of Power Rating: L/hr (gal/hr)	9.5 (2.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	33 (1,849)
Heat Rejection to Air to Air: kW (BTUM)	4 (233)
Heat Radiated to Ambient: kW (BTUM)	9.2 (522)
Fan Power: kW (hp)	1.16 (1.55)

// Air Requirements

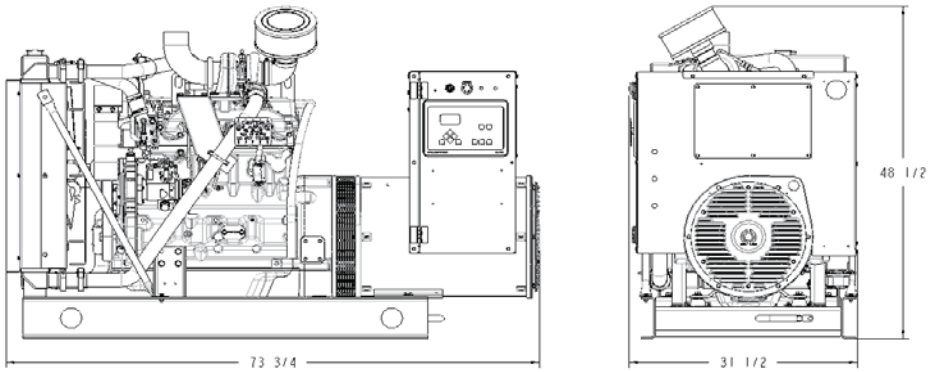
Aspirating: *m^3/min (SCFM)	5.3 (187)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	91 (3,162)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	34 (1,176)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	515 (959)
Gas Volume at Stack Temp: m^3/min (CFM)	13.5 (477)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,873 x 800 x 1,232 mm (73.75 x 31.5 x 48.5 in)	964 kg (2,120 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	76.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.5	0.97	0.32

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0120 DS80

72 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 4R0120 DS80 (80 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	72	72	72	72	72	72	72
kVA	72	72	90	90	90	90	90
Amps	300	300	250	217	137	108	87
skVA@30% Voltage Dip	133	311	216	216	165	288	236
Generator Model	362CSL1606	363CSL1617	362CSL1604	362CSL1604	362CSL1606	362CSL1604	362PSL1635
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

/// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM924LA Diesel Engine
- 4.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM924LA
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.8 (293)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	134 (180)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	15.8 (4.2)
Engine Jacket Water Capacity: L (gal)	7 (1.8)
System Coolant Capacity: L (gal)	20.8 (5.5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.7 (9)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	328.2 (86.7)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	17 (4.5)
At 75% of Power Rating: L/hr (gal/hr)	12.9 (3.4)
At 50% of Power Rating: L/hr (gal/hr)	9.1 (2.4)

* Based on 362CSL1604 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	33.6 (1,911)
Heat Rejection to Air to Air: kW (BTUM)	21.3 (1,211)
Heat Radiated to Ambient: kW (BTUM)	22.2 (1,263)
Fan Power: kW (hp)	3.3 (4.4)

// Air Requirements

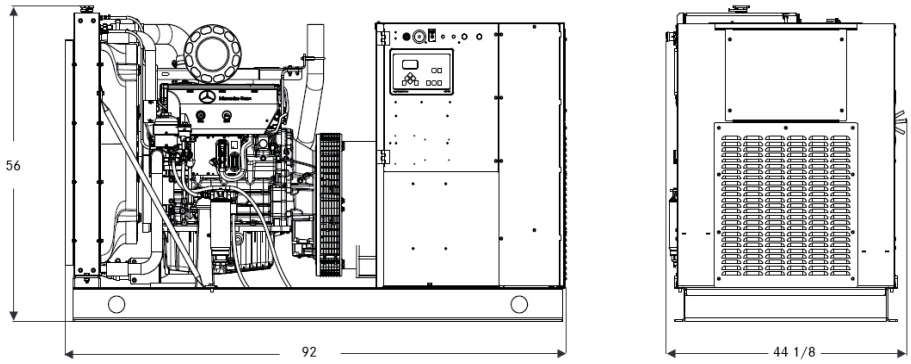
Aspirating: *m^3/min (SCFM)	8.2 (290)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	209 (7,381)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	81 (2,860)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	334 (634)
Gas Volume at Stack Temp: m^3/min (CFM)	20.3 (717)
Max. Allowable Back Pressure: kPa (in. H_20)	6.5 (26)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,336 x 1,121 x 1,422 mm (92 x 44.13 x 56 in)	1,769 kg (3,900 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	83

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.61	1.42	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS80

80 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 4R0113 DS80 (80 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	80	80	80	80	80	80
kVA	80	80	100	100	100	100
Amps	333	333	278	241	120	96
skVA@30% Voltage Dip	157	310	258	258	288	235
Generator Model	363CSL1607	363CSL1617	362CSL1606	362CSL1606	362CSL1604	362PSL1635
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF285 Diesel Engine
- 4.5 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF285
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	107 (144)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	12 (3.2)
Engine Jacket Water Capacity: L (gal)	12.5 (3.3)
System Coolant Capacity: L (gal)	20.1 (5.3)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	74.6 (19.7)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	23.1 (6.1)
At 75% of Power Rating: L/hr (gal/hr)	18.5 (4.9)
At 50% of Power Rating: L/hr (gal/hr)	13.2 (3.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Allowable Static Pressure on Rad. Exhaust: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	180 (48)
Heat Rejection to Coolant: kW (BTUM)	56 (3,190)
Heat Rejection to Air to Air: kW (BTUM)	17.6 (1,002)
Heat Radiated to Ambient: kW (BTUM)	10.5 (596)
Fan Power: kW (hp)	6.5 (8.7)

// Air Requirements

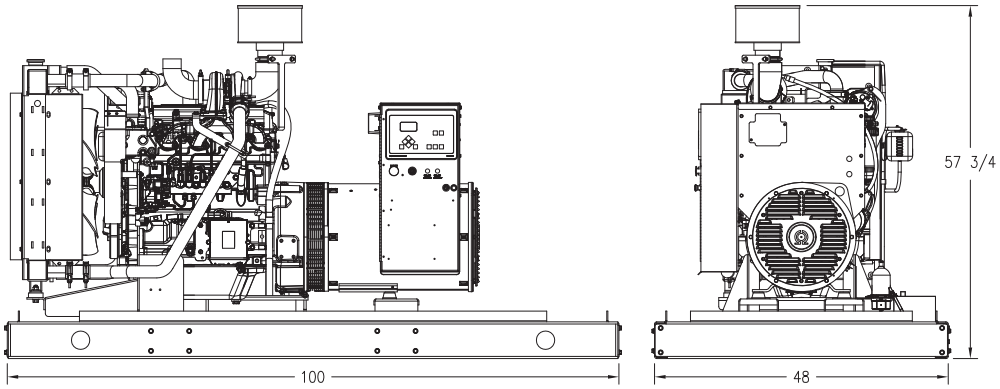
Aspirating: *m^3/min (SCFM)	7.7 (273)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	187 (6,587)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	38 (1,343)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	560 (1,040)
Gas Volume at Stack Temp: m^3/min (CFM)	21.2 (750)
Maximum Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,540 x 1,219 x 1,467 mm (100 x 48 x 57.75 in)	867 kg (1,912 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	83.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.97	0.72	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

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Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS100

90 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 4R0113 DS100 (100 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	90	90	90	90	90	90
kVA	90	90	112	112	112	112
Amps	375	375	312	270	135	108
skVA@30% Voltage Dip	136	193	323	323	430	333
Generator Model	431CSL6204	431PSL6224	363CSL1607	363CSL1607	363CSL1607	363PSL1658
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF285 Diesel Engine
- 4.5 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF285
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (8)
Compression Ratio	19:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	107 (144)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	12 (3.2)
Engine Jacket Water Capacity: L (gal)	12.5 (3.3)
System Coolant Capacity: L (gal)	20.1 (5.3)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	74.6 (19.7)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	28 (7.4)
At 75% of Power Rating: L/hr (gal/hr)	22.3 (5.9)
At 50% of Power Rating: L/hr (gal/hr)	15.9 (4.2)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	180 (48)
Heat Rejection to Coolant: kW (BTUM)	56 (3,190)
Heat Rejection to Air to Air: kW (BTUM)	17.6 (1,002)
Heat Radiated to Ambient: kW (BTUM)	13.8 (785)
Fan Power: kW (hp)	6.5 (8.7)

// Air Requirements

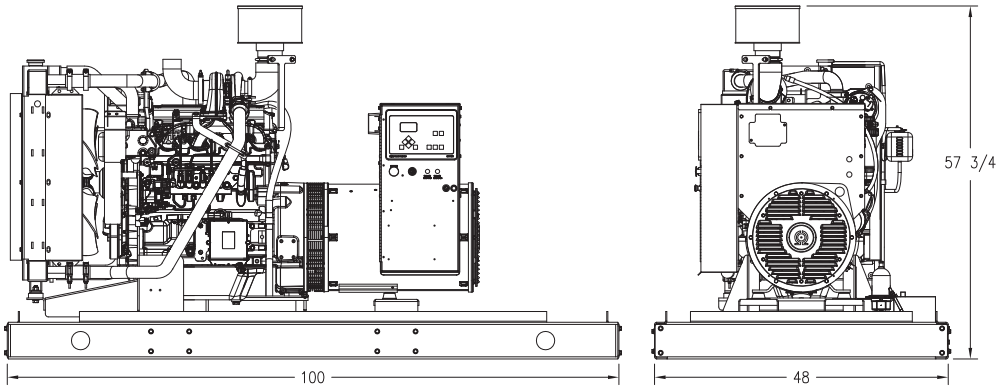
Aspirating: *m^3/min (SCFM)	7.7 (273)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	187 (6,587)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	50 (1,771)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	560 (1,040)
Gas Volume at Stack Temp: m^3/min (CFM)	21.2 (750)
Maximum Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,540 x 1,219 x 1,473 mm (100 x 48 x 58 in)	908 kg (2,002 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	83.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.97	0.72	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0120 DS100

90 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 4R0120 DS100 (100 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	90	90	90	90	90	90	90
kVA	90	90	113	113	113	113	113
Amps	375	375	312	271	171	135	108
skVA@30% Voltage Dip	145	311	258	258	269	344	272
Generator Model	363CSL1607	363CSL1617	362CSL1606	362CSL1606	363CSL1607	362CSL1606	362PSL1636
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM924LA Diesel Engine
- 4.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM924LA
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.8 (293)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	134 (180)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	15.8 (4.2)
Engine Jacket Water Capacity: L (gal)	7 (1.8)
System Coolant Capacity: L (gal)	20.8 (5.5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.7 (9)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	328.2 (86.7)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	21.2 (5.6)
At 75% of Power Rating: L/hr (gal/hr)	15.9 (4.2)
At 50% of Power Rating: L/hr (gal/hr)	11 (2.9)

* Based on 362CSL1606 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	41.4 (2,354)
Heat Rejection to Air to Air: kW (BTUM)	25.3 (1,439)
Heat Radiated to Ambient: kW (BTUM)	24.7 (1,405)
Fan Power: kW (hp)	3.3 (4.4)

// Air Requirements

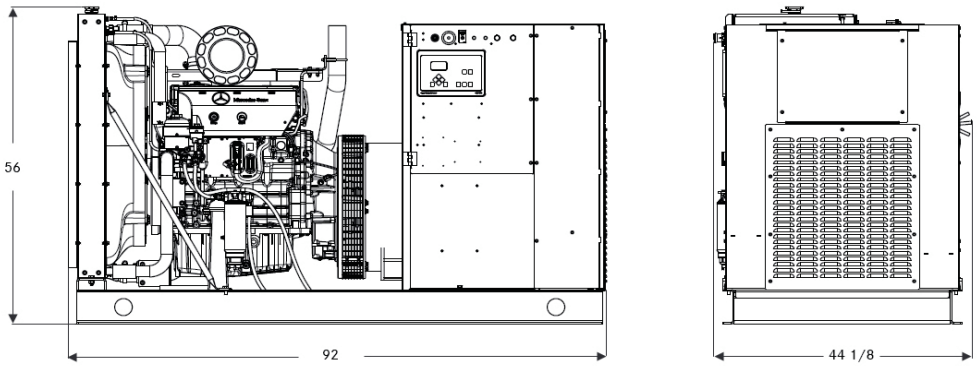
Aspirating: *m^3/min (SCFM)	8.9 (314)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	209 (7,381)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	90.2 (3,185)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	374 (706)
Gas Volume at Stack Temp: m^3/min (CFM)	22.8 (805)
Max. Allowable Back Pressure: kPa (in. H_20)	6.5 (26)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,336 x 1,121 x 1,422 mm (92 x 44.13 x 56 in)	1,769 kg (3,900 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	83.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.61	1.42	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS125

111 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 4R0113 DS125 (125 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	111	111	111	111	111	111
kVA	111	111	138	138	138	138
Amps	462	462	385	333	166	133
skVA@30% Voltage Dip	187	192	296	296	430	333
Generator Model	431PSL6206	431PSL6224	431CSL6202	431CSL6202	363PSL1607	363PSL1658
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF285 Diesel Engine
- 4.58 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF285
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	134 (180)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.2)
System Coolant Capacity: L (gal)	24 (6.2)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	90.1 (23.8)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	34.6 (9.2)
At 75% of Power Rating: L/hr (gal/hr)	26.9 (7.1)
At 50% of Power Rating: L/hr (gal/hr)	21.2 (5.6)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Allowable Static Pressure on Rad. Exhaust: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	180 (48)
Heat Rejection to Coolant: kW (BTUM)	64.1 (3,643)
Heat Rejection to Air to Air: kW (BTUM)	22.8 (1,295)
Heat Radiated to Ambient: kW (BTUM)	17.1 (972)
Fan Power: kW (hp)	10.6 (14.2)

// Air Requirements

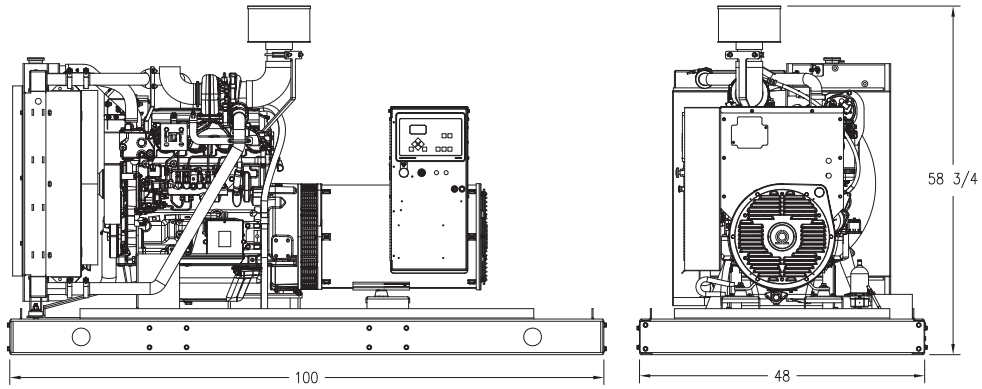
Aspirating: *m^3/min (SCFM)	8.8 (311)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	433 (15,303)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	61 (2,159)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	572 (1,062)
Gas Volume at Stack Temp: m^3/min (CFM)	24.6 (869)
Maximum Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,540 x 1,219 x 1,499 mm (100 x 48 x 59 in)	971 kg (2,140 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	86.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.02	0.16	0.01

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0120 DS125

111 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 4R0120 DS125 (125 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	111	111	111	111	111	111	111
kVA	111	111	139	139	139	139	139
Amps	463	463	385	334	211	167	134
skVA@30% Voltage Dip	184	196	296	296	191	430	334
Generator Model	431CSL6208	431PSL6224	431CSL6202	431CSL6202	431CSL6202	363CSL1607	363PSL1658
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM924LA Diesel Engine
- 4.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM924LA
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.8 (293)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	134 (180)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	15.8 (4.2)
Engine Jacket Water Capacity: L (gal)	7 (1.8)
System Coolant Capacity: L (gal)	20.8 (5.5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.7 (9)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	328.2 (86.7)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	25.7 (6.8)
At 75% of Power Rating: L/hr (gal/hr)	19.3 (5.1)
At 50% of Power Rating: L/hr (gal/hr)	12.9 (3.4)

* Based on 363CSL1607 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5))
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	49.5 (2,815)
Heat Rejection to Air to Air: kW (BTUM)	27.7 (1,575)
Heat Radiated to Ambient: kW (BTUM)	25.2 (1,433)
Fan Power: kW (hp)	3.3 (4.4)

// Air Requirements

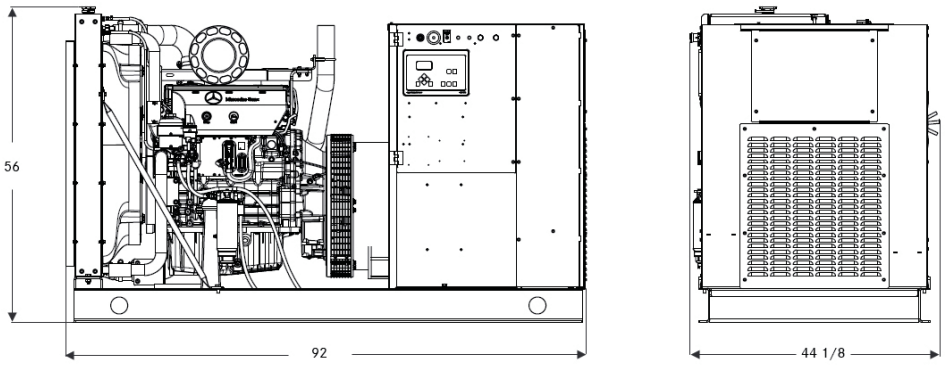
Aspirating: *m^3/min (SCFM)	9.2 (325)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	209 (7,381)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	92 (3,249)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	426 (799)
Gas Volume at Stack Temp: m^3/min (CFM)	24.9 (879)
Max. Allowable Back Pressure: kPa (in. H_20)	6.5 (26)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,336 x 1,121 x 1,422 mm (92 x 44.13 x 56 in)	1,769 kg (3,900 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	83.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.61	1.42	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0113 DS150

135 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R0113 DS150 (150 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	135	135	135	135	135	135
kVA	135	135	168	168	168	168
Amps	562	562	468	406	203	162
skVA@30% Voltage Dip	267	310	339	339	451	375
Generator Model	432CSL6210	431PSL6226	431CSL6204	431CSL6204	431CSL6204	431PSL6242
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6068HF285 Diesel Engine
- 6.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	6068HF285
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	6.8 (415)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	161 (216)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	20 (5.28)
Engine Jacket Water Capacity: L (gal)	12.3 (3.25)
System Coolant Capacity: L (gal)	22.7 (6)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	107.2 (28.3)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	40.1 (10.6)
At 75% of Power Rating: L/hr (gal/hr)	31.4 (8.3)
At 50% of Power Rating: L/hr (gal/hr)	22.7 (6)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Allowable Static Pressure on Rad. Exhaust: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	180 (48)
Heat Rejection to Coolant: kW (BTUM)	84.3 (4,792)
Heat Rejection to Air to Air: kW (BTUM)	30 (1,702)
Heat Radiated to Ambient: kW (BTUM)	21.8 (1,239)
Fan Power: kW (hp)	10.7 (14.3)

// Air Requirements

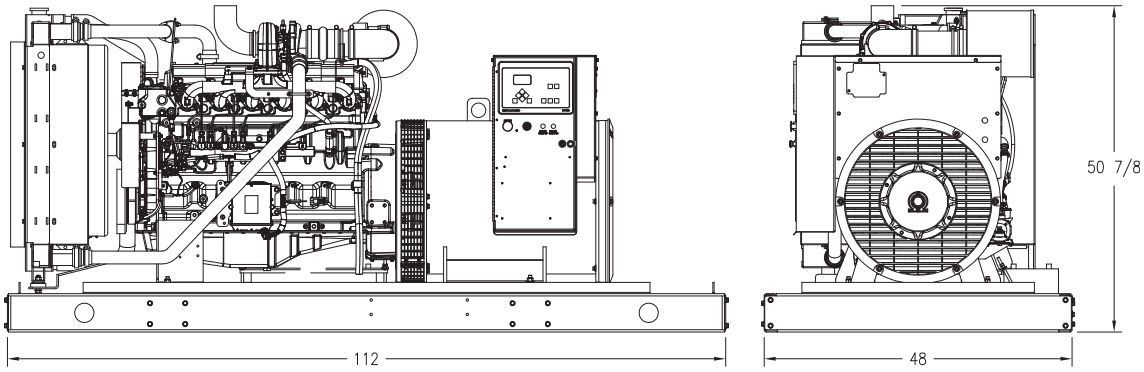
Aspirating: *m^3/min (SCFM)	13.3 (470)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	304 (10,732)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	80 (2,794)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	491 (916)
Gas Volume at Stack Temp: m^3/min (CFM)	33 (1,165)
Maximum Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,845 x 1,219 x 1,283 mm (112 x 48 x 50.5 in)	1,592 kg (3,510 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	86.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.77	0.4	0.06

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0120 DS150

135 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R0120 DS150 (150 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	135	135	135	135	135	135	135
kVA	135	135	169	169	169	169	169
Amps	563	563	468	406	256	203	162
skVA@30% Voltage Dip	188	196	296	296	282	394	394
Generator Model	431CSL6206	431PSL6224	431CSL6202	431CSL6202	431CSL6204	431CSL6202	431PSL6240
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM926LA Diesel Engine
- 7.2 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM926LA
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	7.2 (439)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	225 (302)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	29 (7.7)
Engine Jacket Water Capacity: L (gal)	10 (2.6)
System Coolant Capacity: L (gal)	24.1 (6.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8“ ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8“ ID
Max. Fuel Lift: m (ft)	2.6 (8.5)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	330.5 (87.3)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	36 (9.5)
At 75% of Power Rating: L/hr (gal/hr)	26.9 (7.1)
At 50% of Power Rating: L/hr (gal/hr)	18.5 (4.9)

* Based on 431CSL6202 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	72.7 (4,134)
Heat Rejection to Air to Air: kW (BTUM)	47.4 (2,696)
Heat Radiated to Ambient: kW (BTUM)	28.7 (1,632)
Fan Power: kW (hp)	15.6 (22.1)

// Air Requirements

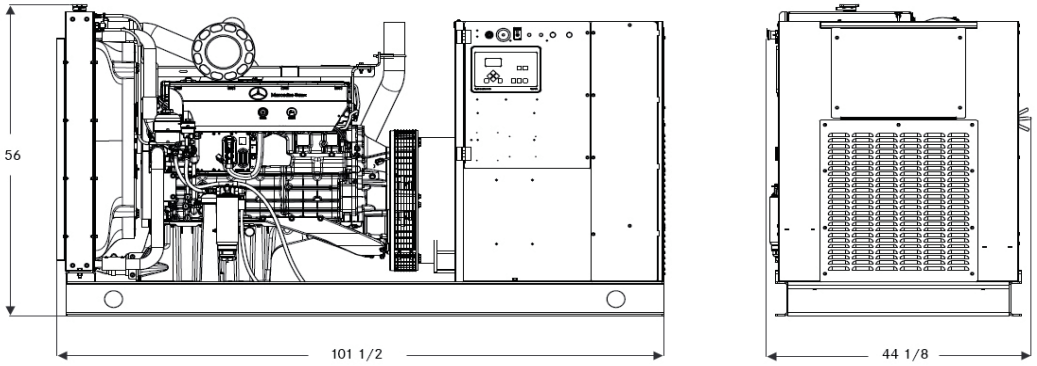
Aspirating: *m^3/min (SCFM)	12.8 (452)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	408 (14,408)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	104.9 (3,705)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	410 (770)
Gas Volume at Stack Temp: m^3/min (CFM)	36.8 (1,300)
Max. Allowable Back Pressure: kPa (in. H_20)	10.5 (42)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,580 x 1,121 x 1,422 mm (101.57 x 44.13 x 56 in)	1,905 kg (4,200 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	88.7

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.93	1.2	0.06

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

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Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0120 DS180

163 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R0120 DS180 (180 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	163	163	163	163	163	163	163
kVA	163	163	204	204	204	204	204
Amps	679	679	566	490	310	246	196
skVA@30% Voltage Dip	268	366	339	339	362	451	375
Generator Model	432CSL6210	432PSL6228	431CSL6204	431CSL6204	431CSL6206	431CSL6204	431PSL6242
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM926LA Diesel Engine
- 7.2 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
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SAE J1939 Engine ECU Communications
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UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM926LA
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	7.2 (439)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	225 (302)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	29 (7.7)
Engine Jacket Water Capacity: L (gal)	10 (2.6)
System Coolant Capacity: L (gal)	24.1 (6.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.6 (8.5)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	330.5 (87.3)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	44.7 (11.8)
At 75% of Power Rating: L/hr (gal/hr)	32.2 (8.5)
At 50% of Power Rating: L/hr (gal/hr)	22 (5.8)

* Based on 431CSL6204 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	82.4 (4,686)
Heat Rejection to Air to Air: kW (BTUM)	52.7 (2,997)
Heat Radiated to Ambient: kW (BTUM)	32.9 (1,871)
Fan Power: kW (hp)	15.6 (22.1)

// Air Requirements

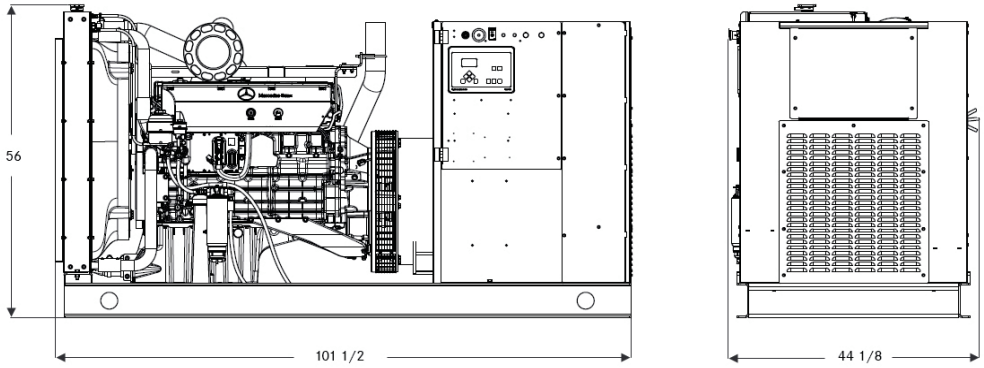
Aspirating: *m^3/min (SCFM)	13.9 (491)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	408 (14,408)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	120.2 (4,245)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	457 (855)
Gas Volume at Stack Temp: m^3/min (CFM)	40.9 (1,444)
Max. Allowable Back Pressure: kPa (in. H_20)	10.5 (42)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,580 x 1,121 x 1,422 mm (101.57 x 44.13 x 56 in)	1,905 kg (4,200 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	88.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.93	1.2	0.06

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0113 DS180

180 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R0113 DS180 (180 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V**	240V**	208V**	240V**	480V**	600V**
Phase	C/F	C/F	3	3	3	3
PF	C/F	C/F	0.8	0.8	0.8	0.8
Hz	C/F	C/F	60	60	60	60
kW	C/F	C/F	180	180	180	180
kVA	C/F	C/F	225	225	225	225
Amps	C/F	C/F	625	541	271	217
skVA@30% Voltage Dip	C/F	C/F	454	454	577	510
Generator Model	C/F	C/F	431CSL6208	431CSL6208	431CSL6206	431PSL6243
Temp Rise	C/F	C/F	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	C/F	C/F	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6068HFG85 Diesel Engine
- 6.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional PMG
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 12V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	6068HFG85
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	6.8 (415)
Bore: cm (in)	10.6 (4.2)
Stroke: cm (in)	12.7 (5)
Compression Ratio	17:1
Rated RPM	1,800
Engine Governor	JDEC
Maximum Power: kWm (bhp)	214 (286)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	32.2 (8.5)
Engine Jacket Water Capacity: L (gal)	11.9 (3.3)
System Coolant Capacity: L (gal)	29.3 (7.75)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Maximum Fuel Lift: m (ft)	2 (6.7)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	93 (24.5)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	51.9 (13.5)
At 75% of Power Rating: L/hr (gal/hr)	40.5 (10.7)
At 50% of Power Rating: L/hr (gal/hr)	27.6 (7.3)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	265 (70)
Heat Rejection to Coolant: kW (BTUM)	83.7 (4,766)
Heat Rejection to Air to Air: kW (BTUM)	40 (2,298)
Heat Radiated to Ambient: kW (BTUM)	25.5 (1,453)
Fan Power: kW (hp)	8.6 (11.5)

// Air Requirements

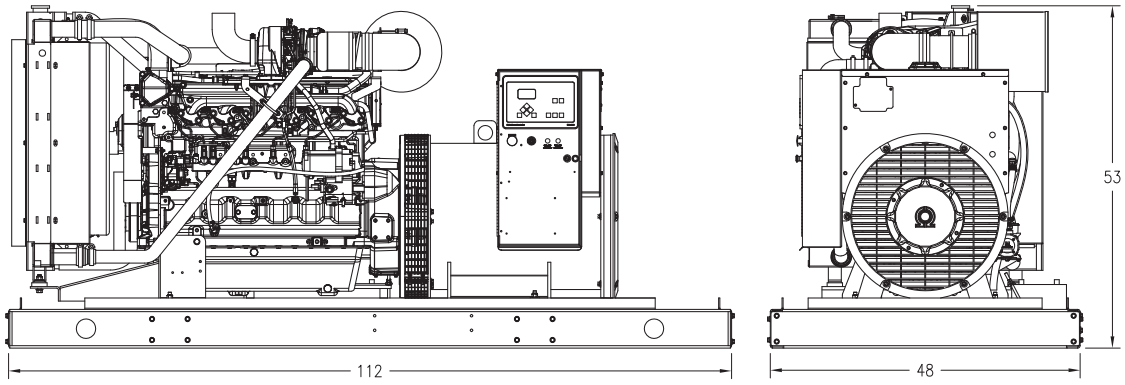
Aspirating: *m^3/min (SCFM)	14.7 (520)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	412 (14,537)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	93 (3,277)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	528 (982)
Gas Volume at Stack Temp: m^3/min (CFM)	38.8 (1,371)
Maximum Allowable Back Pressure: kPa (in. H_20)	10 (40)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,845 x 1,219 x 1,346 mm (112 x 48 x 53 in)	1,751 kg (3,860 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	87.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.63	0.49	0.09

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards. 5-mode emission data per 40 CFR 89 or 40 CFR 1039 (as applicable) is available upon request.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R0120 DS200

180 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R0120 DS200 (200 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	240V	240V	208V	240V	380V	480V	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	180	180	180	180	180	180	180
kVA	180	180	225	225	225	225	225
Amps	750	750	625	541	342	271	217
skVA@30% Voltage Dip	268	366	433	433	373	577	510
Generator Model	432CSL6210	432PSL6228	431CSL6206	431CSL6206	431CSL6208	431CSL6206	431PSL6243
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD ZIG-ZAG	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified
- CE Marking Provided

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// OM926LA Diesel Engine
- 7.2 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
SAE J1939 Engine ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	Mercedes-Benz
Model	OM926LA
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (in^3)	7.2 (439)
Bore: cm (in)	10.6 (4.17)
Stroke: cm (in)	13.6 (5.35)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	MR2 / ADM3
Max. Power: kWm (bhp)	225 (302)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	29 (7.7)
Engine Jacket Water Capacity: L (gal)	10 (2.6)
System Coolant Capacity: L (gal)	24.1 (6.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-6 JIC
Fuel Supply Hose Size	3/8" ID
Fuel Return Connection Size	-6 JIC
Fuel Return Hose Size	3/8" ID
Max. Fuel Lift: m (ft)	2.6 (8.5)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	330.5 (87.3)

// Fuel Consumption *

At 100% of Power Rating: L/hr (gal/hr)	49.6 (13.1)
At 75% of Power Rating: L/hr (gal/hr)	36 (9.5)
At 50% of Power Rating: L/hr (gal/hr)	24.2 (6.4)

* Based on 431CSL6206 480 Volt generator set

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	143 (37)
Heat Rejection to Coolant: kW (BTUM)	88 (5,004)
Heat Rejection to Air to Air: kW (BTUM)	54 (3,071)
Heat Radiated to Ambient: kW (BTUM)	35.4 (2,013)
Fan Power: kW (hp)	15.6 (22.1)

// Air Requirements

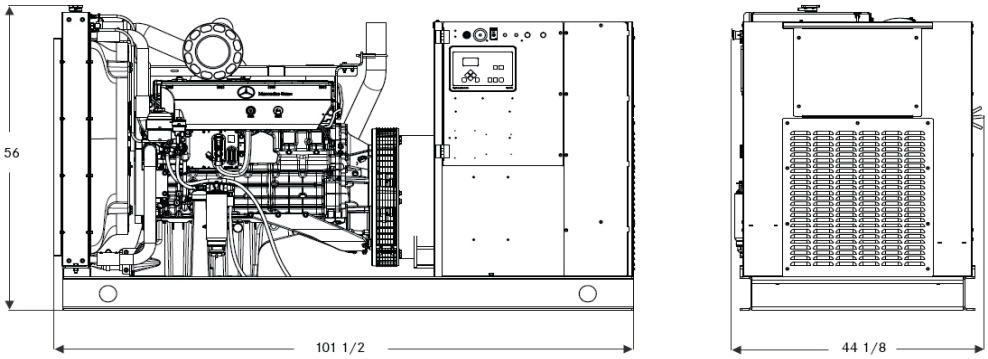
Aspirating: *m^3/min (SCFM)	14.3 (505)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	408 (14,408)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	129.4 (4,570)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	487 (908)
Gas Volume at Stack Temp: m^3/min (CFM)	42.8 (1,511)
Max. Allowable Back Pressure: kPa (in. H_20)	10.5 (42)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	2,580 x 1,121 x 1,422 mm (101.57 x 44.13 x 56 in)	1,905 kg (4,200 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	88.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.93	1.2	0.06

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS230

210 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R1600 DS230 (230 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	210	210	210	210	210	210
kVA	262	262	262	262	262	262
Amps	729	631	399	344	316	253
skVA@30% Voltage Dip	608	608	430	580	604	510
Generator Model	432CSL6210	432CSL6210	432CSL6210	431CSL6208	431CSL6208	431PSL6243
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G10S
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	ECU 8
Max. Power: kWm (bhp)	284 (381)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	198 (60.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	62 (16.4)
At 75% of Power Rating: L/hr (gal/hr)	49 (12.9)
At 50% of Power Rating: L/hr (gal/hr)	35 (9.3)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	129 (7,336)
Heat Rejection to After Cooler: kW (BTUM)	76 (4,322)
Heat Radiated to Ambient: kW (BTUM)	30.2 (1,717)
Fan Power: kW (hp)	14.9 (20)

// Air Requirements

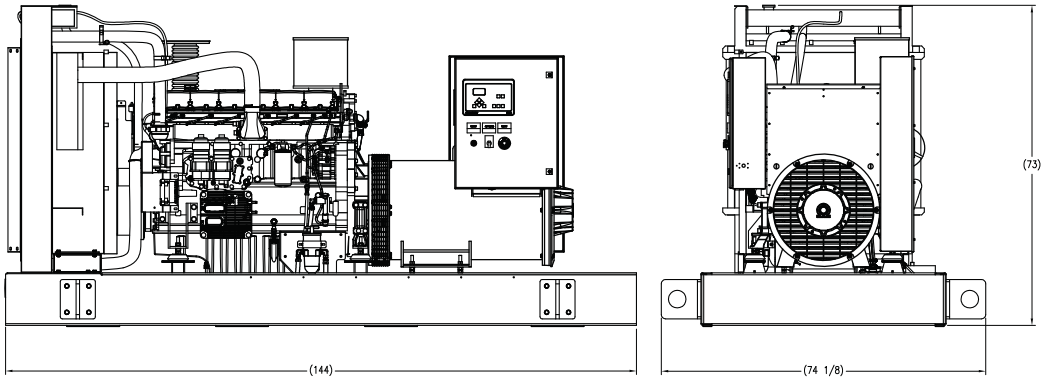
Aspirating: *m^3/min (SCFM)	30 (1,059)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	396 (13,985)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	109.7 (3,873)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	440 (824)
Gas Volume at Stack Temp: m^3/min (CFM)	72 (2,542)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,883 x 1,855 mm (144 x 74.13 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.54	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS250

230 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R1600 DS250 (250 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	230	230	230	230	230	230
kVA	287	287	287	287	287	287
Amps	798	692	437	377	346	277
skVA@30% Voltage Dip	608	608	430	580	809	740
Generator Model	432CSL6210	432CSL6210	432CSL6210	432CSL6210	432CSL6210	432PSL6246
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G10S
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	ECU 8
Max. Power: kWm (bhp)	284 (382)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	198 (60.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	67 (17.7)
At 75% of Power Rating: L/hr (gal/hr)	53 (14)
At 50% of Power Rating: L/hr (gal/hr)	38 (10)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	129 (7,336)
Heat Rejection to After Cooler: kW (BTUM)	76 (4,322)
Heat Radiated to Ambient: kW (BTUM)	30.2 (1,717)
Fan Power: kW (hp)	14.9 (20)

// Air Requirements

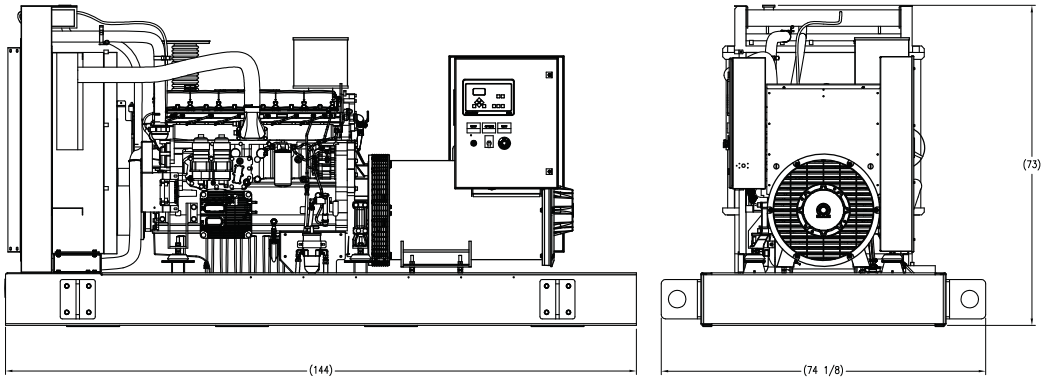
Aspirating: *m^3/min (SCFM)	30 (1,059)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	396 (13,985)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	109.7 (3,873)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	440 (824)
Gas Volume at Stack Temp: m^3/min (CFM)	72 (2,542)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,883 x 1,855 mm (144 x 74.13 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.54	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS275

250 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R1600 DS275 (275 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	250	250	250	250	250	250
kVA	312	312	312	312	312	312
Amps	867	752	475	410	376	301
skVA@30% Voltage Dip	930	930	640	860	809	720
Generator Model	433CSL6216	433CSL6216	433CSL6216	433CSL6216	432CSL6210	432PSL6246
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105°C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G10S
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	ECU 8
Max. Power: kWm (bhp)	284 (381)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	198 (60.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	72 (19.1)
At 75% of Power Rating: L/hr (gal/hr)	56 (14.8)
At 50% of Power Rating: L/hr (gal/hr)	41 (10.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	129 (7,336)
Heat Rejection to After Cooler: kW (BTUM)	76 (4,322)
Heat Radiated to Ambient: kW (BTUM)	30.2 (1,717)
Fan Power: kW (hp)	14.9 (20)

// Air Requirements

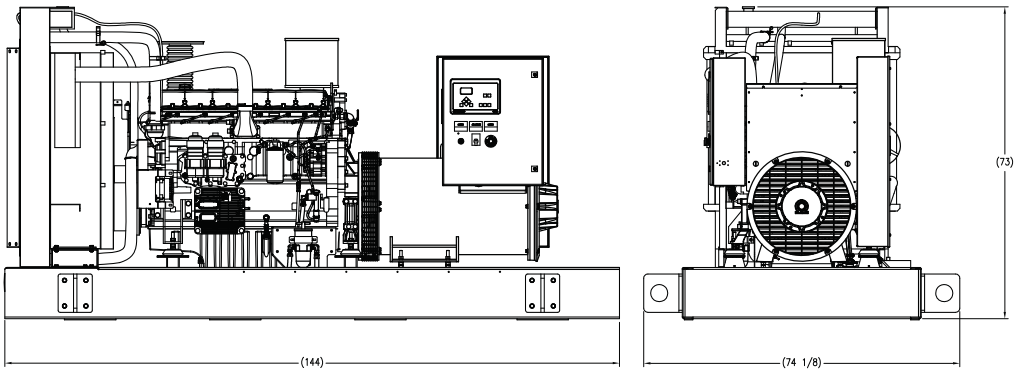
Aspirating: *m^3/min (SCFM)	18 (635.7)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	396 (13,985)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	109.7 (3,873)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	390 (734)
Gas Volume at Stack Temp: m^3/min (CFM)	60 (2,118.9)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,883 x 1,855 mm (144 x 74.13 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.54	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

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C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS300

275 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 6R1600 DS300 (275 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	275	275	275	275	275	275
kVA	343	343	343	343	343	343
Amps	954	827	522	451	413	331
skVA@30% Voltage Dip	930	930	640	860	1238	720
Generator Model	433CSL6216	433CSL6216	433CSL6216	433CSL6216	432CSL6216	432PSL6246
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
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Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
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100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

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Engine Parameters
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Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G20S
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	ECU 8
Max. Power: kWm (bhp)	312 (418)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	198 (60.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	76 (20.2)
At 75% of Power Rating: L/hr (gal/hr)	59 (15.7)
At 50% of Power Rating: L/hr (gal/hr)	45.5 (12)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	154 (8,758)
Heat Rejection to After Cooler: kW (BTUM)	84 (4,777)
Heat Radiated to Ambient: kW (BTUM)	33.1 (1,882)
Fan Power: kW (hp)	14.9 (20)

// Air Requirements

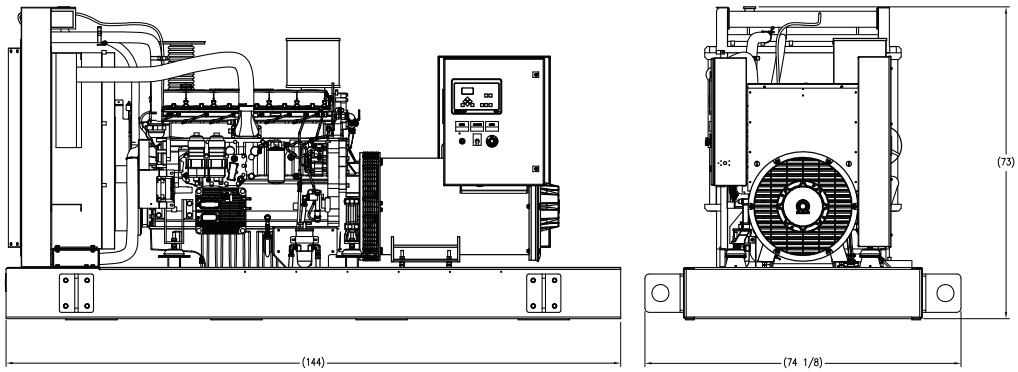
Aspirating: *m^3/min (SCFM)	24 (847.6)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	396 (13,985)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	120.2 (4,245)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	430 (806)
Gas Volume at Stack Temp: m^3/min (CFM)	66 (2,330.8)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,883 x 1,855 mm (144 x 74.13 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.14	0.52	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS350

325 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 8V1600 DS350 (350 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	325	325	325	325	325	325
kVA	407	407	407	407	407	407
Amps	1128	977	617	533	489	391
skVA@30% Voltage Dip	930	930	635	850	1238	1100
Generator Model	433CSL6216	433CSL6216	433CSL6216	433CSL6216	433CSL6216	433PSL6248
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation (570 frame)
±1% Voltage Regulation (430 frame)
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G10S
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	371 (497)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	402 (106)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	93 (24.5)
At 75% of Power Rating: L/hr (gal/hr)	78 (20.6)
At 50% of Power Rating: L/hr (gal/hr)	55 (14.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	190 (10,805)
Heat Rejection to After Cooler: kW (BTUM)	95 (5,403)
Heat Radiated to Ambient: kW (BTUM)	40.5 (2,303)
Fan Power: kW (hp)	16.9 (22.6)

// Air Requirements

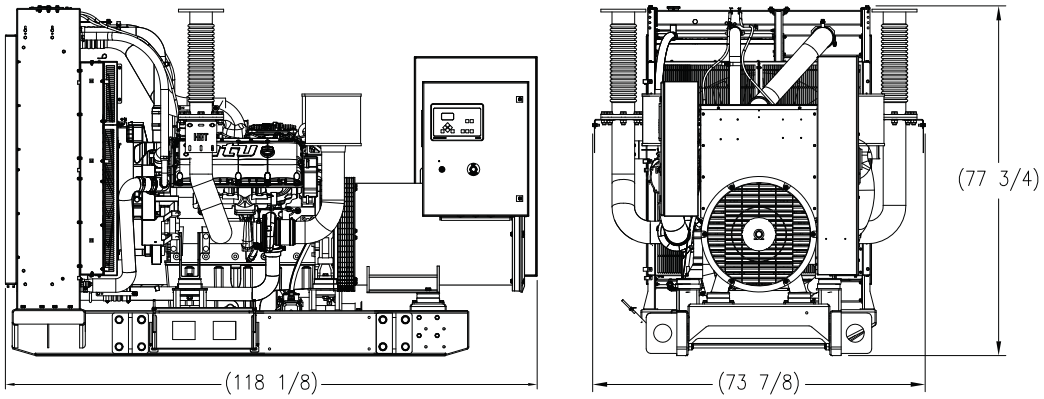
Aspirating: *m^3/min (SCFM)	30 (1,060)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	147.1 (5,194)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	460 (860)
Gas Volume at Stack Temp: m^3/min (CFM)	84 (2,966)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (61)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,001 x 1,877 x 1,975 mm (118.13 x 73.88 x 77.75 in)	3,652 kg (8,050 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.06	0.52	0.05

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS400

365 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 8V1600 DS400 (400 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	365	365	365	365	365	365
kVA	457	457	457	457	457	457
Amps	1266	1098	693	599	549	439
skVA@30% Voltage Dip	800	800	640	920	1277	1100
Generator Model	572RSL4025	572RSL4025	572RSL4025	433CSL6220	433CSL6220	433CSL6248
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation (570 frame)
±1% Voltage Regulation (430 frame)
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G20S
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	408 (547)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	402 (106)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	99 (26.1)
At 75% of Power Rating: L/hr (gal/hr)	80 (21.2)
At 50% of Power Rating: L/hr (gal/hr)	60 (15.8)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	180 (10,237)
Heat Rejection to After Cooler: kW (BTUM)	81 (4,606)
Heat Radiated to Ambient: kW (BTUM)	44.5 (2,531)
Fan Power: kW (hp)	16.9 (22.6)

// Air Requirements

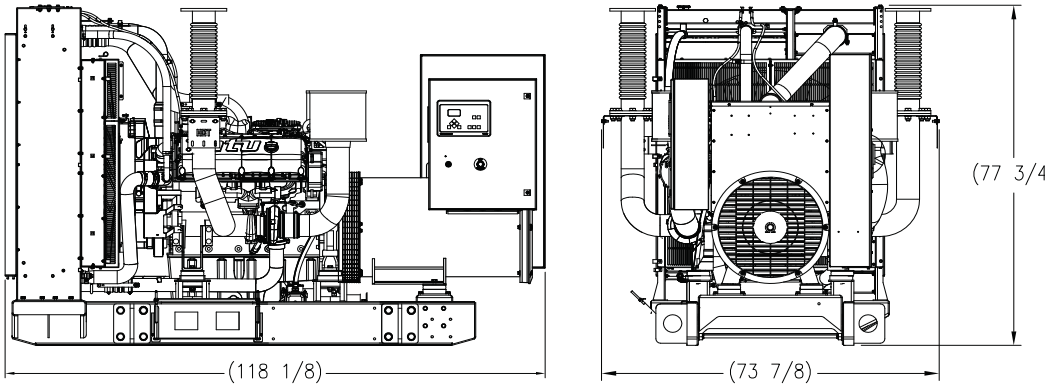
Aspirating: *m^3/min (SCFM)	31.2 (1,103)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	161.6 (5,708)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	460 (860)
Gas Volume at Stack Temp: m^3/min (CFM)	84 (2,966)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (61)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,001 x 1,877 x 1,975 mm (118.13 x 73.88 x 77.75 in)	3,652 kg (8,050 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.01	0.52	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

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Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS450

400 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 10V1600 DS450 (450 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	400	400	400	400	400	400
kVA	500	500	500	500	500	500
Amps	1388	1203	760	656	601	481
skVA@30% Voltage Dip	790	790	650	900	1090	1040
Generator Model	572RSL4025	572RSL4025	572RSL4025	572RSL4025	572RSL4025	572RSS4270
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 3 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
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Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	10V1600G70S
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	511 (685)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	401.3 (106)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	102 (27)
At 75% of Power Rating: L/hr (gal/hr)	82 (21.7)
At 50% of Power Rating: L/hr (gal/hr)	59 (15.7)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	466 (123)
Heat Rejection to Coolant: kW (BTUM)	225 (12,795)
Heat Rejection to After Cooler: kW (BTUM)	101 (5,744)
Heat Radiated to Ambient: kW (BTUM)	51.8 (2,946)
Fan Power: kW (hp)	17.9 (24)

// Air Requirements

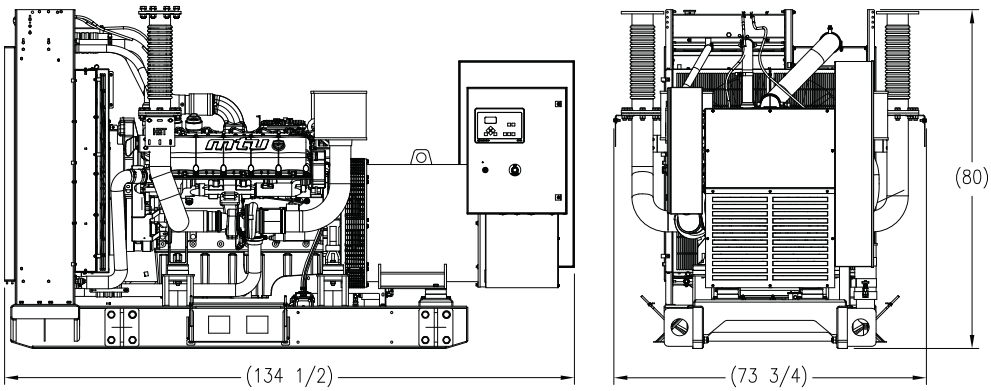
Aspirating: *m^3/min (SCFM)	34 (1,187)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	642 (22,672)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	188 (6,643)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	459 (858)
Gas Volume at Stack Temp: m^3/min (CFM)	95 (3,369)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,525 kg (9,975 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	91.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
3.31	0.37	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS500

450 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 10V1600 DS500 (500 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	450	450	450	450	450	450
kVA	563	563	563	563	563	563
Amps	1561	1353	855	738	677	541
skVA@30% Voltage Dip	790	790	660	900	1090	1040
Generator Model	572RSL4029	572RSL4029	572RSL4029	572RSL4025	572RSL4025	572RSS4270
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	10V1600G20S
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	511 (685)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	401.3 (106)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	115 (30.5)
At 75% of Power Rating: L/hr (gal/hr)	91 (24)
At 50% of Power Rating: L/hr (gal/hr)	68 (17.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	466 (123)
Heat Rejection to Coolant: kW (BTUM)	225 (12,795)
Heat Rejection to After Cooler: kW (BTUM)	101 (5,744)
Heat Radiated to Ambient: kW (BTUM)	51.8 (2,946)
Fan Power: kW (hp)	17.9 (24)

// Air Requirements

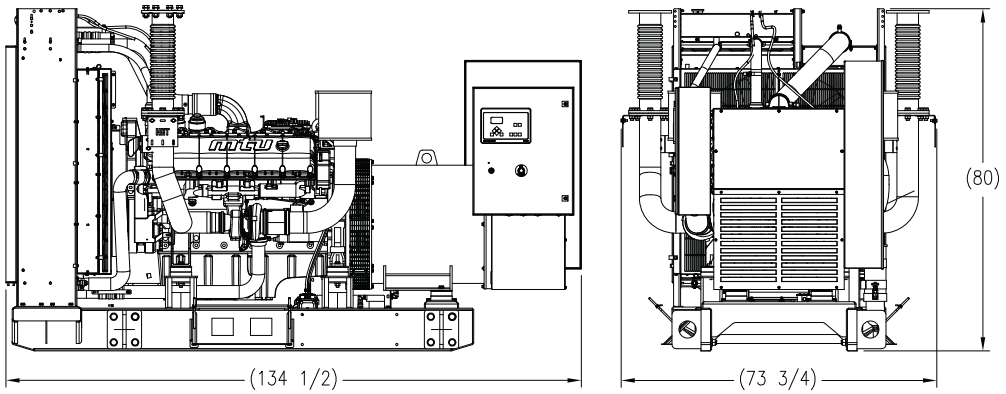
Aspirating: *m^3/min (SCFM)	34 (1,187)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	642 (22,672)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	188 (6,643)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	459 (858)
Gas Volume at Stack Temp: m^3/min (CFM)	95 (3,369)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,525 kg (9,975 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	93.4

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
6.9	0.45	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS550

500 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 12V1600 DS550 (550 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	500	500	500	500	500	500
kVA	625	625	625	625	625	625
Amps	1735	1504	950	820	752	601
skVA@30% Voltage Dip	1040	1040	960	1160	1500	1430
Generator Model	572RSL4033	572RSL4033	573RSL4033	572RSL4031	572RSL4029	572RSS4272
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V1600G10S
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	561 (752)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	402 (106.2)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	132.5 (35)
At 75% of Power Rating: L/hr (gal/hr)	101.8 (26.9)
At 50% of Power Rating: L/hr (gal/hr)	70.4 (18.6)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	517 (137)
Heat Rejection to Coolant: kW (BTUM)	223 (12,681)
Heat Rejection to After Cooler: kW (BTUM)	124 (7,051)
Heat Radiated to Ambient: kW (BTUM)	56.9 (3,236)
Fan Power: kW (hp)	23.1 (31)

// Air Requirements

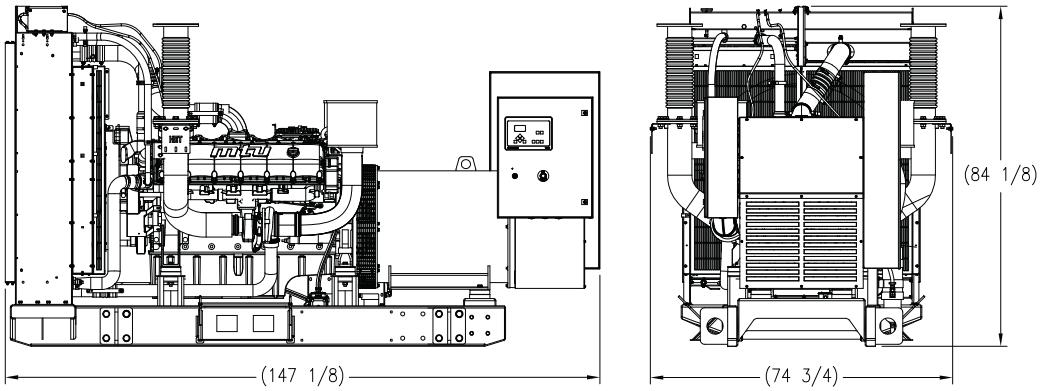
Aspirating: *m^3/min (SCFM)	47 (1,653)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	756 (26,700)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	207 (7,298)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	401 (754)
Gas Volume at Stack Temp: m^3/min (CFM)	114 (4,026)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	4,936 kg (10,880 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	90.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.12	0.3	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

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C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS600

550 kWe / 60 Hz / Prime
208 - 600V

Reference MTU 12V1600 DS600 (600 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V*	240V*	380V	440V	480V*	600V*
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	550	550	550	550	550	550
kVA	687	687	687	687	687	687
Amps	1908	1654	1045	902	827	662
skVA@30% Voltage Dip	1200	1200	1225	1400	1440	1325
Generator Model	573RSL4033	573RSL4033	573RSL4035	573RSL4033	573RSL4033	573RSS4274
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V1600G20S
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	608 (815)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	402 (106.2)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	140 (37)
At 75% of Power Rating: L/hr (gal/hr)	106 (28)
At 50% of Power Rating: L/hr (gal/hr)	75 (19.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	517 (136.5)
Heat Rejection to Coolant: kW (BTUM)	242 (13,762)
Heat Rejection to After Cooler: kW (BTUM)	150 (8,530)
Heat Radiated to Ambient: kW (BTUM)	59.7 (3,395)
Fan Power: kW (hp)	23.1 (31)

// Air Requirements

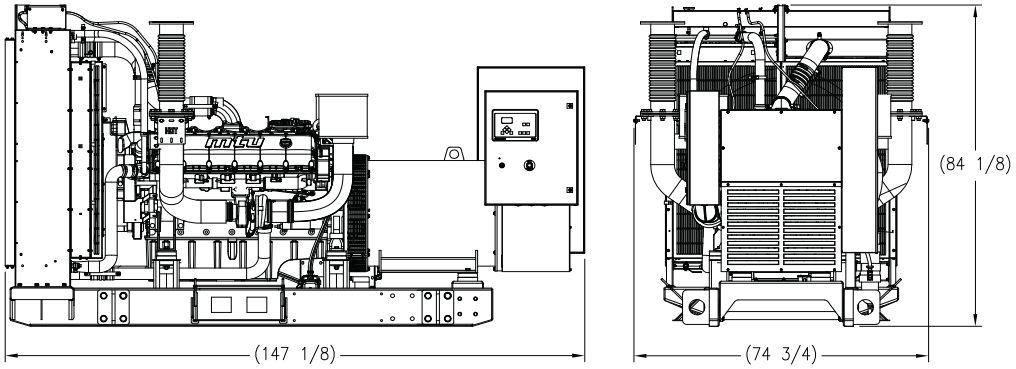
Aspirating: *m^3/min (SCFM)	53 (1,865)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	756 (26,700)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	217 (7,657)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	414 (777)
Gas Volume at Stack Temp: m^3/min (CFM)	126 (4,450)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	5,118 kg (11,282 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	91.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.36	0.3	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V2000 DS650

615 kWe / 60 Hz / Prime
208 - 4160V

Reference MTU 12V2000 DS650 (650 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	615	615	615	615	615	615
kVA	768	768	768	768	768	768
Amps	2133	1849	1168	924	739	106
skVA@30% Voltage Dip	1750	1750	1600	1750	1350	1850
Generator Model*	573RSL4033	573RSL4033	574RSL4037	573RSL4033	573RSS4274	574FSM4358
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	12 LEAD HI WYE	12 LEAD HI WYE	4 LEAD WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 2000 Diesel Engine
- 23.9 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 2000 G45 TB
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	23.9 (1,457)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	710 (952)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	77 (20.3)
Engine Jacket Water Capacity: L (gal)	110 (29.1)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	274 (72.4)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	3/4” NPT
Fuel Return Connection Size	1/4” NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	176 (46.5)
At 75% of Power Rating: L/hr (gal/hr)	132.9 (35.1)
At 50% of Power Rating: L/hr (gal/hr)	90.5 (23.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	245 (13,932)
Heat Rejection to After Cooler: kW (BTUM)	215 (12,226)
Heat Radiated to Ambient: kW (BTUM)	73.1 (4,157)
Fan Power: kW (hp)	37.9 (50.8)

// Air Requirements

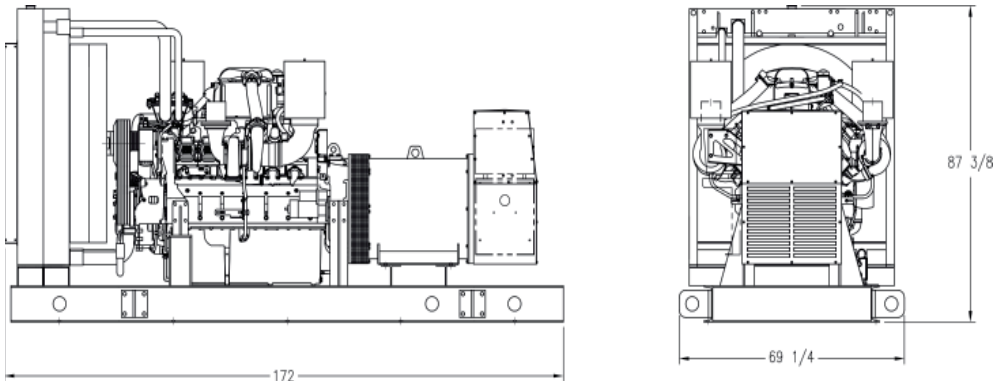
Aspirating: *m^3/min (SCFM)	60 (2,119)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	784 (27,687)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	265 (9,375)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	535 (995)
Gas Volume at Stack Temp: m^3/min (CFM)	150 (5,297)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	4,369 x 1,759 x 2,219 mm (172 x 69.3 x 87.4 in)	5,492 kg (12,108 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	92

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.18	0.37	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V2000 DS750

680 kWe / 60 Hz / Prime
208 - 4160V

Reference MTU 12V2000 DS750 (750 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	680	680	680	680	680	680
kVA	850	850	850	850	850	850
Amps	2359	2045	1293	1022	818	118
skVA@30% Voltage Dip	2600	2600	1850	2120	3050	1850
Generator Model*	574RSL4037	574RSL4037	575RSL4044	573RSL4035	574RSS4278	574FSM4358
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	4 BAR WYE	12 LEAD HI WYE	4 LEAD WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 2000 Diesel Engine
- 23.9 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 2000 G85 TB
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	23.9 (1,457)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	810 (1,086)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	77 (20.3)
Engine Jacket Water Capacity: L (gal)	110 (29.1)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	274 (72.4)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	3/4" NPT
Fuel Return Connection Size	1/4" NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480.7 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	199.1 (52.6)
At 75% of Power Rating: L/hr (gal/hr)	149.9 (39.6)
At 50% of Power Rating: L/hr (gal/hr)	101.4 (26.8)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	280 (15,923)
Heat Rejection to After Cooler: kW (BTUM)	245 (13,932)
Heat Radiated to Ambient: kW (BTUM)	76.5 (4,350)
Fan Power: kW (hp)	38 (50.9)

// Air Requirements

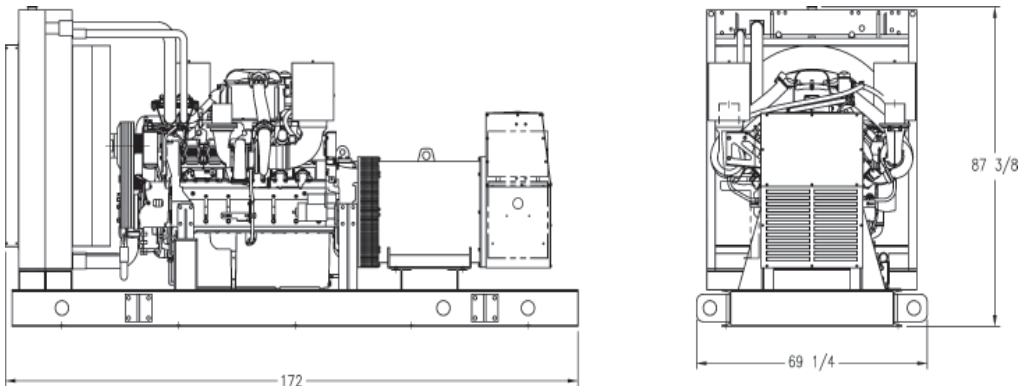
Aspirating: *m^3/min (SCFM)	2,225 (63)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	828 (29,248)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	278 (9,811)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	560 (1,040)
Gas Volume at Stack Temp: m^3/min (CFM)	160 (5,721)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	4,369 x 1,759 x 2,219 mm (172 x 69.3 x 87.4 in)	5,592 kg (12,328 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	91.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.59	0.37	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

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Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V2000 DS800

725 kWe / 60 Hz / Prime
208 - 4160V

Reference MTU 12V2000 DS800 (800 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	725	725	725	725	725	725
kVA	906	906	906	906	906	906
Amps	2518	2182	1379	1091	873	125
skVA@30% Voltage Dip	1800	1800	1850	2500	2825	2600
Generator Model*	741RSL4045	741RSL4045	575RSL4044	574RSL4038	574RSS4280	742FSM4364
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	4 BAR WYE	4 LEAD WYE	4 LEAD WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 2000 Diesel Engine
- 23.9 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
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Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 2000 G85 TB
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	23.9 (1,457)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	810 (1,086)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	77 (20.3)
Engine Jacket Water Capacity: L (gal)	110 (29.1)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	316 (83.5)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#12 JIC 37° Female 3/4" NPT Adapter Provided
Fuel Return Connection Size	#4 JIC 37° Female 1/4" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480.7 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	199.1 (52.6)
At 75% of Power Rating: L/hr (gal/hr)	149.9 (39.6)
At 50% of Power Rating: L/hr (gal/hr)	101.4 (26.8)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	280 (15,923)
Heat Rejection to After Cooler: kW (BTUM)	245 (13,932)
Heat Radiated to Ambient: kW (BTUM)	76.5 (4,350)
Fan Power: kW (hp)	38 (51)

// Air Requirements

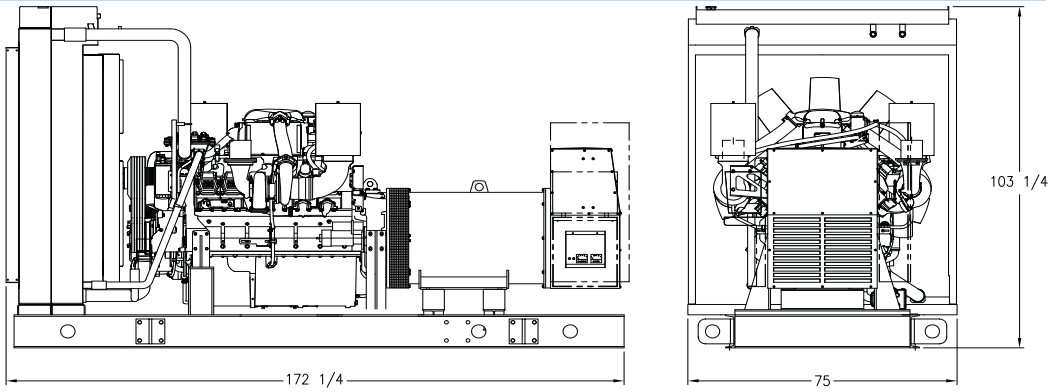
Aspirating: *m^3/min (SCFM)	63 (2,225)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,164 (41,090)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	278 (9,811)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	560 (1,040)
Gas Volume at Stack Temp: m^3/min (CFM)	160 (5,721)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	4,320 x 1,600 x 2,200 mm (170 x 63 x 86.5 in)	5, 737 kg (12,648 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	88.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.59	0.37	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V2000 DS900

800 kWe / 60 Hz / Prime
208 - 4160V

Reference MTU 16V2000 DS900 (900 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	800	800	800	800	800	800
kVA	1000	1000	1000	1000	1000	1000
Amps	2776	2406	1521	1203	962	139
skVA@30% Voltage Dip	2600	2600	1850	2500	2850	1950
Generator Model*	741RSL4045	741RSL4045	740RSL4046	574RSL4037	574RSS4280	741FSM4360
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	4 BAR WYE	12 LEAD HI WYE	4 LEAD WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V 2000 Diesel Engine
- 31.8 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories

// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V 2000 G45 TB
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	31.8 (1,943)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	915 (1,227)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	102 (26.9)
Engine Jacket Water Capacity: L (gal)	130 (34.3)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	415 (110)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	3/4" NPT
Fuel Return Connection Size	1/4" NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480.7 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	221.4 (58.5)
At 75% of Power Rating: L/hr (gal/hr)	169.2 (44.7)
At 50% of Power Rating: L/hr (gal/hr)	15.4 (30.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	320 (18,197)
Heat Rejection to After Cooler: kW (BTUM)	265 (15,070)
Heat Radiated to Ambient: kW (BTUM)	92.5 (5,260)
Fan Power: kW (hp)	55.6 (74.5)

// Air Requirements

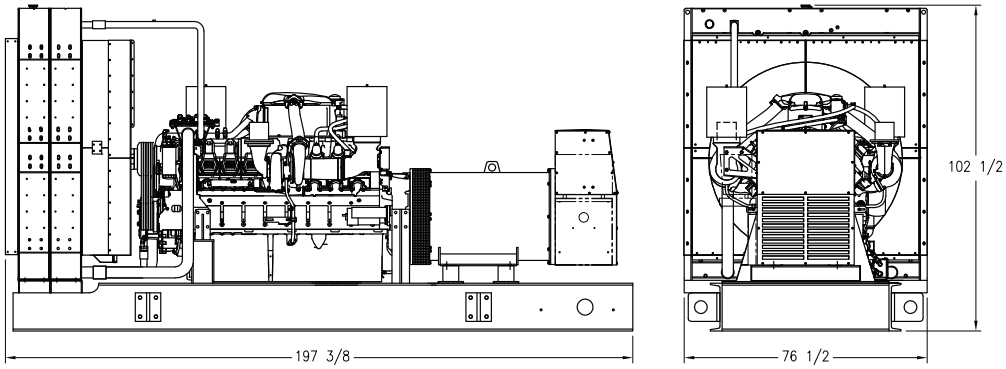
Aspirating: *m^3/min (SCFM)	81 (2,860)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,198 (42,303)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	336 (11,863)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	520 (968)
Gas Volume at Stack Temp: m^3/min (CFM)	190 (6,780)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	5,010 x 1,940 x 2,600 mm (197.4 x 76.5 x 102.5 in)	7,733 kg (17,047 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	92.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.2	0.37	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V2000 DS1000

900 kWe / 60 Hz / Prime
208 - 4160V

Reference MTU 16V2000 DS1000 (1000 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	208V**	240V**	380V	480V**	600V**	4160V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	900	900	900	900	900	900
kVA	1125	1125	1125	1125	1125	1125
Amps	3123	2706	1711	1353	1083	156
skVA@30% Voltage Dip	2600	2600	1850	3200	1550	2600
Generator Model*	741RSL4045	741RSL4045	742RSL4048	575RSL4044	741RSS4282	742FSM4364
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI DELTA	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V 2000 Diesel Engine
- 31.8 Liter Displacement
- Electronic Unit Pump Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V 2000 G85 TB
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	31.8 (1,943)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,010 (1,354)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	102 (26.9)
Engine Jacket Water Capacity: L (gal)	130 (34.3)
After Cooler Water Capacity: L (gal)	20 (5.3)
System Coolant Capacity: L (gal)	415 (110)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	3/4” NPT
Fuel Return Connection Size	1/4” NPT
Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	480.7 (127)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	243.4 (64.3)
At 75% of Power Rating: L/hr (gal/hr)	186.2 (49.2)
At 50% of Power Rating: L/hr (gal/hr)	126.4 (33.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	833 (220)
After Cooler Pump Capacity: L/min (gpm)	257 (68)
Heat Rejection to Coolant: kW (BTUM)	355 (20,188)
Heat Rejection to After Cooler: kW (BTUM)	290 (16,491)
Heat Radiated to Ambient: kW (BTUM)	87.4 (4,970)
Fan Power: kW (hp)	55.6 (74.5)

// Air Requirements

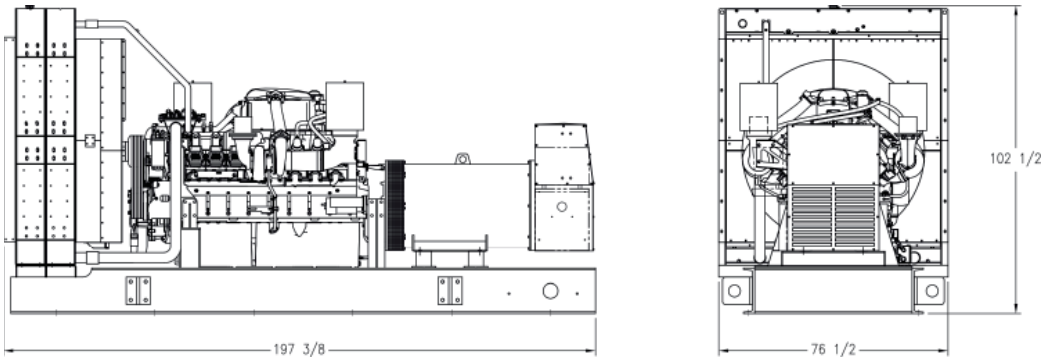
Aspirating: *m^3/min (SCFM)	84 (2,966)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,198 (42,303)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	317 (11,209)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	530 (986)
Gas Volume at Stack Temp: m^3/min (CFM)	210 (7,416)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	5,013 x 1,943 x 2,603 mm (197.4 x 76.5 x 102.5 in)	8,077 kg (17,807 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	97.7

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
4.4	0.37	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 18V2000 DS1250

1000 kWe / 60 Hz / Prime
380 - 4160V

Reference MTU 18V2000 DS1250 (1250 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V**	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1000	1000	1000	1000
kVA	1250	1250	1250	1250
Amps	1899	1504	1203	173
skVA@30% Voltage Dip	1870	2590	2590	2600
Generator Model*	742RSL4048	741RSL4045	741RSS4284	742FSM4364
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** Fuel consumption optimized

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **UL 2200 / CSA – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 18V 2000 Diesel Engine
- 40.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator Resilient Mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Rack & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	18V 2000 B76
Type	4-Cycle
Arrangement	18-V
Displacement: L (in^3)	40.2 (2,448)
Bore: cm (in)	13.5 (5.3)
Stroke: cm (in)	15.6 (6.15)
Compression Ratio	17.5
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,097 (1,471)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	122 (32.2)
Engine Jacket Water Capacity: L (gal)	73 (19.3)
System Coolant Capacity: L (gal)	185 (48.9)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#12 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#12 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,380 (365)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	254 (67)
At 75% of Power Rating: L/hr (gal/hr)	192 (51)
At 50% of Power Rating: L/hr (gal/hr)	133 (35)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.13 (0.5)
Water Pump Capacity: L/min (gpm)	950 (251)
Heat Rejection to Coolant: kW (BTUM)	430 (24,454)
Heat Rejection to After Cooler: kW (BTUM)	285 (16,208)
Heat Radiated to Ambient: kW (BTUM)	107 (6,079)
Fan Power: kW (hp)	33.5 (44.9)

// Air Requirements

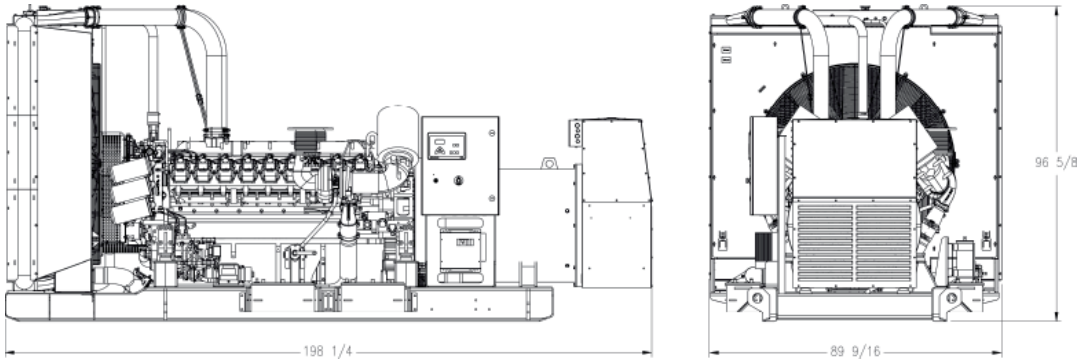
Aspirating: *m^3/min (SCFM)	96.6 (3,411)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,512 (53,396)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	390 (13,710)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	420 (788)
Gas Volume at Stack Temp: m^3/min (CFM)	222 (7,840)
Maximum Allowable Back Pressure: kPa (in. H_20)	5 (20)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	5,036 x 2,275 x 2,454 mm (198.3 x 89.6 x 96.6 in)	9,525 kg (21,000 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	90.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary as a function of ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data provided are laboratory results from one engine representing this rating. The data was obtained under controlled environmental conditions with calibrated instrumentation traceable to the United States National Bureau of Standards and in compliance with US EPA regulations found within 40 CFR Part 89. The weighted cycle value (not shown) from each engine is guaranteed to be below the US EPA Standards at the US EPA defined conditions.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V4000 DS1250

1125 kWe / 60 Hz / Prime
380 - 4160V

Reference MTU 12V4000 DS1250 (1250 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1125	1125	1125	1125
kVA	1406	1406	1406	1406
Amps	2136	1691	1353	195
skVA@30%				
Voltage Dip	2700	3100	4650	3100
Generator Model*	743RSL4052	742RSL4048	743RSS4288	742FSM4366
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 4000 Diesel Engine
- 57.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 4000 G43
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	57.2 (3,491)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,520 (2,038)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	260 (68.7)
Engine Jacket Water Capacity: L (gal)	160 (42.3)
After Cooler Water Capacity: L (gal)	40 (10.6)
System Coolant Capacity: L (gal)	583 (154)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	960 (254)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	309 (81.5)
At 75% of Power Rating: L/hr (gal/hr)	238 (62.9)
At 50% of Power Rating: L/hr (gal/hr)	176 (46.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,117 (295)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	504 (28,662)
Heat Rejection to After Cooler: kW (BTUM)	333 (18,937)
Heat Radiated to Ambient: kW (BTUM)	133 (7,562)
Fan Power: kW (hp)	36.7 (49.2)

// Air Requirements

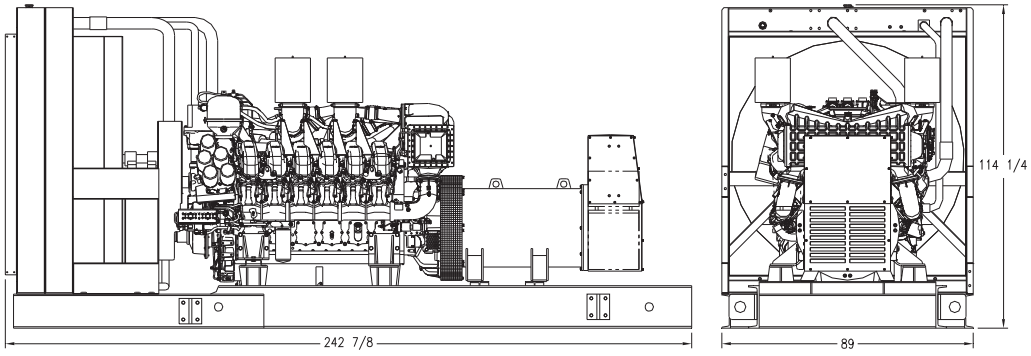
Aspirating: *m^3/min (SCFM)	126 (4,450)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,416 (49,997)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	486 (17,054)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	400 (752)
Gas Volume at Stack Temp: m^3/min (CFM)	306 (10,806)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	6,170 x 2,260 x 2,900 mm (242.88 x 89 x 114.25 in)	13,786 kg (30,392 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	91.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.34	0.37	0.09

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V4000 DS1500

1400 kWe / 60 Hz / Prime
380 - 4160V

Reference MTU 12V4000 DS1500 (1500 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1400	1400	1400	1400
kVA	1750	1750	1750	1750
Amps	2662	2105	1684	243
skVA@30%				
Voltage Dip	3350	3500	4800	3900
Generator Model*	744RSL4054	742RSL4050	743RSS4290	743FSM4368
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	4 BAR WYE	12 LEAD HI WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 4000 Diesel Engine
- 57.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 4000 G43
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	57.2 (3,491)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,520 (2,038)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	260 (68.7)
Engine Jacket Water Capacity: L (gal)	160 (42.3)
After Cooler Water Capacity: L (gal)	40 (10.6)
System Coolant Capacity: L (gal)	583 (154)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	960 (254)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	372 (98.2)
At 75% of Power Rating: L/hr (gal/hr)	285 (75.4)
At 50% of Power Rating: L/hr (gal/hr)	200 (52.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,117 (295)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	560 (31,847)
Heat Rejection to After Cooler: kW (BTUM)	370 (21,042)
Heat Radiated to Ambient: kW (BTUM)	144 (8,192)
Fan Power: kW (hp)	36.7 (49.2)

// Air Requirements

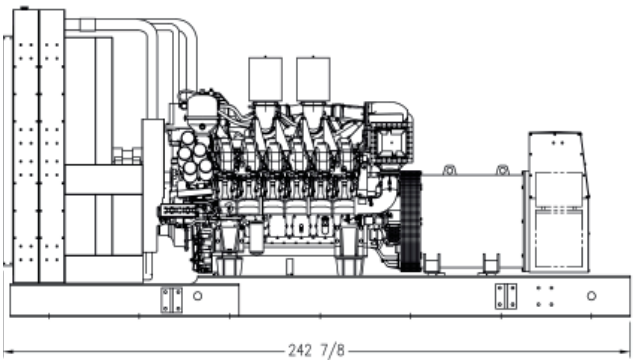
Aspirating: *m^3/min (SCFM)	132 (4,662)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,416 (49,997)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	526 (18,475)

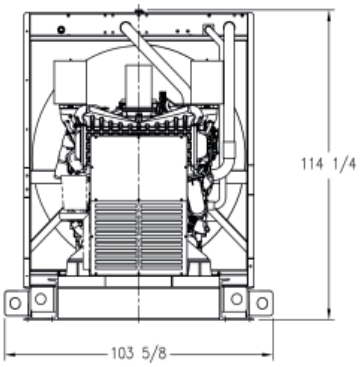
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	410 (770)
Gas Volume at Stack Temp: m^3/min (CFM)	312 (11,018)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS





Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	6,169 x 2,632 x 2,902 mm (242.9 x 103.6 x 114.3 in)	14,207 kg (31,322 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	92.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.34	0.37	0.09

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V4000 DS1750

1600 kWe / 60 Hz / Prime
380 - 4160V

Reference MTU 12V4000 DS1750 (1750 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V	480V**	600V**	4160V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	1600	1600	1600	1600
kVA	2000	2000	2000	2000
Amps	3042	2406	1925	278
skVA@30%				
Voltage Dip	4200	4700	3600	4000
Generator Model*	744RSL4056	743RSL4052	744RSS4292	743FSM4370
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.
** UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 4000 Diesel Engine
- 57.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories

// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
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UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V 4000 G83
Type	4-Cycle
Arrangement	12-V
Displacement: L (in^3)	57.2 (3,491)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,736 (2,328)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	260 (68.7)
Engine Jacket Water Capacity: L (gal)	160 (42.3)
After Cooler Water Capacity: L (gal)	40 (10.6)
System Coolant Capacity: L (gal)	583 (154)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#16 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	960 (254)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	420 (111)
At 75% of Power Rating: L/hr (gal/hr)	322 (85)
At 50% of Power Rating: L/hr (gal/hr)	227 (60)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,117 (295)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	640 (36,396)
Heat Rejection to After Cooler: kW (BTUM)	440 (25,022)
Heat Radiated to Ambient: kW (BTUM)	145.1 (8,254)
Fan Power: kW (hp)	48.7 (65.3)

// Air Requirements

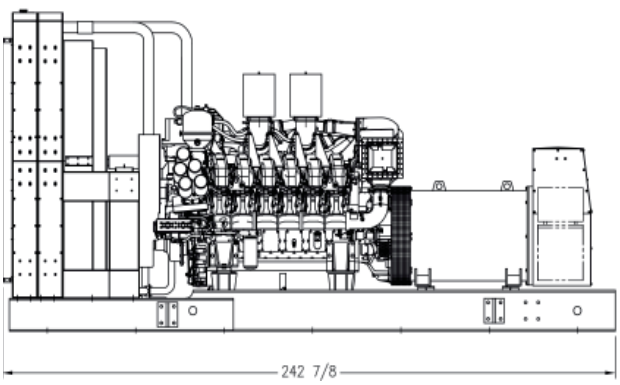
Aspirating: *m^3/min (SCFM)	138 (4,873)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,574 (55,587)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	530 (18,616)

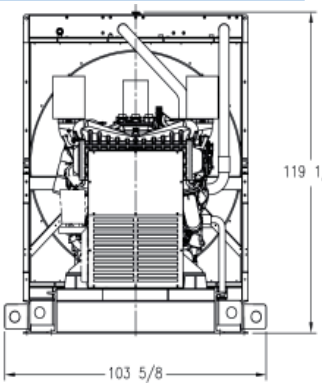
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	435 (815)
Gas Volume at Stack Temp: m^3/min (CFM)	342 (12,078)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS





Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	6,169 x 2,632 x 3,029 mm (242.9 x 103.6 x 119.3 in)	14,511 kg (31,992 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	92.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.26	0.45	0.08

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V4000 DS2000

1800 kWe / 60 Hz / Prime
380 - 13.8kV

Reference MTU 16V4000 DS2000 (2000 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	1800	1800	1800	1800	1800	1800	1800
kVA	2250	2250	2250	2250	2250	2250	2250
Amps	3423	2710	2168	312	104	99	94
skVA@30% Voltage Dip	4300	5800	3600	5100	3900	4250	4583
Generator Model	744RSL4176	744RSL4054	744RSS4292	744FSM4374	1020FDH1242	1020FDH1242	1020FDH1242
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 / CSA – Optional**
- UL 2200 Listed
- CSA Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V4000 Diesel Engine
- 76.3 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V4000G43
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	76.3 (4,656)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,020 (2,709)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	300 (79.3)
Engine Jacket Water Capacity: L (gal)	175 (46.2)
After Cooler Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	651 (172)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,200 (317)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	487 (128.6)
At 75% of Power Rating: L/hr (gal/hr)	381 (100.7)
At 50% of Power Rating: L/hr (gal/hr)	265 (69.9)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,350 (357)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	740 (42,083)
Heat Rejection to After Cooler: kW (BTUM)	520 (29,572)
Heat Radiated to Ambient: kW (BTUM)	173.6 (9,871)
Fan Power: kW (hp)	99.4 (133.2)

// Air Requirements

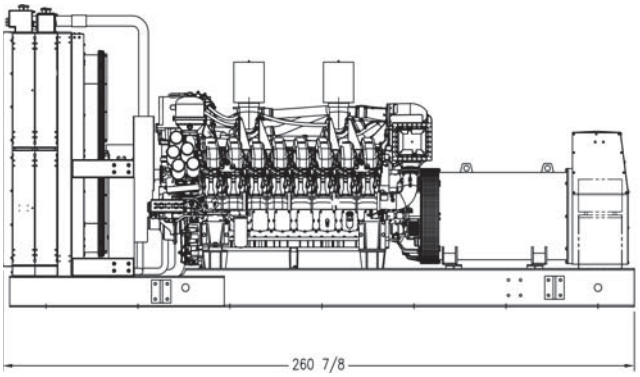
Aspirating: *m^3/min (SCFM)	180 (6,357)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,072 (73,173)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	634 (22,262)

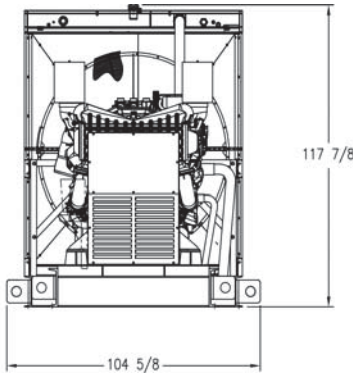
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	435 (815)
Gas Volume at Stack Temp: m^3/min (CFM)	426 (15,044)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS





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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	6,626 x 2,657 x 2,994 mm (260.9 x 104.6 x 117.9 in)	16,477 kg (36,326 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	94.7

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.26	0.67	0.05

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values).
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 16V4000 DS2250

2045 kWe / 60 Hz / Prime
380 - 13.8kV

Reference MTU 16V4000 DS2250 (2250 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2045	2045	2045	2045	2045	2045	2045
kVA	2556	2556	2556	2556	2556	2556	2556
Amps	3888	3078	2463	355	118	112	107
skVA@30% Voltage Dip	3625	8400	3900	5000	4120	4120	4900
Generator Model	1020FDL1102	744RSL4058	1020FDS1120	744FSM4376	1020FDH1246	1020FDH1246	1020FDH1246
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	6 LEAD WYE	4 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 16V4000 Diesel Engine
- 76.3 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	16V4000G83
Type	4-Cycle
Arrangement	16-V
Displacement: L (in^3)	76.3 (4,656)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.5:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,280 (3,056)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	300 (79.3)
Engine Jacket Water Capacity: L (gal)	175 (46.2)
After Cooler Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	651 (172)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,200 (317)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	558 (147)
At 75% of Power Rating: L/hr (gal/hr)	426 (113)
At 50% of Power Rating: L/hr (gal/hr)	299 (79)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	40 (104)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,350 (357)
After Cooler Pump Capacity: L/min (gpm)	583 (154)
Heat Rejection to Coolant: kW (BTUM)	840 (47,770)
Heat Rejection to After Cooler: kW (BTUM)	610 (34,690)
Heat Radiated to Ambient: kW (BTUM)	186.7 (10,615)
Fan Power: kW (hp)	99.4 (133.2)

// Air Requirements

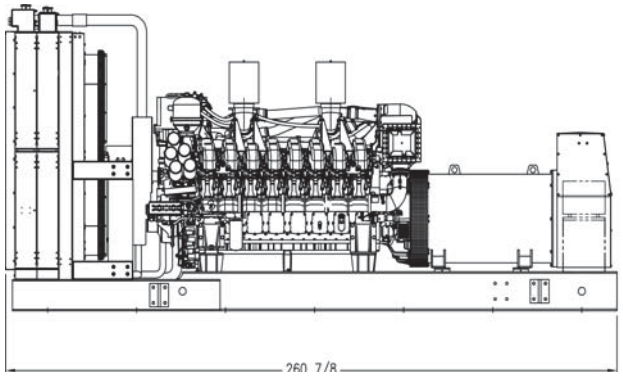
Aspirating: *m^3/min (SCFM)	180 (6,357)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,041 (72,064)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	682 (23,940)

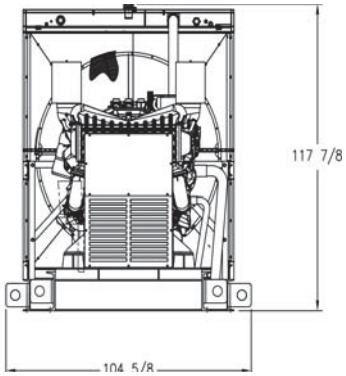
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	480 (896)
Gas Volume at Stack Temp: m^3/min (CFM)	456 (16,103)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS





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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	6,626 x 2,657 x 2,994 mm (260.9 x 104.6 x 117.9 in)	16,994 kg (37,466 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	93.9

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.38	0.45	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS2500

2250 kWe / 60 Hz / Prime
380 - 13.8kV

Reference MTU 20V4000 DS2500 (2500 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2250	2250	2250	2250	2250	2250	2250
kVA	2812	2812	2812	2812	2812	2812	2812
Amps	4273	3383	2706	390	130	123	117
skVA@30% Voltage Dip	3400	4675	5200	5750	4300	4750	5100
Generator Model	1020FDL1104	1020RSL1102	1020FDS1122	1020FDM1180	1020FDH1248	1020FDH1248	1020FDH1250
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
2 Bearings, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V4000G43 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,490 (3,338)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	814 (215)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	587 (155)
At 75% of Power Rating: L/hr (gal/hr)	462 (122)
At 50% of Power Rating: L/hr (gal/hr)	337 (89)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	54 (129)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	890 (50,613)
Heat Rejection to After Cooler: kW (BTUM)	580 (32,984)
Heat Radiated to Ambient: kW (BTUM)	203.6 (11,581)
Fan Power: kW (hp)	87.5 (117.3)

// Air Requirements

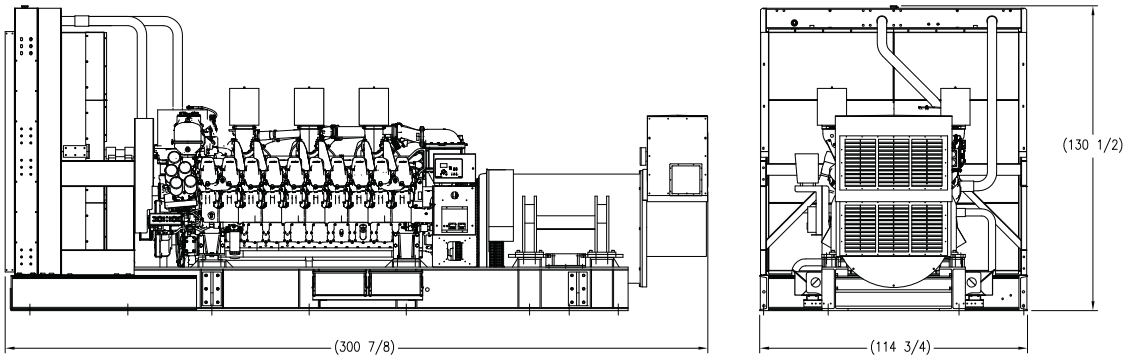
Aspirating: *m^3/min (SCFM)	228 (8,052)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	2,895 (102,247)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	744 (26,119)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	455 (851)
Gas Volume at Stack Temp: m^3/min (CFM)	534 (18,858)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	7,640 x 2,915 x 3,310 mm (300.88 x 114.75 x 130.5 in)	26,941 kg (59,394 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	97.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
6.12	0.37	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS2800

2500 kWe / 60 Hz / Prime
380 - 13.8kV

Reference MTU 20V4000 DS2800 (2800 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2500	2500	2500	2500	2500	2500	2500
kVA	3125	3125	3125	3125	3125	3125	3125
Amps	4754	3864	3091	446	149	141	134
skVA@30% Voltage Dip	4000	4650	5875	5250	4600	5000	5250
Generator Model	1030FDL1110	1020FDL1104	1020FDS1124	1020FDM1182	1030FDH1250	1030FDH1250	1030FDH1252
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
2 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V 4000 G83 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	2,740 (3,673)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	860 (227)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	647 (171)
At 75% of Power Rating: L/hr (gal/hr)	511 (135)
At 50% of Power Rating: L/hr (gal/hr)	367 (97)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	48 (118)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	970 (55,162)
Heat Rejection to After Cooler: kW (BTUM)	670 (38,102)
Heat Radiated to Ambient: kW (BTUM)	217.3 (12,360)
Fan Power: kW (hp)	60.6 (81.3)

// Air Requirements

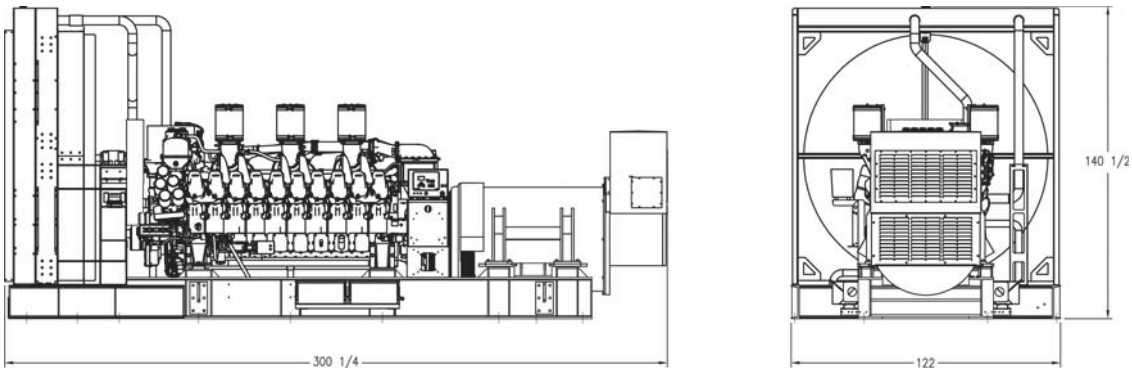
Aspirating: *m^3/min (SCFM)	240 (8,476)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	3,082 (108,843)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	794 (27,875)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	465 (869)
Gas Volume at Stack Temp: m^3/min (CFM)	576 (20,341)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	7,626 x 3,099 x 3,569 mm (300.3 x 122 x 140.5 in)	28,149 kg (62,056 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	97.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.95	0.37	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 20V4000 DS3000

2800 kWe / 60 Hz / Prime
380 - 13.8kV

Reference MTU 20V4000 DS3000 (3000 kWe) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V	480V*	600V	4160V	12470V	13200V	13800V
Phase	3	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	2800	2800	2800	2800	2800	2800	2800
kVA	3500	3500	3500	3500	3500	3500	3500
Amps	5324	4210	3368	486	162	153	146
skVA@30% Voltage Dip	4000	5400	6125	5250	6350	5625	6000
Generator Model	1030FDL1110	1020FDL1108	1030FDS1126	1020FDM1184	1040FDH1256	1030FDH1254	1030FDH1254
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

* UL 2200 Offered

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **UL 2200 Listed – Optional**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 20V4000 Diesel Engine
- 95.4 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Inter Cooler Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Structural Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
2 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	20V4000G83L 6 ECT
Type	4-Cycle
Arrangement	20-V
Displacement: L (in^3)	95.4 (5,822)
Bore: cm (in)	17 (6.69)
Stroke: cm (in)	21 (8.27)
Compression Ratio	16.4:1
Rated RPM	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	3,010 (4,035)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	390 (103)
Engine Jacket Water Capacity: L (gal)	205 (54.2)
After Cooler Water Capacity: L (gal)	30 (7.9)
System Coolant Capacity: L (gal)	860 (227)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	4,200

// Fuel System

Fuel Supply Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	-16 JIC 37° Female 1" NPT Adapter Provided
Max. Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,620 (428)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	712 (188)
At 75% of Power Rating: L/hr (gal/hr)	553 (146)
At 50% of Power Rating: L/hr (gal/hr)	390 (103)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	47 (117)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	1,567 (414)
After Cooler Pump Capacity: L/min (gpm)	567 (150)
Heat Rejection to Coolant: kW (BTUM)	1,040 (59,143)
Heat Rejection to After Cooler: kW (BTUM)	770 (43,789)
Heat Radiated to Ambient: kW (BTUM)	221.7 (12,606)
Fan Power: kW (hp)	60.6 (81.3)

// Air Requirements

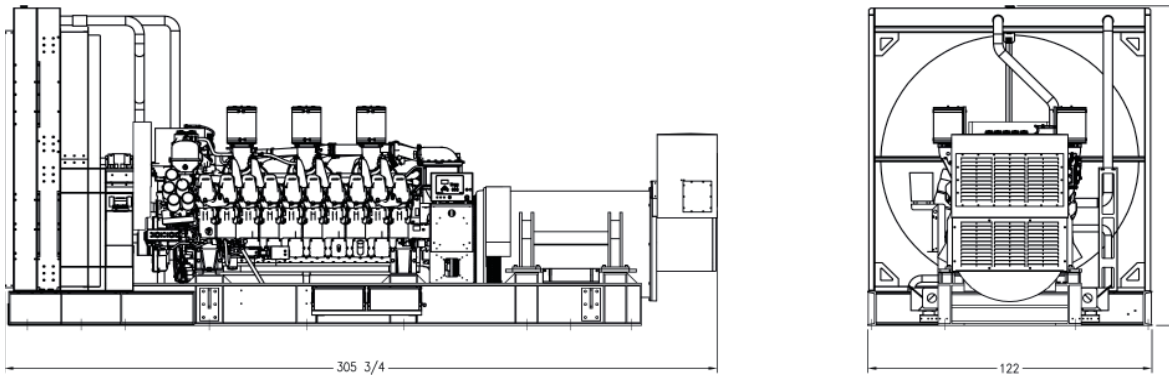
Aspirating: *m^3/min (SCFM)	252 (8,900)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	3,082 (108,843)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	799 (28,041)

* Air density = 1.184 kg/m (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	480 (896)
Gas Volume at Stack Temp: m^3/min (CFM)	624 (22,036)
Max. Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	7,766 x 3,099 x 3,569 mm (305.8 x 122 x 140.5 in)	28,357 kg (62,515 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	97.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.57	0.52	0.04

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL POWER MODULE
MTU 12V1600 DS550

Voltages:
550 kWe / 60 Hz / Prime - 208V, 480V
550 kWe / 60 Hz / Prime - 600V
650 kVA / 50 Hz / Prime - 400V

SYSTEM RATINGS

60 Hz

Voltage (L-L)	208V	480V	600V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	60	60	60
kW	550	550	550
kVA	688	688	668
Amps	1908	827	662
skVA@30% Voltage Dip	1500	2120	2380
Generator Model	573RSL4035	573RSL4035	573RSS4276
Temp Rise	105 °C/40 °C	105 °C/40 °C	105 °C/40 °C
Connection	12 LEAD LOW WYE	12 LEAD HI WYE	4 LEAD WYE

50 Hz *

Voltage (L-L)	400V
Phase	3
PF	0.8
Hz	50
kW	520
kVA	650
Amps	938
skVA@30% Voltage Dip	1600
Generator Model	573RSL4035
Temp Rise	105 °C/40 °C
Connection	12 LEAD HI WYE

* Prime 50 Hz technical data is for a Fuel-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Emissions**
– EPA Tier 2 Certified (60 Hz)
– Fuel Optimized (50 Hz)

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V 1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability
- Link board (208V, 480V and 400V units only)
- Voltage Adjust Toggle Switch

// Digital Control Panel
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Box & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine (60 Hz)
Fuel Optimized (50 Hz)

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA 110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer		MTU
Model 50 Hz		12V 1600 G20F
Model 60 Hz		12V 1600 G20S
Type		4-Cycle
Arrangement		12-V
Displacement: L (Cu In)		21 (1,281)
Bore: cm (in)		12.2 (4.72)
Stroke: cm (in)		15 (5.91)
Compression Ratio		17.5:1
Rated RPM: 60 Hz		1,800
Rated RPM: 50 Hz		1,500
Engine Governor		Electronic Isochronous (ADEC)
Max Power: 110%	60 Hz: kWm (bhp)	668 (896)
	50 Hz: kWm (bhp)	634 (850)
Max Power: Prime	60 Hz: kWm (bhp)	608 (815)
	50 Hz: kWm (bhp)	576 (772)
Speed Regulation		±0.25%
Air Cleaner		Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	154 (40.7)
Fuel Capacity: L (gal)	3,785 (1,000)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	Quick Disconnect
Fuel Return Connection Size	Quick Disconnect
Maximum Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: 60 Hz L/hr (gal/hr)	402 (106.2)
50 Hz L/hr (gal/hr)	341.8 (90.3)

// Fuel Consumption

	60 Hz	50Hz
At 100% of Power Rating: L/hr (gal/hr)	140 (37)	129.8 (34.3)
At 75% of Power Rating: L/hr (gal/hr)	106 (28)	99.92 (26.4)
At 50% of Power Rating: L/hr (gal/hr)	75.32 (19.9)	69.64 (18.4)

// Cooling - Radiator System

	60 Hz	50Hz
Ambient Capacity of Radiator: °C (°F)	50 (122)	50 (122)
Max. Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	517 (136.5)	433 (115)
Heat Rejection to Coolant: kW (BTUM)	242 (13,762)	236 (13,421)
Heat Rejection to After Cooler: kW (BTUM)	150 (8,530)	104 (5,914)
Heat Radiated to Ambient: kW (BTUM)	59.7 (3,395)	59.4 (3,378)
Fan Power: kW (hp)	23.1 (31)	25.4 (34)

// Air Requirements

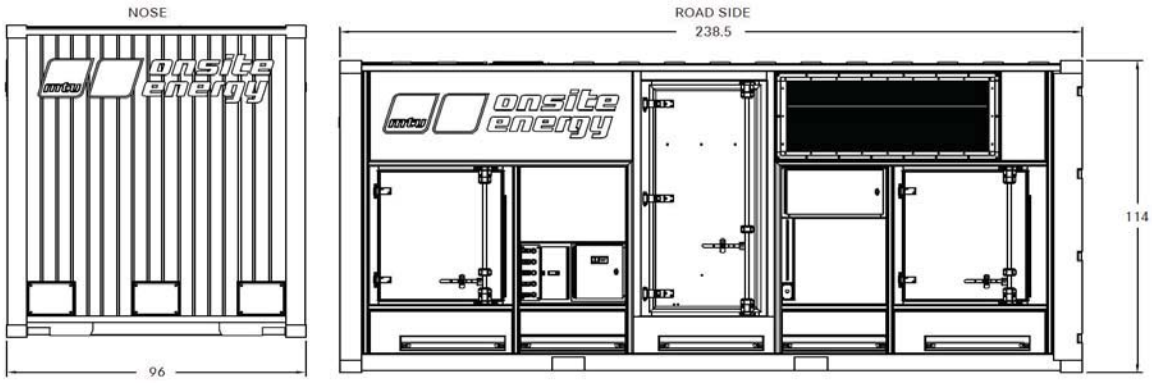
	60 Hz	50Hz
Aspirating: *(m3/min) SCFM	53 (1,865)	48 (1,695)
Air Flow Required for Rad. Cooled Unit: *(m3/min) SCFM	726 (25,638)	612 (21,613)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *(m3/min) SCFM	217 (7,657)	216 (7,618)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

	60 Hz	50Hz
Gas Temp. (Stack): °C (°F)	414 (777)	483 (901)
Gas Volume at Stack Temp: m^3/min (CFM)	126 (4,450)	126 (4,450)
Maximum Allowable Back Pressure: kPa (in. H_20)	15 (60.2)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (wet/no fuel)
Power Module	6,058 x 2,439 x 2,896 mm (238.5 x 96 x 114 in)	16,783 kg (37,000 lb)

Weights and dimensions are based on containerized units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	60 Hz Full Load	50 Hz Full Load
Power Module dB(A)	76.6	73.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.36	0.3	0.03

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL POWER MODULE
MTU 18V2000 DS1000

Voltages:
1000 kWe / 60 Hz / Prime - 480V, 600V

SYSTEM RATINGS

Prime

Voltage (L-L)	480V	600V
Phase	3	3
PF	0.8	0.8
Hz	60	60
kW	1000	1000
kVA	1250	1250
Amps	1504	1203
skVA@30% Voltage Dip	3200	2600
Generator Model	740RSL4046	741RSS4284
Temp Rise	105 °C/40 °C	105 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Emissions –** EPA Tier 2 Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 18V 2000 Diesel Engine
- 35.8 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability
- Voltage Adjust Toggle Switch
// Digital Control Panel
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Remote Mounted
- Electrically Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners – Heavy Duty Two Stage
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Radiator - Remote Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Heavy Duty Construction
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Rack & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
EPA Certified Engine
60 Hz

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Maximum Prime Temperature Rise
2 Bearings
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	18V 2000 G85 TB
Type	4-Cycle
Arrangement	18-V
Displacement: L (Cu In)	35.8 (2,186)
Bore: cm (in)	13 (5.1)
Stroke: cm (in)	15 (5.9)
Compression Ratio	16:1
Rated RPM: 60 Hz	1,800
Engine Governor	Electronic Isochronous (ADEC)
Max Power: 110% kWm (bhp)	1,310 (1,755)
Max Power: Prime kWm (bhp)	1,191 (1,597)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	130 (34.3)
Engine Jacket Water Capacity: L (gal)	120 (31.7)
System Coolant Capacity: L (gal)	583 (154)
Fuel Capacity: L (gal)	3,785 (1,000)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,300

// Fuel System

Fuel Supply Connection Size	Quick Disconnect
Fuel Return Connection Size	Quick Disconnect
Maximum Fuel Lift: m (ft)	1 (3)
Recommended Fuel	Diesel #2
Total Fuel Flow: 60 Hz L/hr (gal/hr)	480 (146)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	284 (75)
At 75% of Power Rating: L/hr (gal/hr)	219 (58)
At 50% of Power Rating: L/hr (gal/hr)	149 (39)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.125 (0.5)
Water Pump Capacity: L/min (gpm)	867 (229)
Heat Rejection to Coolant: kW (BTUM)	460 (26,160)
Heat Rejection to After Cooler: kW (BTUM)	320 (18,200)
Heat Radiated to Ambient: kW (BTUM)	50 (2,841)
Fan Power: kW (hp)	58 (77.8)

// Air Requirements

Aspirating: *(m3/min) SCFM	102 (3,605)
Air Flow Required for Rad. Cooled Unit: *(m3/min) SCFM	1,444 (51,000)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *(m3/min) SCFM	N/A

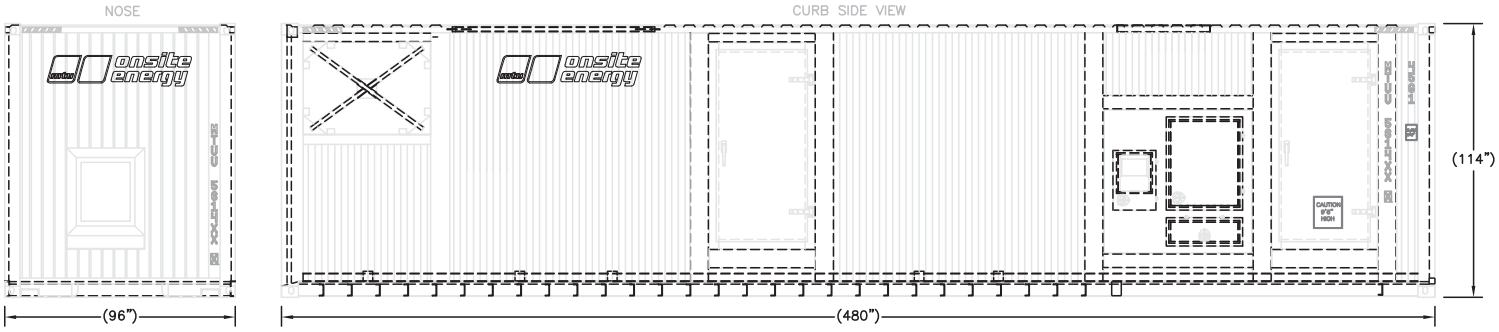
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	510 (950)
Gas Volume at Stack Temp: m^3/min (CFM)	240 (8,476)
Maximum Allowable Back Pressure: kPa (in. H_20)	9 (34)

N/A = Not applicable to this system

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (wet/no fuel)
Power Module	12,192 x 2,439 x 2,896 mm (480 x 96 x 114 in)	29,120 kg (64,200 lb)

Weights and dimensions are based on containerized units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Full Load
Power Module dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
5.19	0.37	0.02

All units are in g/hp-hr and shown at 100% load (not comparable to EPA weighted cycle values). Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations. The weighted cycle value (not shown) from each engine is guaranteed to be within the US EPA Standards.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL POWER MODULE
MTU 16V4000 DS1955

Voltages:
2160 kWe / 2700 kVA / 60 Hz / Standby - 480V
1955 kWe / 2443 kVA / 60 Hz / Prime - 480V
1760 kWe / 2200 kVA / 60 Hz / Continuous - 480V

1900 kWe / 2375 kVA / 50 Hz / Standby - 400V
1721 kWe / 2151 kVA / 50 Hz / Prime - 400V
1500 kWe / 1875 kVA / 50 Hz / Continuous - 400V

SYSTEM RATINGS

60 Hz

Voltage (L-L)	480V	480V	480V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	60	60	60
kW	2,160	1,955	1,760
kVA	2,700	2,443	2,200
Amps	3,251	2,942	2,649
skVA@30%			
Voltage Dip	5,750	5,750	5,750
Generator Model	744RDL4056	744RDL4056	744RDL4056
Temp Rise	150 °C/40 °C	125 °C/40 °C	105 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE

50 Hz

400V	400V	400V
3	3	3
0.8	0.8	0.8
50	50	50
1,900	1,721	1,500
2,375	2,151	1,875
3,432	3,108	2,709
4,530	4,530	4,530
744RDL4056	744RDL4056	744RDL4056
150 °C/40 °C	125 °C/40 °C	105 °C/40 °C
4 BAR WYE	4 BAR WYE	4 BAR WYE

CERTIFICATIONS AND STANDARDS

// **Emissions**
– Fuel Optimized

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Container**
– CSC Certified

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Permissible average power output during 24 hours of operation is approved up to 85% for standby rated unit.
- Permissible average power output during 24 hours of operation is approved up to 75% for prime rated unit.
- Permissible average power output during 24 hours of operation is approved up to 100% for continuous rated unit.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// Consult factory for specific warranty terms
// 16V 4000 Diesel Engine
- 76.3 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-Generator Resilient Mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) Supply to Regulator
- 300% Short Circuit Capability

// Digital Control Panel
- Complete System Metering
- LCD Display

// Cooling System
- Remote Mounted / Vertical Split Cores
- Electrically Driven Fans

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Lube Oil Multi-Stage Filter
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Radiator - Remote Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Rack & Cables
Fuel Optimized (Both 60 Hz and 50 Hz)

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
2 Bearing, Sealed
Close Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

Note: Air filter will cause 5% derate in power output (kWe) and may also affect fuel consumption.

// Digital Control Panel(s)

Digital Metering
Engine/Generator Protection Functions
CANBus ECU Communications
Multilingual Capability
Programmable Contact Outputs

// Container

40’ High Cube ISO Container
Rear Container Double Doors
Three Lockable Personnel Access Doors
1,500 Liters (400 gallons) UL 142 Certified Diesel Fuel Tank
Externally Mounted Critical Grade Exhaust Silencer (stored during transport between the split core radiator)
NEMA 1 Floor-Standing Generator Set Breaker Panel
Main Line Circuit Breaker Rated at 3200 Amps and 65KAIC
24 VDC Incandescent Lights
Field Adjustable Timer, Factory Set to 60 Minutes

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer		MTU
Model 60 Hz Standby		16V 4000 G83 3D
Model 60 Hz Prime		16V 4000 G83 3B
Model 60 Hz Continuous		16V 4000 G83 3A
Model 50 Hz Standby		16V 4000 G63 3D
Model 50 Hz Prime		16V 4000 G63 3B
Model 50 Hz Continuous		16V 4000 G63 3A
Type		4-Cycle
Arrangement		16-V
Displacement: L (Cu In)		76.3 (4,656)
Bore: cm (in)		17 (6.69)
Stroke: cm (in)		21 (8.27)
Compression Ratio		16.5:1
Rated RPM: 60 Hz		1,800
Rated RPM: 50 Hz		1,500
Engine Governor		Electronic Isochronous (ADEC)
Standby Rated Power:	60 Hz: kWm (hp)	2,500 (3,352)
	50 Hz: kWm (hp)	2,185 (2,930)
Prime Rated Power:	60 Hz: kWm (hp)	2,280 (3,057)
	50 Hz: kWm (hp)	1,965 (2,635)
Continuous Rated Power:	60 Hz: kWm (hp)	1,950 (2,614)
	50 Hz: kWm (hp)	1,635 (2,192)
Speed Regulation		±0.25%
Air Cleaner		Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	300 (79.3)
Total Oil Change: L (gal)	240 (63.4)
Engine Jacket Water Capacity: L (gal)	175 (46.2)
After Cooler Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	852 (225)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,600

// Fuel System

Maximum Fuel Lift: m (ft)	3 (10)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,200 (317)

// Fuel Consumption

60 Hz	STANDBY	PRIME	CONTINUOUS
At 100% of Power Rating:			
L/hr (gal/hr)	613 (162)	538 (142)	458 (121)
At 75% of Power Rating:			
L/hr (gal/hr)	435 (115)	397 (105)	352 (93)
At 50% of Power Rating:			
L/hr (gal/hr)	303 (80)	276 (73)	254 (67)

50 Hz	STANDBY	PRIME	CONTINUOUS
At 100% of Power Rating:			
L/hr (gal/hr)	500 (132)	435 (115)	367 (97)
At 75% of Power Rating:			
L/hr (gal/hr)	371 (98)	329 (87)	284 (75)
At 50% of Power Rating:			
L/hr (gal/hr)	254 (67)	231 (61)	201 (53)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	55 (131)
Max. Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.125 (0.5)
Water Pump Capacity: L/min (gpm)	1,350 (357)
Heat Rejection to Coolant: kW (BTUM)	**960 (54,593)
Heat Rejection to After Cooler: kW (BTUM)	**560 (31,846)
Fan Power: kW (hp)	99.5 (133.4)

// Air Requirements

Aspirating: *(m3/min) SCFM	**192 (6,780)
Air Flow Required for Rad. Cooled Unit: *(m3/min) SCFM	3,862 (136,409)

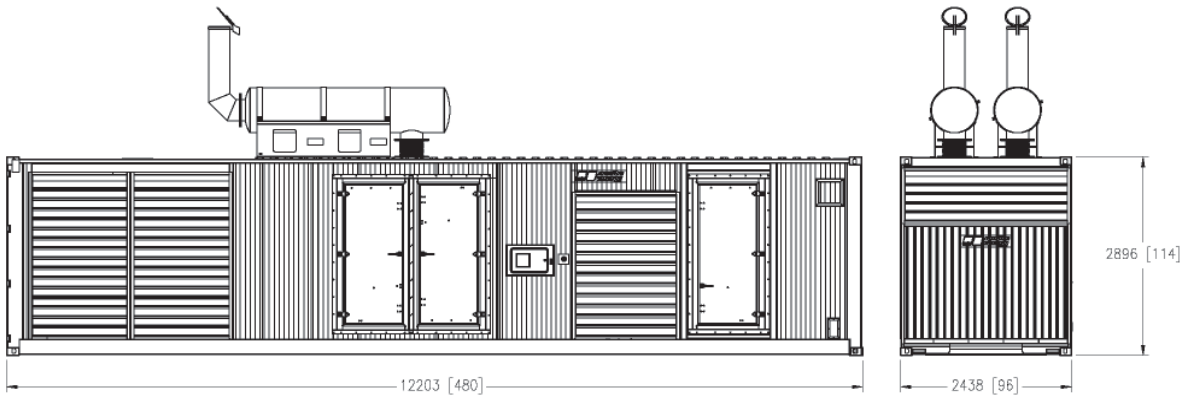
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	**505 (941)
Gas Volume at Stack Temp: m^3/min (CFM)	**504 (17,799)
Maximum Allowable Back Pressure: kPa (in. H_20)	8.5 (34.1)

** For 60 Hz Standby Rated Power

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only. Do not use for installation design.

System	Dimensions (L x W x H)	Weight (wet/no fuel)
Power Module	12,203 x 2,438 x 2,896 mm (480 x 96 x 114 in)	30,546 kg (67,201 lb)

Weights and dimensions are based on containerized units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Full Load - Standby	Full Load - Prime	Full Load - Continuous
Power Module dB(A)	C/F	C/F	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Standby 50 Hz operating hours per year: Max. 500.

// Prime power and continuous ratings apply to installations where utility power is unavailable or unreliable. At varying load for prime power ratings or non-varying load for continuous ratings, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve for both ratings. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75% (Prime) ≤ 100% (Continuous).

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

Product intended for use outside of the United States.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 3R0096 DS34

34 kVA / 50 Hz / Standby
220 - 415V

Reference MTU 3R0096 DS34 (30 kVA) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	220V	220V	380V	400V	415V
Phase	1	3	3	3	3
PF	1	0.8	0.8	0.8	0.8
Hz	50	50	50	50	50
kW	26	27	27	27	27
kVA	26	34	34	34	34
Amps	118	89	51	49	47
skVA@30%					
Voltage Dip	64	83	83	97	97
Generator Model	285PSL1700	285PSL1700	285PSL1700	285PSL1700	285PSL1700
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 3029TFG89 Diesel Engine
- 3.2 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 250% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	3029TFG89
Type	4-Cycle
Arrangement	3-Inline
Displacement: L (in^3)	2.9 (177)
Bore: cm (in)	10.6 (4.2)
Stroke: cm (in)	11 (4.3)
Compression Ratio	17.2:1
Rated RPM	1,500
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	31 (42)
Speed Regulation	±1%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	8 (2.1)
Engine Jacket Water Capacity: L (gal)	5.7 (1.5)
System Coolant Capacity: L (gal)	11.4 (3)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	5/16" ID/-6 JIC
Fuel Return Connection Size	5/16" ID/-6 JIC
Max. Fuel Lift: m (ft)	2 (6.6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	108 (28.6)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	8.7 (2.3)
At 75% of Power Rating: L/hr (gal/hr)	6.4 (1.7)
At 50% of Power Rating: L/hr (gal/hr)	4.5 (1.2)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)*
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	91 (24)
Heat Rejection to Coolant: kW (BTUM)	18.1 (1,029)
Heat Radiated to Ambient: kW (BTUM)	3.5 (197)
Fan Power: kW (hp)	0.62 (0.83)

*Installation of a gravity exhaust louver in a Level 3 enclosure will reduce the ambient capacity of the cooling system by 5 °C (9 °F).

// Air Requirements

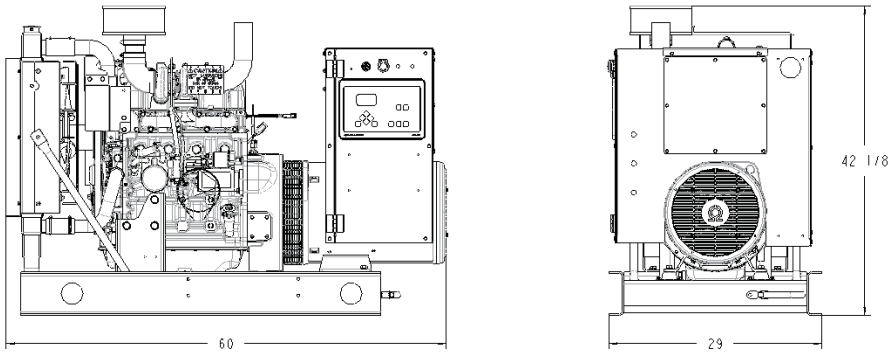
Aspirating: *m^3/min (SCFM)	2.7 (95)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	42 (1,472)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	12.7 (444)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	575 (1,067)
Gas Volume at Stack Temp: m^3/min (CFM)	6.3 (222)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,524 x 737 x 1,070 mm (60 x 29 x 42.13 in)	627 kg (1,380 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	68.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
N/A	N/A	N/A

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS44

44 kVA / 50 Hz / Standby
220 - 415V

Reference MTU 4R0113 DS44 (40 kVA) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	220V	220V	220V	380V	400V	415V
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	50	50	50	50	50	50
kW	35	35	35	35	35	35
kVA	35	35	44	44	44	44
Amps	167	167	125	72	69	66
skVA@30% Voltage Dip	76	112	84	84	93	102
Generator Model	361CSL1602	285PSL1711	361CSL1601	361CSL1601	361CSL1601	361CSL1601
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045TF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 250% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045TF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19.0:1
Rated RPM	1,500
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	49 (66)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	18.9 (5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	113 (29.9)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	13.8 (3.6)
At 75% of Power Rating: L/hr (gal/hr)	10.7 (2.8)
At 50% of Power Rating: L/hr (gal/hr)	7.6 (2)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	34 (1,935)
Heat Radiated to Ambient: kW (BTUM)	6.5 (372)
Fan Power: kW (hp)	1.08 (1.45)

// Air Requirements

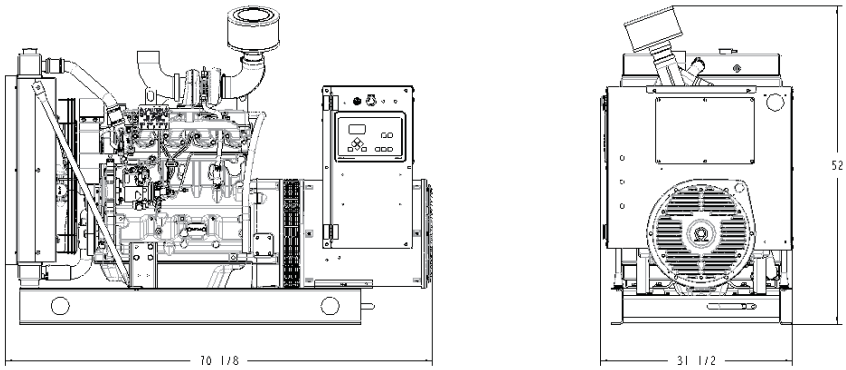
Aspirating: *m^3/min (SCFM)	3.9 (138)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	117 (4,095)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	23.9 (838)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	572 (1,062)
Gas Volume at Stack Temp: m^3/min (CFM)	9.3 (328)
Max. Allowable Back Pressure: kPa (in. H_20)	3.6 (14)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,781 x 800 x 1,321 mm (70.13 x 31.5 x 52 in)	872 kg (1,920 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	78.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
N/A	N/A	N/A

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS55

55 kVA / 50 Hz / Standby
220 - 415V

Reference MTU 4R0113 DS55 (50 kVA) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	220V	220V	220V	380V	400V	415V
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	50	50	50	50	50	50
kW	44	44	44	44	44	44
kVA	44	44	55	55	55	55
Amps	210	207	149	86	82	79
skVA@30% Voltage Dip	90	125	84	84	93	102
Generator Model	362CSL1604	361CSL1613	361CSL1601	361CSL1601	361CSL1601	361CSL1601
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 250% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19.0:1
Rated RPM	1,500
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	56 (75)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	16.7 (4.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	113 (29.9)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	14.7 (3.9)
At 75% of Power Rating: L/hr (gal/hr)	11.4 (3)
At 50% of Power Rating: L/hr (gal/hr)	8 (2.1)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	32 (1,821)
Heat Rejection to Air to Air: kW (BTUM)	4 (228)
Heat Radiated to Ambient: kW (BTUM)	9 (514)
Fan Power: kW (hp)	0.81 (1.09)

// Air Requirements

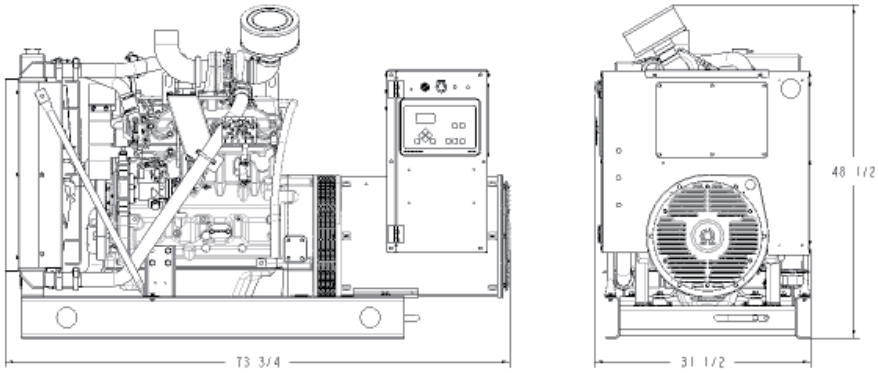
Aspirating: *m^3/min (SCFM)	4.1 (145)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	101 (3,531)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	33 (1,159)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	564 (1,047)
Gas Volume at Stack Temp: m^3/min (CFM)	9.7 (343)
Max. Allowable Back Pressure: kPa (in. H_20)	3.6 (14)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,873 x 800 x 1,232 mm (73.75 x 31.5 x 48.5 in)	964 kg (2,120 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	77.6

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
N/A	N/A	N/A

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS300

300 kVA / 50 Hz / Standby (Fuel-Optimized)
380 - 415V

Reference MTU 6R1600 DS300 (275 kVA Fuel and Exhaust-Optimized) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	240	240	240
kVA	300	300	300
Amps	456	433	417
skVA@30% Voltage Dip	440	650	540
Generator Model	432CSL6212	433CSL6216	432CSL6212
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G70F
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	ECU 8
Max. Power: kWm (bhp)	274 (367)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	171 (52.1)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	64 (16.8)
At 75% of Power Rating: L/hr (gal/hr)	47 (12.4)
At 50% of Power Rating: L/hr (gal/hr)	33 (8.6)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	144 (8,189)
Heat Rejection to After Cooler: kW (BTUM)	60 (3,412)
Heat Radiated to Ambient: kW (BTUM)	28 (1,592)
Fan Power: kW (hp)	10.8 (14.5)

// Air Requirements

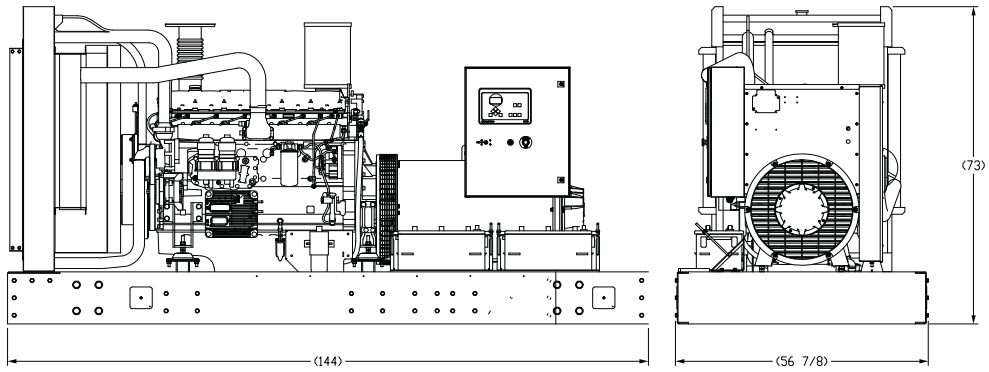
Aspirating: *m^3/min (SCFM)	24 (847.6)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	372 (13,137)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	101.7 (3,591)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	485 (905)
Gas Volume at Stack Temp: m^3/min (CFM)	60 (2,118.9)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,445 x 1,855 mm (144 x 56.875 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	85

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: Max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS330

330 kVA / 50 Hz / Standby (Fuel-Optimized)
380 - 415V

Reference MTU 6R1600 DS330 (300 kVA Fuel and Exhaust-Optimized) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	264	264	264
kVA	330	330	330
Amps	501	476	459
skVA@30% Voltage Dip	590	650	700
Generator Model	433CSL6216	433CSL6216	433CSL6216
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	6R1600G80F
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	ECU 8
Max. Power: kWm (bhp)	301 (403)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	171 (52.1)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	70 (18.5)
At 75% of Power Rating: L/hr (gal/hr)	52 (13.7)
At 50% of Power Rating: L/hr (gal/hr)	36 (9.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	155 (8,815)
Heat Rejection to After Cooler: kW (BTUM)	65 (3,696)
Heat Radiated to Ambient: kW (BTUM)	28 (1,592)
Fan Power: kW (hp)	10.8 (14.5)

// Air Requirements

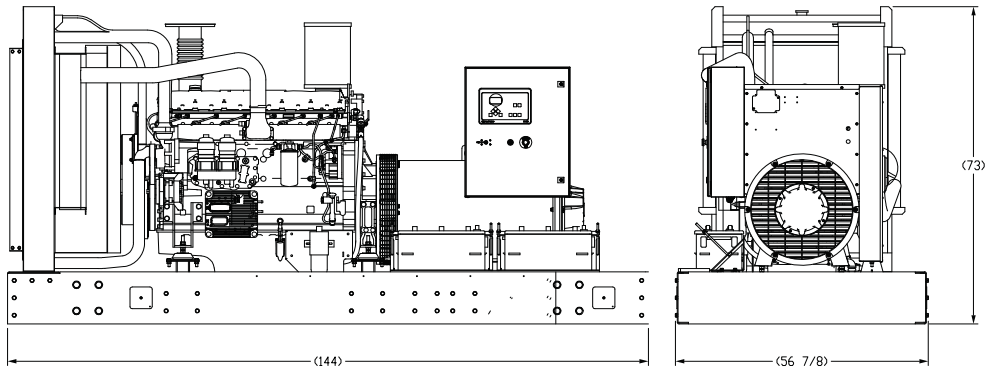
Aspirating: *m^3/min (SCFM)	24 (847.6)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	372 (13,137)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	101.7 (3,591)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	480 (896)
Gas Volume at Stack Temp: m^3/min (CFM)	60 (2,118.9)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,445 x 1,855 mm (144 x 56.875 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	85.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: Max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS400

400 kVA / 50 Hz / Standby (Fuel-Optimized)
380 - 415V

Reference MTU 8V1600 DS400 (365 kVA Fuel and Exhaust-Optimized) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	320	320	320
kVA	400	400	400
Amps	608	577	556
skVA@30% Voltage Dip	660	730	820
Generator Model	433CSL6220	433CSL6220	572RSL4025
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G70F
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.9)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	358 (480)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	342 (90.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	81 (21.4)
At 75% of Power Rating: L/hr (gal/hr)	61 (16.2)
At 50% of Power Rating: L/hr (gal/hr)	45 (12)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	180 (10,237)
Heat Rejection to After Cooler: kW (BTUM)	60 (3,412)
Heat Radiated to Ambient: kW (BTUM)	40.8 (2,320)
Fan Power: kW (hp)	10.4 (14)

// Air Requirements

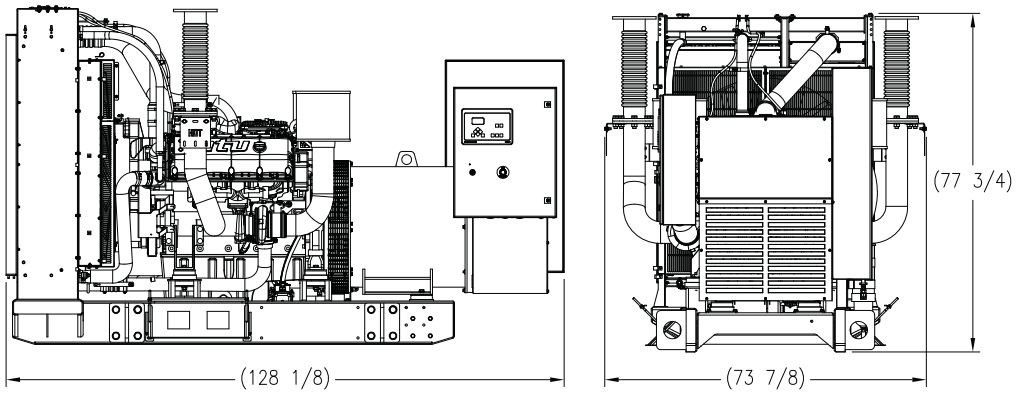
Aspirating: *m^3/min (SCFM)	23.4 (827)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	148.2 (5,233)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	476 (889)
Gas Volume at Stack Temp: m^3/min (CFM)	66 (2,331)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,255 x 1,877 x 1,975 mm (128.13 x 73.88x 77.75 in)	3,992 kg (8,800 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: Max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS440

440 kVA / 50 Hz / Standby (Fuel-Optimized)
380 - 415V

Reference MTU 8V1600 DS440 (400 kVA Fuel and Exhaust-Optimized) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	352	352	352
kVA	440	440	440
Amps	669	635	612
skVA@30% Voltage Dip	680	780	820
Generator Model	572RSL4025	572RSL4025	572RSL4025
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G80F
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.9)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	394 (528)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	342 (90.4)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	90 (23.7)
At 75% of Power Rating: L/hr (gal/hr)	67 (17.7)
At 50% of Power Rating: L/hr (gal/hr)	49 (13)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	195 (11,090)
Heat Rejection to After Cooler: kW (BTUM)	75 (4,265)
Heat Radiated to Ambient: kW (BTUM)	44.3 (2,519)
Fan Power: kW (hp)	10.4 (14)

// Air Requirements

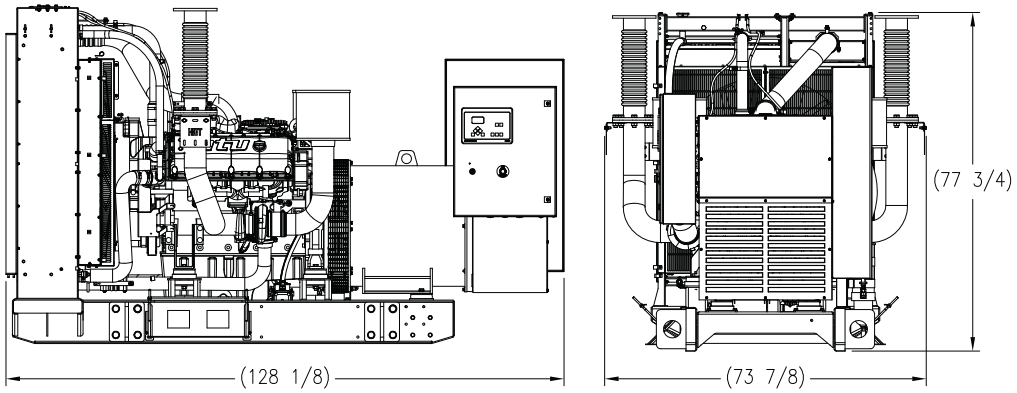
Aspirating: *m^3/min (SCFM)	25.2 (891)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	160.9 (5,682)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	491 (916)
Gas Volume at Stack Temp: m^3/min (CFM)	72 (2,543)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,255 x 1,877 x 1,975 mm (128.13 x 73.88 x 77.75 in)	3,992 kg (8,800 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: Max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS500

500 kVA / 50 Hz / Standby (Fuel-Optimized)
380 - 415V

Reference MTU 10V1600 DS500 (450 kVA Fuel and Exhaust-Optimized) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	400	400	400
kVA	500	500	500
Amps	760	722	696
skVA@30% Voltage Dip	980	850	1200
Generator Model	572RSL4029	572RSL4027	572RSL4029
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	10V1600G70F
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	448 (601)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	340.7 (90)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	99.9 (26.4)
At 75% of Power Rating: L/hr (gal/hr)	78 (20.6)
At 50% of Power Rating: L/hr (gal/hr)	56.8 (15)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	390 (103)
Heat Rejection to Coolant: kW (BTUM)	216 (12,283)
Heat Rejection to After Cooler: kW (BTUM)	60 (3,412)
Heat Radiated to Ambient: kW (BTUM)	47.9 (2,724)
Fan Power: kW (hp)	16.4 (22)

// Air Requirements

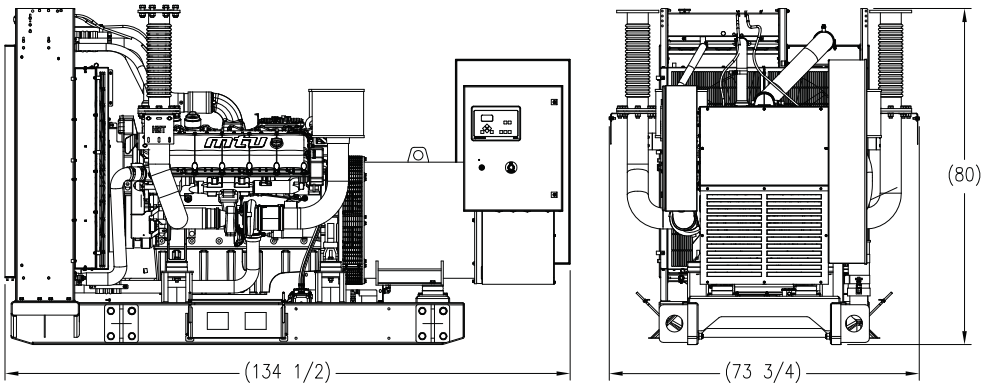
Aspirating: *m^3/min (SCFM)	27 (953)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	554 (19,564)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	165 (5,841)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	520 (968)
Gas Volume at Stack Temp: m^3/min (CFM)	75 (2,649)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,552 kg (10,035 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: Max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS550

550 kVA / 50 Hz / Standby (Fuel-Optimized)
380 - 415V

Reference MTU 10V1600 DS550 (500 kVA Fuel and Exhaust-Optimized) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	440	440	440
kVA	550	550	550
Amps	836	794	765
skVA@30% Voltage Dip	980	1100	1200
Generator Model	572RSL4029	572RSL4029	572RSL4029
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	10V1600G80F
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	493 (661)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	340.7 (90)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	109.4 (28.9)
At 75% of Power Rating: L/hr (gal/hr)	82.9 (21.9)
At 50% of Power Rating: L/hr (gal/hr)	62.5 (16.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	390 (103)
Heat Rejection to Coolant: kW (BTUM)	227 (12,909)
Heat Rejection to After Cooler: kW (BTUM)	75 (4,265)
Heat Radiated to Ambient: kW (BTUM)	51.6 (2,934)
Fan Power: kW (hp)	16.4 (22)

// Air Requirements

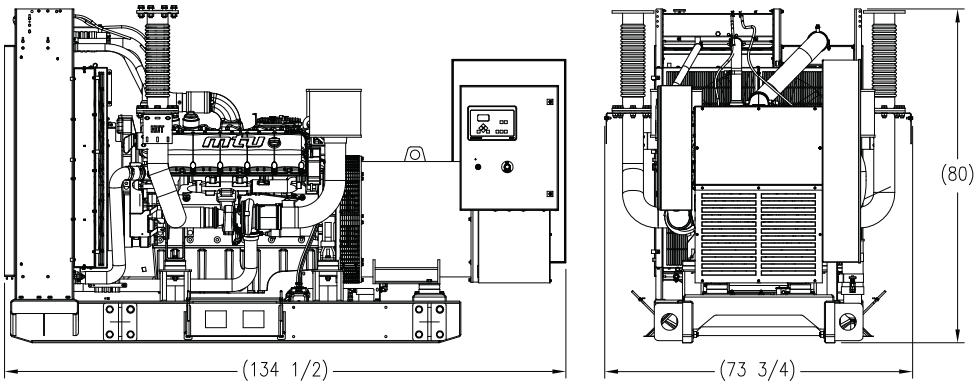
Aspirating: *m^3/min (SCFM)	29 (1,017)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	554 (19,564)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	187 (6,618)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	540 (1,004)
Gas Volume at Stack Temp: m^3/min (CFM)	83 (2,924)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,552 kg (10,035 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: Max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS650

650 kVA / 50 Hz / Standby (Fuel-Optimized)
380 - 415V

Reference MTU 12V1600 DS650 (590 kVA Fuel and Exhaust-Optimized) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	520	520	520
kVA	650	650	650
Amps	988	938	904
skVA@30% Voltage Dip	1450	1600	1750
Generator Model	573RSL4033	573RSL4033	573RSL4033
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V1600G70F
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	576 (772)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	341.8 (90.3)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	130 (34.3)
At 75% of Power Rating: L/hr (gal/hr)	100 (26.4)
At 50% of Power Rating: L/hr (gal/hr)	70 (18.4)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	433 (115)
Heat Rejection to Coolant: kW (BTUM)	236 (13,421)
Heat Rejection to After Cooler: kW (BTUM)	104 (5,914)
Heat Radiated to Ambient: kW (BTUM)	59.4 (3,378)
Fan Power: kW (hp)	25.4 (34)

// Air Requirements

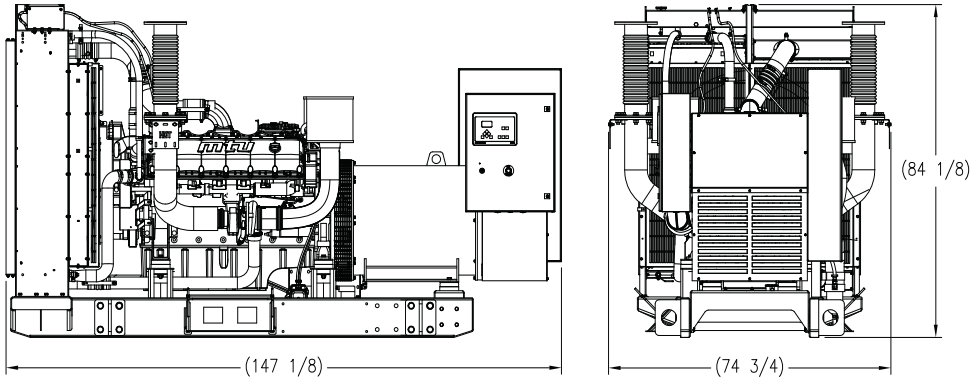
Aspirating: *m^3/min (SCFM)	48 (1,695)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	803 (28,350)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	216 (7,618)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	484 (903)
Gas Volume at Stack Temp: m^3/min (CFM)	126 (4,450)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	5,249 kg (11,572 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: Max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS715

715 kVA / 50 Hz / Standby (Fuel-Optimized)
380 - 415V

Reference MTU 12V1600 DS715 (650 kVA Fuel and Exhaust-Optimized) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	572	572	572
kVA	715	715	715
Amps	1086	1032	995
skVA@30% Voltage Dip	1450	1600	2000
Generator Model	573RSL4033	573RSL4033	574RSL4037
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
150 °C Max. Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	12V1600G80F
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	634 (850)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	341.8 (90.3)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	143 (37.8)
At 75% of Power Rating: L/hr (gal/hr)	107 (28.3)
At 50% of Power Rating: L/hr (gal/hr)	75 (19.7)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	433 (115)
Heat Rejection to Coolant: kW (BTUM)	255 (14,501)
Heat Rejection to After Cooler: kW (BTUM)	133 (7,563)
Heat Radiated to Ambient: kW (BTUM)	68.1 (3,873)
Fan Power: kW (hp)	25.4 (34)

// Air Requirements

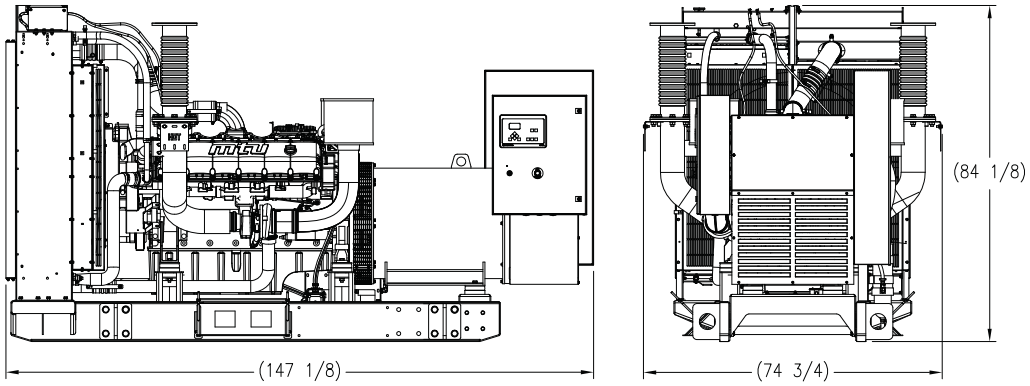
Aspirating: *m^3/min (SCFM)	45 (1,589)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	803 (28,350)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	247 (8,734)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	485 (905)
Gas Volume at Stack Temp: m^3/min (CFM)	120 (4,238)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	5,249 kg (11,572 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: Max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 18V2000 DS1400

1400 kVA / 50 Hz / Standby
380 - 3300V

Reference MTU 18V2000 DS1400 (1250 kVA) for Prime Rating Technical Data

SYSTEM RATINGS

Standby

Voltage (L-L)	380V	400V	415V	3300V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	50	50	50	50
kW	1120	1120	1120	1120
kVA	1400	1400	1400	1400
Amps	2127	2021	1948	245
skVA@30%				
Voltage Dip	2450	3510	3040	2020
Generator Model*	742RSL4050	742RSL4050	742RSL4050	742FSM4366
Temp Rise	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C	150 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.

CERTIFICATIONS AND STANDARDS

// **Emissions –** Fuel Optimized

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality, and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 85%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 18V 2000 Diesel Engine
- 40.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator Resilient Mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Rack & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
130 °C Maximum Standby Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	18V 2000 G76F
Type	4-Cycle
Arrangement	18-V
Displacement: L (in^3)	40.2 (2,448)
Bore: cm (in)	13.5 (5.3)
Stroke: cm (in)	15.6 (6.15)
Compression Ratio	17.5
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,235 (1,656)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	122 (32.2)
Engine Jacket Water Capacity: L (gal)	73 (19.3)
System Coolant Capacity: L (gal)	185 (48.9)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#12 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#12 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,380 (365)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	285 (75)
At 75% of Power Rating: L/hr (gal/hr)	209 (55)
At 50% of Power Rating: L/hr (gal/hr)	142 (37.5)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.13 (0.5)
Water Pump Capacity: L/min (gpm)	772 (204)
Heat Rejection to Coolant: kW (BTUM)	475 (27,013)
Heat Rejection to After Cooler: kW (BTUM)	285 (16,208)
Heat Radiated to Ambient: kW (BTUM)	92.5 (5,542.2)
Fan Power: kW (hp)	31.5 (42.2)

// Air Requirements

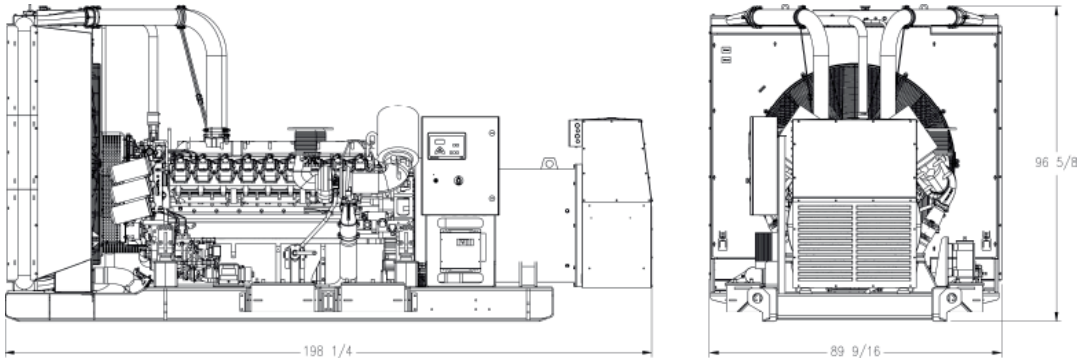
Aspirating: *m^3/min (SCFM)	90.6 (3,200)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,480 (52,266)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	338 (12,510)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	495 (923)
Gas Volume at Stack Temp: m^3/min (CFM)	237 (8,370)
Maximum Allowable Back Pressure: kPa (in. H_20)	5 (20)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	5,036 x 2,275 x 2,454 mm (198.3 x 89.6 x 96.6 in)	9,525 kg (21,000 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Standby Full Load
Level 0: Open Power Unit dB(A)	88.7

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary as a function of ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data provided are laboratory results from one engine representing this rating. The data was obtained under controlled environmental conditions with calibrated instrumentation traceable to the United States National Bureau of Standards and in compliance with US EPA regulations found within 40 CFR Part 89. The weighted cycle value (not shown) from each engine is guaranteed to be below the US EPA Standards at the US EPA defined conditions.

RATING DEFINITIONS AND CONDITIONS

// Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%. Operating hours per year: max. 500.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 3R0096 DS34

30 kVA / 50 Hz / Prime
220 - 415V

Reference MTU 3R0096 DS34 (34 kVA) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	220V	220V	380V	400V	415V
Phase	1	3	3	3	3
PF	1	0.8	0.8	0.8	0.8
Hz	50	50	50	50	50
kW	24	24	24	24	24
kVA	24	30	30	30	30
Amps	109	78	45	43	41
skVA@30% Voltage Dip	64	83	83	97	97
Generator Model	285PSL1700	285PSL1700	285PSL1700	285PSL1700	285PSL1700
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 3029TFG89 Diesel Engine
- 2.9 Liter Displacement
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 250% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	3029TFG89
Type	4-Cycle
Arrangement	3-Inline
Displacement: L (in^3)	2.9 (177)
Bore: cm (in)	10.6 (4.2)
Stroke: cm (in)	11 (4.3)
Compression Ratio	17.2:1
Rated RPM	1,500
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	28 (38)
Speed Regulation	±1%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	8 (2.1)
Engine Jacket Water Capacity: L (gal)	5.7 (1.5)
System Coolant Capacity: L (gal)	11.4 (3)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	5/16" ID/-6 JIC
Fuel Return Connection Size	5/16" ID/-6 JIC
Max. Fuel Lift: m (ft)	2 (6.6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	108 (28.6)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	7.9 (2.1)
At 75% of Power Rating: L/hr (gal/hr)	5.7 (1.5)
At 50% of Power Rating: L/hr (gal/hr)	4.2 (1.1)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)*
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	91 (24)
Heat Rejection to Coolant: kW (BTUM)	18.1 (1,029)
Heat Radiated to Ambient: kW (BTUM)	3.5 (197)
Fan Power: kW (hp)	0.62 (0.83)

*Installation of a gravity exhaust louver in a Level 3 enclosure will reduce the ambient capacity of the cooling system by 5 °C (9 °F).

// Air Requirements

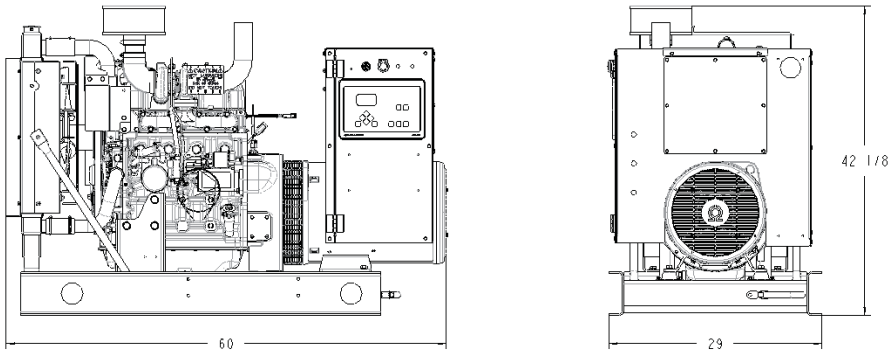
Aspirating: *m^3/min (SCFM)	2.7 (95)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	42 (1,472)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	12.7 (444)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	575 (1,067)
Gas Volume at Stack Temp: m^3/min (CFM)	6.3 (222)
Max. Allowable Back Pressure: kPa (in. H_20)	7.5 (30)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,524 x 737 x 1,070 mm (60 x 29 x 42.13 in)	627 kg (1,380 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	64.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
N/A	N/A	N/A

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS44

40 kVA / 50 Hz / Prime
220 - 415V

Reference MTU 4R0113 DS44 (44 kVA) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	220V	220V	220V	380V	400V	415V
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	50	50	50	50	50	50
kW	32	32	32	32	32	32
kVA	32	32	40	40	40	40
Amps	145	149	112	65	62	59
skVA@30% Voltage Dip	64	112	84	84	93	102
Generator Model	361CSL1601	285PSL1711	361CSL1601	361CSL1601	361CSL1601	361PSL1601
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045TF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 250% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)
// Digital Control Panel(s)
- CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045TF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19.0:1
Rated RPM	1,500
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	44 (59)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	18.9 (5)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	113 (29.9)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	12.5 (3.3)
At 75% of Power Rating: L/hr (gal/hr)	9.8 (2.6)
At 50% of Power Rating: L/hr (gal/hr)	6.9 (1.8)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	29 (1,651)
Heat Radiated to Ambient: kW (BTUM)	5.5 (314)
Fan Power: kW (hp)	1.08 (1.45)

// Air Requirements

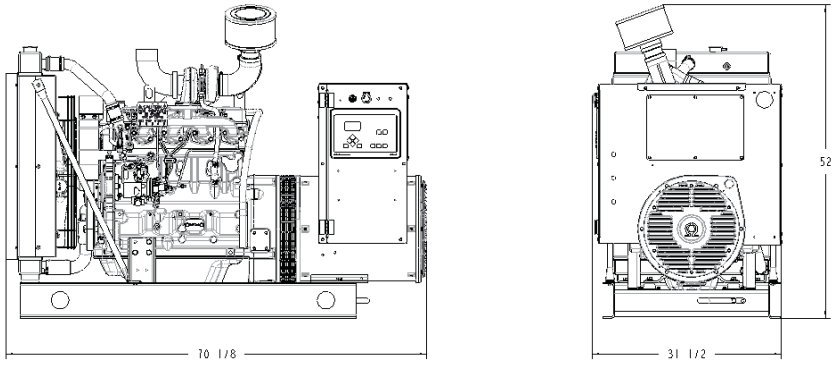
Aspirating: *m^3/min (SCFM)	3.7 (131)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	117 (4,095)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	20.2 (709)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	542 (1,008)
Gas Volume at Stack Temp: m^3/min (CFM)	8.7 (307)
Max. Allowable Back Pressure: kPa (in. H_20)	3.6 (14)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,781 x 800 x 1,321 mm (70.13 x 31.5 x 52 in)	872 kg (1,920 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	78.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
N/A	N/A	N/A

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 4R0113 DS55

50 kVA / 50 Hz / Prime
220 - 415V

Reference MTU 4R0113 DS55 (55 kVA) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	220V	220V	220V	380V	400V	415V
Phase	1	1	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8
Hz	50	50	50	50	50	50
kW	40	40	40	40	40	40
kVA	40	40	50	50	50	50
Amps	181	189	136	79	75	72
skVA@30% Voltage Dip	76	125	84	84	93	102
Generator Model	361CSL1602	361CSL1613	361CSL1601	361CSL1601	361CSL1601	361PSL1601
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
– IBC Certification

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 4045HF280 Diesel Engine
- 4.5 Liter Displacement
- Mechanical Injection Pump
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 250% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filter
Fuel Filter with Water Separator
Jacket Water Pump
Thermostat
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 12V
Governor – Mechanical Droop
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 12V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Solid State, Volts-per-Hertz Regulator
±1% Voltage Regulation No Load to Full Load
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	John Deere
Model	4045HF280
Type	4-Cycle
Arrangement	4-Inline
Displacement: L (in^3)	4.5 (275)
Bore: cm (in)	10.6 (4.19)
Stroke: cm (in)	12.7 (5)
Compression Ratio	19.0:1
Rated RPM	1,500
Engine Governor	Mechanical Droop
Max. Power: kWm (bhp)	50 (67)
Speed Regulation	±0.5%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	13 (3.4)
Engine Jacket Water Capacity: L (gal)	8.5 (2.3)
System Coolant Capacity: L (gal)	16.7 (4.4)

// Electrical

Electric Volts DC	12
Cold Cranking Amps Under -17.8 °C (0 °F)	925

// Fuel System

Fuel Supply Connection Size	3/8” NPT
Fuel Return Connection Size	3/8” NPT
Max. Fuel Lift: m (ft)	1.8 (6)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	113 (29.9)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	13.4 (3.5)
At 75% of Power Rating: L/hr (gal/hr)	10.4 (2.7)
At 50% of Power Rating: L/hr (gal/hr)	7.4 (2)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.12 (0.5)
Water Pump Capacity: L/min (gpm)	144 (38)
Heat Rejection to Coolant: kW (BTUM)	27 (1,537)
Heat Rejection to Air to Air: kW (BTUM)	4 (228)
Heat Radiated to Ambient: kW (BTUM)	7.5 (427)
Fan Power: kW (hp)	0.81 (1.09)

// Air Requirements

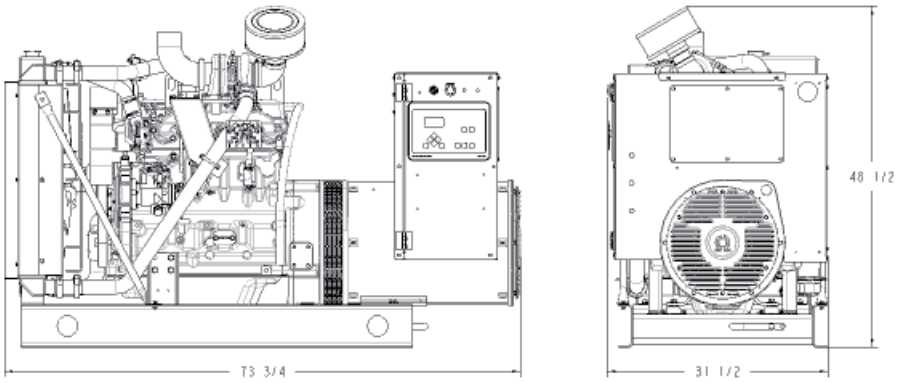
Aspirating: *m^3/min (SCFM)	3.9 (138)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	101 (3,531)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	28 (964)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	540 (1,004)
Gas Volume at Stack Temp: m^3/min (CFM)	9.2 (325)
Max. Allowable Back Pressure: kPa (in. H_20)	3.6 (14)
Min. Allowable Back Pressure: kPa (in. H_20)	N/A

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	1,873 x 800 x 1,232 mm (73.75 x 31.5 x 48.5 in)	964 kg (2,120 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	77.1

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
N/A	N/A	N/A

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary with ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data was obtained in compliance with US EPA regulations.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, overload power in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS300

275 kVA / 50 Hz / Prime (Fuel-Optimized)
380 - 415V

Reference MTU 6R1600 DS300 (300 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime **

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	220	220	220
kVA	275	275	275
Amps	418	397	383
skVA@30% Voltage Dip	590	650	700
Generator Model	433CSL6216	433CSL6216	433CSL6216
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

** Prime technical data is for a Fuel-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle
// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generato (PMG)
// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display
// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	6R1600G10F
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	ECU 8
Max. Power: kWm (bhp)**	249 (334)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	171 (52.1)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	58 (15.2)
At 75% of Power Rating: L/hr (gal/hr)	44 (11.5)
At 50% of Power Rating: L/hr (gal/hr)	30 (8)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	115 (6,540)
Heat Rejection to After Cooler: kW (BTUM)	50 (2,843)
Heat Radiated to Ambient: kW (BTUM)	28 (1,592)
Fan Power: kW (hp)	10.8 (14.5)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	18 (635.7)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	372 (13,137)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	101.7 (3,591)

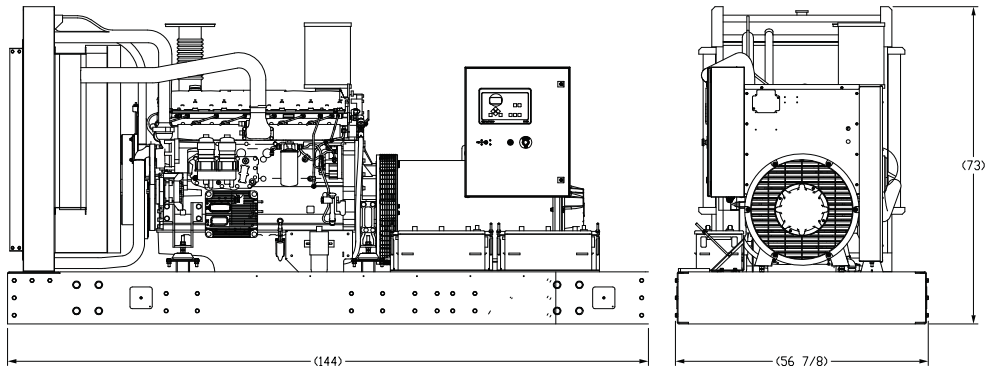
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	495 (923)
Gas Volume at Stack Temp: m^3/min (CFM)	54 (1,907)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for a Fuel-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,445 x 1,855 mm (144 x 56.875 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	83.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS300

275 kVA / 50 Hz / Prime (Exhaust-Optimized)
380 - 415V

Reference MTU 6R1600 DS300 (300 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime**

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	220	220	220
kVA	275	275	275
Amps	418	397	383
skVA@30%			
Voltage Dip	590	650	700
Generator Model	433CSL6216	433CSL6216	433CSL6216
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

** Prime technical data is for an Exhaust-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Emissions –** TA-Luft Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
TA-Luft Compliant Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	6R1600G10F
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	ECU 8
Max. Power: kWm (bhp)**	249 (334)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	171 (52.1)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	62 (16.3)
At 75% of Power Rating: L/hr (gal/hr)	48 (12.6)
At 50% of Power Rating: L/hr (gal/hr)	33 (8.7)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	136 (7,734)
Heat Rejection to After Cooler: kW (BTUM)	71 (4,037)
Heat Radiated to Ambient: kW (BTUM)	28 (1,592)
Fan Power: kW (hp)	10.8 (14.5)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	18 (635.7)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	372 (13,137)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	101.7 (3,591)

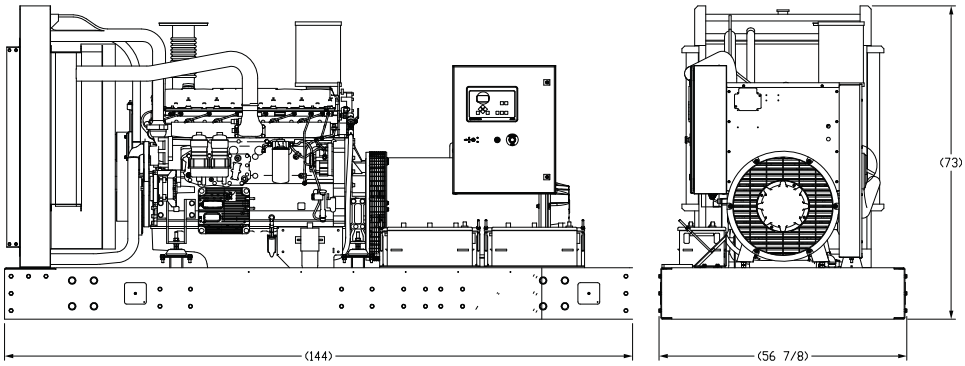
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	485 (905)
Gas Volume at Stack Temp: m^3/min (CFM)	54 (1,907)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for an Exhaust-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,445 x 1,855 mm (144 x 56.875 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	83.8

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS330

300 kVA / 50 Hz / Prime (Fuel-Optimized)
380 - 415V

Reference MTU 6R1600 DS330 (330 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime **

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	240	240	240
kVA	300	300	300
Amps	456	433	417
skVA@30% Voltage Dip	590	650	700
Generator Model	433CSL6216	433CSL6216	433CSL6216
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

** Prime technical data is for a Fuel-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	6R1600G20F
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	ECU 8
Max. Power: kWm (bhp)**	274 (367)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	171 (52.1)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	63 (16.6)
At 75% of Power Rating: L/hr (gal/hr)	48 (12.6)
At 50% of Power Rating: L/hr (gal/hr)	33 (8.7)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	125 (7,109)
Heat Rejection to After Cooler: kW (BTUM)	55 (3,128)
Heat Radiated to Ambient: kW (BTUM)	28 (1,592)
Fan Power: kW (hp)	10.8 (14.5)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	24 (847.6)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	372 (13,137)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	101.7 (3,591)

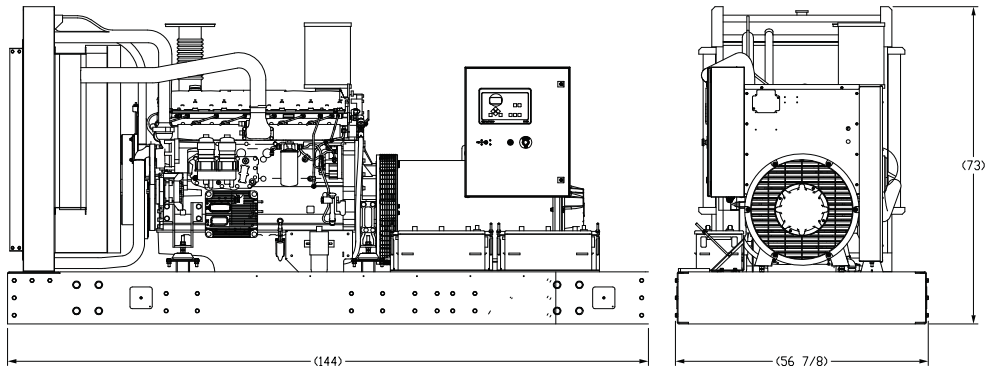
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	485 (905)
Gas Volume at Stack Temp: m^3/min (CFM)	60 (2,118.9)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for a Fuel-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,445 x 1,855 mm (144 x 56.875 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	85

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 6R1600 DS330

300 kVA / 50 Hz / Prime (Exhaust-Optimized)
380 - 415V

Reference MTU 6R1600 DS330 (330 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime**

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	240	240	240
kVA	300	300	300
Amps	456	433	417
skVA@30%			
Voltage Dip	590	650	700
Generator Model	433CSL6216	433CSL6216	433CSL6216
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE

** Prime technical data is for an Exhaust-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Emissions –** TA-Luft Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 6R1600 Diesel Engine
- 10.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Optional Permanent Magnet Generator (PMG)

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaner
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
TA-Luft Compliant Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±1% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	6R1600G20F
Type	4-Cycle
Arrangement	6-Inline
Displacement: L (Cu In)	10.5 (641)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	ECU 8
Max. Power: kWm (bhp)**	274 (367)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	45 (11.9)
System Coolant Capacity: L (gal)	82 (21.7)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	950

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	171 (52.1)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	68 (17.9)
At 75% of Power Rating: L/hr (gal/hr)	52 (13.7)
At 50% of Power Rating: L/hr (gal/hr)	36 (9.5)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	277 (73.1)
Heat Rejection to Coolant: kW (BTUM)	141 (8,018)
Heat Rejection to After Cooler: kW (BTUM)	71 (4,037)
Heat Radiated to Ambient: kW (BTUM)	28 (1,592)
Fan Power: kW (hp)	10.8 (14.5)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	24 (847.6)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	372 (13,137)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	101.7 (3,591)

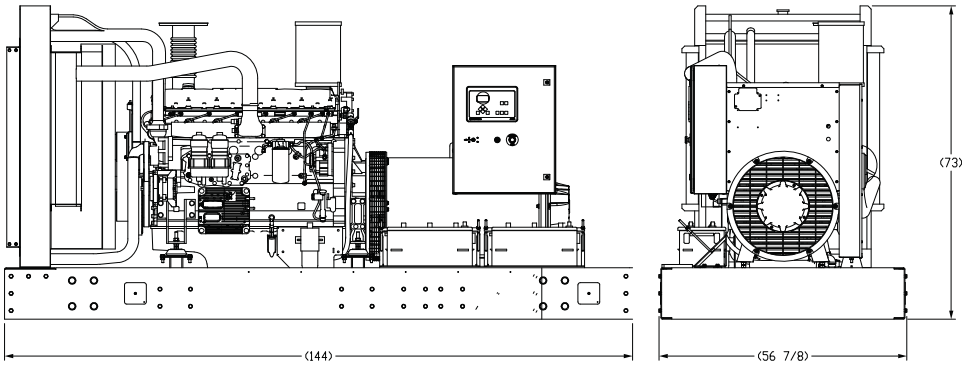
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	470 (878)
Gas Volume at Stack Temp: m^3/min (CFM)	60 (2,118.9)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for an Exhaust-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,658 x 1,445 x 1,855 mm (144 x 56.875 x 73 in)	3,078 kg (6,785 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	85

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS400

365 kVA / 50 Hz / Prime (Fuel-Optimized)
380 - 415V

Reference MTU 8V1600 DS400 (400 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime **

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	292	292	292
kVA	365	365	365
Amps	555	527	508
skVA@30%			
Voltage Dip	660	730	820
Generator Model	433CSL6220	433CSL6220	572RSL4025
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** Prime technical data is for a Fuel-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V 1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G10F
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.9)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	325 (436)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	342 (90.4)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	80 (21.1)
At 75% of Power Rating: L/hr (gal/hr)	62 (16.4)
At 50% of Power Rating: L/hr (gal/hr)	45 (11.8)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	170 (9,668)
Heat Rejection to After Cooler: kW (BTUM)	50 (2,844)
Heat Radiated to Ambient: kW (BTUM)	40 (2,275)
Fan Power: kW (hp)	10.4 (14)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	25.2 (891)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	145.3 (5,130)

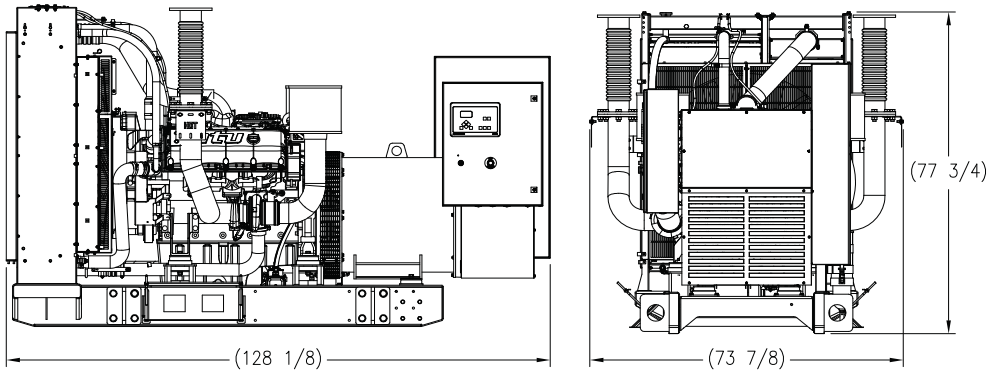
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	490 (914)
Gas Volume at Stack Temp: m^3/min (CFM)	72 (2,543)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for a Fuel-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,255 x 1,877 x 1,975 mm (128.13 x 73.88 x 77.75 in)	3,992 kg (8,800 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS400

365 kVA / 50 Hz / Prime (Exhaust-Optimized)
380 - 415V

Reference MTU 8V1600 DS400 (400 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime**

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	292	292	292
kVA	365	365	365
Amps	555	527	508
skVA@30% Voltage Dip	660	730	820
Generator Model	433CSL6220	433CSL6220	572RSL4025
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

** Prime technical data is for an Exhaust-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Emissions –** TA-Luft Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
TA-Luft Compliant Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G10F
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.9)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	325 (436)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	342 (90.4)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	82 (21.6)
At 75% of Power Rating: L/hr (gal/hr)	61 (16)
At 50% of Power Rating: L/hr (gal/hr)	42 (11)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	175 (9,952)
Heat Rejection to After Cooler: kW (BTUM)	80 (4,450)
Heat Radiated to Ambient: kW (BTUM)	40 (2,275)
Fan Power: kW (hp)	10.4 (14)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	25.8 (912)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	145.3 (5,130)

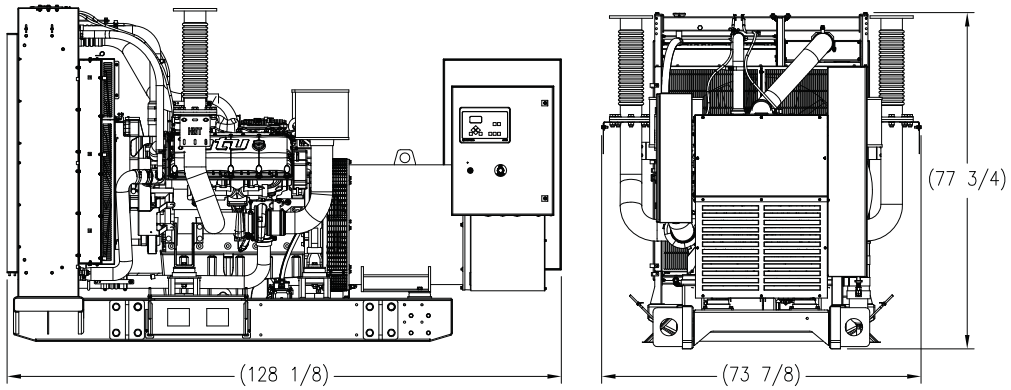
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	460 (860)
Gas Volume at Stack Temp: m^3/min (CFM)	72 (2,543)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for an Exhaust-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,255 x 1,877 x 1,975 mm (128.13 x 73.88 x 77.75 in)	3,992 kg (8,800 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS440

400 kVA / 50 Hz / Prime (Fuel-Optimized)
380 - 415V

Reference MTU 8V1600 DS440 (440 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime **

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	320	320	320
kVA	400	400	400
Amps	608	577	556
skVA@30%			
Voltage Dip	660	780	820
Generator Model	433CSL6220	572RSL4025	572RSL4025
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for a Fuel-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G20F
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.9)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	358 (480)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	342 (90.4)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	81 (21.4)
At 75% of Power Rating: L/hr (gal/hr)	61 (16.1)
At 50% of Power Rating: L/hr (gal/hr)	46 (12)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	185 (10,521)
Heat Rejection to After Cooler: kW (BTUM)	60 (3,412)
Heat Radiated to Ambient: kW (BTUM)	40.8 (2,320)
Fan Power: kW (hp)	10.4 (14)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	23.4 (827)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	148.2 (5,233)

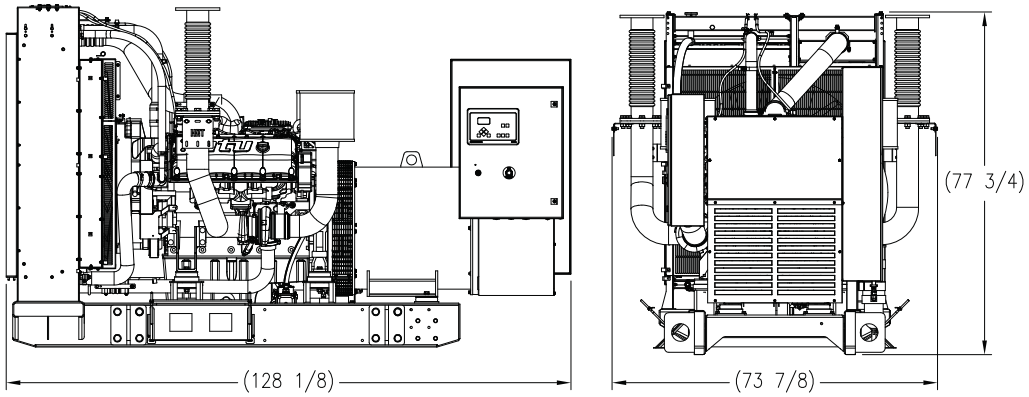
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	476 (889)
Gas Volume at Stack Temp: m^3/min (CFM)	66 (2,331)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

** Prime technical data is for a Fuel-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,255 x 1,877 x 1,975 mm (128.13 x 73.88 x 77.75 in)	3,992 kg (8,800 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 8V1600 DS440

400 kVA / 50 Hz / Prime (Exhaust-Optimized)
380 - 415V

Reference MTU 8V1600 DS440 (440 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime**

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	320	320	320
kVA	400	400	400
Amps	608	577	556
skVA@30%			
Voltage Dip	660	780	820
Generator Model	433CSL6220	572RSL4025	572RSL4025
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	12 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for an Exhaust-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Emissions –** TA-Luft Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 8V1600 Diesel Engine
- 14.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- 300% Short Circuit Capability with Permanent Magnet Generator (PMG)
    - PMG Standard for 570 frame and larger
    - PMG Optional for 430 frame and smaller

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
TA-Luft Compliant Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
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UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	8V1600G20F
Type	4-Cycle
Arrangement	8-V
Displacement: L (Cu In)	14 (854)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.9)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)	358 (480)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	46 (12.2)
Engine Jacket Water Capacity: L (gal)	50 (13.2)
System Coolant Capacity: L (gal)	80.3 (21.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	342 (90.4)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	91 (24)
At 75% of Power Rating: L/hr (gal/hr)	67 (17.7)
At 50% of Power Rating: L/hr (gal/hr)	46 (12)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	362 (95)
Heat Rejection to Coolant: kW (BTUM)	190 (10,805)
Heat Rejection to After Cooler: kW (BTUM)	95 (5,403)
Heat Radiated to Ambient: kW (BTUM)	40.8 (2,320)
Fan Power: kW (hp)	10.4 (14)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	27.6 (975)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	510 (18,010)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	148.2 (5,233)

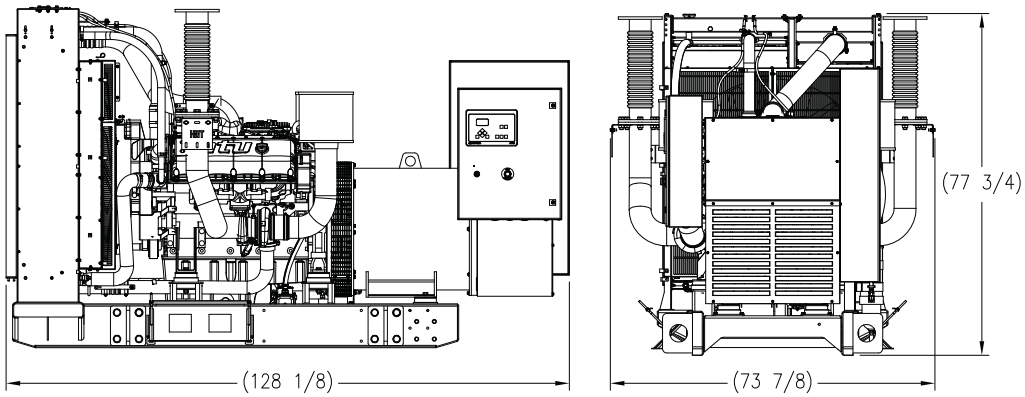
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	485 (905)
Gas Volume at Stack Temp: m^3/min (CFM)	78 (2,755)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for an Exhaust-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,255 x 1,877 x 1,975 mm (128.13 x 73.88 x 77.75 in)	3,992 kg (8,800 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS500

450 kVA / 50 Hz / Prime (Fuel-Optimized)
380 - 415V

Reference MTU 10V1600 DS500 (500 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime **

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	360	360	360
kVA	450	450	450
Amps	684	650	626
skVA@30% Voltage Dip	720	960	1200
Generator Model	572RSL4025	572RSL4027	572RSL4027
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for a Fuel-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	10V1600G10F
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)**	407 (546)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	340.7 (90)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	91 (24.1)
At 75% of Power Rating: L/hr (gal/hr)	73 (19.4)
At 50% of Power Rating: L/hr (gal/hr)	53 (13.9)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	433 (115)
Heat Rejection to Coolant: kW (BTUM)	210 (11,942)
Heat Rejection to After Cooler: kW (BTUM)	47 (2,673)
Heat Radiated to Ambient: kW (BTUM)	48.1 (2,735)
Fan Power: kW (hp)	16.4 (22)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	24 (848)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	554 (19,564)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	174.7 (6,169)

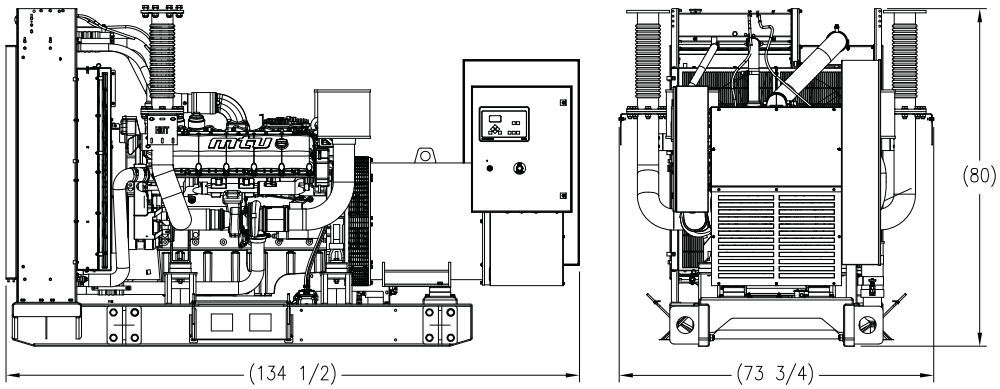
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	549 (1,020)
Gas Volume at Stack Temp: m^3/min (CFM)	68 (2,416)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for a Fuel-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,552 kg (10,035 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	88.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS500

450 kVA / 50 Hz / Prime (Exhaust-Optimized)
380 - 415V

Reference MTU 10V1600 DS500 (500 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime**

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	360	360	360
kVA	450	450	450
Amps	684	650	626
skVA@30% Voltage Dip	720	960	1050
Generator Model	572RSL4025	572RSL4027	572RSL4027
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for an Exhaust-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Emissions –** TA-Luft Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
TA-Luft Compliant Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	10V1600G10F
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)**	407 (546)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	340.7 (90)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	100 (26.5)
At 75% of Power Rating: L/hr (gal/hr)	77 (20.3)
At 50% of Power Rating: L/hr (gal/hr)	53 (13.9)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	390 (103)
Heat Rejection to Coolant: kW (BTUM)	206 (11,715)
Heat Rejection to After Cooler: kW (BTUM)	83 (4,720)
Heat Radiated to Ambient: kW (BTUM)	48.1 (2,735)
Fan Power: kW (hp)	16.4 (22)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	28 (975)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	554 (19,564)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	174.7 (6,169)

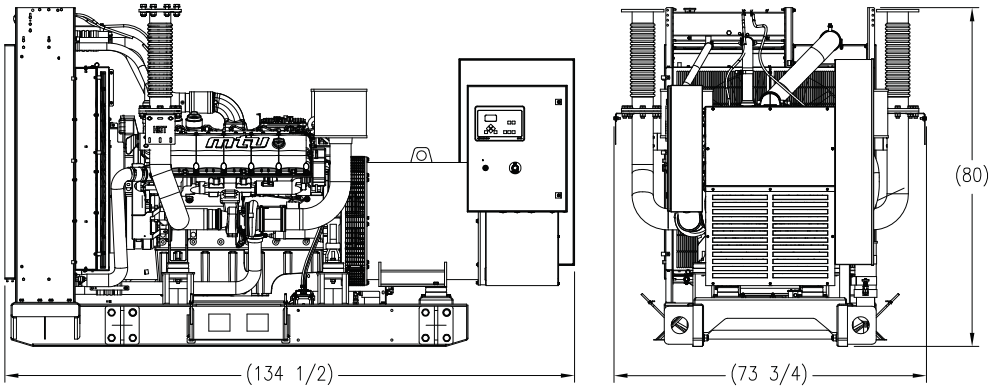
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	548 (1,018)
Gas Volume at Stack Temp: m^3/min (CFM)	86 (3,051)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for an Exhaust-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,552 kg (10,035 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	88.2

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS550

500 kVA / 50 Hz / Prime (Fuel-Optimized)
380 - 415V

Reference MTU 10V1600 DS550 (550 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime **

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	400	400	400
kVA	500	500	500
Amps	760	722	696
skVA@30% Voltage Dip	980	1100	1200
Generator Model	572RSL4029	572RSL4029	572RSL4029
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for a Fuel-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	10V1600G20F
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)**	448 (601)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	340.7 (90)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	100 (26.4)
At 75% of Power Rating: L/hr (gal/hr)	78 (20.6)
At 50% of Power Rating: L/hr (gal/hr)	57 (15.1)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	390 (103)
Heat Rejection to Coolant: kW (BTUM)	216 (12,283)
Heat Rejection to After Cooler: kW (BTUM)	60 (3,412)
Heat Radiated to Ambient: kW (BTUM)	46.5 (2,644)
Fan Power: kW (hp)	16.4 (22)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	27 (953)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	554 (19,564)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	169 (5,964)

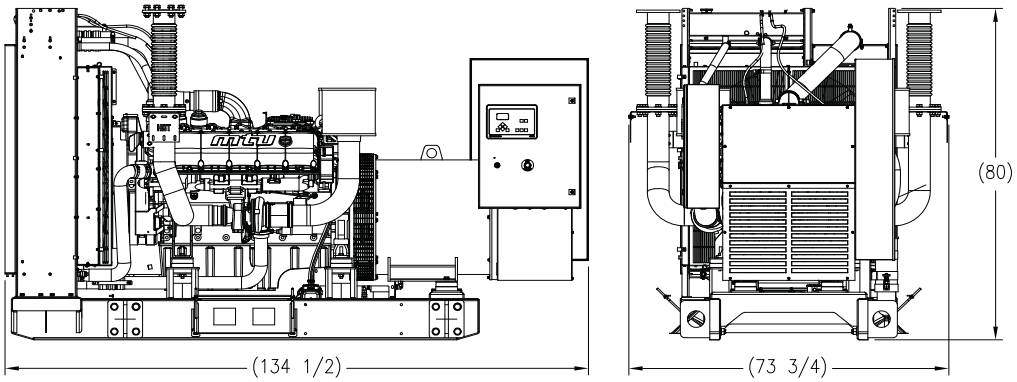
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	520 (968)
Gas Volume at Stack Temp: m^3/min (CFM)	75 (2,649)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for a Fuel-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,552 kg (10,035 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	88.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 10V1600 DS550

500 kVA / 50 Hz / Prime (Exhaust-Optimized)
380 - 415V

Reference MTU 10V1600 DS550 (550 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime**

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	400	400	400
kVA	500	500	500
Amps	760	722	696
skVA@30%			
Voltage Dip	980	1100	1200
Generator Model	572RSL4029	572RSL4029	572RSL4029
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for an Exhaust-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Emissions –** TA-Luft Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 10V1600 Diesel Engine
- 17.5 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
TA-Luft Compliant Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated and Drip-Proof
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	10V1600G20F
Type	4-Cycle
Arrangement	10-V
Displacement: L (Cu In)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)**	448 (601)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	61 (16)
Engine Jacket Water Capacity: L (gal)	60 (15.9)
System Coolant Capacity: L (gal)	99.3 (26.2)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	340.7 (90)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	112 (29.5)
At 75% of Power Rating: L/hr (gal/hr)	83 (22)
At 50% of Power Rating: L/hr (gal/hr)	58 (15.2)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	390 (103)
Heat Rejection to Coolant: kW (BTUM)	222 (12,624)
Heat Rejection to After Cooler: kW (BTUM)	100 (5,687)
Heat Radiated to Ambient: kW (BTUM)	46.5 (2,644)
Fan Power: kW (hp)	16.4 (22)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	30 (1,059)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	554 (19,564)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	169 (5,964)

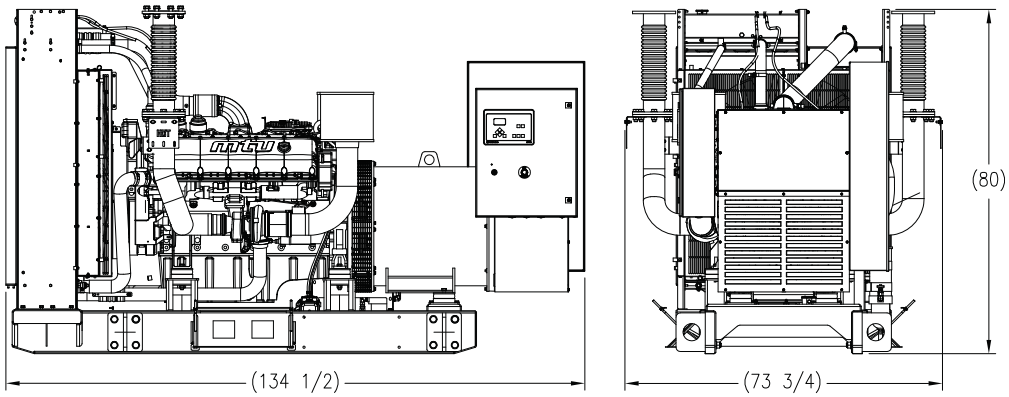
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	540 (1,004)
Gas Volume at Stack Temp: m^3/min (CFM)	97 (3,411)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for an Exhaust-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,416 x 1,873 x 2,032 mm (134.5 x 73.75 x 80 in)	4,552 kg (10,035 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	88.3

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS650

590 kVA / 50 Hz / Prime (Fuel-Optimized)
380 - 415V

Reference MTU 12V1600 DS650 (650 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime **

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	472	472	472
kVA	590	590	590
Amps	896	852	821
skVA@30% Voltage Dip	1050	1200	1750
Generator Model	573RSL4033	573RSL4033	573RSL4035
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for a Fuel-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilate
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
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CANBus ECU Communications
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Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	12V1600G10F
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)**	524 (703)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	341.8 (90.3)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	118 (31.2)
At 75% of Power Rating: L/hr (gal/hr)	92 (24.3)
At 50% of Power Rating: L/hr (gal/hr)	64 (16.8)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	433 (115)
Heat Rejection to Coolant: kW (BTUM)	231 (13,136)
Heat Rejection to After Cooler: kW (BTUM)	87 (4,947)
Heat Radiated to Ambient: kW (BTUM)	53.5 (3,042)
Fan Power: kW (hp)	25.4 (34)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	36 (1,271)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	803 (28,350)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	194 (6,861)

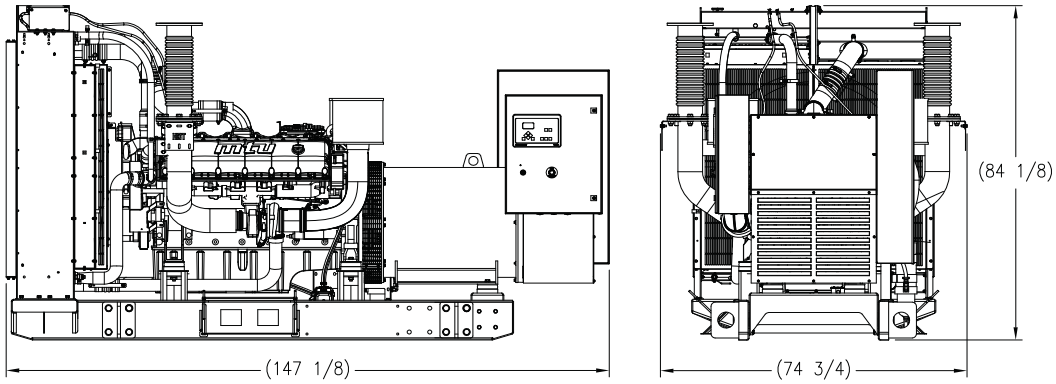
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	482 (900)
Gas Volume at Stack Temp: m^3/min (CFM)	90 (3,178)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

** Prime technical data is for a Fuel-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	5,249 kg (11,572 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS650

590 kVA / 50 Hz / Prime (Exhaust-Optimized)
380 - 415V

Reference MTU 12V1600 DS650 (650 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime**

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	472	472	472
kVA	590	590	590
Amps	896	852	821
skVA@30% Voltage Dip	1050	1200	1750
Generator Model	573RSL4033	573RSL4033	573RSL4035
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for an Exhaust-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Emissions –** TA-Luft Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator resilient mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
TA-Luft Compliant Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	12V1600G10F
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)**	524 (703)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	341.8 (90.3)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	126 (33.4)
At 75% of Power Rating: L/hr (gal/hr)	95 (25.1)
At 50% of Power Rating: L/hr (gal/hr)	65 (17.2)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	433 (115)
Heat Rejection to Coolant: kW (BTUM)	225 (12,795)
Heat Rejection to After Cooler: kW (BTUM)	121 (6,881)
Heat Radiated to Ambient: kW (BTUM)	52.5 (2,985)
Fan Power: kW (hp)	25.4 (34)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	36 (1,271)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	803 (28,350)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	191 (6,733)

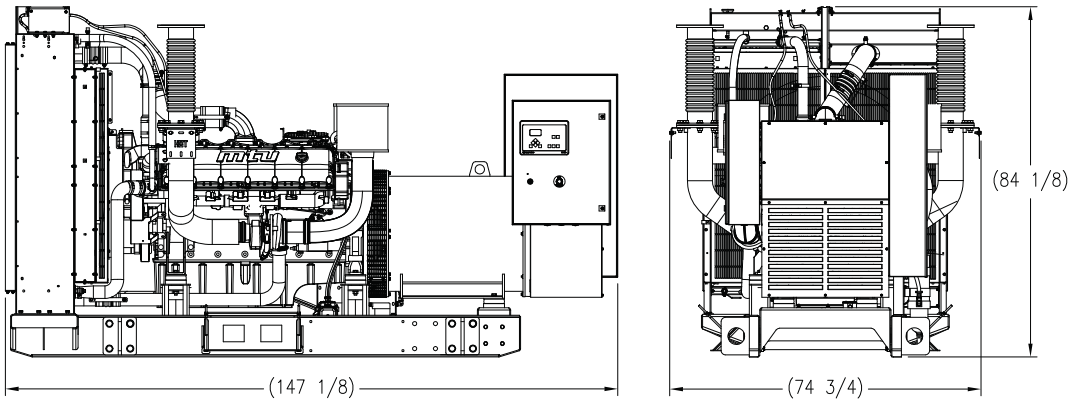
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	466 (871)
Gas Volume at Stack Temp: m^3/min (CFM)	96 (3,390)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

** Prime technical data is for an Exhaust-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



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System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	5,249 kg (11,572 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

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Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS715

650 kVA / 50 Hz / Prime (Fuel-Optimized)
380 - 415V

Reference MTU 12V1600 DS715 (715 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime **

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	520	520	520
kVA	650	650	650
Amps	988	938	904
skVA@30% Voltage Dip	1450	1600	1750
Generator Model	573RSL4033	573RSL4033	573RSL4033
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for a Fuel-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
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Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Max. Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

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IP 54 Front Panel Rating with Integrated Gasket
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APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	12V1600G20F
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)**	576 (772)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	341.8 (90.3)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	130 (34.3)
At 75% of Power Rating: L/hr (gal/hr)	100 (26.4)
At 50% of Power Rating: L/hr (gal/hr)	70 (18.4)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_2O)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	433 (115)
Heat Rejection to Coolant: kW (BTUM)	236 (13,421)
Heat Rejection to After Cooler: kW (BTUM)	104 (5,914)
Heat Radiated to Ambient: kW (BTUM)	59.4 (3,378)
Fan Power: kW (hp)	25.4 (34)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	48 (1,695)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	803 (28,350)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	216 (7,618)

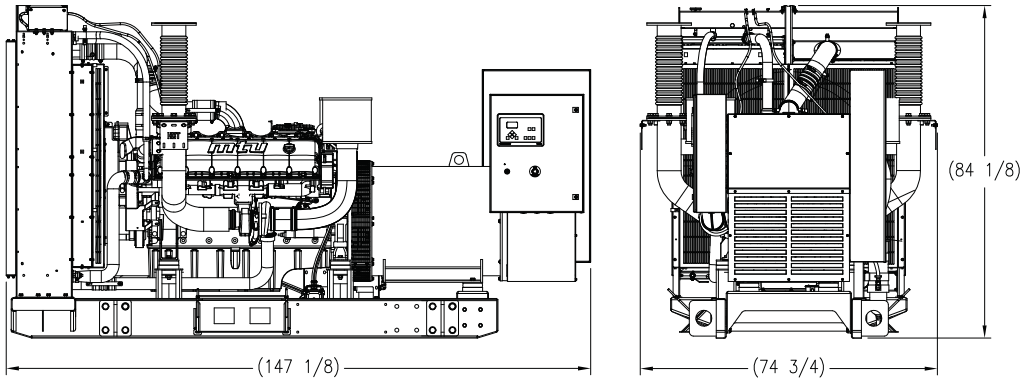
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	483 (901)
Gas Volume at Stack Temp: m^3/min (CFM)	126 (4,450)
Max. Allowable Back Pressure: kPa (in. H_2O)	15 (60.2)

** Prime technical data is for a Fuel-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	5,249 kg (11,572 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 12V1600 DS715

650 kVA / 50 Hz / Prime (Exhaust-Optimized)
380 - 415V

Reference MTU 12V1600 DS715 (715 kVA Fuel-Optimized) for Standby Rating Technical Data

SYSTEM RATINGS

Prime**

Voltage (L-L)	380V	400V	415V
Phase	3	3	3
PF	0.8	0.8	0.8
Hz	50	50	50
kW	520	520	520
kVA	650	650	650
Amps	988	938	904
skVA@30%			
Voltage Dip	1450	1600	1750
Generator Model	573RSL4033	573RSL4033	573RSL4033
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	4 LEAD WYE	4 LEAD WYE	4 LEAD WYE

** Prime technical data is for an Exhaust-Optimized Prime unit.

CERTIFICATIONS AND STANDARDS

// **Emissions –** TA-Luft Certified

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Seismic Certification – Optional**
- IBC Certification
- OSHPD Pre-Approval

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 12V1600 Diesel Engine
- 21.0 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine-Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension and S/O Valve
Full Flow Oil Filters
Closed Crankcase Ventilation
Jacket Water Pump
Thermostats
Blower Fan and Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel and Bell Housing
Charging Alternator - 24V
Battery Box and Cables
Flexible Fuel Connectors
Flexible Exhaust Connection
TA-Luft Compliant Engine

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
105 °C Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Max. Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified, CE Approved
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model**	12V1600G20F
Type	4-Cycle
Arrangement	12-V
Displacement: L (Cu In)	21 (1,281)
Bore: cm (in)	12 (4.72)
Stroke: cm (in)	15 (5.91)
Compression Ratio	17.5:1
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Max. Power: kWm (bhp)**	576 (772)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	73 (19.3)
Engine Jacket Water Capacity: L (gal)	65 (17.2)
System Coolant Capacity: L (gal)	106 (28.1)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	1,050

// Fuel System

Fuel Supply Connection Size	-10 JIC 37° Female M20 x 1.5 Male Adapter Provided
Fuel Return Connection Size	-6 JIC 37° Female M14 x 1.5 Male Adapter Provided
Max. Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	341.8 (90.3)

// Fuel Consumption **

At 100% of Power Rating: L/hr (gal/hr)	141 (37.2)
At 75% of Power Rating: L/hr (gal/hr)	104 (27.5)
At 50% of Power Rating: L/hr (gal/hr)	72 (18.9)

// Cooling - Radiator System **

Ambient Capacity of Radiator: °C (°F)	50 (122)
Max. Restriction of Cooling Air: Intake and Discharge Side of Rad.: kPa (in. H_20)	0.2 (0.8)
Water Pump Capacity: L/min (gpm)	433 (115)
Heat Rejection to Coolant: kW (BTUM)	250 (14,217)
Heat Rejection to After Cooler: kW (BTUM)	121 (6,881)
Heat Radiated to Ambient: kW (BTUM)	58.4 (3,321)
Fan Power: kW (hp)	25.4 (34)

// Air Requirements **

Aspirating: *m^3/min (SCFM)	38 (1,335)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	803 (28,350)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m^3/min (SCFM)	212 (7,490)

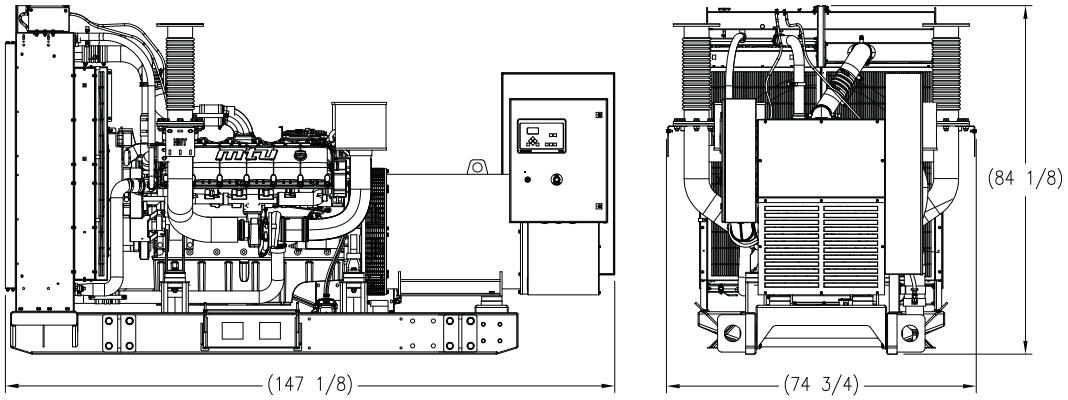
* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System **

Gas Temp. (Stack): °C (°F)	470 (878)
Gas Volume at Stack Temp: m^3/min (CFM)	102 (3,602)
Max. Allowable Back Pressure: kPa (in. H_20)	15 (60.2)

** Prime technical data is for an Exhaust-Optimized Prime unit.

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 400 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (dry/less tank)
Open Power Unit (OPU)	3,737 x 1,899 x 2,137 mm (147.13 x 74.75 x 84.13 in)	5,249 kg (11,572 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	C/F

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

DIESEL GENERATOR SET
MTU 18V2000 DS1400

1250 kVA / 50 Hz / Prime
380 - 3300V

Reference MTU 18V2000 DS1400 (1400 kVA) for Standby Rating Technical Data

SYSTEM RATINGS

Prime

Voltage (L-L)	380V	400V	415V	3300V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	50	50	50	50
kW	1000	1000	1000	1000
kVA	1250	1250	1250	1250
Amps	1899	1804	1739	219
skVA@30%				
Voltage Dip	2450	3510	3040	2020
Generator Model*	742RSL4050	742RSL4050	742RSL4050	742FSM4366
Temp Rise	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C	125 °C/40 °C
Connection	4 BAR WYE	4 BAR WYE	4 BAR WYE	6 LEAD WYE

* Consult the factory for alternate configuration.

CERTIFICATIONS AND STANDARDS

// **Emissions –** Fuel Optimized

// **Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004**

// **Performance Assurance Certification (PAC)**
- Generator Set Tested to ISO 8528-5 for Transient Response
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

// **Power Rating**
- Accepts Rated Load in One Step Per NFPA 110
- Permissible average power output during 24 hours of operation is approved up to 75%.

STANDARD FEATURES*

// MTU Onsite Energy is a single source supplier
// Global Product Support
// 2 Year Standard Warranty
// 18V 2000 Diesel Engine
- 40.2 Liter Displacement
- Common Rail Fuel Injection
- 4-Cycle

// Engine-generator Resilient Mounted
// Complete Range of Accessories
// Generator
- Brushless, Rotating Field Generator
- 2/3 Pitch Windings
- PMG (Permanent Magnet Generator) supply to regulator
- 300% Short Circuit Capability

// Digital Control Panel(s)
- UL Recognized, CSA Certified, NFPA 110
- Complete System Metering
- LCD Display

// Cooling System
- Integral Set-Mounted
- Engine Driven Fan

STANDARD EQUIPMENT*

// Engine

Air Cleaners
Oil Pump
Oil Drain Extension & S/O Valve
Full Flow Oil Filter
Closed Crankcase Ventilation
Jacket Water Pump
Thermostat
Blower Fan & Fan Drive
Radiator - Unit Mounted
Electric Starting Motor - 24V
Governor – Electronic Isochronous
Base - Formed Steel
SAE Flywheel & Bell Housing
Charging Alternator - 24V
Battery Rack & Cables
Flexible Fuel Connectors
Flexible Exhaust Connection

// Generator

NEMA MG1, IEEE and ANSI standards compliance for temperature rise and motor starting
Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
Self-Ventilated
Superior Voltage Waveform
Digital, Solid State, Volts-per-Hertz Regulator
No Load to Full Load Regulation
Brushless Alternator with Brushless Pilot Exciter
4 Pole, Rotating Field
125 °C Maximum Prime Temperature Rise
1 Bearing, Sealed
Flexible Coupling
Full Amortisseur Windings
125% Rotor Balancing
3-Phase Voltage Sensing
±0.25% Voltage Regulation
100% of Rated Load - One Step
5% Maximum Total Harmonic Distortion

// Digital Control Panel(s)

Digital Metering
Engine Parameters
Generator Protection Functions
Engine Protection
CANBus ECU Communications
Windows®-Based Software
Multilingual Capability
Remote Communications to RDP-110 Remote Annunciator
Programmable Input and Output Contacts
UL Recognized, CSA Certified
Event Recording
IP 54 Front Panel Rating with Integrated Gasket
NFPA110 Compatible

* Represents standard product only. Consult Factory/MTU Onsite Energy Distributor for additional configurations.

APPLICATION DATA

// Engine

Manufacturer	MTU
Model	18V 2000 G26F
Type	4-Cycle
Arrangement	18-V
Displacement: L (in^3)	40.2 (2,448)
Bore: cm (in)	13.5 (5.3)
Stroke: cm (in)	15.6 (6.15)
Compression Ratio	17.5
Rated RPM	1,500
Engine Governor	Electronic Isochronous (ADEC)
Maximum Power: kWm (bhp)	1,102 (1,477)
Speed Regulation	±0.25%
Air Cleaner	Dry

// Liquid Capacity (Lubrication)

Total Oil System: L (gal)	122 (32.2)
Engine Jacket Water Capacity: L (gal)	73 (19.3)
System Coolant Capacity: L (gal)	185 (48.9)

// Electrical

Electric Volts DC	24
Cold Cranking Amps Under -17.8 °C (0 °F)	2,800

// Fuel System

Fuel Supply Connection Size	#12 JIC 37° Female 1" NPT Adapter Provided
Fuel Return Connection Size	#12 JIC 37° Female 1" NPT Adapter Provided
Maximum Fuel Lift: m (ft)	5 (16)
Recommended Fuel	Diesel #2
Total Fuel Flow: L/hr (gal/hr)	1,380 (365)

// Fuel Consumption

At 100% of Power Rating: L/hr (gal/hr)	250 (66)
At 75% of Power Rating: L/hr (gal/hr)	188 (50)
At 50% of Power Rating: L/hr (gal/hr)	130 (34)

// Cooling - Radiator System

Ambient Capacity of Radiator: °C (°F)	50 (122)
Maximum Restriction of Cooling Air, Intake, and Discharge Side of Rad.: kPa (in. H_20)	0.13 (0.5)
Water Pump Capacity: L/min (gpm)	772 (204)
Heat Rejection to Coolant: kW (BTUM)	430 (24,454)
Heat Rejection to After Cooler: kW (BTUM)	215 (15,923)
Heat Radiated to Ambient: kW (BTUM)	87.1 (5,236)
Fan Power: kW (hp)	31.5 (42.2)

// Air Requirements

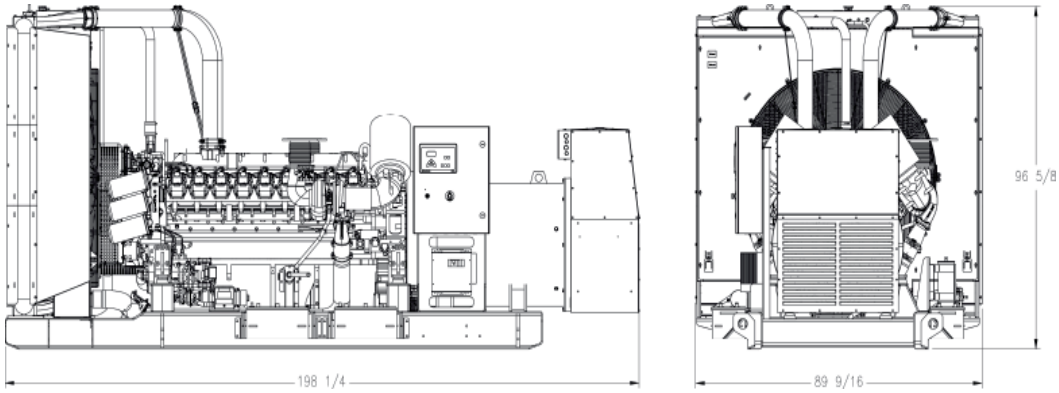
Aspirating: *m^3/min (SCFM)	80.4 (2,839)
Air Flow Required for Rad. Cooled Unit: *m^3/min (SCFM)	1,480 (52,266)
Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Gen-set Heat for a Max of 25 °F Rise: *m^3/min (SCFM)	338 (12,510)

* Air density = 1.184 kg/m^3 (0.0739 lbm/ft^3)

// Exhaust System

Gas Temp. (Stack): °C (°F)	485 (905)
Gas Volume at Stack Temp: m^3/min (CFM)	206 (7,275)
Maximum Allowable Back Pressure: kPa (in. H_20)	5 (20)

WEIGHTS AND DIMENSIONS



Drawing above for illustration purposes only, based on standard open power 480 volt generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

System	Dimensions (L x W x H)	Weight (less tank)
Open Power Unit (OPU)	5,036 x 2,275 x 2,454 mm (198.3 x 89.6 x 96.6 in)	9,525 kg (21,000 lb)

Weights and dimensions are based on open power units and are estimates only. Consult the factory for accurate weights and dimensions for your specific generator set.

SOUND DATA

Unit Type	Prime Full Load
Level 0: Open Power Unit dB(A)	85.5

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

EMISSIONS DATA

NO_x + NMHC	CO	PM
C/F	C/F	C/F

All units are in g/hp-hr and at 100% load.
Emission levels of the engine may vary as a function of ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data provided are laboratory results from one engine representing this rating. The data was obtained under controlled environmental conditions with calibrated instrumentation traceable to the United States National Bureau of Standards and in compliance with US EPA regulations found within 40 CFR Part 89. The weighted cycle value (not shown) from each engine is guaranteed to be below the US EPA Standards at the US EPA defined conditions.

RATING DEFINITIONS AND CONDITIONS

// Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 75%.

// Deration Factor:
Altitude: Consult your local MTU Onsite Energy Power Generation Distributor for altitude derations.
Temperature: Consult your local MTU Onsite Energy Power Generation Distributor for temperature derations.

C/F = Consult Factory/MTU Onsite Energy Distributor
N/A = Not Available

Automatic Transfer Switches (ATS)
Product Overview

MTX series

Small Frame Residential, Commercial & Light Industrial

- Standard Transition
- 40-400 Amp, 120-480 Volt Ratings
- 2, 3 or 4 Pole

Assembled in the USA

MTG series

General Purpose Commercial & Industrial

- Standard or Delayed Transition for motor, transformer or UPS switching
- Extended ratings up to 3000A & 600VAC (2, 3 or 4 Pole)

MTS series

Business & Industrial Critical

- Standard, Delayed or Closed Transition for make-before-break source switching
- Extended ratings up to 4000A & 600VAC (2, 3 or 4 Pole)
- Maintenance Bypass available on all frames and transition types

MTU Onsite Energy
A Rolls-Royce Power Systems Brand

www.mtuonsiteenergy.com

DEC-099
2014-01

Automatic Transfer Switch

MTG/D Options

Option Code	Abbreviated Feature Description	MSTDG (Default)	MEXEG
A1	Auxiliary contact SPDT - Normal (Source 1) Failure	OPT	OPT
A1E	Auxiliary contact SPDT - Emergency (Source 2) Failure	OPT	OPT
A3	Emergency (Source 2) position auxiliary contact. Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary) (up to 4 on MTG)	1	2
A4	Normal (Source 1) position auxiliary contact. Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary) (up to 4 on MTG)	1	2
A62	Motor disconnect and staged restart (1 contact)	OPT	OPT
A62T (1-10)	Extra contacts (Individual Timers) each (MTG up to 10 circuits; MTGSE up to 2 circuits)	OPT	OPT
Calibrate	Microprocessor-activated calibration feature	STD	STD
CD/P	Programmable exerciser daily, 7-14-28-365 days user-selectable, with or without load. (Replaces former "D" or C/D 7 and 365 day)	Not Avail	STD
CDT/P	Exerciser no load timer. (Increased functionality no longer requires a jumper.)	STD	Not Avail
CTAPA	Chicago Transfer Alarm Panel mounted in door of Nema 1 Enclosure. Includes 3 auxiliary contacts and fuse.	OPT	OPT
CTAPB	Chicago Transfer Alarm Panel mounted in door of Nema 3R, 4, or 12 type enclosures. Includes 3 auxiliary contacts and	OPT	OPT
DS	Disconnect switch. Disconnects source voltage to transfer power panel on ATS. (ON MTG, STD 800A and above, ON MTS, STD 600A and above, ON MTGSE STD ALL)	OPT	OPT
DT	Time delay from Neutral switch Position to Normal on Retransfer. **(This option disables the ability to have the R50.)**	STD (DELAY)	STD (DELAY)
DW	Time Delay from Neutral Switch Position to Emergency on Retransfer. **(This option disables the ability to have the R50.)**	STD (DELAY)	STD (DELAY)
E	Engine start relay (SPDT)	STD	STD
EL/P	Event log of last 16 events	STD	STD
GB1	Mechanical Lugs (3) #8-1/0 cables - 40-1200A	OPT	OPT
GB2	Mechanical Lugs (6) #8-1/0 cables - 40-1200A	OPT	OPT
GB3	Mechanical Lugs (6) #6-250MCM cables - 600-1200A	OPT	OPT
GB4	Mechanical Lugs (12) #6-250MCM cables - 600-1200A	OPT	OPT
GB5	Mechanical Lugs (8) #2-600MCM cables - 600-1200A	OPT	OPT
GB6	Mechanical Lugs (12) #2-600MCM cables - 600-3000A	OPT	OPT
GB7	Mechanical Lugs (24) #2-600MCM cables - 1600-3000A	OPT	OPT
GB8	Mechanical Lugs (36) #2-600MCM cables - 1600-3000A	OPT	OPT
HT1	Heater and thermostat 208/240V - mounted and interwired in transfer switch enclosure **(Requires larger enclosure 40-200A)**	OPT	OPT
HT2	Heater and thermostat 380/600 - mounted and interwired in transfer switch enclosure **(Requires larger enclosure 40-200A)**	OPT	OPT
J1E	Adjustable under frequency sensor (Source 2 or Emergency)	STD	STD
K/P	Frequency indication (on the controller)	STD	STD

Option Code	Abbreviated Feature Description	MSTDG (Default)	MEXEG
L1	LED Source 2 (Emergency) position indication	STD	STD
L2	LED Source 1 (Normal) position indication	STD	STD
L3	LED Source 1 (Normal) source availability indication	STD	STD
L4	LED Source 2 (or Emergency) source availability indication	STD	STD
LN/P	Center-off position / LCD indication on microprocessor	STD (DELAY)	STD (DELAY)
M90SAG	EPM2000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency). 3 Line LED Display. 50/60 Hz Universal Operation. 1 or 3-phase. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection) (Nema 1 only, include OCVR option for outdoor environment)	OPT	OPT
M90LAG	EPM2000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency). 3 Line LED Display. 50/60 Hz Universal Operation. 1 or 3-phase. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection) (Nema 1 only, include OCVR option for outdoor environment)	OPT	OPT
M90ASAG	EPM2000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Modbus Serial (RS485) network. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM2000, ATS Modbus Communications card, and factory Modbus cabling (RS-485) between EMP2000 and ATS Communications Card.	OPT	OPT
M90ALAG	EPM2000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Modbus Serial (RS485) network. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM2000, ATS Modbus Communications card, and factory Modbus cabling (RS-485) between EMP2000 and ATS Communications Card.	OPT	OPT
M90BSAG	EPM2000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Ethernet TCP/IP Communications. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM2000, ATS Modbus Communications card, factory Modbus cabling (RS-485) between EMP2000 and ATS Communications Card, and Multilin 'Multinet' Serial-to-Ethernet Adapter for conversion of RS485 network to Ethernet TCP/IP network.	OPT	OPT
M90BLAG	EPM2000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Ethernet TCP/IP Communications. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM2000, ATS Modbus Communications card, factory Modbus cabling (RS-485) between EMP2000 and ATS Communications Card, and Multilin 'Multinet' Serial-to-Ethernet Adapter for conversion of RS485 network to Ethernet TCP/IP network.	OPT	OPT

Option Code	Abbreviated Feature Description	MSTDG (Default)	MEXEG
M91SAxxHG (xx = '50' or '60' for Hz)	EPM6000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency, THD). Revenue Class (0.2%) Certified energy and demand metering. Meets ANSI C12.20 and IEC 687 Accuracy Classes. 3 Line LED Display. Front IrDA Port Laptop Connection. 1 or 3-phase. Standard Modbus RTU RS485 or DNP 3.0 communications capability. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection) (Nema 1 only, include OCVR option for outdoor environment)	OPT	OPT
M91LAxxHG (xx = '50' or '60' for Hz)	EPM6000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency, THD). Revenue Class (0.2%) Certified energy and demand metering. Meets ANSI C12.20 and IEC 687 Accuracy Classes. 3 Line LED Display. Front IrDA Port Laptop Connection. 1 or 3-phase. Standard Modbus RTU RS485 or DNP 3.0 communications capability. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection) (Nema 1 only, include OCVR option for outdoor environment)	OPT	OPT
M91ASAxxHG (xx = '50' or '60' for Hz)	EPM6000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Modbus Serial (RS485) network. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM6000, ATS Modbus Communications card, and factory Modbus cabling (RS-485) between EMP6000 and ATS Communications Card.	OPT	OPT
M91ALAxxHG (xx = '50' or '60' for Hz)	EPM6000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Modbus Serial (RS485) network. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM6000, ATS Modbus Communications card, and factory Modbus cabling (RS-485) between EMP6000 and ATS Communications Card.	OPT	OPT
M91BSAxxHG (xx = '50' or '60' for Hz)	EPM6000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Ethernet TCP/IP Communications. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM6000, ATS Modbus Communications card, factory Modbus cabling (RS-485) between EMP6000 and ATS Communications Card, and Multilin 'Multinet' Serial-to-Ethernet Adapter for conversion of RS485 network to Ethernet TCP/IP network.	OPT	OPT

Option Code	Abbreviated Feature Description	MSTDG (Default)	MEXEG
M91BLAxxHG (xx = '50' or '60' for Hz)	EPM6000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Ethernet TCP/IP Communications. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM6000, ATS Modbus Communications card, factory Modbus cabling (RS-485) between EMP6000 and ATS Communications Card, and Multilin 'Multinet' Serial-to-Ethernet Adapter for conversion of RS485 network to Ethernet TCP/IP network.	OPT	OPT
EVM-VP1	Enervista Viewpoint Monitoring for MTU Onsite Energy ATS. Permits Plug-&-Play Monitoring for up to 32 MTU Onsite Energy Transfer Switches. Requires Modbus Communications cards on ATS. [Note: See "M90/91A" and "M90/91B" meter options for factory supply and pre-wiring for Enervista Monitoring].	OPT	OPT
NEMA1A	Gasketed door on NEMA 1 enclosure "NEMA 1A" (add to enclosure price)	OPT	OPT
OCVR-1SG	Lockable, see-through cover for NEMA 3R or NEMA 12 Microprocessor only (Not NEMA 4)	OPT	OPT
OCVR-1SS	Lockable, see-through cover for NEMA 3R or NEMA 12 Microprocessor selectors and meters (Not NEMA 4)	OPT	OPT
P1	Engine start timer P1 (adjustable up to 6 seconds)	STD	STD
Q2	Peak shave/remote load test/area protection - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	STD	STD
R2E	Under voltage sensing: (Source 2 or Emergency) (1-phase) (STD 3-phase sensing - R17 if U-U application is ordered)	STD	STD
R7	Over voltage sensing (Source 2 or Emergency) 1-phase	Not Avail	Not Avail
R8	Over voltage sensing (Source 2 or Emergency) 3-phase	Not Avail	Not Avail
R15	Load shed provisions to transfer Source 2 or emergency to dead normal (includes Q3 load add relay - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	Not Avail	Not Avail
R15D	Load shed provisions to transfer Source 2 or emergency to neutral position (only available on delayed transition units) (includes Q3 load add relay - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	Not Avail	Not Avail
R16	Phase rotation sensing of Source 1 and Source 2	Not Avail	Not Avail
R17	Under voltage sensing: Source 2 (Emergency) (3-phase)	Not Avail	Not Avail
R26	Provisions for transfer to dead Source 2 or emergency for interruptible power rates - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	Not Avail	Not Avail
R26D	Provisions for transfer to neutral position (only available on delayed transition units) for interruptible power rates - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	Not Avail	Not Avail
R50	In Phase Monitor between Source 1 and Source 2 to allow transfer (with enable/disable)	STD	STD

Option Code	Abbreviated Feature Description	MSTDG (Default)	MEXEG
S13/P	Microprocessor-activated Commit/No Commit on transferring to emergency source (with enable/disable)	STD	STD
T	Retransfer to normal adjustable time delay	STD	STD
T3/W3	Pre-signal contact on transfer to Source 1 (Normal) or Source 2 (Emergency) during test	OPT	OPT
U	Engine stop/cool adjustable cool down timer	STD	STD
UMD	Pre- and post-transfer output adjustable time range. Functions in both directions. Includes 2 circuits. Additional circuits available. (See A62.)	OPT	OPT
VI	Voltage imbalance between phases (applies to 3-phase only)	STD	STD
W	Adjustable time delay on transfer to emergency source	STD	STD
YEN/P	Bypass transfer timers function (soft switch in controller)	STD	STD
ZNETL	Lonworks microprocessor communication module (Consult factory for special quotation on any other ZNET annunciator or communication options)	OPT	OPT
ZNETM	Modbus RTU microprocessor communication module (Consult factory for special quotation on any other ZNET annunciator or communication options)	OPT	OPT
6/P	Microprocessor-activated Test Switch: a momentary test switch	STD	STD
6A	Test Switch (hard-wired) (maintained)	OPT	OPT
6A/P	Test Switch (maintained) Programmable in microprocessor	OPT	OPT
ATSEW-1	Extended warranty for MTS/MTSD 40-400A to 5 years labor	Not Avail	Not Avail
ATSEW-2	Extended warranty for MTS/MTSD 600-1200A to 5 years labor	Not Avail	Not Avail
ATSEW-3	Extended warranty for MTS/MTSD 1600-4000A to 5 years labor	Not Avail	Not Avail
ATSEW-4	Extended warranty for MBTS/MBTSD 100-400A to 5 years labor	Not Avail	Not Avail
ATSEW-5	Extended warranty for MBTS/MBTSD 600-1200A to 5 years labor	Not Avail	Not Avail
ATSEW-6	Extended warranty for MBTS/MBTSD 1600-4000A to 5 years labor	Not Avail	Not Avail
ATSEW-7	Extended warranty for MTSCT 100-400A to 5 years labor	Not Avail	Not Avail
ATSEW-8	Extended warranty for MTSCT 600-1200A to 5 years labor	Not Avail	Not Avail
ATSEW-9	Extended warranty for MTSCT 1600-4000A to 5 years labor	Not Avail	Not Avail
ATSEW-10	Extended warranty for MBTSCT 100-400A to 5 years labor	Not Avail	Not Avail
ATSEW-11	Extended warranty for MBTSCT 600-1200A to 5 years labor	Not Avail	Not Avail
ATSEW-12	Extended warranty for MBTSCT 1600-4000A to 5 years labor	Not Avail	Not Avail

Automatic Transfer Switch

MTGSE/MTGDSE Options

(Standard options available. Refer to MTG/D Options.)

Option Code	Abbreviated Feature Description	MSTDG
A1	Auxiliary contact SPDT - Normal (Source 1) Failure	OPT
A1E	Auxiliary contact SPDT - Emergency (Source 2) Failure	OPT
A3	Emergency (Source 2) position auxiliary contact. Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary) (up to 4 on MTG)	1
A4	Normal (Source 1) position auxiliary contact. Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary) (up to 4 on MTG)	1
A62	Motor disconnect and staged restart (1 contact)	OPT
A62T (1-10)	Extra contacts (Individual Timers) each (MTG up to 10 circuits, MTGSE up to 2 circuits)	OPT
Calibrate	Microprocessor-activated calibration feature	STD
CD/P	Programmable exerciser daily, 7-14-28-365 days user-selectable, with or without load. Replaces former "D" or C/D 7 and 365 day)	Not Avail
CDT/P	Exerciser no load timer (Increased functionality no longer requires a jumper.)	STD
CTAPA	Chicago Transfer Alarm Panel mounted in door of Nema 1 Enclosure. Includes 3 auxiliary contacts and fuse.	OPT
CTAPB	Chicago Transfer Alarm Panel mounted in door of Nema 3R, 4, or 12 type Enclosures. Includes 3 auxiliary contacts and fuse.	OPT
DS	Disconnect switch. Disconnects source voltage to transfer power panel on ATS. (ON MTG, STD 800A and above, ON MTS, STD 600A and above, ON MTGSE STD ALL)	OPT
DT	Time delay from Neutral switch Position to Normal on Retransfer. (This option disables the ability to have the R50.)	STD (DELAY)
DW	Time Delay from Neutral Switch Position to Emergency on Retransfer. (This option disables the ability to have the R50.)	STD (DELAY)
E	Engine start relay (SPDT)	STD
EL/P	Event log of last 16 events	STD
GB1	Mechanical Lugs (3) #8-1/0 cables - 40-1200A	OPT
GB2	Mechanical Lugs (6) #8-1/0 cables - 40-1200A	OPT
GB3	Mechanical Lugs (6) #6-250MCM cables - 600-1200A	OPT
GB4	Mechanical Lugs (12) #6-250MCM cables - 600-1200A	OPT
GB5	Mechanical Lugs (8) #2-600MCM cables - 600-1200A	OPT
GB6	Mechanical Lugs (12) #2-600MCM cables - 600-3000A	OPT
GB7	Mechanical Lugs (24) #2-600MCM cables - 1600-3000A	OPT
GB8	Mechanical Lugs (36) #2-600MCM cables - 1600-3000A	OPT
HT1	Heater and thermostat 208/240V-mounted and interwired in transfer switch enclosure (Requires larger enclosure 40-200A)	OPT
HT2	Heater and thermostat 380/600-mounted and interwired in transfer switch enclosure (Requires larger enclosure 40-200A)	OPT
J1E	Adjustable under frequency sensor (Source 2 or Emergency)	STD
K/P	Frequency indication (on the controller)	STD
L1	LED Source 2 (Emergency) position indication	STD
L2	LED Source 1 (Normal) position indication	STD
L3	LED Source 1 (Normal) source availability indication	STD
L4	LED Source 2 (or Emergency) source availability indication	STD
LN/P	Center-off position / LCD indication on microprocessor	STD (DELAY)

Automatic Transfer Switch

MTGSE/MTGDSE Options

(Standard options available. Refer to MTG/D Options.)

Option Code	Abbreviated Feature Description	MSTDG
M90SAG	EPM2000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency). 3 Line LED Display. 50/60 Hz Universal Operation. 1 or 3-phase. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection) (Nema 1 only (include OCVR option for outdoor environment).	OPT
M90LAG	EPM2000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency). 3 Line LED Display. 50/60 Hz Universal Operation. 1 or 3-phase. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection) (Nema 1 only (include OCVR option for outdoor environment).	OPT
M90ASAG	EPM2000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Modbus Serial (RS485) network. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM2000, ATS Modbus Communications card, and factory Modbus cabling (RS-485) between EMP2000 & ATS Communications Card.	OPT
M90ALAG	EPM2000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Modbus Serial (RS485) network. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM2000, ATS Modbus Communications card, and factory Modbus cabling (RS-485) between EMP2000 & ATS Communications Card.	OPT
M90BSAG	EPM2000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Ethernet TCP/IP Communications. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM2000, ATS Modbus Communications card, factory Modbus cabling (RS-485) between EMP2000 & ATS Communications Card, and Multilin 'Multinet' Serial-to-Ethernet Adapter for conversion of RS485 network to Ethernet TCP/IP network.	OPT
M90BLAG	EPM2000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Ethernet TCP/IP Communications. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM2000, ATS Modbus Communications card, factory Modbus cabling (RS-485) between EMP2000 & ATS Communications Card, and Multilin 'Multinet' Serial-to-Ethernet Adapter for conversion of RS485 network to Ethernet TCP/IP network.	OPT
M91SAxxHG (xx = '50' or '60' for Hz)	EPM6000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency, THD). Revenue Class (0.2%) Certified energy and demand metering. Meets ANSI C12.20 and IEC 687 Accuracy Classes. 3 Line LED Display. Front IrDA Port Laptop Connection. 1 or 3-phase. Standard Modbus RTU RS485 or DNP 3.0 communications capability. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection) (Nema 1 only (include OCVR option for outdoor environment).	OPT

Automatic Transfer Switch

MTGSE/MTGDSE Options

(Standard options available. Refer to MTG/D Options.)

Option Code	Abbreviated Feature Description	MSTDG
M91LAxxHG (xx = '50' or '60' for Hz)	EPM6000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency, THD). Revenue Class (0.2%) Certified energy and demand metering. Meets ANSI C12.20 and IEC 687 Accuracy Classes. 3 Line LED Display. Front IrDA Port Laptop Connection. 1 or 3-phase. Standard Modbus RTU RS485 or DNP 3.0 communications capability. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection) (Nema 1 only (include OCVR option for outdoor environment).	OPT
M91ASAxxHG (xx = '50' or '60' for Hz)	EPM6000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Modbus Serial (RS485) network. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM6000, ATS Modbus Communications card, and factory Modbus cabling (RS-485) between EMP6000 and ATS Communications Card.	OPT
M91ALAxxHG (xx = '50' or '60' for Hz)	EPM6000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Modbus Serial (RS485) network. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM6000, ATS Modbus Communications card, and factory Modbus cabling (RS-485) between EMP6000 and ATS Communications Card.	OPT
M91BSAxxHG (xx = '50' or '60' for Hz)	EPM6000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Ethernet TCP/IP Communications. 40 - 1200 Amps (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM6000, ATS Modbus Communications card, factory Modbus cabling (RS-485) between EMP6000 and ATS Communications Card, and Multilin 'Multinet' Serial-to-Ethernet Adapter for conversion of RS485 network to Ethernet TCP/IP network.	OPT
M91BLAxxHG (xx = '50' or '60' for Hz)	EPM6000 Meter plus factory-supplied equipment and wiring for remote monitoring of ATS using Ethernet TCP/IP Communications. 1600 Amps and above (Need to specify with order open delta or wye type voltage connection). Includes Modbus-capable EPM6000, ATS Modbus Communications card, factory Modbus cabling (RS-485) between EMP6000 and ATS Communications Card, and Multilin 'Multinet' Serial-to-Ethernet Adapter for conversion of RS485 network to Ethernet TCP/IP network.	OPT
EVM-VP1	Enervista Viewpoint Monitoring for MTU Onsite Energy ATS. Permits Plug-&-Play Monitoring for up to 32 MTU Onsite Energy Transfer Switches. Requires Modbus Communications cards on ATS. [Note: See "M90/91A" and "M90/91B" meter options for factory supply and pre-wiring for Enervista Monitoring].	OPT
NEMA1A	Gasketed door on NEMA 1 enclosure "NEMA 1A" (add to enclosure price)	OPT
OCVR-1SG	Lockable, see-through cover for NEMA 3R or NEMA 12 Microprocessor only (Not NEMA 4)	OPT
OCVR-1SS	Lockable, see-through cover for NEMA 3R or NEMA 12 Microprocessor selectors and meters (Not NEMA 4)	OPT
P1	Engine start timer P1 (adjustable up to 6 seconds)	STD
Q2	Peak shave/remote load test/area protection - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	STD

Automatic Transfer Switch

MTGSE/MTGDSE Options

(Standard options available. Refer to MTG/D Options.)

Option Code	Abbreviated Feature Description	MSTDG
R2E	Under voltage sensing: (Source 2 or Emergency) (1-phase) (STD 3-phase sensing - R17 if U-U application is ordered)	STD
R7	Over voltage sensing (Source 2 or Emergency) 1-phase	Not Avail
R8	Over voltage sensing (Source 2 or Emergency) 3-phase	Not Avail
R15	Load shed provisions to transfer Source 2 or emergency to dead normal (includes Q3 load add relay - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	Not Avail
R15D	Load shed provisions to transfer Source 2 or emergency to neutral position (only available on delayed transition units) (includes Q3 load add relay - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	Not Avail
R16	Phase rotation sensing of Source 1 and Source 2	Not Avail
R17	Under voltage sensing: Source 2 (Emergency) (3-phase)	Not Avail
R26	Provisions for transfer to dead Source 2 or emergency for interruptible power rates - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	Not Avail
R26D	Provisions for transfer to neutral position (only available on delayed transition units) for interruptible power rates - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	Not Avail
R50	In Phase Monitor between Source 1 and Source 2 to allow transfer (with enable/disable)	STD
S13/P	Microprocessor-activated Commit/No Commit on transferring to emergency source (with enable/disable)	STD
T	Retransfer to normal adjustable time delay	STD
T3/W3	Pre-signal contact on transfer to Source 1 (Normal) or Source 2 (Emergency) during test	OPT
U	Engine stop/cool adjustable cool down timer	STD
UMD	Pre- and post-transfer output adjustable time range. Functions in both directions. Includes 2 circuits. Additional circuits available. (See A62.)	OPT
VI	Voltage imbalance between phases (applies to 3-phase only)	STD
W	Adjustable time delay on transfer to emergency source	STD
YEN/P	Bypass transfer timers function (soft switch in controller)	STD
ZNETL	Lonworks microprocessor communication module (Consult factory for special quotation on any other ZNET annunciator or communication options)	OPT
ZNETM	Modbus RTU microprocessor communication module (Consult factory for special quotation on any other ZNET annunciator or communication options)	OPT
6/P	Microprocessor-activated Test Switch: a momentary test switch	STD
6A	Test Switch (hard-wired) (maintained)	OPT
6A/P	Test Switch (maintained) Programmable in microprocessor	OPT
ATSEW-1	Extended warranty for MTS/MTSD 40-400A to 5 years labor	Not Avail
ATSEW-2	Extended warranty for MTS/MTSD 600-1200A to 5 years labor	Not Avail
ATSEW-3	Extended warranty for MTS/MTSD 1600-4000A to 5 years labor	Not Avail
ATSEW-4	Extended warranty for MBTS/MBTSD 100-400A to 5 years labor	Not Avail
ATSEW-5	Extended warranty for MBTS/MBTSD 600-1200A to 5 years labor	Not Avail
ATSEW-6	Extended warranty for MBTS/MBTSD 1600-4000A to 5 years labor	Not Avail
ATSEW-7	Extended warranty for MTSCT 100-400A to 5 years labor	Not Avail
ATSEW-8	Extended warranty for MTSCT 600-1200A to 5 years labor	Not Avail
ATSEW-9	Extended warranty for MTSCT 1600-4000A to 5 years labor	Not Avail

Automatic Transfer Switch

MTGSE/MTGDSE Options

(Standard options available. Refer to MTG/D Options.)

Option Code	Abbreviated Feature Description	MSTDG
ATSEW-10	Extended warranty for MBTSCT 100-400A to 5 years labor	Not Avail
ATSEW-11	Extended warranty for MBTSCT 600-1200A to 5 years labor	Not Avail
ATSEW-12	Extended warranty for MBTSCT 1600-4000A to 5 years labor	Not Avail

Automatic Transfer Switch

MTS/MTSD/MTSCT/MBTS/MBTSD/MBTSCT Options (with MX250 Controller)

Option Code	Abbreviated Feature Description	MSTDS (Default)	MEXES	MCONS	MSENS	MSPES	MPSGS
A1	Auxiliary contact SPDT - Normal (Source 1) Failure	OPT	1	1	1	1	1
A1E	Auxiliary contact SPDT - Emergency (Source 2) Failure	OPT	1	1	1	1	1
A3	Emergency (Source 2) position auxiliary contact. Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary) (up to 4 on MTG)	1	2	2	2	2	3
A34N	Auxiliary contact - closed in neutral position (mechanically activated limit switch)	OPT (DELAY)	OPT (DELAY)	OPT (DELAY)	OPT (DELAY)	OPT (DELAY)	OPT (DELAY)
A3DT	Auxiliary contact - closed in emergency (Source 2) position (SPDT) Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary)	OPT	OPT	OPT	OPT	OPT	OPT
A4	Normal (Source 1) position auxiliary contact. Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary) (up to 4 on MTG)	1	2	2	2	2	3
A4DT	Auxiliary contact - closed in normal (Source 1) position (SPDT) Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary)	OPT	OPT	OPT	OPT	OPT	OPT
A6	Motor disconnect (obsolete, replaced by UMD option)	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
A62	Motor disconnect and staged restart (1 contact)	OPT	OPT	OPT	OPT	OPT	OPT
A62T(1-10)	Extra contacts (Individual Timers) each (up to 10 circuits)	OPT	OPT	OPT	OPT	OPT	OPT
AB3	Auxiliary contact - closed in bypass emergency (Source 2) (STD up to 400A) Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary)	OPT (BYP)	OPT (BYP)	OPT (BYP)	OPT (BYP)	OPT (BYP)	OPT (BYP)
AB4	Auxiliary contact - closed in bypass normal (Source 1) (STD up to 400A) Additional available on MTS and need to be specified with order (up to 10 using limit switches and auxiliary relays, if necessary)	OPT (BYP)	OPT (BYP)	OPT (BYP)	OPT (BYP)	OPT (BYP)	OPT (BYP)
B9X	Battery charger for MTX 1.5 amp 12VDC or 24VDC (specify with order)	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
Calibrate	Microprocessor-activated calibration feature	STD	STD	STD	STD	STD	STD
CD/P	Programmable exerciser daily, 7-14-28-365 days user-selectable, with or without load. Replaces former "D" or C/D 7 and 365 day)	Not Avail	STD	STD	STD	STD	STD
CDT/P	Exerciser no load timer (Increased functionality no longer requires a jumper.)	STD	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
CTAPA	Chicago Transfer Alarm Panel mounted in door of Nema 1 Enclosure. Includes 3 auxiliary contacts and fuse.	OPT	OPT	OPT	OPT	OPT	OPT

Option Code	Abbreviated Feature Description	MSTDS (Default)	MEXES	MCONS	MSENS	MSPES	MPSGS
CTAPB	Chicago Transfer Alarm Panel mounted in door of Nema 3R, 4, or 12 type Enclosures. Includes 3 auxiliary contacts and fuse.	OPT	OPT	OPT	OPT	OPT	OPT
DS	Disconnect switch. Disconnects source voltage to transfer power panel on ATS. (ON MTG, STD 800A and above, ON MTS, STD 600A and above)	OPT	OPT	OPT	OPT	OPT	OPT
DSA	Auxilary contact of disconnect switch wired to terminal block for customer use.	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
DT	Time delay from Neutral switch Position to Normal on Retransfer. (This option disables the ability to have the R50.)A6 (UMD) and A62 are now available.)	STD (DELAY)	STD (DELAY)	STD (DELAY)	STD (DELAY)	STD (DELAY)	STD (DELAY)
DW	Time Delay from Neutral Switch Position to Emergency on Retransfer. ((This option disables the ability to have the R50) A6 (UMD) and A62 are now available.)	STD (DELAY)	STD (DELAY)	STD (DELAY)	STD (DELAY)	STD (DELAY)	STD (DELAY)
E	Engine start relay (SPDT)	STD	STD	STD	STD	STD	STD
EL/P	Event log of last 16 events	STD	STD	STD	STD	STD	STD
F	Fan contact. Closed when engine runs (SPNO)	OPT	OPT	OPT	OPT	OPT	OPT
GB1	Ground bus - Mechanical Lugs (Consult factory for special quotation if total # of ground cables exceeds 1/3 total # of cables into switch) 3 - #8 - 1/0 cables (40-1200A only)	OPT	OPT	OPT	OPT	OPT	OPT
GB2	Ground bus - Mechanical Lugs (Consult factory for special quotation if total # of ground cables exceeds 1/3 total # of cables into switch) 6 - #8 - 1/0 cables (40-1200A only)	OPT	OPT	OPT	OPT	OPT	OPT
GB3	Ground bus - Mechanical Lugs (Consult factory for special quotation if total # of ground cables exceeds 1/3 total # of cables into switch) 6 - #6 - 250MCM cables (600-1200A only)	OPT	OPT	OPT	OPT	OPT	OPT
GB4	Ground bus - Mechanical Lugs (Consult factory for special quotation if total # of ground cables exceeds 1/3 total # of cables into switch) 12 - #6 - 250MCM cables (600-1200A only, but MBTS series 40-4000A)	OPT	OPT	OPT	OPT	OPT	OPT
GB5	Ground bus - Mechanical Lugs (Consult factory for special quotation if total # of ground cables exceeds 1/3 total # of cables into switch) 8 - #2 - 600MCM cables (600-1200A only)	OPT	OPT	OPT	OPT	OPT	OPT
GB6	Ground bus - Mechanical Lugs (Consult factory for special quotation if total # of ground cables exceeds 1/3 total # of cables into switch) 12 - #2 - 600MCM cables (600-4000A	OPT	OPT	OPT	OPT	OPT	OPT
GB7	Ground bus - Mechanical Lugs (Consult factory for special quotation if total # of ground cables exceeds 1/3 total # of cables into switch) 24 - #2 - 600MCM cables (600-4000A only)	OPT	OPT	OPT	OPT	OPT	OPT

Option Code	Abbreviated Feature Description	MSTDS (Default)	MEXES	MCONS	MSENS	MSPES	MPSGS
GB8	Ground bus - Mechanical Lugs (Consult factory for special quotation if total # of ground cables exceeds 1/3 total # of cables into switch) 36 - #2 - 600MCM cables (600-4000A only)	OPT	OPT	OPT	OPT	OPT	OPT
HH1	Heater and humidistat 208/240V-mounted and interwired in transfer switch enclosure (Requires larger enclosure 40-200A)	OPT	OPT	OPT	OPT	OPT	OPT
HH2	Heater and humidistat 380/600V- mounted and interwired in transfer switch enclosure (Requires larger enclosure 40-200A)	OPT	OPT	OPT	OPT	OPT	OPT
HT1	Heater and thermostat 208/240V-mounted and interwired in transfer switch enclosure (Requires larger enclosure 40-200A)	OPT	OPT	OPT	OPT	OPT	OPT
HT2	Heater and thermostat 380/600-mounted and interwired in transfer switch enclosure (Requires larger enclosure 40-200A)	OPT	OPT	OPT	OPT	OPT	OPT
J1E	Adjustable under frequency sensor (Source 2 or Emergency)	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
J1N	Adjustable under frequency sensor (Source 1 or Normal)	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
J2E	Adjustable over/under frequency sensor (Source 2 or Emergency)	STD	STD	STD	STD	STD	STD
J2N	Adjustable over/under frequency sensor (Source 1 or	STD	STD	STD	STD	STD	STD
K	Frequency meter door mounted	OPT	OPT	OPT	OPT	OPT	OPT
K/P	Frequency indication (on the controller)	STD	STD	STD	STD	STD	STD
L1	LED Source 2 (Emergency) position indication	STD	STD	STD	STD	STD	STD
L2	LED Source 1 (Normal) position indication	STD	STD	STD	STD	STD	STD
L3	LED Source 1 (Normal) source availability indication	STD	STD	STD	STD	STD	STD
L4	LED Source 2 (or Emergency) source availability indication	STD	STD	STD	STD	STD	STD
LM	Selector switch (S5 or S12) out of automatic position (pilot light only)	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
LN/P	Center-off position / LCD indication on microprocessor	STD (DELAY)	STD (DELAY)	STD (DELAY)	STD (DELAY)	STD (DELAY)	STD (DELAY)
M1A	Load side Ammeter - 40-260amps (1-phase) 2%	OPT	OPT	OPT	OPT	OPT	OPT
M1B	Load side Ammeter - 400-1200amps (1-phase) 2%	OPT	OPT	OPT	OPT	OPT	OPT
M1C	Load side Ammeter - 1600-2000amps (1-phase) 2%	OPT	OPT	OPT	OPT	OPT	OPT
M1D	Load side Ammeter - 3000-4000amps (1-phase) 2%	OPT	OPT	OPT	OPT	OPT	OPT
M2A	Load side Ammeter - 40 -260 (3-phase with selector switch) 2%	OPT	OPT	OPT	OPT	OPT	OPT
M2B	Load side Ammeter - 400-1200amps (3-phase with selector switch) 2%	OPT	OPT	OPT	OPT	OPT	OPT
M2C	Load side Ammeter - 1600-2000amps (3-phase with selector switch) 2%	OPT	OPT	OPT	OPT	OPT	OPT
M2D	Load side Ammeter - 3000-4000amps (3-phase with selector switch) 2%	OPT	OPT	OPT	OPT	OPT	OPT

Option Code	Abbreviated Feature Description	MSTDS (Default)	MEXES	MCONS	MSENS	MSPES	MPSGS
EVM-VP1	Enervista Viewpoint Monitoring for MTU Onsite Energy ATS. Permits Plug-&-Play Monitoring for up to 32 MTU Onsite Energy Transfer Switches. Requires Modbus Communications cards on ATS. [Note: See "M90/91A" and "M90/91B" meter options for factory supply and pre-wiring for Enervista Monitoring].	OPT	OPT	OPT	OPT	OPT	OPT
N1	Running time indicator (for engine running) (door-mounted counter) (Note: Digital is available in controller.)	OPT	OPT	OPT	OPT	OPT	OPT
N2	Operation counter (door-mounted counter) (Note: Digital is available in controller.)	OPT	OPT	OPT	OPT	OPT	OPT
NEMA1A	Gasketed door on NEMA 1 enclosure "NEMA 1A" (add to enclosure price)	OPT	OPT	OPT	OPT	OPT	OPT
OCVR-1SG	Lockable, see-through cover for NEMA 3R or NEMA 12 Microprocessor only (Not NEMA 4)	OPT	OPT	OPT	OPT	OPT	OPT
OCVR-1SS	Lockable, see-through cover for NEMA 3R or NEMA 12 Microprocessor selectors and meters (Not NEMA 4)	OPT	OPT	OPT	OPT	OPT	OPT
P1	Engine start timer P1 (adjustable up to 6 seconds)	STD	STD	STD	STD	STD	STD
P2	Engine start timer P2 (adjustable up to 300 seconds)	OPT	OPT	OPT	OPT	OPT	OPT
Q2	Peak shave/remote load test/area protection - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	OPT	STD	STD	STD	STD	STD
Q3	Inhibit transfer to emergency (load add relay) - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	OPT	OPT	STD	OPT	STD	STD
Q7	Inhibit transfer to normal - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	OPT	OPT	STD	STD	STD	STD
R1-1	Over voltage sensing (Source 1 or Normal) 1-phase	OPT	OPT	OPT	STD	STD	STD
R1-3	Over voltage sensing (Source 1 or Normal) 3-phase	OPT	OPT	OPT	STD	STD	STD
R2E	Under voltage sensing: (Source 2 or Emergency) (1-phase) (STD 3-phase if U-U sensing is ordered)	STD	STD	STD	STD	STD	STD
R7	Over voltage sensing (Source 2 or Emergency) 1-phase	STD	STD	STD	STD	STD	STD
R8	Over voltage sensing (Source 2 or Emergency) 3-phase	STD	STD	STD	STD	STD	STD
R15	Load shed provisions to transfer Source 2 or emergency to dead normal (includes Q3 load add relay - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	OPT	OPT	OPT	OPT	OPT	STD
R15D	Load shed provisions to transfer Source 2 or emergency to neutral position (only available on delayed transition units) (includes Q3 load add relay - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	OPT	OPT	OPT	OPT	OPT	STD
R16	Phase rotation sensing of Source 1 and Source 2	OPT	STD	STD	STD	STD	STD
R17	Under voltage sensing: Source 2 (Emergency) (3-phase)	STD	STD	STD	STD	STD	STD

Automatic Transfer Switch

MTS/MTSD/MTSCT/MBTS/MBTSD/MBTSCT Options (with MX250 Controller)

Option Code	Abbreviated Feature Description	MSTDS (Default)	MEXES	MCONS	MSENS	MSPES	MPSGS
R26	Provisions for transfer to dead Source 2 or emergency for interruptible power rates - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	OPT	OPT	OPT	OPT	OPT	OPT
R26D	Provisions for transfer to neutral position (only available on delayed transition units) for interruptible power rates - Relay (SPDT) [Need to specify voltage (120VAC, 24VAC, 24VDC) 120V default standard]	OPT	OPT	OPT	OPT	OPT	OPT
R50	In Phase Monitor between Source 1 and Source 2 to allow transfer (with enable/disable)	STD	STD	STD	STD	STD	STD
SW1	Three position engine selector switch (Auto/Test/Off)	OPT	OPT	OPT	OPT	OPT	OPT
SW1K	Three position engine selector key switch (Auto/Test/Off)	OPT	OPT	OPT	OPT	OPT	OPT
SW2	Disconnect switch in series with accessory E to disconnect engine starting circuit	OPT	OPT	OPT	OPT	OPT	OPT
SW2K	Keyed Disconnect switch in series with accessory E to disconnect engine starting circuit	OPT	OPT	OPT	OPT	OPT	OPT
SW3	Prime source selector switch choosing Source 1 or Source 2 as normal source. Consult factory for special quotation on gen-gen systems (requires double P & U timers for proper operation)	OPT	OPT	OPT	OPT	OPT	OPT
SW3K	Keyed Prime source selector switch choosing Source 1 or Source 2 as normal source. Consult factory for special quotation on gen-gen systems (requires double P & U timers for proper operation)	OPT	OPT	OPT	OPT	OPT	OPT
S5/P	Microprocessor-activated auto/manual retransfer selector switch for transferring to normal source (includes Micro activated YN accessory) Consult factory for special quotation on hard-wired options.	OPT (N/A with S12/P)	OPT (N/A with S12/P)	OPT (N/A with S12/P)	Not Avail	STD	Not Avail
S12/P	Microprocessor-activated auto/manual retransfer selector switch for transferring to both Source 1 and Source 2 (includes Micro activated YN & YE accessory) Consult factory for special quotation on hard-wired options.	OPT (N/A with S5/P)	OPT (N/A with S5/P)	OPT (N/A with S5/P)	STD	Not Avail	STD
S13/P	Microprocessor-activated Commit/No Commit on transferring to emergency source (with enable/disable)	STD	STD	STD	STD	STD	STD
S14K	Keyed selector switch for (re-transfer to normal - test - auto)	OPT	OPT	OPT	OPT	OPT	OPT
SSS	SSS - (SSS0000) Safety Shutter System - Horizontal Bypass Switches (MBTS 600 thru 3000 Amp & MBTSCT 100-3000 Amp)	OPT	OPT	OPT	OPT	OPT	OPT
T	Retransfer to normal adjustable time delay	STD	STD	STD	STD	STD	STD
TMS	Tranisition Mode Selector Switch (only available with Closed Transition)	Optional (Closed Trans only)	Optional (Closed Trans only)	Optional (Closed Trans only)	Optional (Closed Trans only)	Optional (Closed Trans only)	Not Avail
T3/W3	Pre-signal contact on transfer to Source 1 (Normal) or Source 2 (Emergency) during test	OPT	OPT	STD	OPT	STD	STD

Option Code	Abbreviated Feature Description	MSTDS (Default)	MEXES	MCONS	MSENS	MSPES	MPSGS
U	Engine stop/cool adjustable cool down timer	STD	STD	STD	STD	STD	STD
UMD	Pre- and post-transfer output adjustable time range. Functions in both directions. Includes 2 circuits. Additional circuits available. (See A62.)	OPT	OPT	STD	OPT	STD	STD
VA1120	Remote annunciator connections for L1, L2, YN, TS - Relay (120VAC)	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
VA124	Remote annunciator connections for L1, L2, YN, TS - Relay (24VAC)	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
VA2	Padlock hasp/chain (padlock supplied by others)	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail	Not Avail
VI	Voltage imbalance between phases (applies to 3-phase only)	STD	STD	STD	STD	STD	STD
W	Adjustable time delay on transfer to emergency source	STD	STD	STD	STD	STD	STD
YEN/P	Bypass transfer timers function (soft switch in controller)	STD	STD	STD	STD	STD	STD
ZNETL	Lonworks microprocessor communication module	OPT	OPT	OPT	OPT	OPT	OPT
ZNETM	Modbus RTU microprocessor communication module	OPT	OPT	OPT	OPT	OPT	OPT
6/P	Microprocessor-activated Test Switch: a momentary test switch	STD	STD	STD	STD	STD	STD
6A	Test Switch (hard-wired) (maintained)	OPT	OPT	OPT	OPT	OPT	OPT
6A/P	Test Switch (maintained) Programmable in microprocessor	OPT	OPT	OPT	OPT	OPT	OPT
6BK	Test Switch (hard-wired) Maintained Auto - Momentary Test (Key Operated)	OPT	OPT	OPT	OPT	OPT	OPT
6CK	Test Switch (hard-wired) Maintained Auto - Maintained Test (Key Operated)	OPT	OPT	OPT	OPT	OPT	OPT

Automatic Transfer Switch

Special Lug Options

Switch Size	Std # of Cables per Pole	Option #	Lug Style	Std Compression Lug Size
40 ATS Only (see note 2)	1	18A	Compression	#2
80 ATS Only (see note 2)	1	18B	Compression	1/0
100 ATS/Bypass (see note 2)	1	18C	Compression	1/0
150 AST/Bypass (see note 2)	1	19A	Compression	3/0
225 ATS & Bypass	1	19B	Compression	250 MCM
260 ATS & Bypass	1	19C	Compression	350 MCM
400 ATS & Bypass	1	20	Compression	500 MCM
600 ATS & Bypass	2	21	Compression	500 MCM
800 ATS & Bypass	3	22A	Compression	500 MCM
1000 ATS & Bypass	4	22B	Compression	500 MCM
1200 ATS & Bypass	4	22C	Compression	500 MCM
1600/2000 ATS	4	23	Mechanical	600 MCM
1600/2000 BYP	4	23	Mechanical	600 MCM
1600/2000 ATS	8	24	Mechanical	600 MCM
1600/2000 BYP	8	24	Mechanical	600 MCM
1600/2000 ATS	8	24A	Mechanical	750 MCM
1600/2000 BYP	8	24A	Mechanical	750 MCM
1600/2000 ATS/BYP	4	23A	Compression	500 MCM
1600/2000 ATS/BYP	6	23B	Compression	750 MCM
1600/2000 ATS/BYP	8	23C	Compression	500 MCM
3000 ATS/BYP	8	25A	Compression	500 MCM
3000 ATS/BYP	6	25B	Compression	750 MCM
3000 ATS/BYP	8	25C	Mechanical	600 MCM
3000 ATS/BYP	8	25D	Mechanical	750MCM
4000 ATS/BYP	12	26A	Mechanical	600 MCM
4000 ATS/BYP	12	26B	Mechanical	750 MCM
4000 ATS/BYP	12	27A	Compression	500 MCM
4000 ATS/BYP	12	27B	Compression	750 MCM

Notes:

1. Compression lugs are not available on MTG or MTX Series Product.
2. Compression lugs not available on MTS open transition below 225A.
3. Consult factory for quotation if special lug configurations are required.
4. Compression lugs add an additional 2-6 weeks of delivery time. Consult factory.

REAR BUS CONNECTION (MTS4-120) OPEN STYLE

- MTS 40 - 1200 Amp - Open Style
- MBTS 100 - 1200 Amp - Open Style

SIS WIRING

SIS type wire is available on MTS series products, however, this is normally a spec item written in by competitors. Delivery and cost are *greatly* impacted by this requirement. A minimum of four added weeks of manufacturing time (added to standard lead times) is required.

- MTS and MTSD transfer switch
- MBTS and MBTSD bypass switch
- MTSCT and MBTSCT closed transition transfer and/or bypass switch

RING TERMINALS

Ring type terminals are also a specification item written in by others and present a significant additional manufacturing cost and delivery delay. Ring terminals used in place of spade type where possible (not in place of any connection made through control plugs) require a minimum of 4 added weeks of manufacturing time (added to standard lead times) and the following list adders apply to the product:

- MTS and MTSD transfer switch
- MBTS and MBTSD bypass switch
- MTSCT and MBTSCT closed transition transfer and/or bypass switch

INVERTED STYLE SWITCH

Wired and marked for emergency at top and normal at bottom
Bypass NOT AVAILABLE in inverted style

- MTS transfer switch only

ZNET SPECIAL ACCESSORIES

Option Code	Abbreviated Feature Description
ZNET10PS	Power Supply (120/240VAC to 24VAC) for annunciator when 24V AC/DC is not available for control power.
ZNET900	Annunciator (lonworks) up to 8 ATS units. Must also add ZNETL option to order. Must specify with order # of switches and nomenclature for nameplates.
ZNET901	Annunciator (lonworks) extension up to 6 units (up to 14 total with ZNET 900 & 901). More units will require additional ZNET900 & 901s.

INTEGRAL-MOUNTED BATTERY CHARGER - ALL MTG & MTS TRANSFER SWITCHES	
Option Code	**Abbreviated Feature Description**
BCI 12 03 LV X XX	12 VDC, 3 Ampere Output, [120VAC 2W, 120/240VAC 3W, 120/208VAC 4W, 120/240VAC 4W], 60Hz
BCI 12 10 LV X XX	12 VDC, 10 Ampere Output, [120VAC 2W, 120/240VAC 3W, 120/208VAC 4W, 120/240VAC 4W], 60Hz
BCI 24 03 LV X XX	24 VDC, 3 Ampere Output, [120VAC 2W, 120/240VAC 3W, 120/208VAC 4W, 120/240VAC 4W], 60Hz
BCI 24 10 LV X XX	24 VDC, 10 Ampere Output, [120VAC 2W, 120/240VAC 3W, 120/208VAC 4W, 120/240VAC 4W], 60Hz
Option 'HV' (BCI xx 03 HV x xx)	PT and Fusing for 480VAC 3 Phase, 4 Wire ATS, 60Hz, 3A Charger
Option 'HV' (BCI xx 10 HV x xx)	PT and Fusing for 480VAC 3 Phase, 4 Wire ATS, 60Hz, 10A Charger
Alarm Option (BCI xx 03 xx A xx)	Alarm Dry Contact Output & Door-Mounted Alarm LED, 3A Charger
Alarm Option (BCI xx 10 xx A xx)	Alarm Dry Contact Output & Door-Mounted Alarm LED, 10A Charger
Enclosure Option S1 (BCI xx xx xx x S1)	36" x 24" x 14" Custom Enclosure for MTG(S) 40-200 Amp ATS
Enclosure Option S1 (BCI xx xx xx x S2)	46" x 24" x 14" Custom Enclosure for MTG 225 Amp ATS

INTEGRAL-MOUNTED TVSS DEVICE - ALL MTG & MTS TRANSFER SWITCHES	
Option Code	**Abbreviated Feature Description**
TVI ME XXX 065 NC X XX	Integrally-mounted TVSS, [40-800 Amp MTG(S)], 65kA per Mode, Standard
TVI ME XXX 080 NC X XX	Integrally-mounted TVSS, [40-800 Amp MTG(S)], 80kA per Mode, Standard
TVI ME XXX 100 NC X XX	Integrally-mounted TVSS, [40-800 Amp MTG(S)], 100kA per Mode, Standard
TVI ME XXX 065 NF X XX	Integrally-mounted TVSS, [40-800 Amp MTG(S)], 65kA per Mode, With Surge Counter, No Noise Filter
TVI ME XXX 080 NF X XX	Integrally-mounted TVSS, [40-800 Amp MTG(S)], 80kA per Mode, With Surge Counter, No Noise Filter
TVI ME XXX 100 NF X XX	Integrally-mounted TVSS, [40-800 Amp MTG(S)], 100kA per Mode, With Surge Counter, No Noise Filter
TVI ME XXX 065 WC X XX	Integrally-mounted TVSS, [40-800 Amp MTG(S)], 65kA per Mode, With Surge Counter and Noise Filter
TVI ME XXX 080 WC X XX	Integrally-mounted TVSS, [40-800 Amp MTG(S)], 80kA per Mode, With Surge Counter and Noise Filter
TVI ME XXX 100 WC X XX	Integrally-mounted TVSS, [40-800 Amp MTG(S)], 100kA per Mode, With Surge Counter and Noise Filter
TVI HE XXX 100 NC X XX	Integrally-mounted TVSS, [1000-4000 Amp MTG(S)], 100kA per Mode, With Surge Counter and Noise Filter
TVI HE XXX 150 NC X XX	Integrally-mounted TVSS, [1000-4000 Amp MTG(S)], 150kA per Mode, With Surge Counter and Noise Filter
TVI HE XXX 200 NC X XX	Integrally-mounted TVSS, [1000-4000 Amp MTG(S)], 200kA per Mode, With Surge Counter and Noise Filter
TVI HE XXX 300 NC X XX	Integrally-mounted TVSS, [1000-4000 Amp MTG(S)], 300kA per Mode, With Surge Counter and Noise Filter
Alarm Option 'A'	Customer contact output and Door-mounted Alarm LED
Enclosure Option S1	36" x 24" x 14" Custom Enclosure for MTG(S) 40-200 Amp ATS
Enclosure Option S2	46" x 24" x 14" Custom Enclosure for MTG 225 Amp ATS

Date	Summary of Updates	Version
1/15/2013	Under **Custom Info**, branding for the CTS / CTG were updated to reflect MTU Onsite Energy branding.	2013-01 v1
1/10/2014	Changed Tognum reference to "A Rolls-Royce Power Systems Brand"	2014-01

MTG Series

Low-Voltage Automatic Transfer Switches

MTU Onsite Energy MTG Series switches are built for standard applications requiring the dependability and ease of operation found in a power contactor switch.

- Ratings 40 to 3000 amps (2, 3 or 4 poles)
- UL 1008 listed at 480 VAC
- CSA certified at 600 VAC (200-260 amps - 480V)
- NFPA 70, 99, 101 and 110
- IEEE 446 and 241
- NEC 517, 700, 701 and 702
- NEMA ICS2-447
- UL 508 and 50
- ANSI C33.76
- ICS 6
- NEMA 250
- Equipment *(Controls and Power Section)* **Seismic Test Qualified** to:
  - IBC-2006
  - ieee-693-2005
- Double throw, mechanically interlocked contactor mechanism
- Electrically operated, mechanically held
- Designed for emergency and standby applications
- Available in standard (MTG) or delayed transition (MTGD) models

MTG switches are equipped with the MX150 microprocessor panel, which controls the operation and displays the status of the transfer switch's position, timers and available sources. As an embedded digital controller, the MX150 offers high reliability and ease of unattended operation across a range of applications. The MX150 features include:

- Timer and voltage/frequency settings adjustable without disconnection from the power section
- Built-in diagnostics with an LCD display for immediate troubleshooting
- LED/LCD indicators for ease of viewing and long life
- Nonvolatile memory—clock battery backup not required for standard switch operation
- Processor and digital circuitry isolated from line voltage
- Inputs optoisolated for high electrical immunity to transients and noise
- Communications network interface

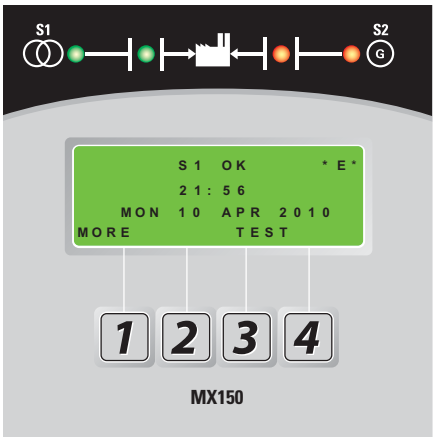
Fully Approved

- UL and CSA listed
- NFPA 70, 99 101 and 110
- IEEE 446 and 241
- NEC 517, 700, 701 and 702
- NEMA ICS 2-447
- UL 508 and 50
- ANSI C33.76
- ICS 6
- NEMA 250
- IBC-2006
- IEEE-693-2005
- Ringing wave immunity per IEEE 472 (ANSI C37.90A)
- Conducted and Radiated Emissions per EN55022 Class B (CISPR 22) (Exceeds EN55011 & MILSTD 461 Class 3)
- ESD immunity test per EN61000-4-2 Class B (Level 4)
- Radiated RF, electromagnetic Weld immunity test per en61000-4-3 (ENV50140) 10v/m
- Electrical fast transient / burst immunity test per EN61000-4-4
- Surge immunity test per EN61000-4-5 IEEE C62.41 (1.2 X 50µs, 0.5 & 4 kV)
- Conducted immunity test per EN61000-4-6 (ENV50141)
- Voltage dips and interruption immunity EN61000-4-11

Design and Construction Features

- Close differential 3 phase under-voltage sensing of Source 1 (normal) – factory standard setting 90% pickup, 80% dropout (adjustable); under-frequency sensing of Source 1 factory setting 95% pickup (adjustable)
- Voltage and frequency sensing of the Source 2 (emergency)–factory standard setting 90% pickup voltage, 95% pickup frequency (adjustable)
- Test switch (fast test/load/no load) to simulate Source 1 (normal) failure – automatically bypassed should the Source 2 (emergency) fail
- NEMA Type 1 enclosure is standard – also available in open style or NEMA Types 3R, 4, 4X or 12

MX150 Control Panel



Standard Features (MSTDG Option Pkg.)

6/P	Test Switch, Momentary
A3	Auxiliary Contact: Closed when the switch is in the Source 2 position (S2)
A4	Auxiliary Contact: Closed when the switch is in the Source 1 position (S1)
CALIBRATE	Capabilities are available for Frequency and AB, BC, CA Phase to Phase voltage for both Sources
CDT	Daily 7, 14, 28 timed exercise (CDT memory backup battery included), pushbutton/timer operation
E	Engine Start Contact
EL/P	Event Log of 16 Events that track date, time, reason and action taken
J1E	Adjustable under frequency sensor for S2
K/P	Voltage and Frequency Indication for S1 and S2
L	Indicating LED Pilot Lights: **L1** Indicates switch in S2 position **L2** Indicates switch in S1 position **L3** Indicates S1 source available **L4** Indicates S2 source available
P1	Time Delay to Engine Start
Q2	Peak Shave / Remote Load Test
R50	In-Phase Monitor, self-adjusting
T	Time Delay on Retransfer to Normal: To delay retransfer to S1 (immediate retransfer on S2 failure)
R2E	Under voltage sensing of S2
S13	Microprocessor activated commit / no commit on tranferring to S2
U	Time Delay for Engine Cool Down: Allows engine to run unloaded after switch retransfer to S1
W	Time Delay on Transfer to Emergency: To delay transfer to S2 after availability
YEN	Pushbutton Bypass of T & W Timers

When specified for use with a MTGD Series delayed transition switch, the control panel also includes the following:

DT	Time Delay from Neutral Switch Position to S1 on Retransfer
DW	Time Delay from Neutral Switch Position to S2
LN/P	Center-Off position/Off Delay Timing indicating lights

Additional Standard Features (MEXEG Option Pkg.)

CDP	Clock Exerciser Load/No Load (Replaces CDT Exerciser Option)
VI	Voltage Imbalance Monitor (Three Phase)

MTU Onsite Energy MTG Series Ordering Information

MODEL/TYPE	CONTROL PANEL	APPLICATION	AMPERE SIZE	SWITCHED POLES		ENCLOSURE TYPE	OPERATIONAL VOLTAGE	ACCESSORIES
M _ _ _ _ _	A 0	_	_ _ _	_	—	Z E C _ _	Z V C _ _	_ _ _ _

MODEL/TYPE
- M T G 0 0 0 — Standard (Open Transition)
- M T G D 0 0 — Delayed Transition

CONTROL PANEL
- A 0 — Entelli-Switch 150 Microprocessor Control Unit

APPLICATION
- 0 — Utility - Generator
- U — Utility - Utility
- M — Manual Transfer

AMPERE SIZE
- 0 0 4 — 40 amps
- 0 0 8 — 80 amps
- 0 1 0 — 100 amps
- 0 1 5 — 150 amps
- 0 2 0 — 200 amps
- 0 2 2 — 225 amps
- 0 2 6 — 260 amps
- 0 4 0 — 400 amps
- 0 6 0 — 600 amps
- 0 8 0 — 800 amps
- 1 0 0 — 1000 amps
- 1 2 0 — 1200 amps
- 1 6 0 — 1600 amps
- 2 0 0 — 2000 amps
- 2 6 0 — 2600 amps
- 3 0 0 — 3000 amps

SWITCHED POLES
- B — 2 Poles
- E — 3 Poles
- F — 4 Poles

ENCLOSURE TYPE
- 0 1 — Type 1 Enclosure
- 1 2 — Type 12 Enclosure
- 3 R — Type 3R Enclosure
- 4 0 — Type 4 Enclosure
- 4 X — Type 4X Enclosure
- 0 0 — Open Style Unit

OPERATIONAL VOLTAGE
- A B — Consult Table Below

A	B	Voltage	Phase	ConWg.	Hz
1	0	120	1	2 wire	60
2	0	120/240	1	3 wire	60
2	2	110/220	1	3 wire	50
3	0	240	3	3 wire	60
3	1	208	3	3 wire	60
3	2	220	3	3 wire	50
3	5	139/240	3	4 wire	60
4	0	120/208	3	4 wire	60
4	1	127/220	3	4 wire	60
4	2	127/220	3	4 wire	50
5	0	480	3	3 wire	60
5	1	440	3	3 wire	60
5	2	440	3	3 wire	50
5	5	460	1	3 wire	50
5	7	480	1	2 wire	60
5	8	254/440	3	4 wire	60
6	0	575	3	3 wire	60
6	1	347/600	3	4 wire	60
6	3	575	1	2 wire	60
7	0	277/480	3	4 wire	60
7	1	277	1	2 wire	60
7	4	266/460	3	4 wire	60
7	5	460	3	3 wire	60
8	2	380	1	2 wire	50
9	0	240/416	3	4 wire	60
9	1	220/380	3	4 wire	60
9	2	220/380	3	4 wire	50
9	3	240/416	3	4 wire	50
9	7	380	3	3 wire	60

Note: Operating voltage must be specified at time of order. Only the most common voltages are shown above.

ACCESSORIES
- M S T D
- M E X E
- M A N O

Then choose additional accessories

- 6A
- 6AP
- A1
- A1E
- A3
- A4
- A62
- ATGEW-X
- CTAP
- DS
- HT
- LCM
- M90
- M90A
- M90B
- M91
- M91A
- M91B
- MCM
- OCVR-1SG
- OCVR-1SS
- T3/W3
- UMD
- VI
- None

Switch Types

- **Standard**: Unless otherwise noted, the standard switch with quick transfer will be supplied.
- **Delayed Transition**: When ordered as the MTGD, the delayed transition switch offers time delay during transfer from one position to the other. This is primarily for transfer of large motor or inductive loads. The operation of the delayed transition switch is totally independent of the synchronism of the power sources, eliminating the need for in-phase monitors or extensive motor-disconnect control wiring between the transfer switch and motor control centers.

Examples

MTG000A00040F-ZEC01ZVC40MSTD

This number string shows the correct format for a MTG Series Automatic Transfer Switch with an MX150 microprocessor control unit, Utility - Generator, 400 amps, 4 pole, NEMA Type 1 enclosure, 120/208V 3f, 4 wire, 60 Hz system with the standard group of accessories.

UL 1008 Withstand and Closing Ratings

Please refer to MTU Onsite Energy Publication TB–1102.

Options

6A	Test Switch, Maintained
6AP	Test Switch, Maintained Programmable
A1	Auxiliary Contact, operates on Source 1 line failure
A1E	Auxiliary Contact, operates on Source 2 line failure
A3	Auxiliary Contacts: Closed when the transfer switch is in Source 2 position
A4	Auxiliary Contacts: Closed when the transfer switch is in Source 1 position
A62	Sequential Universal Motor Load Disconnect Circuit. Normally closed Auxiliary contacts for Motor Loads. Open 0-60 seconds pior to transfer, after transfer, or both in either direction then reclose in timed sequence after transfer.
ATGEW-X	Extended annual parts and labor warranty (1-4 years for a total of 5 years max.)
CTAP	Alarm panel on transfer to emergency w/silence button & light
DS	Inhibits transfer in either direction when in inhibit. Allows automatic operation when in Auto (Standard on 800A and above)
HT	Heater and Thermostat
LCM	LonWorks Communication Module
MCM	Modbus rtu Communication Module

M90 Series Power Measurement Meters (Not available in NEMA 4 enclosure)

M90	EPM2000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency). 3 Line LED Display. 50/60 Hz Universal Operation. 1 or 3 phase. Standard Modbus RTU RS485 communications capability. 40 - 1200 Amps.
M90A	Adds Pre-Wiring for Enervista Viewpoint Monitoring of M90 Accessory & ATS Status using Modbus RS485 Serial Communications
M90B	Adds Pre-Wiring for Enervista Viewpoint Monitoring of M90 Accessory & ATS Status using Ethernet TCP/IP Communications
M91	EPM6000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency, THD). Certified energy and demand metering. Meets ANSI C12.20 and IEC 687 Accuracy Classes. Front IrDA Port Laptop Connection. Standard Modbus RTU RS485 or DNP 3.0 communications capability.
M91A	Adds Pre-Wiring for Enervista Viewpoint Monitoring of M91 Accessory & ATS Status using Modbus RS485 Serial Communications
M91B	Adds Pre-Wiring for Enervista Viewpoint Monitoring of M91 Accessory & ATS Status using Ethernet TCP/IP Communications

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OCVR-1SG	Lockable see-through microprocessor cover for NEMA 3R or 12
OCVR-1SS	Lockable see-through microprocessor and meters cover for NEMA 3R or 12
T3/W3	Elevator Pre-Signal Auxiliary Contacts: Open 0-60 seconds prior to transfer to either direction, re-closes after transfer.
UMD	Universal Motor Load Disconnect Circuit: Auxiliary Contact opens 0-5 minutes prior to transfer in either direction, re-closes after transfer. Can be configured by end user for Pre-transfer, Post-transfer, or both.
VI	Voltage Imbalance Monitor (Three Phase)

NOTE:
For additional options or other configurations, contact the MTU Onsite Energy factory.

Reference Charts

Testing Standards	
UL and CSA listed	UL 1008, CSA 22.2 No. 178
Ringing wave immunity	IEEE 472 (ANSI C37.90A)
Conducted and radiated emissions	EN55022 Class B (CISPR 22) (Exceeds EN55011 & MILSTD 461 Class 3)
ESD immunity test	EN61000-4-2 Class B (Level 4)
Radiated RF, electromagnetic field immunity test	EN61000-4-3 (ENV50140) 10v/m
Electrical fast, transient/burst immunity test	EN61000-4-4
Surge immunity test	EN61000-4-5 IEEE C62.41 1.2 X 50µs, 0.5 to 4 kV
Conducted immunity test	EN61000-4-6 (ENV50141)
Voltage dips and interruption immunity	EN61000-4-11

MTG AL/CU UL Listed Solderless Screw-Type Terminals for External Power Connections *			
Switch Size (Amps)	Normal, Emergency and Load Terminals		
	Cables per Phase & Neutral	Range of Wire Sizes	
40	1	#8 to 3/0	8-85 mm^2
80			
100		#6 to 250 MCM	13-127 mm^2
150			
200, 225			
260		#6 to 350 MCM	13-177 mm^2
400		#4 to 600 MCM	21-304 mm^2
600	2	#2 to 600 MCM	33-304 mm^2
800, 1000, 1200	4		
1600, 2000, 2600, 3000	8	#2 to 600 MCM	33-304 mm^2

* For MTGD series data, contact the MTU Onsite Energy factory

Standard MX150 Control Setting Ranges			
	Control Function	Range	Factory Setting
MSTDG	Source 1 Line Sensing – Under-voltage Dropout/Pickup	75-98% 85-100%	80% 90%
	Source 2 Line Sensing – Under-voltage Dropout/Pickup	75-98% 85-100%	80% 90%
	Source 2 Line Sensing – Under-frequency Dropout/Pickup	88-98% 90-100%	90% 95%
	Time Delay – Engine Start (Acc. P1)	0-10 seconds	3 seconds
	Time Delay – Engine Cool Down (Acc. U)	0-60 minutes	5 minutes
	Time Delay – Transfer to Source 2 (Acc. W)	0-5 minutes	1 second
	Time Delay – Retransfer to Source 1 (Acc. T)	0-60 minutes	30 minutes
	Time Delay – Motor Disconnect or Transfer Presignal (Acc. UMD, or T3/W3)	0-60 seconds	20 seconds
	Delayed Transition Time Delays (DT, DW)	0-10 minutes	5 seconds
	Event Exerciser (CDT)	5-60 min.-1,7,14 or 28 days load or no load	20 min. - 7 days no load
MEXEG	Programmable Event Exerciser (CDP)	365 day cycle, load or no load	0 min. - 7 days no load
	Voltage Imbalance (VI)	5-20% nominal; 10-30 sec.	10% Fail, 8% Restore; 30 sec.
Options	Elevator Pre-Signal (T3/W3)	0-60 seconds	20 seconds
	Sequential Motor Load Disconnect (A62)	0-5 minutes	20 seconds
	Motor Load Disconnect (UMD)	0-60 seconds	5 seconds

MTG and MTGD Model, Dimensions and Weight									
Model	Ampere Rating	Poles	NEMA 1				Weight		Application Notes
			Height (A)	Width (B)	Depth (C)	Ref. Figure	Open Type	NEMA 1	
MTG	40, 80 100, 150 200	2, 3	24 (61)	18 (46)	11 (28)	A	14 (6)	69 (31)	1 - 6
		4					20 (9)	75 (34)	
	225	2, 3	46 (117)	24 (61)	14 (36)		59 (27)	69 (31)	1 - 5
		4					70 (32)	75 (34)	
	260	2, 3					59 (27)	114 (52)	
		4					70 (32)	125 (57)	
	400	2, 3					59 (27)	168 (76)	
		4					70 (32)	180 (82)	
	600	2, 3	66 (168)	24 (61)	19.5 (50)	B	71 (32)	224 (102)	1 - 5, 7
		4					81 (37)	214 (97)	
	800	2, 3	74 (188)	40 (102)	19.5 (50)		190 (86)	460 (209)	
		4					210 (95)	490 (222)	
	1000, 1200	2, 3					190 (86)	475 (216)	
		4					210 (95)	560 (254)	
	1600, 2000	3	90 (229)	35.5 (90)	48 (122)	C	345 (156)	1030 (467)	1 - 5, 7-8
		4					450 (204)	1180 (535)	
	2600, 3000	3					465 (211)	1150 (522)	
		4					670 (304)	1400 (635)	
MTGD	40, 80 100, 150 200, 225	2, 3	46 (117)	24 (61)	14 (36)	A	18 (8)	127 (58)	1 - 6
		4					24 (11)	133 (60)	
	260, 400	2, 3					65 (29)	176 (80)	1 - 5
		4					76 (34)	188 (85)	
	600	2, 3	66 (168)	24 (61)	19.5 (50)	B	77 (35)	221 (100)	1 - 5, 7
		4					87 (39)	230 (104)	
	800, 1000, 1200	2, 3	74 (188)	40 (102)	19.5 (50)		210 (95)	475 (215)	
		4					230 (104)	560 (254)	
	1600, 2000	3	90 (229)	35.5 (90)	48 (122)	C	365 (166)	1030 (467)	1 - 5, 7-8
		4					470 (213)	1180 (535)	
	2600, 3000	3					485 (220)	1150 (522)	
		4					690 (313)	1400 (635)	

1. Metric dimensions (cm) and weights (kg) shown in parentheses adjacent to English measurements.
2. Includes 1.25" door projection beyond base depth. Allow a minimum of 3" additional depth for projection of handle, lights, switches, pushbuttons, etc.
3. All dimensions and weights are approximate and subject to change without notice.
4. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
5. Special enclosure (NEMA 3R, 4, 4X, 12, etc.) dimensions and layouts may differ. Consult the MTU Onsite Energy factory for details.
6. A MTG(D) 40-225A, when ordered with the following options, will require a larger enclosure: A62(T), Digital Meter, HT, OCVR-1SG, OCVR-1SS. Contact the MTU Onsite Energy factory for dimensions.
7. Add 3" in height for removable lifting eyes.
8. Ventilation louvers on side and rear of enclosure at 1600-3000 amps. One set of louvers must be clear for airflow with standard cable connections.

Reference Figures

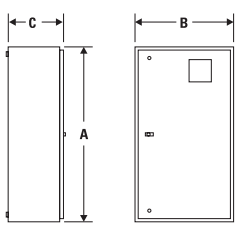


Figure A

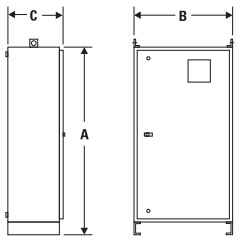


Figure B

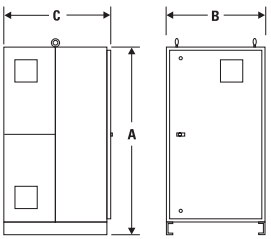


Figure C

MTU Onsite Energy
A Rolls-Royce Power Systems Brand

www.mtuonsiteenergy.com

PB-1201
2014-01

MTGSE/MTGDSE

Service Entrance Rated Automatic Transfer Switches

Introduction

While providing the functionality of an automatic transfer switch (ATS), MTU Onsite Energy's MTGSE Series integrates the utility circuit breaker, optional transient voltage surge suppression and power monitor into one simple coordinated package.

- Suitable for use as Service Entrance equipment
- Ratings 40 to 800 amps (2, 3 or 4 pole) and 1000 - 3000 amps (3 or 4 pole)
- UL 1008 listed at 480 VAC
- UL 891 listed and labeled suitable for use as Service Equipment
- Double throw, mechanically interlocked ATS contactor mechanism
- Electrically operated, mechanically held ATS
- Designed for emergency and standby applications
- Optional integrated load center for multiple loadside connections available up to 240 volts
- Additional options include integrated battery charger, Ground Fault Protection (GFP), shunt trip selector, power monitor and integrated TVSS
- Available with delayed transition feature (MTU Onsite Energy's MTGDSE)

Features and Benefits

MTU Onsite Energy's MTGSE Series switches are equipped with MTU Onsite Energy's MX150 microprocessor panel, which controls the operation and displays the status of the transfer switch's position, timers and available sources.

As an embedded digital controller, the MX150 offers high reliability and ease of unattended operation across a range of applications. The MX150 features include:

- Timer and voltage/frequency settings adjustable without disconnection from the power section
- Built-in diagnostics with an LCD display for immediate troubleshooting
- LED/LCD indicators for ease of viewing and long life
- Nonvolatile memory – clock battery backup not required for standard switch operation
- Processor and digital circuitry isolated from line voltage
- Inputs opto-isolated for high electrical immunity to transients and noise
- Communications network interface (optional)

MTU Onsite Energy's MTGSE Series Transfer Switch
Rated 480 VAC, 1200 Amps, NEMA 1

Fully Approved

- UL 891, UL 1008, CSA 22.2
- Ringing wave immunity per IEEE 472 (ANSI C37.90A)
- Conducted and Radiated Emissions per EN55022 Class B (CISPR 22) (Exceeds EN55011 & MILSTD 461 Class 3)
- ESD immunity test per EN61000-4-2 (Level 4)
- Radiated RF, electromagnetic field immunity test per EN61000-4-3 (ENV50140) 10v/m
- Electrical fast transient/burst immunity test per EN61000-4-4
- Surge immunity test per EN61000-4-5 IEEE C62.41 (1.2 X 50µs, 0.5 to 4 kV)
- Conducted immunity test per EN61000-4-6 (ENV50141)
- Voltage dips and interruption immunity EN61000-4-11
- NFPA 70, 99, 101, 110

Design and Construction Features

- Includes integrated and pre-wired Source 1 (normal) molded case circuit breaker (2 or 3 pole) for 40-800 amps, insulated case circuit breaker (3 pole) for 1000-3000 amps
- Includes mechanical lug connections for cables
- Close differential 3 phase under-voltage sensing of Source 1 — factory standard setting 90% pickup, 80% dropout (adjustable); under-frequency sensing of Source 1 factory setting 95% pickup (adjustable)
- Voltage and frequency sensing of Source 2 (emergency) — factory standard setting 90% pickup voltage, 95% pickup frequency (adjustable)
- Test switch (fast test/load/no load) to simulate normal source failure — automatically bypassed should Source 2 fail
- NEMA Type 1 enclosure is standard with optional NEMA 3R available
- Ground fault protection (GFP) is standard on 1000 - 3000 Amp and optional on 40 - 800 Amp
- Disconnect link on Neutral and Ground

Key Features

MTU Onsite Energy's MTGSE 1200 Amp, 480V, NEMA 1 Shown

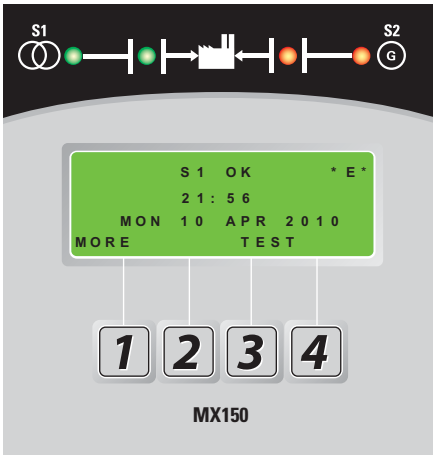
Closed View

1. MX150 Microprocessor Controller
2. Service Disconnect Breaker
3. NEMA 1 Enclosure
4. Service Entrance Rated Label

Open View

1. Power Panel (4-pole shown)
2. MX150 Microprocessor Controller
3. MTU Onsite Energy PowerBreak® II Service Disconnect Breaker
4. Service Disconnect Breaker Customer I/O Connections
5. Service Entrance Rated Label
6. UL 891 Label

MX150 Control Panel



Front View

Standard Features (MSTDG Option Pkg.)

6/P	Test Switch, Momentary
A3	Auxiliary Contact: Closed when the switch is in the Source 2 position (S2)
A4	Auxiliary Contact: Closed when the switch is in the Source 1 position (S1)
CALIBRATE	Capabilities are available for Frequency and AB, BC, CA Phase to Phase voltage for both Sources
CDT/P	Daily 7, 14, 28 timed load/no-load exerciser (cdt memory backup battery included), pushbutton/timer operation
E	Engine Start Contact
EL/P	Event Log of 16 Events that track date, time, reason and action taken
GFP	Ground fault protection, includes electronic trip, long time, short time and instantaneous trip. (Standard for 1000 - 3000 Amps)
J1E	Adjustable under frequency sensor for S2
K/P	Voltage and Frequency Indication for S1 and S2
L	Indicating led Pilot Lights: **L1** Indicates switch in S2 position **L2** Indicates switch in S1 position **L3** Indicates S1 source available **L4** Indicates S2 source available
P1	Time Delay to Engine Start
Q2	Peak Shave / Remote Load Test
R2E	Under voltage sensing of S2
R50	In-Phase Monitor, self-adjusting
S13	Microprocessor activated commit / no commit on tranferring to S2
T	Time Delay on Retransfer to Normal: To delay retransfer to S1 (immediate retransfer on generator set failure)
U	Time Delay for Engine Cool Down: Allows engine to run unloaded after switch retransfer to S1
VI	Voltage Imbalance Monitor (Three Phase)
W	Time Delay on Transfer to Emergency: To delay transfer to S2 after availability
YEN	Pushbutton Bypass of T & W Timers

When specified for use with a mtgdse Series delayed transition switch, the control panel also includes the following:

DT	Time Delay from Neutral Switch Position to S1 on Retransfer
DW	Time Delay from Neutral Switch Position to S2
LN/P	Center-Off position/Off Delay Timing indicating lights

Additional Standard Features (MEXEG Option Pkg.)

A3	Additional Auxiliary Contact: Closed when the switch is in the S2 position
A4	Additional Auxiliary Contact: Closed when the switch is in the S1 position
CDP	Clock Exerciser Load/No Load (Replaces CDT/P option)

MTG(D)SE Transfer Switch Options

6A	Test Switch, Maintained
6AP	Test Switch, Maintained Programmable
A1	Auxiliary Contact, operates on Source 1 line failure
A1E	Auxiliary Contact, operates on Source 2 line failure
A3	Auxiliary Contacts: Closed when the transfer switch is in Source 2 position
A4	Auxiliary Contacts: Closed when the transfer switch is in Source 1 position
A62	Sequential Universal Motor Load Disconnect Circuit. Normally closed Auxiliary contacts for Motor Loads. Open 0 - 60 seconds pior to transfer, after transfer, or both in either direction then reclose in timed sequence after transfer.
ATGEW-X	Extended annual parts and labor warranty (1 - 4 years for a total of 5 years max.)
BB	Auxiliary Contact, circuit breaker position two form C
BC12	Integrated generator battery charger, 12 VDC, 3 Amp output
BC24	Integrated generator battery charger, 24 VDC, 3 Amp output
CTAP	Alarm panel on transfer to emergency w/silence button & light
ECM	Ethernet Converter Module
GFP	Ground fault protection, includes electronic trip, long time, short time and instantaneous trip. (40 - 800 Amps)
HT3	Heater and Thermostat
LCM	Lonworks communications interface card

M90 Series Power measurement meters (Not available in NEMA 4 enclosure)

M90	EPM2000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency). 3 Line LED Display. 50/60 Hz Universal Operation. 1 or 3 phase. Standard Modbus RTU RS485 communications capability.
M90A	Adds Pre-Wiring for Enervista™ Viewpoint Monitoring of M90 Accessory & ATS Status using Modbus RS485 Serial Communications
M90B	Adds Pre-Wiring for Enervista™ Viewpoint Monitoring of M90 Accessory & ATS Status using Ethernet TCP/IP Communications

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MCM	Modbus RTU communications interface card
OCVR-1SG	Lockable see-through microprocessor cover for NEMA 3R or 12
OCVR-1SS	Lockable see-through microprocessor and meters cover for NEMA 3R or 12
STS	Shunt trip selector switch, Source 1 service entrance. Includes position indicating lamps and generator start inhibit circuit. Standard on NEMA 3R enclosures. 800 Amps and below.
T3/W3	Elevator Pre-Signal Auxiliary Contacts: Open 0 - 60 seconds prior to transfer to either direction, re-closes after transfer.
TVSSN	Integrated Transient Voltage Surge Suppressor, installed on Source 1 side 100kA per mode
TVSSL	Integrated Transient Voltage Surge Suppressor, installed on load side 100kA per mode
TVSSE	Integrated Transient Voltage Surge Suppressor, installed on Source 2 side 100kA per mode
UMD	Universal Motor Load Disconnect Circuit: Auxiliary Contact opens 0 - 5 minutes prior to transfer in either direction, re-closes after transfer. Can be configured by end user for Pre-transfer, Post-transfer, or both.

NOTE:
For additional options or other configurations, contact the MTU Onsite Energy factory.

Testing Standards	
UL, CSA, NEMA	UL 1008, UL 891, CSA 22.2, ICS10
Ringing wave immunity	IEEE 472 (ANSI C37.90A)
Conducted and radiated emissions	EN55022 Class B (CISPR 22) (Exceeds EN55011 & MILSTD 461 Class 3)
ESD immunity test	EN61000-4-2 Class B (Level 4)
Radiated RF, electromagnetic field immunity test	EN61000-4-3 (ENV50140) 10v/m
Electrical fast, transient/burst immunity test	EN61000-4-4
Surge immunity test	EN61000-4-5 IEEE C62.41 1.2 X 50µs, 0.5 to 4 kV
Conducted immunity test	EN61000-4-6 (ENV50141)
Voltage dips and interruption immunity	EN61000-4-11

AL / CU UL Listed Solderless Screw-Type Terminals for External Power Connections							
	Switch Size (Amps)	Source 1 Terminals (MCCB)			Source 2 & Load Terminals (ATS)		
		Cables per Pole	Range of Wire Sizes		Cables per Pole	Range of Wire Sizes	
MTGSE & MTGDSE	40, 80	1	#12 - 3/0	3 - 85 mm²	1	#8 - 3/0	8 - 85 mm²
	100 - 150		#8 - 350 MCM	8 - 177 mm²			
	200					#6 - 250 MCM	13 - 127 mm²
	225	1	2/0 - 600 MCM or 8 - 500 mm²	(1) 67 - 304 mm² or 8 - 253 mm²			
	260					#6 - 350 MCM	13 - 177 mm²
	400				1 or 2	(1) #4 - 600 MCM or (2) 1/0 - 250 MCM	(1) 21 - 304 mm² or (2) 53 - 127 mm²
	600	3	3/0 - 500 MCM	85 - 253 mm²	2	#2 - 600 MCM	34 - 304 mm²
	800	4	250 - 500 MCM	127 - 253 mm²	4		
	1000	4	#2 - 600 MCM	34 - 304 mm²			
	1200						
	1600	8			8		
	2000						
	2600						
	3000						

NOTE: For ground bar and neutral bar cable size and quantity data, contact the MTU Onsite Energy factory.

Standard MX150 Control Setting Ranges					
	Control Function			Range	Factory Setting
MSTDG	Source 1 Line Sensing – Under-voltage	Dropout Pickup		75 - 98% 85 - 100%	80% 90%
	Source 2 Line Sensing – Under-voltage	Dropout Pickup		75 - 98% 85 - 100%	80% 90%
	Source 2 Line Sensing – Under-frequency	Dropout Pickup		88 - 98% 90 - 100%	90% 95%
	Time Delay – Engine Start	(Acc. P1)		0 - 10 seconds	3 seconds
	Time Delay – Engine Cool Down	(Acc. U)		0 - 60 minutes	5 minutes
	Time Delay – Transfer to Emergency (Acc. W)			0 - 5 minutes	1 second
	Time Delay – Retransfer to Normal	(Acc. T)		0 - 60 minutes	30 minutes
	Time Delay – Motor Disconnect or Transfer Presignal	(Acc. UMD, or T3/W3)		0 - 60 seconds	20 seconds
	Delayed Transition Time Delays	(DT, DW)		0 - 10 minutes	5 seconds
	Event Exerciser	(CDT/P)	5 - 60 min. - 1,7,14 or 28 days load or no load		20 min. - 7 days no load
MEXEG	Programmable Event Exerciser	(CDP)	365 day cycle, load or no load		0 min. - 7 days no load
	Voltage Imbalance	(VI)	5-20% nominal; 10-30 sec.		10% Fail, 8% Restore; 30 sec.
Options	Elevator Pre-Signal	(T3/W3)		0-60 seconds	20 seconds
	Sequential Motor Load Disconnect	(A62)		0-5 minutes	20 seconds
	Motor Load Disconnect	(UMD)		0-60 seconds	5 seconds

Dimensional and Weight Specifications

MTGSE & MTGDSE Dimensions									
Amp Rating	Poles	NEMA 1 Enclosure						Fig	App Notes
		H (in)	H (cm)	W (in)	W (cm)	D (in)	D (cm)		
40 - 260	2, 3, 4	48.2	122	36	91	15.9	40	A	1-4
400	2, 3, 4	48.2	122	36	91	15.9	40	A	1-4
600	2, 3, 4	75	191	39	99	20	51	A	1-4
800	2, 3, 4	90	229	51	129	20	51	A	1-4
1000 - 1200	3, 4	90	229	39	99	51	130	B	1-6
1600 - 2000	3, 4	90	229	39	99	51	130	B	1-6
2600 - 3000	3, 4	90	229	39	99	63	160	B	1-6
Amp Rating	Poles	NEMA 3R Enclosure						Fig	App Notes
		H (in)	H (cm)	W (in)	W (cm)	D (in)	D (cm)		
40 - 260	2, 3, 4	48.2	122	36	91	15.9	40	A	1-4
400	2, 3, 4	48.2	122	36	91	15.9	40	A	1-4
600	2, 3, 4	75	191	39	99	20	51	A	1-4
800	2, 3, 4	90	229	51	129	20	51	A	1-4
1000 - 1200	3, 4	90	229	40	101	57	145	C	1-6
1600 - 2000	3, 4	90	229	40	101	57	145	C	1-6
2600 - 3000	3, 4	90	229	40	101	69	175	C	1-6

MTGSE Model Weight(s)			
Amp Rating	Poles	Weight Lb (kg)	
		NEMA 1	NEMA 3R
40, 80, 100 150, 225, 260	2, 3	183 (83)	193 (88)
	4	187 (85)	197 (89)
400	2, 3	265(120)	275 (125)
	4	289 (131)	299 (136)
600	2, 3	415 (188)	435 (197)
	4	444 (201)	464 (210)
800	2, 3	577 (262)	597 (271)
	4	662 (300)	682 (309)
1000, 1200	3	1690 (766)	1890 (857)
	4	1710 (775)	1910 (866)
1600, 2000	3	2355 (1067)	2555 (1159)
	4	2455 (1112)	2655 (1204)
2600, 3000	3	2475 (1121)	2675 (1213)
	4	2675 (1212)	2875 (1304)

MTGDSE Model Weight(s)			
Amp Rating	Poles	Weight Lb (kg)	
		NEMA 1	NEMA 3R
40, 80, 100 150, 225, 260	2, 3	272 (123)	282 (128)
	4	296 (134)	306 (139)
400	2, 3	272 (123)	282 (128)
	4	296 (134)	306 (139)
600	2, 3	422 (191)	442 (200)
	4	451 (205)	471 (214)
800	2, 3	587 (266)	607 (275)
	4	672 (305)	692 (314)
1000, 1200	3	1700 (771)	1900 (862)
	4	1720 (780)	1920 (871)
1600, 2000	3	2365 (1073)	2565 (1163)
	4	2465 (1118)	2665 (1209)
2600, 3000	3	2485 (1127)	2685 (1218)
	4	2685 (1218)	2885 (1309)

Application Notes:

1. Metric dimensions (cm) and weights (kg) shown in parentheses adjacent to English measurements.
2. Allow a minimum of 3" additional depth for projection of handle, lights, switches, pushbuttons, etc.
3. All dimensions and weights are approximate and subject to change without notice.
4. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
5. Add 3" in height for lifting eyes.
6. Removable side covers permit mounting against wall.

Reference Figures

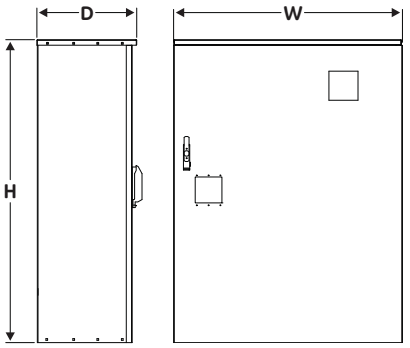


Figure A
40 - 800 Amp Transfer Switch
NEMA 1 & 3R

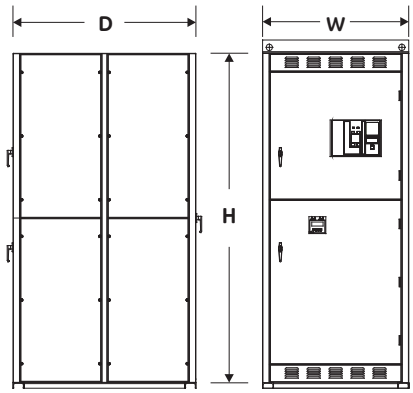


Figure B
1000 - 3000 Amp Transfer Switch
NEMA 1

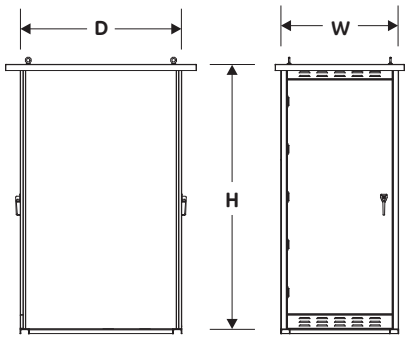


Figure C
1000 - 3000 Amp Transfer Switch
NEMA 3R

M	T	G	S	E	0	A	0	0					—	N	0	1			M	S	T	D	G
Base Model			Type			Control Panel		Config.	Ampere Size			Switched Poles		Enclosure Type			Operational Voltage		Accessories				

Type

- S E 0 — Standard (Open Transition Transfer Switch)
- D S E — Standard (Delayed Transition Transfer Switch)

Control Panel

- A 0 — MX150 Microprocessor Control Unit

Config.

- 0 — Utility - Generator
- M — Manual

Ampere Size

- 0 0 4 — 40 amps
- 0 0 8 — 80 amps
- 0 1 0 — 100 amps
- 0 1 5 — 150 amps
- 0 2 0 — 200 amps
- 0 2 2 — 225 amps
- 0 2 6 — 260 amps
- 0 4 0 — 400 amps
- 0 6 0 — 600 amps
- 0 8 0 — 800 amps
- 1 0 0 — 1000 amps *
- 1 2 0 — 1200 amps *
- 1 6 0 — 1600 amps *
- 2 0 0 — 2000 amps *
- 2 6 0 — 2600 amps *
- 3 0 0 — 3000 amps *

* Available in 3 or 4 pole only

Switched Poles

- B — 2 Poles
- E — 3 Poles
- F — 4 Poles

Enclosure Type

- N 0 1 — Type 1 Enclosure
- N 3 R — Type 3R Enclosure

Operational Voltage

- A B

Accessories

- M S T D G
- M E X E G

If required, choose additional accessories on page 4 for automatic transfer switches.

For manuals transfer switches, this section will only read "MSTDG". If required, choose additional features specified on page 4.

Example

MTGSE0A0040E-N0140MSTDG

This model number string shows the correct format for a MTGSE Series Automatic Transfer Switch with an MX150 microprocessor control unit, Utility - Generator application, 400 amps, 3 pole, NEMA Type 1 enclosure, 120/208V 3f, 4 wire, 60 Hz system with the standard group of accessories.

A	B	Voltage	Phase	Config.	Hz
1	0	120	1	2 wire	60
2	0	120 / 240	1	3 wire	60
2	2	110 / 220	1	3 wire	50
3	0	240	3	3 wire	60
3	1	208	3	3 wire	60
3	2	220	3	3 wire	50
3	5	139 / 240	3	4 wire	60
4	0	120 / 208	3	4 wire	60
4	1	127 / 220	3	4 wire	60
4	2	127/ 220	3	4 wire	50
5	0	480	3	3 wire	60
5	1	440	3	3 wire	60
5	2	440	3	3 wire	50
5	5	460	1	3 wire	50
5	7	480	1	2 wire	60
5	8	254 / 440	3	4 wire	60
6	0	575	3	3 wire	60
6	1	347/600	3	4 wire	60
6	3	575	1	2 wire	60
7	0	277/ 480	3	4 wire	60
7	1	277	1	2 wire	60
7	4	266 / 460	3	4 wire	60
7	5	460	3	3 wire	60
8	2	380	1	2 wire	50
9	0	240 / 416	3	4 wire	60
9	1	220 / 380	3	4 wire	60
9	2	220 / 380	3	4 wire	50
9	3	240 / 416	3	4 wire	50
9	7	380	3	3 wire	60

NOTE: Will need to specify with order the operating voltage. Only the most common ones are shown here.

UL 1008 Withstand and Closing Ratings

Withstand Current Ratings per UL 1008			
MTGSE Switch Ratings (Amps)	Maximum Circuit Amps When Used With		
	Specific Coordinated Breaker Rating	Any Breaker Rating	Current Limiting Fuse
40, 80, 100 150, 200, 225	30,000	10,000	200,000
260	35,000	10,000	200,000
400	50,000	35,000	200,000
600	50,000	35,000	200,000
800	65,000	50,000	200,000
1000, 1200	85,000	50,000	200,000
1600, 2000	100,000	65,000	200,000
2600, 3000	100,000	100,000	200,000

Withstand Current Ratings per UL 1008			
MTGDSE Switch Ratings (Amps)	Maximum Circuit Amps When Used With		
	Specific Coordinated Breaker Rating	Any Breaker Rating	Current Limiting Fuse
40, 80, 100, 150 200, 225, 260 300, 400, 600	50,000	50,000	200,000
800	65,000	50,000	200,000
1000, 1200	85,000	50,000	200,000
1600, 2000	100,000	65,000	200,000
2600, 3000	100,000	100,000	200,000

MTU Onsite Energy
A Rolls-Royce Power Systems Brand

www.mtuonsiteenergy.com

PB-1301
2014-01

MTS Series

Low-Voltage Automatic and Manual Transfer Switches

MTU Onsite Energy has partnered with GE Energy to offer the MTS Series of transfer switches that have become a hallmark of quality and performance. Reliability resulting from superior design and heavy duty construction has made the MTS the industry standard for critical installations. Our emphasis on research and development, design improvements, materials, manufacturing methods, quality assurance and service yields products that have been proven in hundreds of thousands of applications. Subsequent to the first MTS units installed, our engineering staff has been dedicated to the improvement and expansion of our product line. Today, we offer a wide selection of transfer switch products worldwide.

- MTS Automatic Transfer Switches
  40 - 4000 Amps
- MTSD Delayed Transition Transfer Switches
  40 - 4000 Amps
- MTSCT Closed Transition Transfer Switches
  100 - 4000 Amps
- MBTS Automatic Transition Bypass Switches
  100 - 4000 Amps
- MBTSD Delayed Transition Bypass Switches
  100 - 4000 Amps
- MBTSCT Closed Transition Bypass Switches
  100 - 4000 Amps

All MTS products meet or exceed industry requirements allowing specification and installation confidence.

- UL 1008 listed through 480 VAC
- CSA C22.2 No. 178 listed through 600 VAC
- Codes and Standards
  – NFPA 70, 99, 101, 110
  – IEEE 446, 241, 602
  – NEC 517, 700, 701, 702
  – NEMA ICS-10
- Controls tested in accordance with:
  – IEEE 472 (ANSI C37.90A)
  – EN55022 Class B (CISPR 22)

(Exceeds EN55011 & MILSTD 461 Class 3)

  – EN61000-4-2 Class B (Level 4)
  – EN61000-4-3 (ENV50140) 10 V/M
  – EN61000-4-4
  – EN61000-4-5, IEEE C62.41
    (1.2 X 50µs, 0.5 to 4 kV)
  – EN61000-4-6 (ENV50141)
  – EN61000-4-11
- Equipment *(Controls and Power Section)*
  Seismic Test Qualified to:
  – IBC-2006
  – IEEE-693-2005
- Enclosures meet the requirements of:
  – UL 508, 50
  – ANSI C33.76
  – ICS 6
  – NEMA 250
- Quality System
  – ISO 9001 Registered

Specification Assistance

MTU Onsite Energy offers a complete range of product guide specifications to help you determine your needs.

For more information, please consult your local MTU Onsite Energy representative, our factory or our website at www.mtu-online.com.

MTU Onsite Energy MTS Series Automatic Transfer Switches

The MTU Onsite Energy MTS Series is the building block of our transfer switch product line. This ruggedly built power contactor family of switches has been specifically designed for transfer switch duty with dependability, versatility and user friendliness of prime concern.

MTS switches are available in open type construction for switchboard installation or NEMA enclosed to the customer's specifications. The power panel components, consisting of power switching contacts, drive mechanism and terminal lugs, are mounted on a specially formed panel. Logic devices including microprocessor control auxiliary time delays and special accessory equipment are assembled on the door for ease of maintenance and separation from the power section. They are connected with a numbered wiring harness equipped with a disconnect plug that allows isolation of the control panel for maintenance.

MTS Series Method of Operation

When Source 1 voltage fails or drops to a predetermined point (usually 80% of nominal), if required, a circuit is closed to start the engine generator set. When Source 2 reaches 90% of rated voltage and 95% of rated frequency, the drive solenoid is energized through the Source 2 coil control relay, causing the main contacts to disconnect the load from Source 1 and connect it to Source 2. After the drive solenoid has completed its electrical stroke and is seated, the Source 2 coil control relay opens to disconnect it. The transfer switch is now mechanically locked in the Source 2 position.

When Source 1 voltage is restored to a predetermined point (usually 90% of nominal), the control voltage sensing energizes. The Source 1 side coil relay closes, and after the drive solenoid has completed its electrical stroke and is seated, the coil control relay opens to disconnect it. The transfer switch is now mechanically locked in the Source 1 position.

Drive Mechanism

All MTU Onsite Energy MTS switches employ the simple "over-center" principle to achieve a mechanically locked position in either Source 1 or Source 2 and MTU Onsite Energy's high speed drive assures contact transfer in 100ms or less. High contact pressure and positive mechanical lock allow for high withstand and closing ratings, far exceeding UL requirements. All MTS units are listed with UL umbrella (any) breaker, coordinated breaker and current limiting fuse ratings.

Neutral Switching

The MTU Onsite Energy MTS Series is available in true four pole designs for multi-source power systems that require neutral switching. The neutral contact is on the same shaft as the associated main contacts. This ensures positive operation, and avoids any possibility that the neutral contact will fail to open or close, as is possible when the neutral pole is an add-on accessory. The neutral contacts are identical to the main contacts, having the same current carrying and high withstand/closing ratings as the mains. They are designed to break last and make first to reduce the possibility of transients while switching the neutral.

Safe Manual Operation

The MTS manual operator consists of a large, easy-to-use handle that fits securely for manual operation during installation and maintenance or in an emergency.

The MTS may be provided with an operator inhibit switch to disconnect the electrical drive prior to maintenance. Fully enclosed wrap-around arc covers shield the main contacts and mechanical components, preventing operator exposure during manual operation.

Transferring Large Motor or Highly Inductive Loads

Some loads, especially large motors, receive severe mechanical stress if power is transferred out of phase while the motor is still rotating. Also, back EMF generated by a motor may result in excess currents that can blow fuses or trip circuit breakers. MTU Onsite Energy offers four solutions to these problems:

Universal Motor Disconnect (UMD): This load control disconnects a large motor via its control circuit for an adjustable period of time prior to transfer in either direction. For switching multiple motors, MTU Onsite Energy's Accessory A62 disconnects the motors prior to transfer and brings them back on line sequentially.

Accessory R50: This is an in-phase monitor that compares the phase angle between both sources of power and prevents transfer until the two are approximately in phase (within a self-adjusting range). MTU Onsite Energy's high speed transfer action, coupled with the MX series microprocessor control logic, ensure closures at or near zero degree phase difference.

Series MTSD: MTU Onsite Energy offers delayed transition switching on transfer switches rated 40 amperes and above – the MTU Onsite Energy MTSD Series. This programmed center-off position allows for the full decay of rotating motors or transformer fields. It can also be used for load shedding of selected circuits or other applications which require a means to disconnect the load from either source. Major UPS system manufacturers recommend delayed transition switches for proper restart sequencing of their systems.

Series MTSCT: MTU Onsite Energy's series of closed transition switches combine MTSD operation during a source failure with a highly engineered control system that allows momentary paralleling (100 MS) of two acceptable sources, thereby limiting the impact of transfer on the load.

Electrical Ratings

- Ratings 40 to 4000 amperes
- 2, 3 or 4 Poles
- Open type, NEMA 1, 3R, 4, 4X and 12
- Available to 600 VAC, 50 or 60 Hz
- Suitable for emergency and standby applications on all classes of load, 100% tungsten rated through 400 amps
- UL 1008 listed at 480 VAC
- CSA C22.2 No. 178 certified at 600 VAC

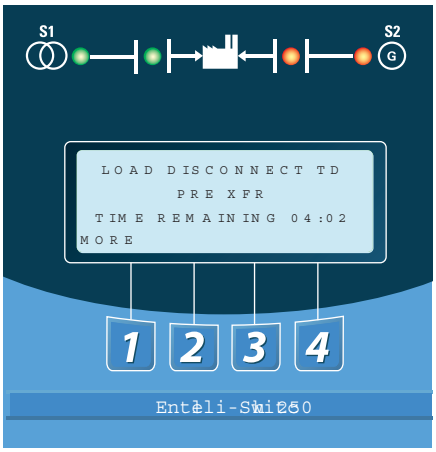
Performance Features

- Contact transfer speed less than 100 milliseconds
- High close-in and withstand capability
- Temperature rise test per UL 1008 conducted after overload and endurance tests - exceeds UL requirements
- Available in MTS (utility-generator), MTSU (utility-utility), MTSG (generator-generator) and MTSM (manual) configurations

Design and Construction Features

- Double throw, interlocked operation
- Electrically operated, mechanically held by a simple, over-center mechanism
- Segmented silver tungsten alloy contacts with separate arcing contacts on 225 amp and above
- Arc quenching grids, enclosed arc chambers, and wide contact air gap for superior source-to-source isolation on all units
- Control circuit disconnect plug and drive inhibit switch for safe maintenance
- Components accessible for inspection and maintenance without removal of the switch or power conductors
- Mechanical indicator and contact chamber cover designed for inspection, safety and position designation

MX250 Series Microprocessor Controller



Enhanced Display and Settings

LEDs are used in a recognizable line configuration for continuous monitoring of switch position. The LCD display shows source availability, exercise time delay operation and system source condition. A simplified adjustment is featured for voltage, frequency and time delay settings.

The control operates off a close differential 3-phase under-voltage sensing of Source 1, factory standard setting 90% pickup, 80% dropout; under-frequency sensing of Source 1 factory setting 95% pickup; 3-phase voltage and frequency sensing of Source 2, factory standard setting 90% pickup voltage, 95% pickup frequency. All factory settings are operator adjustable.

A test function is standard (fast test/load/no load) to simulate Source 1 failure - automatically bypassed should Source 2 fail.

More Enhanced Features

- Available in all transfer modes:
  - Open, Delayed & Bypass / Isolation
  - Closed (with newly integrated transition control)
- User-friendly programmable engine exerciser, used for the engine generator with or without load, at any interval in a one-year period
- Operating voltages available in a single controller for worldwide applications
- Real-time display of ATS status, including active timer(s)
- Multiple levels of user-defined password protection
- Serial communications allowing connectivity with other ATS's, paralleling switchgear, and SCADA systems
- Time-tested synchronous logic automatically measures phase angle and frequency allowing disturbance-free transfer
- Unsurpassed statistical ATS/System monitoring available in real-time
- T3/W3 elevator pre-signal. Automatically bypassed if the selected source fails, minimizing time an elevator is without power
- Universal Motor Disconnect (UMD) sends a pre-signal, post-signal or both to any motor control center. Not bypassed in an outage, the UMD ensures safety in the event of a single phase loss
- Voltage unbalance detection standard
- Extensive Warranty

Performance Features

- UL and CSA listed
- Ringing wave immunity per IEEE 472 (ANSI C37.90A)
- Conducted and Radiated Emissions per EN55022 Class B

  (CISPR 11) (Exceeds EN55011 & MILSTD 461 Class 3)
- ESD Immunity test per EN61000-4-2 Class B (Level 4)
- Radiated RF, electromagnetic field immunity test per

  EN61000-4-3 (ENV50140) 10v/m
- Electrical fast transient / burst immunity test for EN61000-4-4
- Surge immunity test per EN61000-4-5 (IEEEC62.41) (1.2 x 50µs, 0.5 to 4 kV)
- Conducted immunity test per EN61000-4-6 (ENV50141)
- Voltage dips and interruption immunity EN61000-4-11

Technical Benefits

- Separate line voltage components for controller isolation
- Inputs optoisolated for high electrical immunity to transients and noise
- Built-in electrical operator protection
- Simplified maintenance – major components are easily replaceable
- Close differential under-voltage sensing of the normal source
- Voltage and frequency sensing of the emergency source (all settings are adjustable)

MTU Onsite Energy MTS Series Accessory Definitions

6P

Microprocessor activated test switch (Momentary)

6A

Hardwired test switch (Maintained)

6AP

Microprocessor activated test switch (Maintained)

6B

Hardwired test switch (Maintained Auto - Momentary Test) Key operated

6C

Hardwired test switch (Maintained Auto - Maintained Test) Key operated

A1

Auxiliary Contact S.P.D.T. - Normal (Source 1) Failure

A1E

Auxiliary Contact S.P.D.T. - Emergency (Source 2) Failure

A3

Auxiliary Contact - closed in emergency (Source 2) Additional available (10 max.) on MTS Series and need to be specified

A4

Auxiliary Contact - closed in normal (Source 1) Additional available (10 max.) on MTS Series and need to be specified

A62

Motor disconnect and staged restart (1 contact)

AB3

Auxiliary Contact - closed in bypass emergency (Source 2) (S.P.D.T.) (Standard up to 400A) Additional available (10 max.) on MBTS Series and need to be specified

AB4

Auxiliary Contact - closed in bypass normal (Source 1) (S.P.D.T.) (Standard up to 400A) Additional available (10 max.) on MBTS Series and need to be specified

CALIBRATE

Microprocessor activated calibration feature

CDP

Programmable exerciser daily, 7/14/28/365 days user-selectable, with or without load

CDT

Exerciser no load timer

CTAP

Chicago transfer alarm panel mounted in door of enclosure. Includes 3 aux. contacts and fuse.

DS

Disconnect Switch. Disconnects source voltage to transfer power panel.

DT (Delayed Transition Only)

Time Delay from Neutral Switch position to Source 1 on retransfer

DW (Delayed Transition Only)

Time Delay from Neutral Switch position to Source 2 on retransfer

E

Engine Start Relay

ECM

Ethernet Communication Adapter. Requires mcm (Modbus) Accessory.

EI / P

Event log of last 16 events

F

Fan contact, closed when engine runs.

MTU Onsite Energy MTS Series Accessory Group Matrix

Accessories	Group Packages					
	MSTD	MEXE	MCON	MSEN	MSPE	MPSG
6P	●	●	●	●	●	●
A1	○	●	●	●	●	●
A1E	○	●	●	●	●	●
A3	●	②●	②●	②●	②●	③●
A4	●	②●	②●	②●	②●	③●
Calibrate	●	●	●	●	●	●
CDT	●					
CDP		●	●	●	●	●
**DS	●	●	●	●	●	●
*DT	●	●	●	●	●	●
*DW	●	●	●	●	●	●
E	●	●	●	●	●	●
EL/P	●	●	●	●	●	●
K/P	●	●	●	●	●	●
L1	●	●	●	●	●	●
L2	●	●	●	●	●	●
L3	●	●	●	●	●	●
L4	●	●	●	●	●	●
*LNP	●	●	●	●	●	●
P1	●	●	●	●	●	●
Q2	○	●	●	●	●	●
Q3	○	○	●	○	●	●
Q7	○	○	●	●	●	●
R1-1	○	○	○	●	●	●
R1-3	○	○	○	●	●	●
R15	○	○	○	○	○	●
*R15D	○	○	○	○	○	●
R16	○	●	●	●	●	●
R50	●	●	●	●	●	●
S5P	◪	◪	◪		●	
S12P	◪	◪	◪	●		●
S13P	●	●	●	●	●	●
T	●	●	●	●	●	●
T3/W3	②	②	②●	②	②●	②●
U	●	●	●	●	●	●
UMD	②	②	②●	②	②●	②●
VI	●	●	●	●	●	●
W	●	●	●	●	●	●
YEN	●	●	●	●	●	●

● Standard Accessory included in the group package.
○ Optional Accessory not included but can be added to group package.
◪ Optional Accessory. Can not be used with accessory having the same symbol.
— N/A
②● Denotes an Accessory with 2 circuits as a standard.
③● Denotes an Accessory with 3 circuits as a standard.

* Delayed Transition Units Only.
** Optional for 40-400 Amp

MTU Onsite Energy MTS Series Accessory Definitions *(cont.)*

HT(1)(2)

Heater and Thermostat 208/240V (1) 380/600V (2) mounted and interwired in enclosure. (Requires larger enclosure for 40-200A.)

K

Frequency Meter (Analog) - Door mounted

K / P

Frequency Indication on the controller

LNP

Center-off position LCD-Indicator

L1

LED light indicates Switch in Source 2 position

L2

LED light indicates Switch in Source 1 position

L3

LED light indicates Source 1 available

L4

LED light indicates Source 2 available

MTU Onsite Energy MTS Series Accessory Definitions *(cont.)*

LCM

LonWorks Communication Module

M1

Single Phase Amp Meter (Analog)

M2

Three Phase Amp Meter (Analog)

M90

EPM2000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency). 3 Line LED Display. 50/60 Hz Universal Operation. 1 or 3 phase. Standard Modbus RTU RS485 communications capability. 40 - 1200 Amps.

M90A

Adds Pre-Wiring for Enervista Viewpoint Monitoring of M90 Accessory & ATS Status using Modbus RS485 Serial Communications

M90B

Adds Pre-Wiring for Enervista Viewpoint Monitoring of M90 Accessory & ATS Status using Ethernet TCP/IP Communications

M91

EPM6000 True RMS Digital Meter with display (Amps, Volts, Power, Energy, Power Factory and Frequency, THD). Certified energy and demand metering. Meets ANSI C12.20 and IEC 687 Accuracy Classes. Front IrDA Port Laptop Connection. Standard Modbus RTU RS485 or DNP 3.0 communications capability.

M91A

Adds Pre-Wiring for Enervista Viewpoint Monitoring of M91 Accessory & ATS Status using Modbus RS485 Serial Communications

M91B

Adds Pre-Wiring for Enervista Viewpoint Monitoring of M91 Accessory & ATS Status using Ethernet TCP/IP Communications

MCM

Modbus RTU Communication Module

N1

Running Time Indicator - Door mounted

N2

Operation Counter - Door Mounted

P1

Engine Start Timer (adjustable to 6 sec.)

P2

Engine Start Timer (adjustable to 300 sec.)

Q2

Peak shave/remote load test/area protection - Relay (S.P.D.T.) (Need to specify voltage - 120 VAC, 24 VAC, 24 VDC - 120V default standard)

Q3

Inhibit transfer to emergency (Source 2) (load add relay) - Relay (S.P.D.T.) (Need to specify voltage - 120 VAC, 24 VAC, 24 VDC - 120V default standard)

Q7

Inhibit transfer to normal (Source 1) - Relay (S.P.D.T.) (Need to specify voltage - 120 VAC, 24 VAC, 24 VDC - 120V default standard)

R1-1 / R1-3

Over Voltage sensing for normal (Source 1) single (R1-1) or three (R1-3) phase

R15/R15d

Load Shed. Should Source 2 become overloaded, a signal can be given to switch to the Neutral position. Available only on 225A and above.

R16

Phase rotation sensing of Normal (Source 1) and Emergency (Source 2)

R26 / R26D

Interruptable Power Rate Provisions. Allow transfer out of Source 1 position to Mid position or dead Source 2. Alarm and Pre-Signal circuit included. (Need to specify voltage - 120 VAC, 24 VAC, 24 VDC - 120V default standard)

R50

In Phase monitor between Normal (Source 1) and Emergency (Source 2) to allow transfer

S5P

Microprocessor activated auto/manual retransfer selector switch for transferring to Normal (Source 1) (includes microprocessor activated YN accessory)

S12P

Microprocessor activated auto/manual retransfer selector switch for transferring to Normal (Source 1) (includes microprocessor activated YN & YE accessory)

S13P

Microprocessor activated commit/no commit on transferring to Emergency (Source 2) (with enable/disable settings)

S14

Keyed selector switch for retransfer to normal-test-auto

SW1

Auto/Off/Start Engine control selector - Door mounted (keyed or non-keyed operation available)

SW2

Auto / Off Engine control selector - Door mounted (keyed or non-keyed operation available)

SW3

Source Priority Selector Switch - Door mounted

Allows selection of Source 1 or Source 2 to be the Prime Source. Transfer Switch will transfer to selected Prime Source if that Source is available. (keyed or non-keyed operation available)

T

Retransfer to Normal (Source 1) adjustable time delay

T3 / W3

Pre-signal contact on transfer to Normal (Source 1) or Emergency (Source 2) during test

U

Engine stop /cool adjustable cool down timer

UMD

Pre and post transfer output adjustable time range. Functions in both directions. Includes 2 circuits. (Additional circuits available).

VI

Voltage imbalance between phases (3 Phase only)

W

Adjustable time delay on transfer to Emergency (Source 2)

YEN

Bypass transfer timers function (soft key switch in microprocessor)

MTU Onsite Energy MTS Series Dimensional Specifications / Power Connection Terminals

MTS Model, Dimensions and Weights								
Ampere Rating	Poles	NEMA 1				Weight		Application Notes
		Height (A)	Width (B)	Depth (C)	Reference Figure	Open Type	NEMA 1	
40, 80, 100, 150	2, 3	24 (61)	18 (46)	11 (28)	A	21 (10)	57 (26)	1 - 7, 12-14
	4						60 (27)	
225, 260, 400	3	46 (117)	24 (61)	14 (36)	B	125 (57)	220 (100)	1 - 7, 12-14
	4					146 (66)	241 (109)	
600	2, 3	74 (188)	40 (102)	19.5 (50)		165 (75)	380 (172)	1 - 8, 12-14
	4					185 (84)	430 (195)	
800, 1000, 1200	2, 3					190 (86)	455 (206)	1 - 8, 12-13
	4					210 (95)	540 (245)	
1600, 2000	3	90 (229)	35.5 (90)	48 (122)	C	345 (156)	1010 (458)	1 - 13
	4					450 (204)	1160 (526)	
3000	3					465 (211)	1130 (513)	
	4					670 (304)	1395 (633)	
4000	3	90 (229)	46.5 (118)	60 (152)		770 (349)	1595 (723)	
	4					1025 (465)	1850 (839)	

Application Notes:

1. Metric dimensions (cm) and weights (Kg) shown in parenthesis adjacent to English measurements in inches and pounds.
2. Includes 1.25" door projection beyond base depth. Allow a minimum of 3" additional depth for projection of handle, light, switches, pushbuttons, etc.
3. All dimensions and weights are approximate and subject to change without notice.
4. Special enclosures (NEMA 3R, 4, 12, etc.) dimensions and layout may differ. Consult the ge factory for details.
5. Normal and emergency may be ordered inverted on any switch. The load may be inverted 600 - 1200 amps. Consult the MTU Onsite Energy factory for details.
6. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the MTU Onsite Energy factory.
7. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
8. Add 4" in height for removable lifting lugs.
9. Lug adapters for 3000 - 4000 amp limits may be staggered length for ease of entrance. Consult the MTU Onsite Energy factory for details.
10. Ventilation louvers on both sides and rear of enclosure. Louvers must be clear for airflow with standard cable connections.
11. A MTS 40 - 150A, when ordered with the following options, will require a larger enclosure: A62(T), Digital Meter, HT, HH, K, LDS, L11, N1, N2, OCVR-1SG, OCVR-1SS, P2, Q2M, Q3M, Q7M, R15, R26(D). R15 is not available on the 40 - 150A ZTS. You must upsize to the 225A in order to have the R15 option. Please contact the ge factory for dimensions.
12. For Delayed and Closed Transition dimensions and weights, refer to MTU Onsite Energy Publication PB-5067 and PB-5069.
13. For Bypass/Isolation dimensions and weights, refer to MTU Onsite Energy Publication PB-5068.
14. A MTS, when ordered with compression lugs suitable for use with copper cables, will require a larger enclosure. For 40-225A, the enclosure is 46" x 24" x 14" (HxWxD). For 260 - 400A, the enclosure is 66" x 24" x 19.75" (HxWxD). For 600A and MTSCT 100 - 400A models only, the enclosure is 74" x 40" x 19.75" (HxWxD). For certified drawings, please contact the MTU Onsite Energy factory.

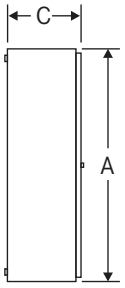


Figure A

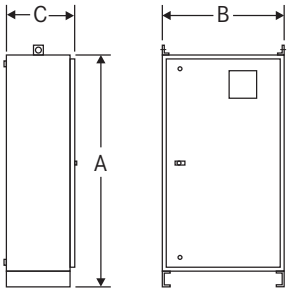


Figure B

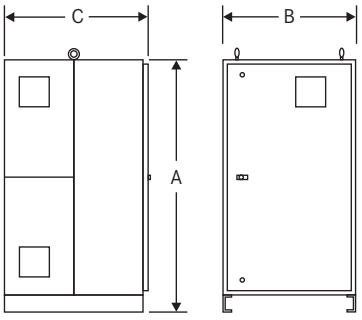


Figure C

AL-CU UL Listed Solderless Screw-Type Terminals for External Power Connections					
Switch Size Amps	Normal, Emergency & Load Terminals		Switch Size Amps	Normal, Emergency & Load Terminals	
	Cables/ Pole	Wire Ranges		Cables/ Pole	Wire Ranges
40 - 80	1	#8 to 3/0	600	2	#2 to 600 MCM
100, 150	1	#6 to 250 MCM	800, 1000, 1200	4	#2 to 600 MCM
225	1	#4 to 600 MCM	1600, 2000, 3000, 4000	*	
260	1	#4 to 600 MCM			
400	1	#4 to 600 MCM			

NOTES:

* Line and load terminals are located in rear and arranged for bus bar connection. Terminal lugs are available as an accessory. Contact the MTU Onsite Energy factory for more details.

1. Special terminal lugs and neutral bars are available at additional cost. Contact factory and advise cable sizes and number of conductors per pole.
2. Fully rated neutral provided on 3 phase, 4 wire system.
3. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the MTU Onsite Energy factory.

MTU Onsite Energy MTS Series Ordering Information

M						B	0							Z	E	C			Z	V	C						
MODEL/TYPE						CONTROL PANEL		APPLICATION	AMPERE SIZE			SWITCHED POLES		ENCLOSURE TYPE					OPERATIONAL VOLTAGE					ACCESSORIES			

MODEL/TYPE

- MTS000 — Standard (Open Transition)
- MTSD00 — Delayed Transition
- MTSCT0 — Closed Transition
- MBTS00 — Standard (Open Transition) w/Bypass
- MBTSD0 — Delayed Transition w/Bypass
- MBTSCT — Closed Transition w/Bypass

CONTROL PANEL

- B0 — Entelli-Switch 250 Microprocessor Control Unit

APPLICATION

- 0 — Utility - Generator
- U — Utility - Utility
- M — Manual
- G — Gen to Gen

AMPERE SIZE

- 004 — 40 amps
- 008 — 80 amps
- 010 — 100 amps
- 015 — 150 amps
- 022 — 225 amps
- 026 — 260 amps
- 040 — 400 amps
- 060 — 600 amps
- 080 — 800 amps
- 100 — 1000 amps
- 120 — 1200 amps
- 160 — 1600 amps
- 200 — 2000 amps
- 260 — 2600 amps *
- 300 — 3000 amps
- 400 — 4000 amps

SWITCHED POLES

- B — 2 Poles
- E — 3 Poles
- F — 4 Poles

ENCLOSURE TYPE

- 01 — Type 1 Enclosure
- 12 — Type 12 Enclosure
- 3R — Type 3R Enclosure
- 40 — Type 4 Enclosure
- 4X — Type 4X Enclosure
- 00 — Open Style Unit

OPERATIONAL VOLTAGE

- AB — Consult Table Below

ACCESSORIES

- MSTD
- MEXE
- MCON
- MSEN
- MSPE
- MPSG
- MAN0

Then choose additional accessories

Switch Types

- **Standard:** Unless otherwise noted, the standard switch with quick transfer will be supplied.
- **Delayed Transition:** When ordered as the MTSD, the delayed transition switch offers time delay during transfer from one position to the other. This is primarily for transfer of large motor or inductive loads.
- **Closed Transition:** When ordered as the MTSCT, the closed transition switch offers two basic modes of operation. During a failure of one source or an out of specification condition, the MTSCT Model operates as a standard delayed transition switch (MTSD Model). This sequence allows clear separation of an unreliable source from an available one.
- **Bypass:** When ordered as the MBTS, the bypass transition switch offers a draw-out mechanism, with electrical and mechanical interlocks for secure removal after load bypass. In this way the transfer switch and/or the control panel may be tested, isolated and removed for maintenance without load interruption.

Example

MTSCT0B00040F-ZEC01ZVC40MSTD

This number string shows the correct format for a MTS Model Automatic Transfer Switch with closed transition, an Entelli-Switch 250 microprocessor control unit, Utility - Generator, 400 amps, 4 pole, NEMA Type 1 enclosure, 120/208V 3f, 4 wire, 60 Hz system with the standard group of accessories.

UL 1008 Withstand and Closing Ratings

Please refer to MTU Onsite Energy Publication TB-1102

A	B	Voltage	Phase	Config.	Hz
1	0	120	1	2 wire	60
2	0	120/240	1	3 wire	60
2	2	110/220	1	3 wire	50
3	0	240	3	3 wire	60
3	1	208	3	3 wire	60
3	2	220	3	3 wire	50
3	5	139/240	3	4 wire	60
4	0	120/208	3	4 wire	60
4	1	127/220	3	4 wire	60
4	2	127/220	3	4 wire	50
5	0	480	3	3 wire	60
5	1	440	3	3 wire	60
5	2	440	3	3 wire	50
5	5	460	1	3 wire	50
5	7	480	1	2 wire	60
5	8	254/440	3	4 wire	60
6	0	575	3	3 wire	60
6	1	347/600	3	4 wire	60
6	3	575	1	2 wire	60
7	0	277/480	3	4 wire	60
7	1	277	1	2 wire	60
7	4	266/460	3	4 wire	60
7	5	460	3	3 wire	60
8	2	380	1	2 wire	50
9	0	240/416	3	4 wire	60
9	1	220/380	3	4 wire	60
9	2	220/380	3	4 wire	50
9	3	240/416	3	4 wire	50
9	7	380	3	3 wire	60

Note: Operating voltage must be specified at time of order. Only the most common voltages are shown above.

* Available only on Bypass configuration

Assembled in the USA

MTSCT

Closed Transition Transfer Switches

Introduction

An automatic transfer switch is the single vital link between utility and alternate power supplies. Yet it is the very operation and testing and retransfer back to normal that may be a cause of concern for many users. Loads such as electronic equipment, HID lighting, motor starters, etc., are sensitive to even the 30 -100 millisecond outage experienced during a typical transfer switch operation. Therefore, testing and use of the standby system is not optimized and necessary system checks are not performed because of concerns about the effects of transfer outages.

In addition to these applications, opportunities for peak shaving and utility incentive rates may be passed over because of the inability to accept the short power interruptions inflicted during operation. In response to the needs of these installations, MTU Onsite Energy offers the MTSCT Closed Transition Transfer Switch and MBTSCT Closed Transition Transfer/Bypass Switch.

Features and Benefits

Closed transition switches utilize the proven switching technology of the MTU Onsite Energy MTS/MTSD Series of transfer switches combined with controls developed during MTU Onsite Energy's years of experience in the manufacture of synchronizing switchgear. They provide the capability to transfer in a closed transition mode when both sources are within preset parameters. Utilizing MTU Onsite Energy's high speed drive system, the overlap of the normal and alternate sources is less than 100 milliseconds. When one source is not within specified limits, such as during a power failure, the MTU Onsite Energy MTSCT operates in a delayed transition mode.

Description and Operation

Closed transition switches have two basic modes of operation. During a failure of one source or an out of specification condition, the MTU Onsite Energy MTSCT Model operates as a delayed transition switch (MTSD Model). This sequence allows clear separation of an unreliable source from an available one.

Closed transition operation takes place when both sources are within preset voltage and frequency parameters and the phase angle differential is less than five degrees. The closed transition sequence may be initiated by the test switch, a load exerciser clock, peak shaving controls or special utility incentive rate input signals.

Application Information

- Closed transition switches require a momentary (less than 100 ms) paralleling of Source 2 (emergency) with Source 1 (normal). This usually requires the owner to obtain approval of the installation with the local utility.
- The purpose of a closed transition switch is to prevent the momentary outages that occur during transfer of a standard or delayed unit. This technology is not normally a substitute for a UPS system as it does not provide stored energy capability but rather acts in a complementary fashion.
- System application requirements: Source 2 (generator set) must be provided with an isochronous governor stable at a frequency differential of not more than 60 Hz +/- 0.2 Hz.

A 24VDC shunt trip circuit is strongly suggested on one of the feeder breakers, normally the Source 2 (generator) feeder. Power for this trip circuit and alarm system backup must be supplied from the engine starting batteries or an equivalent source.

MTSCT Model, Dimensions and Weights								
Ampere Rating	Poles	NEMA 1				Weight		Application Notes
		Height (A)	Width (B)	Depth (C)	Ref. Figure	Open Type	NEMA 1	
100, 150 225, 260, 400	3	66 (168)	24 (61)	20 (50)	A	125 (57)	220 (100)	1 - 8
	4					146 (66)	241 (109)	
600	2, 3	74 (188)	40 (102)	19.5 (50)	A	185 (84)	400 (181)	
	4					205 (93)	450 (204)	
800, 1000 1200	2, 3					210 (95)	475 (215)	
	4					230 (104)	560 (254)	
1600, 2000	3	90 (229)	35.5 (90)	48 (122)	B	365 (166)	1030 (467)	
	4					470 (204)	1190 (540)	
3000	3					485 (220)	1150 (522)	1 - 11
	4					690 (313)	1415 (642)	
4000	3	90 (229)	46.5 (118)	60 (152)		820 (372)	1635 (742)	
	4					1045 (474)	1870 (848)	

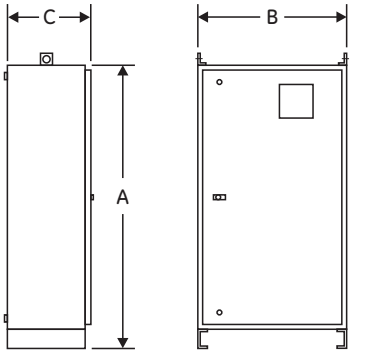


Figure A

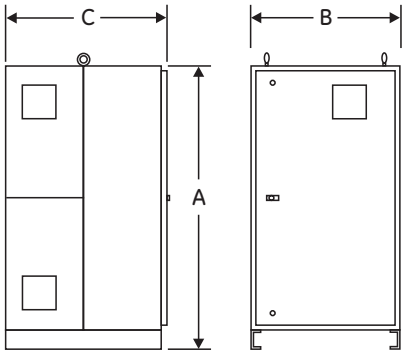


Figure B

AL-CU UL Listed Solderless Screw-Type Terminals for External Power Connections					
Switch Size Amps	Normal, Emergency & Load Terminals		Switch Size Amps	Normal, Emergency & Load Terminals	
	Cables/ Pole	Wire Ranges		Cables/ Pole	Wire Ranges
100-150	1	#4 to 600 MCM	800 / 1000 / 1200	4	#2 to 600 MCM
225	1	#4 to 600 MCM	1600		
260	1	#4 to 600 MCM	2000		
400	1	#4 to 600 MCM	3000		*
600	2	#2 to 600 MCM	4000		

APPLICATION NOTES:

1. Metric dimensions (cm) and weights (Kg) shown in parenthesis adjacent to English measurements in inches and pounds.
2. Includes 1.25" door projection beyond base depth. Allow a minimum of 3" additional depth for projection of handle, light, switches, pushbuttons, etc.
3. All dimensions and weights are approximate and subject to change without notice.
4. Special enclosures (NEMA 3R, 4, 4X, 12, etc.) dimensions and layout may differ. Consult the MTU Onsite Energy factory for details.
5. Normal and emergency may be ordered inverted on any switch. The load may be inverted 600 - 1200 amps. Consult the factory for details.
6. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the MTU Onsite Energy factory.
7. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
8. Add 4" in height for removable lifting lugs.
9. 4000 amp depth dimension shown is standard. Depending on your cable/conduit requirements, you may desire a deeper enclosure. Consult the MTU Onsite Energy factory for further details.
10. Lug adapters for 3000 - 4000 amp limits may be staggered length for ease of entrance. Consult the MTU Onsite Energy factory for details.
11. Ventilation louvers on both sides of enclosure at 3000 and 4000 amps. One must be clear for airflow with standard cable connections.

NOTES:

* Line and load terminals are located in rear and arranged for bus bar connection. Terminal lugs are available as an accessory. Contact MTU Onsite Energy factory for more details.

1. Special terminal lugs and neutral bars are available at additional cost. Contact the MTU Onsite Energy factory and advise cable sizes and number of conductors per pole.
2. Fully rated solid neutral (3x standard normal power connection) provided when required by system voltage.
3. Normal and emergency may be ordered inverted on any switch. Load may be inverted 600 - 1200 amps. Consult the MTU Onsite Energy factory for details.
4. Lug adapters for 3000 - 4000 amp units may be staggered length for ease of entrance. Consult the MTU Onsite Energy factory for details.
5. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the MTU Onsite Energy factory.

Electrical Ratings

- Ratings 100 to 4000 amperes
- 2, 3 or 4 Poles
- Open type, NEMA 1, 3r, 4, 4X and 12
- Available in Transfer Switch (MTSCT) or Transfer / Bypass Switch (Mbtsct) styles
- Suitable for emergency and standby applications on all classes of load, 100% tungsten rated through 400 amps
- UL 1008 listed at 480 VAC
- CSA certified at 600 VAC

Assembled in the USA

Performance Features

- Incorporates the applicable features of the MTS and MBTS Series
- Source parallel time of less than 100 milliseconds
- Closed transition operation (no power interruption) during transfer and retransfer when sources are within specified parameters
- Open transition transfer operation is initiated upon a source failure
- Available in MTSCT (utility-generator), MTSCTU (utility-utility) and MTSCTM (manual) configurations

Design and Construction Features

- Electrically operated, mechanically held
- Segmented silver tungsten alloy contacts with separate arcing contacts on all sizes
- Arc quenching grids, enclosed arc chambers, and wide contact air gap
- Components accessible for inspection and maintenance without removal of the switch or the power conductors
- Standard annunciation and operational selection package for user interface
- Active control of the generator governor not required, but is available as an option

MTSD

Delayed Transition Transfer Switches

Introduction

The MTU Onsite Energy MTSD provides an adjustable time delay after the opening of the closed contacts and before the closing of the open contacts for transferring large motor and/or transformer and UPS loads. This delayed transition time allows for motors to coast down and transformer fields to decay, thus allowing inductive loads to be re-energized after transfer with only normal inrush starting currents. The delayed transition design is an effective method of handling these applications and can be utilized as an alternative to a standard transfer switch equipped with an in-phase monitor.

The delayed transition transfer switch is ideally suited for pumping stations, sewage treatment plants, hospital x-ray equipment, or wherever the bulk of the load being controlled consists of large motors and/or transformers. Major UPS manufacturers strongly recommend the use of delayed transition type transfer switches to ensure proper operation of their rectifier circuit and battery system. The MTU Onsite Energy MTSD allows a UPS system sufficient delay to recognize a power failure and transfer to batteries, acknowledge the return of power and allow the rectifier to walk-on to the new source, reducing any transfer anomalies.

One solution to this issue is to introduce a delay in the transition between two live sources. MTU Onsite Energy's MTSD Delayed Transition Transfer Switches have been designed expressly for this purpose.

Features and Benefits

The advantages of using the MTU Onsite Energy MTSD when transferring large motor and/or transformer loads are:

- Consistent operation under all conditions, including manual (pushbutton) operation
- Operation is totally independent of the synchronism of the power sources, eliminating the need for in-phase monitors or extensive motor disconnect control wiring between the transfer switch and motor control centers
- The delayed transition function adapts itself for use in multiple generator systems and paralleling systems to permit load shedding by switching the main contacts to a center-off or disconnected position
- Allows UPS systems to function properly while switching between line input sources

Except for the delayed transition period, the performance, operating capabilities, ratings, UL listings, withstand current values and available options are identical to those of MTU Onsite Energy's MTS Series Automatic Transfer Switches.

The MTU Onsite Energy MTSD incorporates all of the important features of the standard MTU Onsite Energy MTS Series switches. In addition, its unique design incorporates features oriented toward its specific operation.

Description and Operation

The operation of the MTU Onsite Energy MTSD Delayed Transition Transfer Switch is identical to MTU Onsite Energy's MTS Model with the exception of the drive mechanism and delayed transition period.

Upon failure or reduction of the normal source, and the availability of Source 2 (emergency), the drive solenoid is energized and pulls the main contacts out of the Source 1 (normal) position and locks them mechanically in the open position. An adjustable time delay is then energized. After the preset time has elapsed, the drive solenoid is energized and pulls the main contacts out of the open position and locks them mechanically in the Source 2 (emergency) closed position. Source 2 (emergency) is now supplying the load.

When the voltage sensing detects the restoration of Source 1 (normal) for a predetermined time period, the drive solenoid is energized and pulls the main contacts from the Source 2 (emergency) position and locks them mechanically in the open position. After the preset time delay has elapsed, the drive solenoid is energized and pulls the main contacts out of the open position and locks them mechanically in the Source 1 (normal) closed position. Source 1 (normal) is now supplying the load.

All voltage and frequency sensing controls, disconnect plug, test switch, time delays and other accessories supplied on the MTU Onsite Energy MTS Series are also supplied on the MTU Onsite Energy MTSD.

MTSD Model, Dimensions and Weights

Ampere Rating	Poles	NEMA 1 Height (A)	NEMA 1 Width (B)	NEMA 1 Depth (C)	NEMA 1 Reference Figure	Weight Open Type	Weight NEMA 1	Application Notes
40, 80 100, 150	2, 3	46 (117)	24 (61)	14 (36)	A	80 (36)	200 (91)	1 - 7, 11-13
	4					85 (39)	205 (93)	
225	2, 3					80 (36)	200 (91)	1 - 7, 12-13
260, 400	4					85 (39)	205 (93)	
600	2, 3	74 (188)	40 (102)	19.5 (50)	B	185 (84)	400 (181)	1 - 8, 12-13
	4					205 (93)	450 (204)	
800, 1000 1200	2, 3					210 (95)	475 (215)	
	4					230 (104)	560 (254)	
1600, 2000	3	90 (229)	35.5 (90)	48 (122)	C	365 (166)	1030 (467)	1 - 10, 12-13
	4					470 (204)	1190 (540)	
3000	3					485 (220)	1150 (522)	
	4					690 (313)	1415 (642)	
4000	3	90 (229)	46.5 (118)	60 (152)		820 (372)	1635 (742)	
	4					1045 (474)	1870 (848)	

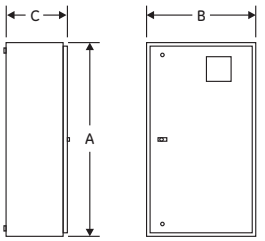


Figure A

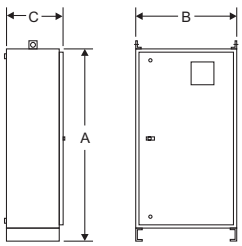


Figure B

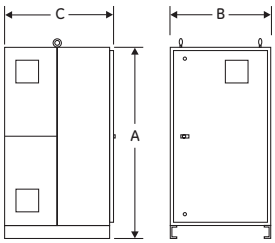


Figure C

AL-CU UL Listed Solderless Screw-Type Terminals for External Power Connections

Switch Size Amps	Normal, Emergency & Load Terminals Cables/ Pole	Normal, Emergency & Load Terminals Wire Ranges	Switch Size Amps	Normal, Emergency & Load Terminals Cables/ Pole	Normal, Emergency & Load Terminals Wire Ranges
40-80	1	#8 to 3/0	800 / 1000 / 1200	4	#2 to 600 MCM
100-225	1	#4 to 600 MCM	1600		*
260	1	#4 to 600 MCM	2000		
400	1	#4 to 600 MCM	3000		
600	2	#2 to 600 MCM	4000		

APPLICATION NOTES:

1. Metric dimensions (cm) and weights (Kg) shown in parenthesis adjacent to English measurements in inches and pounds.
2. Includes 1.25" door projection beyond base depth. Allow a minimum of 3" additional depth for projection of handle, light, switches, pushbuttons, etc.
3. All dimensions and weights are approximate and subject to change without notice.
4. Special enclosures (NEMA 3R, 4, 4X, 12, etc.) dimensions and layout may differ. Consult the MTU Onsite Energy factory for details.
5. Normal and emergency may be ordered inverted on any switch. The load may be inverted 600 - 1200 amps. Consult the factory for details.
6. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the MTU Onsite Energy factory.
7. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
8. Add 4" in height for removable lifting lugs.
9. Lug adapters for 3000 - 4000 amp limits may be staggered length for ease of entrance. Consult the MTU Onsite Energy factory for further details.
10. Ventilation louvers on both sides and rear of enclosure. One set of louvers must be clear for airflow with standard cable connections.
11. Ventilation louvers on both sides of enclosure at 3000 and 4000 amps. One must be clear for airflow with standard cable connections.
12. For Closed Transition dimensions and weights, refer to MTU Onsite Energy Publication PB-5069.
13. For Bypass/Isolation dimensions and weights, refer to MTU Onsite Energy Publication PB-5068.

NOTES:

* Line and load terminals are located in rear and arranged for bus bar connection. Terminal lugs are available as an accessory. Contact MTU Onsite Energy factory for more details.

1. Special terminal lugs and neutral bars are available at additional cost. Contact the MTU Onsite Energy factory and advise cable sizes and number of conductors per pole.
2. Fully rated neutral provided on 3 phase, 4 wire system.
3. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the MTU Onsite Energy factory.

Electrical Ratings

- Ratings 100 to 4000 amperes
- 2, 3 or 4 Poles
- Open type, NEMA 1, 3r, 4, 4X and 12
- Available to 600 vac, 50 or 60 Hz
- Suitable for emergency and standby applications on all classes of load, 100% tungsten rated through 400 amps
- UL 1008 listed at 480 VAC
- CSA c22.2 No. 178 certified at 600 VAC

Performance Features

- Adjustable center-off time to meet specific installation requirements
- High close-in and withstand capability
- Temperature rise test per UL 1008 conducted after overload and endurance tests - exceeds UL requirements
- Available in MTSD (utility-generator), MTSDU (utility-utility), MTSDG (generator-generator) and MTSDM (manual) configurations

Design and Construction Features

- Mechanically interlocked center-off position for load back EMF decay
- Electrically operated, mechanically held by a simple, over-center mechanism
- Segmented silver tungsten alloy contacts with separate arcing contacts on 225 amp and above
- Arc quenching grids, enclosed arc chambers, and wide contact air gap for superior source-to-source isolation on all units
- Control circuit disconnect plug and drive inhibit switch for safe maintenance
- Components accessible for inspection and maintenance without removal of the switch or the power conductors
- Mechanical indicator and contact chamber cover designed for inspection, safety and position designation

Assembled in the USA

MBTS/ MBTSD/MBTSCT

Transfer/Bypass-Isolation Transfer Switches

Introduction

MTU Onsite Energy's MBTS Series Bypass-Isolation Transfer Switch consists of two major modules – the automatic transfer and the bypass-isolation switches. The automatic transfer switch module is MTU Onsite Energy's proven MTS Series, built in MTS, MTSD or MTSCT configuration and constructed for rugged, reliable operation. The same components – heavy-duty silver alloy contacts, rugged drive mechanism and silver plated bus bar inter-connections are used throughout the MBTS Series.

Features and Benefits

MTU Onsite Energy's design requires no additional load break contacts which cause load interruption during bypass-isolation functions. The bypass-isolation switch contacts are out of the system current path except during actual bypass operation. Therefore, they are not constantly exposed to the destructive effects of potential fault currents. The Source 1 (normal), Source 2 (emergency) and load are connected between the automatic transfer switch and the bypass-isolation switch through solidly braced isolating contacts that are open when the automatic transfer switch is isolated. All current carrying components provide high withstand current ratings in excess of those specified in UL 1008 standards.

Description and Operation

The bypass section is a MTS switch provided with a quick make/quick break manual load transfer handle and ge's control/interlock system consisting of both mechanical and electrical interlocks. The bypass switch is equipped with normal failure sensing and a time delay to start the engine automatically if the ats has been removed for service. The modules are mounted in a compact enclosure and completely interconnected requiring only Source 1 (normal), Source 2 (emergency) and load cable connections. Once installed, no cables need to be removed to isolate the transfer switch module for maintenance or inspection. The automatic transfer switch may be withdrawn for testing or maintenance without disturbing the load. The transfer switch module has three positions:

1. Automatic/Connected: The transfer switch is carrying the load, and the bypass switch is in the open position. This is the normal operating position.
2. Test: The bypass switch is closed and feeding the load. The transfer switch has control power and may be operated for test purposes via the test switch on the enclosure door. The load is not affected during testing.
3. Isolate: The transfer switch is withdrawn from all power and ready for maintenance. The load is served by the bypass switch.

The Automatic Transfer Switch is installed on a draw-out mechanism, with electrical and mechanical interlocks for secure removal after load bypass. The ATS control/logic panel is mounted on the enclosure door and connected by a wire harness and multi-pin disconnect plugs. The transfer switch and/or the control panel may be tested, isolated and removed for maintenance without load interruption.

The bypass-isolation switch module is the same basic design as the automatic transfer switch module and thus has the same electrical ratings. Manually operated, it features high speed, quick make/ quick break contact action. The bypass-isolation switch has three basic positions:

1. Automatic: Source 1 (Normal) bypass contacts open, Source 2 (emergency) bypass contacts open.
2. Bypass Normal: Source 1 (Normal) bypass contacts closed, Source 2 (emergency) bypass contacts open.
3. Bypass Emergency: Source 1 (Normal) bypass contacts open, Source 2 (emergency) bypass contacts closed.

Interlocks and Indicators

Every MBTS Series Bypass-Isolation Transfer Switch is supplied with all necessary electrical and mechanical interlocks to prevent improper sequence of operation as well as the necessary interlocking circuit for engine starting integrity. Each MBTS Series Switch is furnished with a detailed, step-by-step operating instruction plate, as well as the following function diagnostic lights:

- Source 1 (Normal) Available
- Source 2 (Emergency) Available
- Bypass Switch in Source 1 (Normal) Position
- Bypass Switch in Source 2 (Emergency) Position
- Automatic Transfer Switch in Test Position
- Automatic Transfer Switch Isolated
- Automatic Transfer Switch Inhibit
- Automatic Transfer Switch Operator Disconnect Switch "Off"
- Automatic Transfer Switch in Source 1 (Normal) Position
- Automatic Transfer Switch in Source 2 (Emergency) Position

MBTS & MBTSD Model, Dimensions and Weights								
Ampere Rating	Poles	NEMA 1 Enclosed				Weight		Application Notes
		Height (A)	Width (B)	Depth (C)	Reference Figure	Open Type	NEMA 1	
100, 150 225, 260 400	2, 3 4	83 (211) 83 (211)	30 (76) 30 (76)	31 (79) 31 (79)	A	310 (141) 380 (173)	770 (350) 840 (322)	1 – 9
600	3 4	90 (229) 90 (229)	36 (91) 40 (102)	28.25 (72) 28.25 (72)	B	660 (299) 770 (349)	1220 (533) 1365 (619)	
800, 1000 1200	3 4	90 (229) 90 (229)	40 (102) 46 (117)	28.25 (72) 28.25 (72)		765 (347) 910 (413)	1355 (615) 1570 (712)	
1600, 2000 2600	3 4	80 (2023) 80 (2023)	40.6 (1031) 46.1 (1171)	64.6 (1640) 64.6 (1640)	C	1978 (897) 2275 (1032)	4044 (1835) 4431 (2010)	1 – 7, 10
3000	3 4	80 (2023) 80 (2023)	40.6 (1031) 46.1 (1171)	64.6 (1640) 64.6 (1640)		2572 (1166) 3049 (1383)	4456 (2021) 4977 (2258)	1 – 7, 10 - 12
4000	3 4	90 (229) 90 (229)	47.5 (121) 54 (137)	81 (206) 81 (206)	D	4310 (1955) 5510 (2499)	4660 (2113) 5860 (2658)	1 – 7, 10 – 11

MBTSCT Model, Dimensions and Weights								
Ampere Rating	Poles	NEMA 1 Enclosed				Weight		Application Notes
		Height (A)	Width (B)	Depth (C)	Reference Figure	Open Type	NEMA 1	
100, 150 225, 260 400, 600	3 4	90 (229) 90 (229)	36 (91) 40 (102)	28.25 (72) 28.25 (72)	B	730 (331) 840 (381)	1280 (581) 1385 (628)	1 – 8
800, 1000 1200	3 4	90 (229) 90 (229)	40 (102) 46 (117)	28.25 (72) 28.25 (72)		835 (379) 980 (444)	1435 (651) 1640 (744)	1 – 9
1600, 2000 2600	3 4	80 (2023) 80 (2023)	40.6 (1031) 46.1 (1171)	64.6 (1640) 64.6 (1640)	C	1978 (897) 2275 (1032)	4044 (1835) 4431 (2010)	1 – 7, 10
3000	3 4	80 (2023) 80 (2023)	40.6 (1031) 46.1 (1171)	64.6 (1640) 64.6 (1640)		2572 (1166) 3049 (1383)	4456 (2021) 4977 (2258)	1 – 7 10 - 12
4000	3 4	90 (229) 90 (229)	47.5 (121) 54 (137)	81 (206) 81 (206)	D	4380 (1986) 5580 (2531)	4730 (2145) 5930 (2689)	

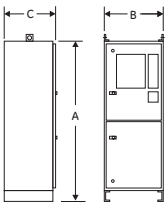


Figure A

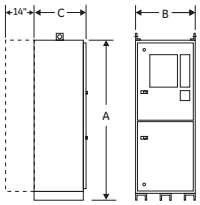


Figure B

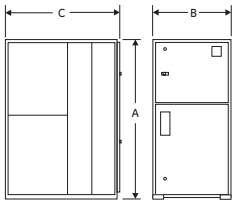


Figure C

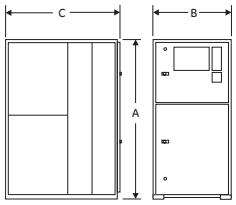


Figure D

APPLICATION NOTES:

1. Metric dimensions (cm) and weights (Kg) shown in parenthesis adjacent to English measurements in inches and pounds.
2. Includes 1.25" door projection beyond base depth. Allow a minimum of 3" additional depth for projection of handle, light, switches, pushbuttons, etc.
3. All dimensions and weights are approximate and subject to change without notice.
4. Special enclosures (NEMA 3R, 4, 4X, 12, etc.) dimensions and layout may differ. Consult the MTU Onsite Energy factory for details.
5. Bypass Model product can not be ordered with inverted style.
6. Special lug arrangements may require different enclosure dimensions. For certified drawings, contact the MTU Onsite Energy factory.
7. Packing materials must be added to weights shown. Allow 15% additional weight for cartons, skids, crates, etc.
8. Add 4" in height for removable lifting lugs.
9. MBTS(D) 600-1200A & MBTSCT 100 - 1200A standard configuration is top entry. 14" rear adapter bay required for bottom entry. Consult the MTU Onsite Energy factory for details.
10. Bypass switch weights for 1600 - 4000 amp units vary up to 10% based on connections variations. Weights shown are for estimation only.
11. 3000 amp depth dimension shown is standard. Depending on your cable/conduit requirements you may desire a deeper enclosure. Consult the MTU Onsite Energy factory for further details.
12. Lug adapters for 3000 - 4000 amp limits may be staggered length for ease of entrance. Consult the MTU Onsite Energy factory for details.

AL / CU UL Listed Solderless Screw-Type Terminals for External Power Connections		
Switch Size Amps	Normal, Emergency & Load Terminals	
	Cables/Pole	Wire Ranges
MBTS & MBTSD		
100 - 225	1	#6 to 250 MCM
260	1	#4 to 600 MCM
400	1	#4 to 600 MCM
600	2	#2 to 600 MCM
800 / 1000 / 1200	4	#2 to 600 MCM
1600 / 2000 / 2600 / 3000 / 4000	*	*
MBTSCT		
100 - 400	1	#4 to 600 MCM
600	2	#2 to 600 MCM
800 / 1000 / 1200	4	#2 to 600 MCM
1600 / 2000 / 2600 / 3000 / 4000	*	*

* Line and load terminals are located in rear and arranged for bus bar connection. Terminal lugs are available at additional cost. Contact the MTU Onsite Energy factory for more details.

MBTSD Model – Delayed Transition Transfer/Bypass-Isolation Switches

The MTSD Delayed Transition Transfer Switch with a timed center-off position is available in a bypass configuration. The MBTSD Model Bypass incorporates the features of both the MBTS Bypass-Isolation Switch and the MTSD unit for transfer of large motor loads, transformers, UPS systems or load shedding to a neutral "Off" position. Reference the MTSD unit features and operation discussion for more details.

MBTSD Model – Cloded Transition Transfer/Bypass-Isolation Switches

The MTSCT Closed Transition Transfer Switch may be applied with a bypass-isolation switch for the utmost in reliability and versatility. The MBTSCT Model provides the ability to withdraw the transfer switch unit for maintenance or inspection. Reference the MTSCT unit features and operation discussion for more details.

Electrical Ratings

- Ratings 100 to 4000 amperes
- 2, 3 or 4 Poles
- Open type, NEMA 1, 3R, 4, 4X and 12
- Available with MTU Onsite Energy MTS, MTSD and MTSCT Series Automatic Transfer Switch
- Bypass and transfer switch have identical ratings
- Suitable for emergency and standby applications on all classes of load, 100% tungsten rated through 400 amps
- UL 1008 listed at 480 VAC
- CSA C22.2 No. 178 certified at 600 VAC

Assembled in the USA

Performance Features

- Load is not interrupted during bypass operation
- High close-in and withstand capability
- Temperature rise test per UL 1008 conducted after overload and endurance tests exceeds UL requirements
- Available in MBTS (utility-generator), MBTSU (utility-utility), MBTSG (generator-generator) and MBTSM (manual configurations; models include standard, delayed and closed transition

Design and Construction Features

- Automatic transfer switch is located on a draw out mechanism to facilitate maintenance
- Emergency power systems can be electrically tested without disturbing the load
- Power cables do not have to be disconnected to remove the transfer switch
- Bypass to any available source with the automatic transfer switch removed
- Engine start circuit maintained during bypass operation; normal power failure causes engine start contact closure even with the ATS removed
- Diagnostic lights and detailed instructions for simple step-by-step operation
- Mechanical and electrical interlocks ensure proper sequence of operation
- Bypass switch contacts are closed only during the bypass-isolation operation
- Silverplated copper bus interconnection of the transfer and bypass switches on all sizes

UL 1008 Withstand and Closing Ratings

- Please refer to MTU Onsite Energy Publication TB-1102

MTX

Automatic Transfer Switch

MTU Onsite Energy's MTX Series Automatic Transfer Switches are designed for residential and light commercial critical/non-life safety applications requiring the dependability and ease of operation found in a power contactor switch.

- Ratings 40 to 400 amps (2, 3 and 4 pole)
- UL 1008 and CSA listed
- Seismic Compliance to IEEE-693-2005 and IBC-2006
- Double throw, mechanically interlocked contactor mechanism
- Electrically operated, mechanically held
- Designed for standby applications

MTU Onsite Energy's MTX switches are equipped with the MX60 control panel. This microprocessor control includes:

- Undervoltage sensing (90% pickup/80% dropout) of Source 1 (normal)
- Voltage and frequency sensing of Source 2 (emergency) (90% voltage/95% frequency pickup)
- Time Delay Engine Start (P) - 5 seconds
- Time Delay Engine Warmup (W) - Transfer to Emergency (Source 2) - 20 seconds
- Time Delay Utility Stabilization/Retransfer to Utility (Source 1) (T) - 5 minutes
- Time Delay Engine Cool Down (U) - 5 minutes

All time delays are fixed (non-adjustable).

MTU Onsite Energy MTX Series Small Frame Residential, Commercial & Light Industrial Switch with LED Control Panel (cover removed)

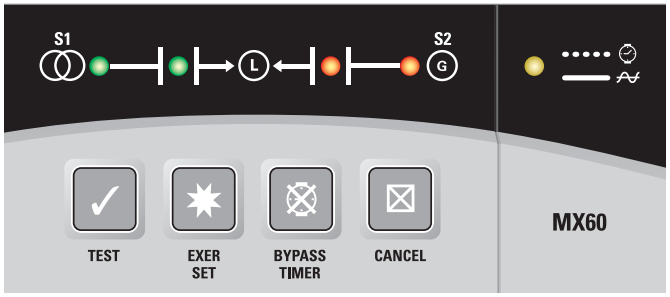
The unit is available in open type, NEMA 1 or NEMA 3R enclosures. The MX60 control adds a user interface and functionality, including:

- Indicating LEDs for source availability and switch position
- Push buttons for test, exerciser set, timer bypass and program cancel
- Special status annunciation of in-phase transfer and timer operation
- Selectable 7, 14, 21 or 28 day (factory set 28 days) generator (Source 2) with or without load exerciser timer
- Diagnostic LED indications in logical one-line configuration

Additional options include:

A3/A4 Auxiliary contacts (1 each) closed in Source 1 (normal) and Source 2 (emergency) positions

B9X 1.5 Amp/12 or 24 VDC Battery Charger



MX60 Microprocessor Control Panel

Ordering Information

MTX000		0			– ZEC		ZVC	
MODEL/TYPE	CONTROL PANEL	APPLICATION	AMPERE SIZE	SWITCHED POLES	ENCLOSURE TYPE		OPERATIONAL VOLTAGE	ACCESSORIES

MODEL/TYPE
- MTX000 — Standard (Open Transition)

CONTROL PANEL
- M6 — MX60 Microprocessor Control Unit
- 00 — No Microprocessor Control Unit

APPLICATION
- 0 — Utility - Generator

AMPERE SIZE
- 004 — 40 amps
- 008 — 80 amps
- 010 — 100 amps
- 015 — 150 amps
- 020 — 200 amps
- 022 — 225 amps
- 030 — 300 amps
- 040 — 400 amps

SWITCHED POLES
- B — 2 Poles
- E — 3 Poles
- F — 4 Poles

ENCLOSURE TYPE
- 01 — Type 1 Enclosure
- 3R — Type 3R Enclosure
- 00 — Open Style Unit

OPERATIONAL VOLTAGE
- Consult Table Below

ACCESSORIES

Then choose additional accessories

- A3/A4 — Auxiliary Contacts (1 each) Closed in Source 1 (normal) and Source 2 (emergency)
- B9X — Battery Charger 1.5 Amp / 12 or 24 VDC

For information on MTX OEM plans, please consult your MTU Onsite Energy representative

Example

MTX000M60010E-ZEC01ZVC50M060

This number string shows the correct format for a MTX Model Automatic Transfer Switch with MX60 microprocessor control unit, Utility - Generator, 100 amps, 3 pole, NEMA Type 1 enclosure, 480V 3f, 3 wire, 60 Hz system with the standard group of accessories.

Technical Specifications

Lug Configuration			
Amp Size	Qty Per Phase and Neutral	Size	
40 - 80	1	#8 to 3/0	8 to 85 mm²
100 - 225	1	#6 to 250 MCM	13 to 127 mm²
300 - 400	1	#4 to 600 MCM	21 to 304 mm²

		Dimensions inches (mm)						weight lbs. (kg)	
Ampere Rating	Poles	NEMA 1			NEMA 3R			Open Style	NEMA 1
		H	W	D	H	W	D		
40 - 225	2, 3	24 (610)	18 (457)	10 (254)	24 (610)	18.5 (470)	10.5 (267)	12 (5.4)	67 (30.4)
	4							18 (8.2)	73 (33.1)
300 - 400	2, 3	46 (1168)	24 (610)	14 (356)	46 (1168)	24 (610)	15 (381)	59 (26.8)	168 (76.2)
	4							70 (31.8)	180 (81.7)

UL 1008 Withstand and Closing Ratings

Please refer to MTU Onsite Energy Publication TB-1102.

	Voltage / Phase / Config / Hz
10	120V, 1PH, 2W, 60HZ
12	120V, 3PH, 3W, 60HZ
20	120/240V, 1PH, 3W, 60HZ
22	110/120V, 1PH, 3W, 50HZ
24	220V, 1PH, 2W, 50HZ
25	240V, 1PH, 2W, 50HZ
26	208V, 1PH, 2W, 60HZ
30	240V, 3PH, 3W, 60HZ
31	208V, 3PH, 3W, 60HZ
32	220V, 3PH, 3W, 50HZ
35	139/240V, 3PH, 4W, 60HZ
38	120/240V, 3PH, 4W, 60HZ
39	220V, 3PH, 3W, 60HZ
40	120/208V, 3PH, 4W, 60HZ
41	127/220V, 3PH, 4W, 60HZ
42	127/220V, 3PH, 4W, 50HZ
46	120/208V, 3PH, 4W, 50HZ
50	480V, 3PH, 3W, 60HZ
51	440V, 3PH, 3W, 60HZ
52	440V, 3PH, 3W, 50HZ
53	440V, 1PH, 2W, 60HZ
54	480V, 3PH, 3W, 50HZ
57	480V, 1PH, 2W, 60HZ
58	254/440V, 3PH, 4W, 60HZ
59	254/440V, 3PH, 4W, 50HZ
70	277/480V, 3PH, 4W, 60HZ
82	380V, 1PH, 2W, 50HZ
90	240/416V, 3PH, 4W, 60HZ
91	220/380V, 3PH, 4W, 60HZ
92	220/380V, 3PH, 4W, 50HZ
93	240/416V, 3PH, 4W, 50HZ
96	416V, 3PH, 3W, 60HZ
97	380V, 3PH, 3W, 60HZ
98	380V, 3PH, 3W, 50HZ
99	416V, 3PH, 3W, 50HZ

Assembled in the USA

CIRCUIT BREAKER ENCLOSURE - DIESEL
27-30 kW / 30-34 kVA Data Sheet

CIRCUIT BREAKER ENCLOSURE

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation and specification requirements. This document summarizes the enclosure dimensions and mounting positions for the MTU 3R0096 DS30 and MTU 3R0096 DS34 circuit breakers. The dimensional drawings will govern and should be referenced for installation.

280 FRAME ENCLOSURE

- Supplied with all 280 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 1.1 and Table 1.1 for breaker mounting positions.

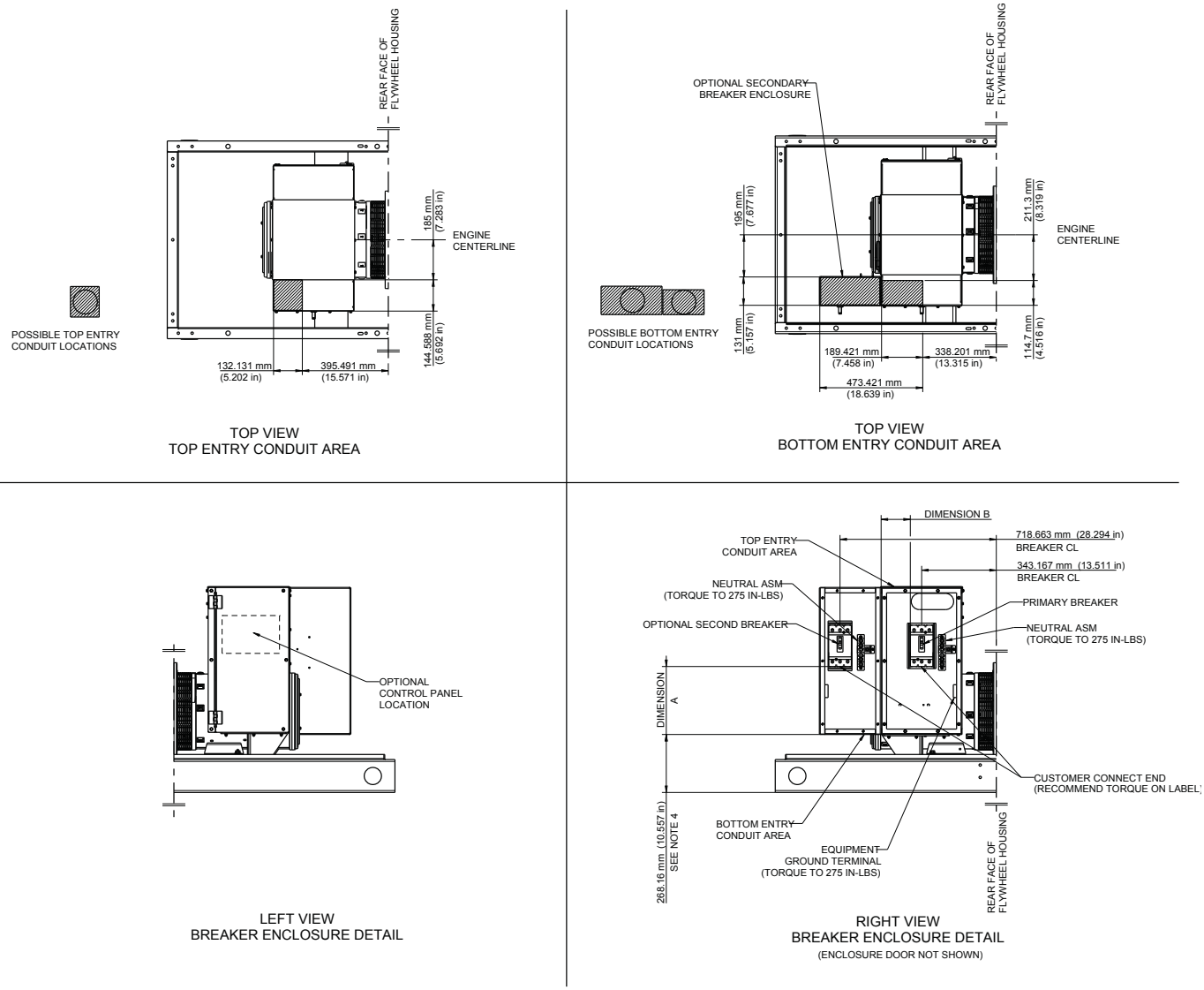


Figure 1: 280 Frame Enclosure (Drawing ID: XZG3000100095)

CIRCUIT BREAKER ENCLOSURE - DIESEL
27-30 kW / 30-34 kVA Data Sheet

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	329 (12.95)	134 (5.27)	1	2.5
J-Frame	175	(1) 4 - 4/0	314 (12.36)	134 (5.27)	1	2.5
J-Frame	250	(1) 3/0 - 350	314 (12.36)	134 (5.27)	1	3

Table 1: 280 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications.
3. Based on flexible metal conduit at 40% fill using THHN wire.
4. Add 177.8 mm (7 in) for bases with integrated single wall fuel tank (see Figure 1).

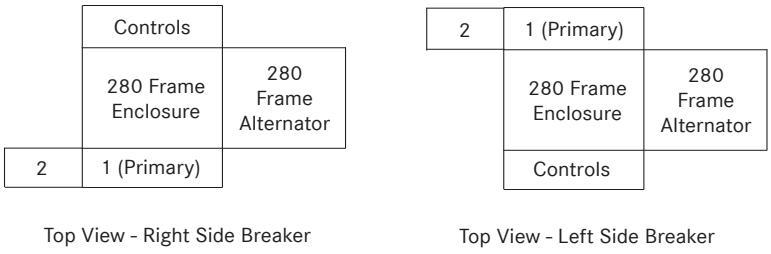


Figure 1.1: 280 Frame Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J	-
H / J	H / J

Table 1.1: 280 Frame Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - DIESEL
40-50 kW / 40-44 kVA Data Sheet

CIRCUIT BREAKER ENCLOSURE

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation and specification requirements. This document summarizes the enclosure dimensions and mounting positions for the MTU 4R0113 DS40, MTU 4R0113 DS44, and MTU 4R0113 DS50 circuit breakers, including 280 and 360 frame size enclosures. The dimensional drawings will govern and should be referenced for installation.

280 FRAME ENCLOSURE

- Supplied with all 280 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 1.1 and Table 1.1 for breaker mounting positions.

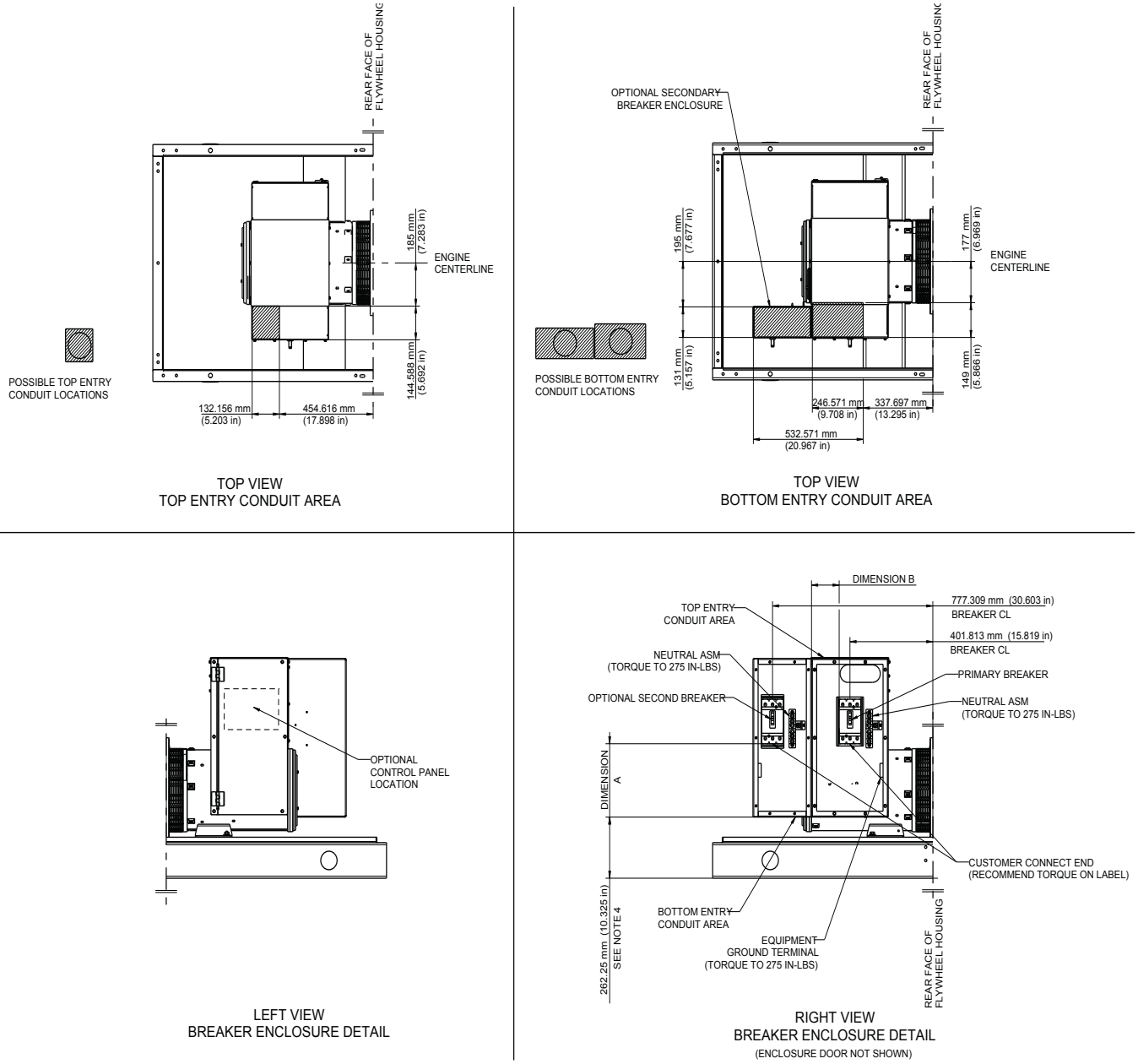


Figure 1: 280 Frame Enclosure (Drawing ID: XZG3000100108)

CIRCUIT BREAKER ENCLOSURE - DIESEL
40-50 kW / 40-44 kVA Data Sheet

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	329 (12.95)	134 (5.27)	1	2.5
J-Frame	175	(1) 4 - 4/0	314 (12.36)	134 (5.27)	1	2.5
J-Frame	250	(1) 3/0 - 350	314 (12.36)	134 (5.27)	1	3

Table 1: 280 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications.
3. Based on flexible metal conduit at 40% fill using THHN wire.
4. Add 177.8 mm (7 in) for bases with integrated single wall fuel tank (see Figure 1).

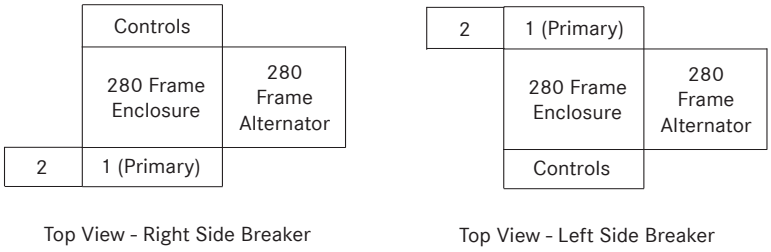


Figure 1.1: 280 Frame Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J	-
H / J	H / J

Table 1.1: 280 Frame Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - DIESEL
40-50 kW / 40-44 kVA Data Sheet

360 FRAME ENCLOSURE

- Supplied with all 360 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 2.1 and Table 2.1 for breaker mounting positions.

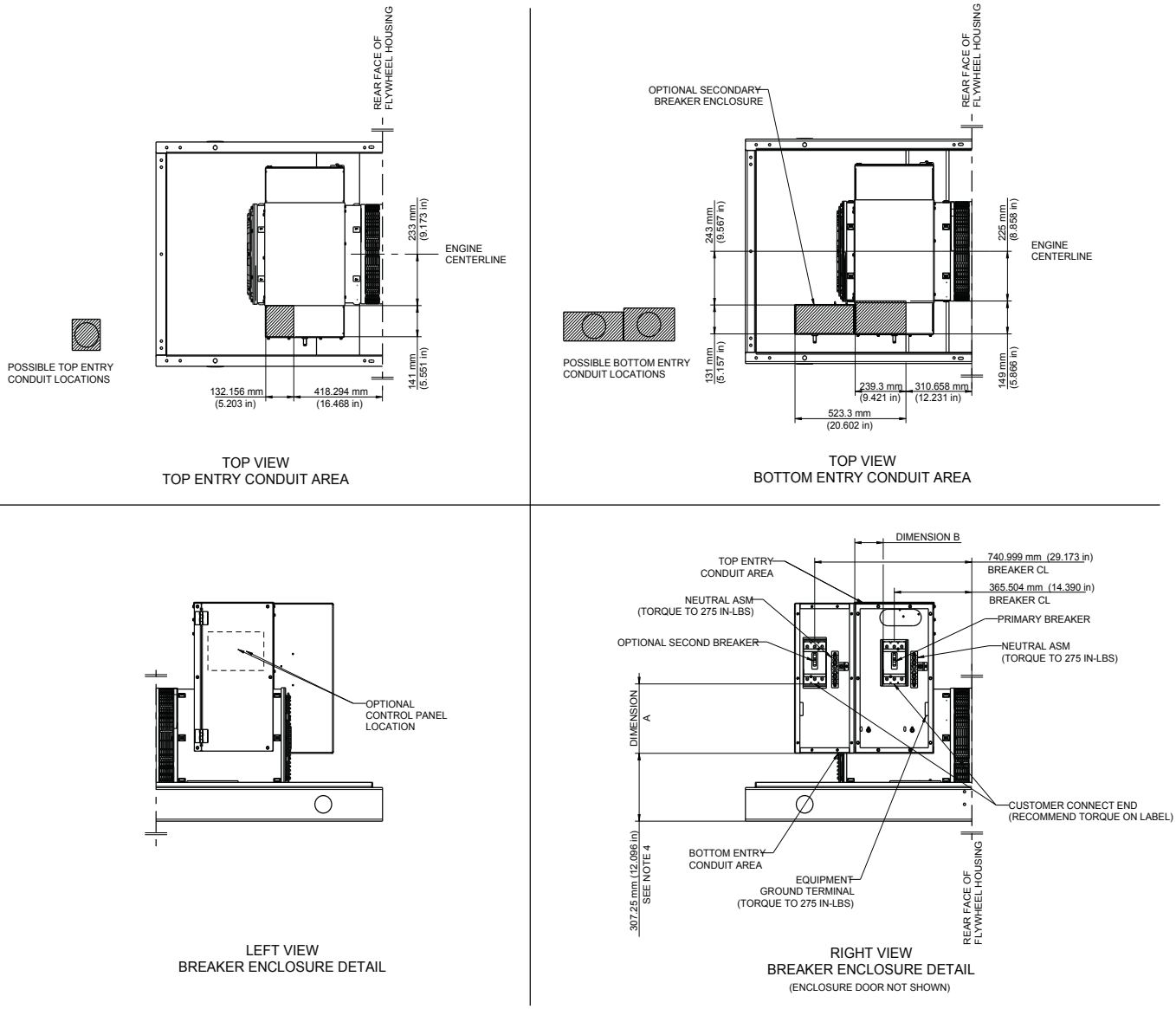


Figure 2: 360 Frame Enclosure (Drawing ID: XZG3000100109)

CIRCUIT BREAKER ENCLOSURE - DIESEL
40-50 kW / 40-44 kVA Data Sheet

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	329 (12.95)	134 (5.27)	1	2.5
J-Frame	175	(1) 4 - 4/0	314 (12.36)	134 (5.27)	1	2.5
J-Frame	250	(1) 3/0 - 350	314 (12.36)	134 (5.27)	1	3

Table 2: 360 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications up to 800 amps.
3. Based on flexible metal conduit at 40% fill using THHN wire.
4. Add 177.8 mm (7 in) for bases with integrated single wall fuel tank (see Figure 2).

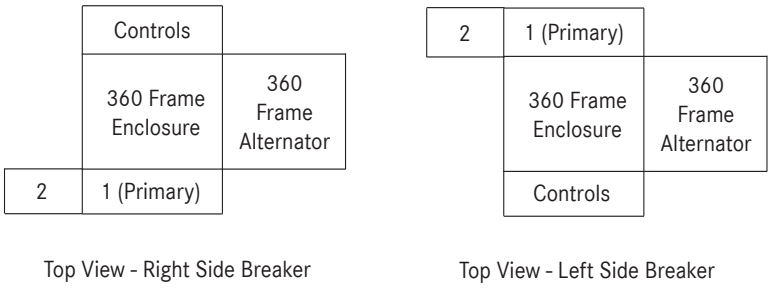


Figure 2.1: 360 Frame Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J	-
H / J	H / J

Table 2.1: 360 Frame Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - DIESEL
55-60 kW / 50-55 kVA Data Sheet

CIRCUIT BREAKER ENCLOSURE

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation and specification requirements. This document summarizes the enclosure dimensions and mounting positions for the MTU 4R0113 DS55 and MTU 4R0113 DS60 circuit breakers. The dimensional drawings will govern and should be referenced for installation.

360 FRAME ENCLOSURE

- Supplied with all 360 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 1.1 and Table 1.1 for breaker mounting positions.

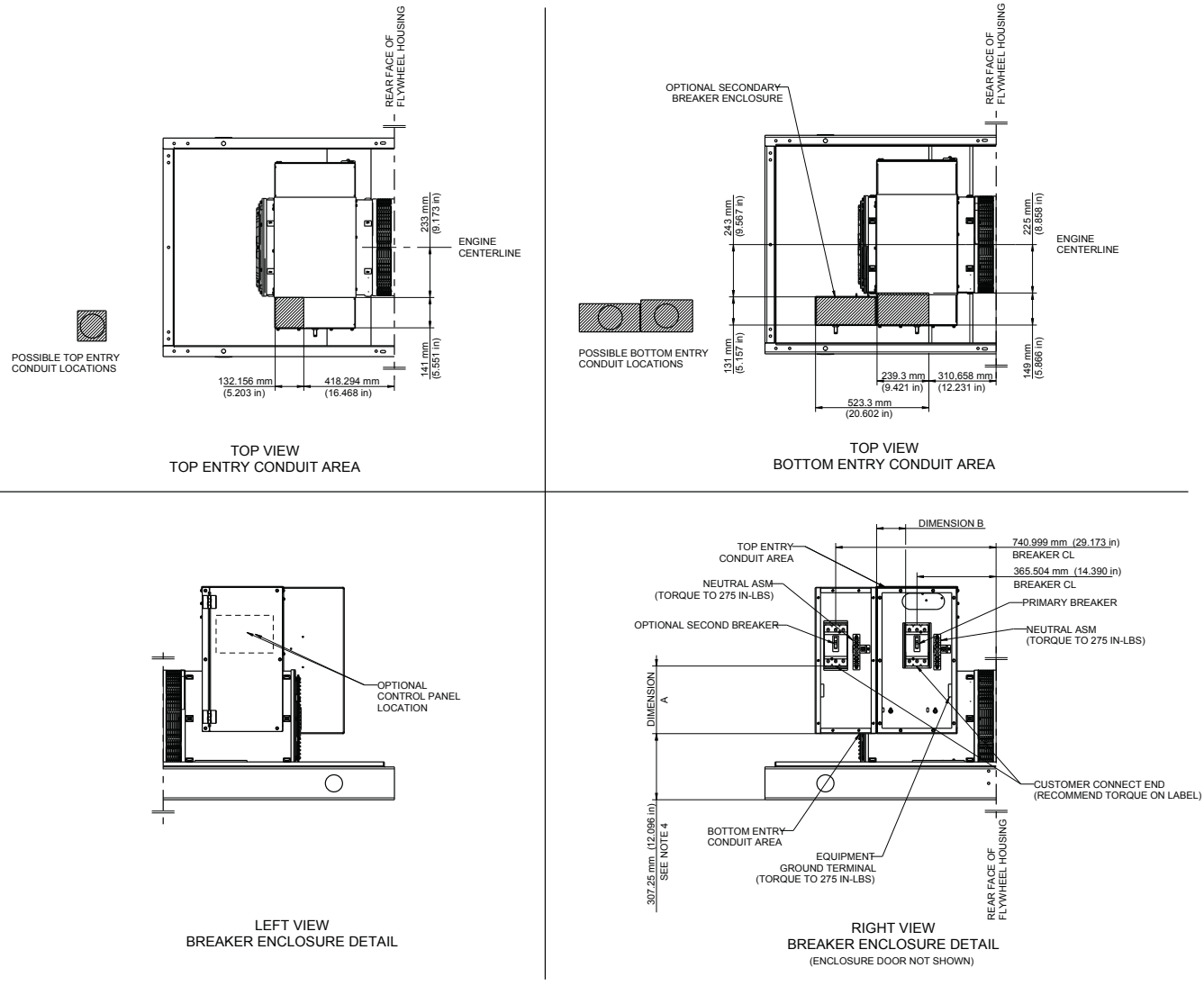


Figure 1: 360 Frame Enclosure (Drawing ID: XZG3000100109)

CIRCUIT BREAKER ENCLOSURE - DIESEL
55-60 kW / 50-55 kVA Data Sheet

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	329 (12.95)	134 (5.27)	1	2.5
J-Frame	175	(1) 4 - 4/0	314 (12.36)	134 (5.27)	1	2.5
J-Frame	250	(1) 3/0 - 350	314 (12.36)	134 (5.27)	1	3

Table 1: 360 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications.
3. Based on flexible metal conduit at 40% fill using THHN wire.
4. Add 177.8 mm (7 in) for bases with integrated single wall fuel tank (see Figure 1).

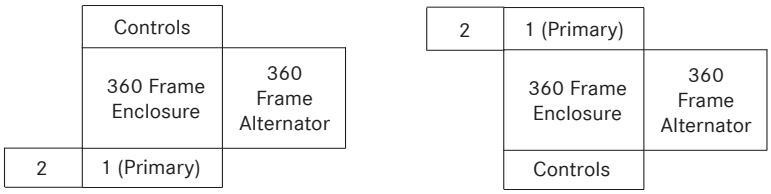


Figure 1.1: 360 Frame Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J	-
H / J	H / J

Table 1.1: 360 Frame Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - DIESEL
72-125 kW Data Sheet

CIRCUIT BREAKER ENCLOSURE

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation and specification requirements. This document summarizes the enclosure dimensions and mounting positions for the MTU 4R0120 DS80, MTU 4R0120 DS100, and MTU 4R0120 DS125 circuit breakers, including small and large size enclosures. The dimensional drawings will govern and should be referenced for installation.

SMALL ENCLOSURE

- Small enclosure supplied with select 360 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 1.1 and Table 1.1 for breaker mounting positions.

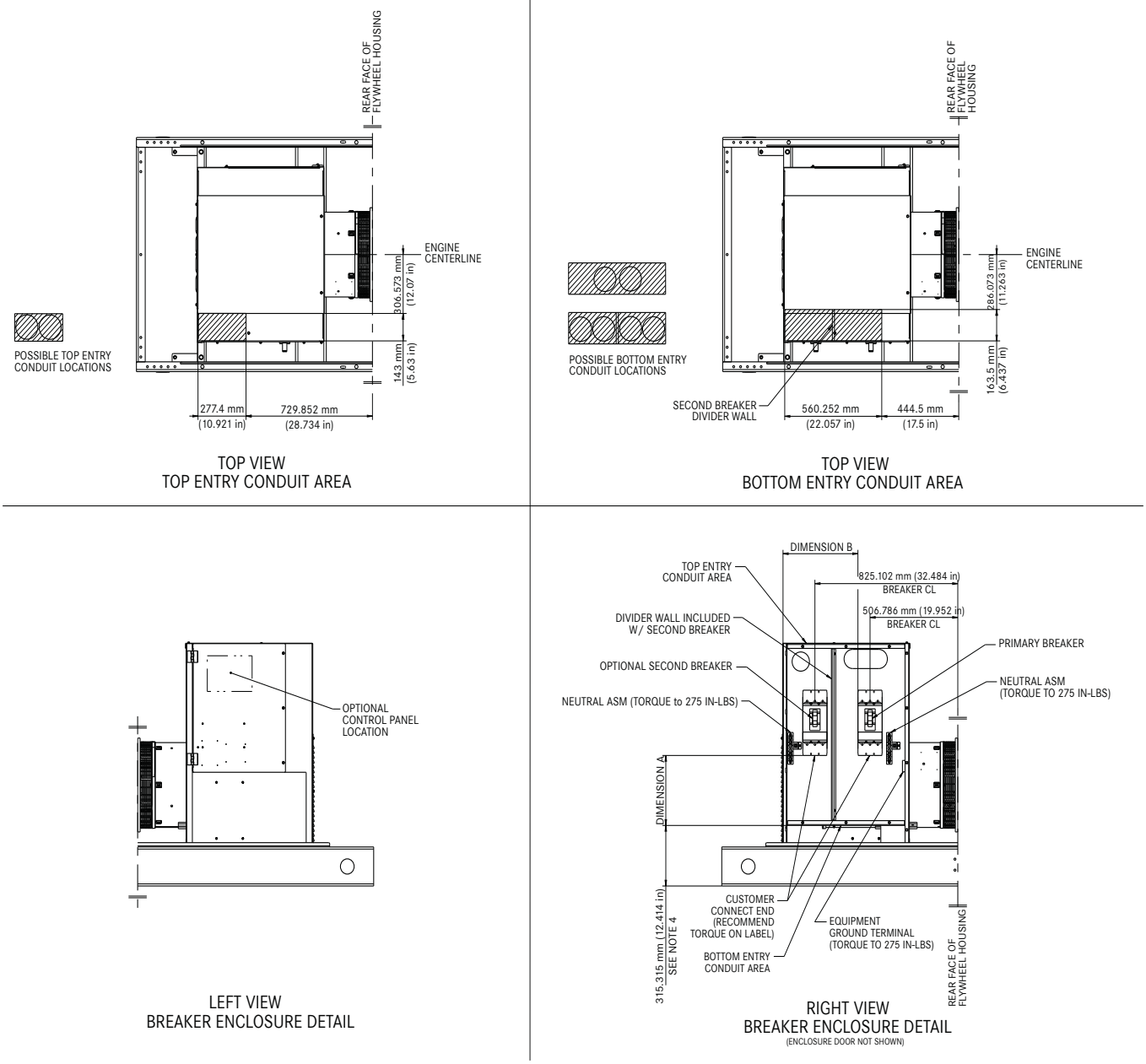


Figure 1: Small Enclosure (Drawing ID: XZG2100100031)

CIRCUIT BREAKER ENCLOSURE - DIESEL
72-125 kW Data Sheet

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	459 (18.08)	450 (17.72)	1	2.5
J-Frame	175	(1) 4 - 3/0	445 (17.52)	450 (17.72)	1	2.5
J-Frame	250	(1) 3/0 - 350	445 (17.52)	450 (17.72)	1	3
L-Frame 100%	250	(1) 2/0 - 500	364 (14.35)	433 (17.03)	1	3.5
L-Frame 100%	400	(2) 2/0 - 500	364 (14.35)	433 (17.03)	2	3.5
L-Frame 80%	250	(1) 2/0 - 500	364 (14.35)	433 (17.03)	1	3.5
L-Frame 80%	400 - 600	(2) 2/0 - 500	364 (14.35)	433 (17.03)	2	3.5

Table 1: Small Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications.
3. Based on flexible metal conduit at 40% fill using THHN wire.
4. Add 205 mm (8.08 in) for bases with integrated single wall fuel tank (see Figure 1).

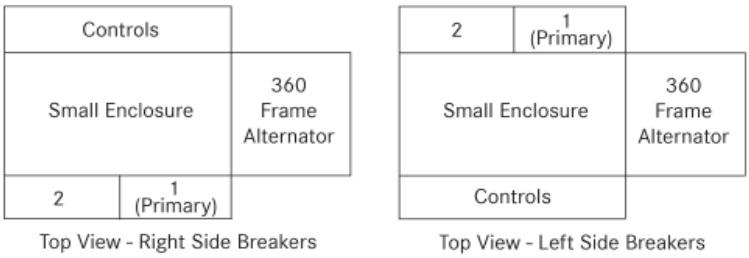


Figure 1.1: Small Enclosure Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J / L	-
H / J / L	H / J / L

Table 1.1: Small Enclosure Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - DIESEL
72-125 kW Data Sheet

LARGE ENCLOSURE

- Large enclosure supplied with all 430 frame alternator applications and select 360 frame alternator applications.
- Right side primary breaker shown. Left side primary breaker optional.
- Reference Figure 2.1 and Table 2.1 for breaker mounting positions.

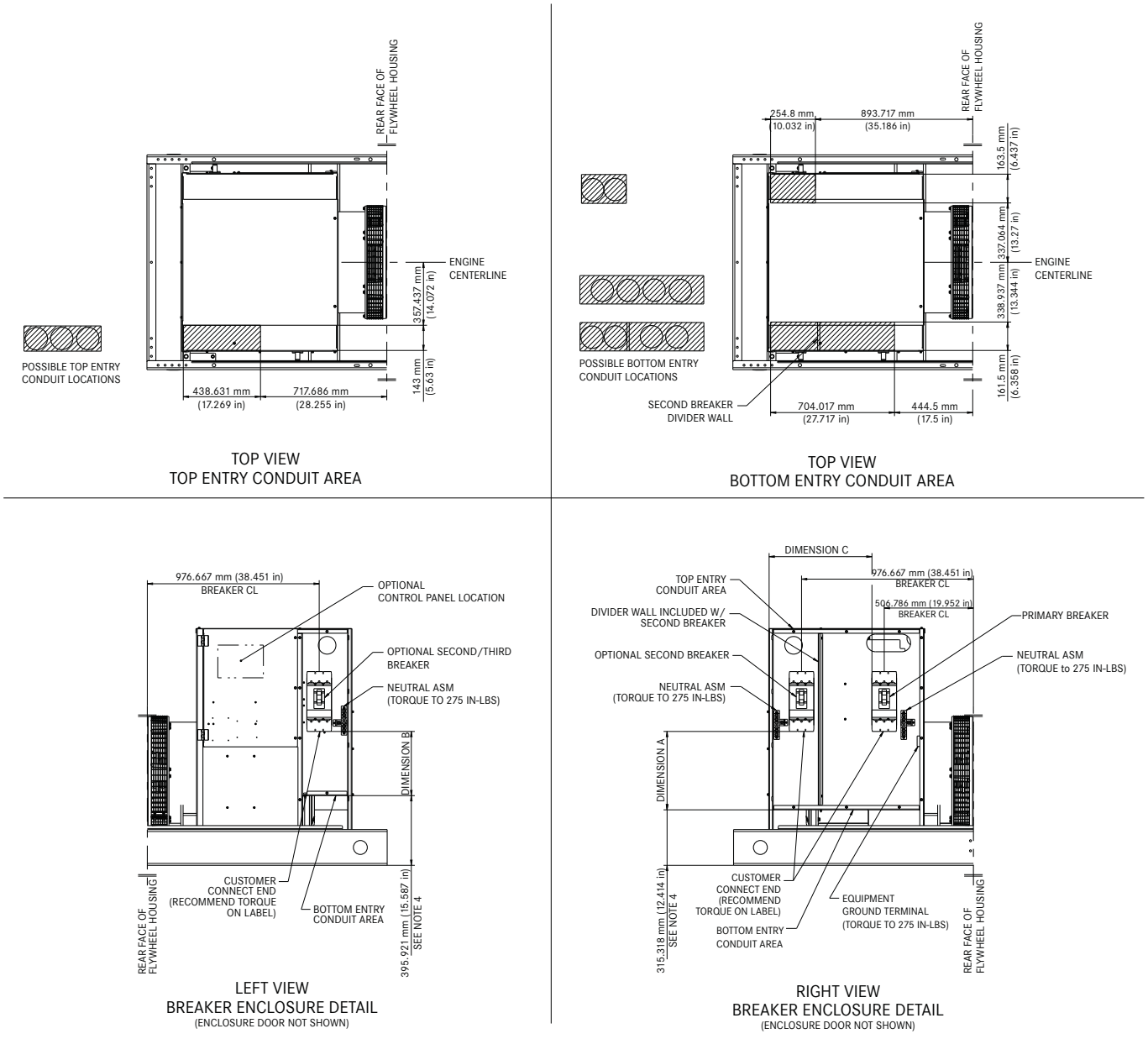


Figure 2: Large Enclosure (Drawing ID: XZG2100100031)

Available Circuit Breakers		Enclosure Data					
Breaker Frame	Amperage	Output Wire Range 90 °C Cu (wires per lug)	Wire Bending Space[1] Dimension A mm (in)	Wire Bending Space[1] Dimension B mm (in)	Wire Gutter Space[1,2] Dimension C mm (in)	Conduit Quantity	Conduit Size[3] in
H-Frame	15 - 150	(1) 4 - 3/0	532 (20.93)	451 (17.76)	602 (23.69)	1	2.5
J-Frame	175	(1) 4 - 4/0	518 (20.37)	437 (17.2)	602 (23.69)	1	2.5
J-Frame	250	(1) 3/0 - 350	518 (20.37)	437 (17.2)	602 (23.69)	1	3
L-Frame 100%	250	(1) 2/0 - 500	443 (17.44)	362 (14.27)	584 (23)	1	3.5
L-Frame 100%	400	(2) 2/0 - 500	443 (17.44)	362 (14.27)	584 (23)	2	3.5
L-Frame 80%	250	(1) 2/0 - 500	443 (17.44)	362 (14.27)	584 (23)	1	3.5
L-Frame 80%	400 - 600	(2) 2/0 - 500	443 (17.44)	362 (14.27)	584 (23)	2	3.5
P-Frame	250 - 800	(3) 250 - 500	407 (16.01)	n/a	451 (17.74)	3	3.5
P-Frame	1200	(4) 250 - 500	407 (16.01)	n/a	n/a	4	3.5

Table 2: Large Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications up to 800 amps.
3. Based on flexible metal conduit at 40% fill using THHN wire.
4. Add 205 mm (8.08 in) for bases with integrated single wall fuel tank (see Figure 2).

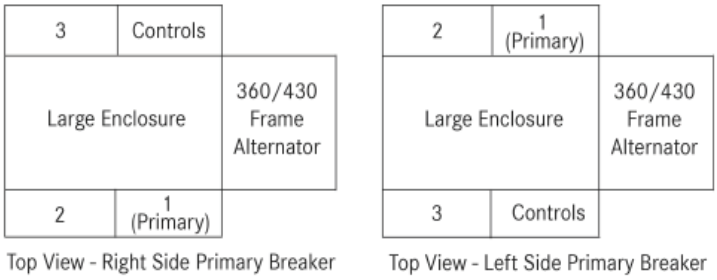


Figure 2.1: Large Enclosure Breaker Mounting Positions

Breaker Frame		
Position 1 (Primary)	Position 2	Position 3
H / J / L	-	-
H / J / L	H / J / L	-
H / J / L	H / J / L	H / J / L
P		-
P		H / J / L

Table 2.1: Large Enclosure Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - DIESEL
135-200 kW Data Sheet

CIRCUIT BREAKER ENCLOSURE

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation and specification requirements. This document summarizes the enclosure dimensions and mounting positions for the MTU 6R0120 DS150, MTU 6R0120 DS180, and MTU 6R0120 DS200 circuit breakers. The dimensional drawings will govern and should be referenced for installation.

430 FRAME ENCLOSURE

- Enclosure supplied with all 430 frame alternator applications.
- Right side primary breaker shown. Left side primary breaker optional.
- Reference Figure 1.1 and Table 1.1 for breaker mounting positions.

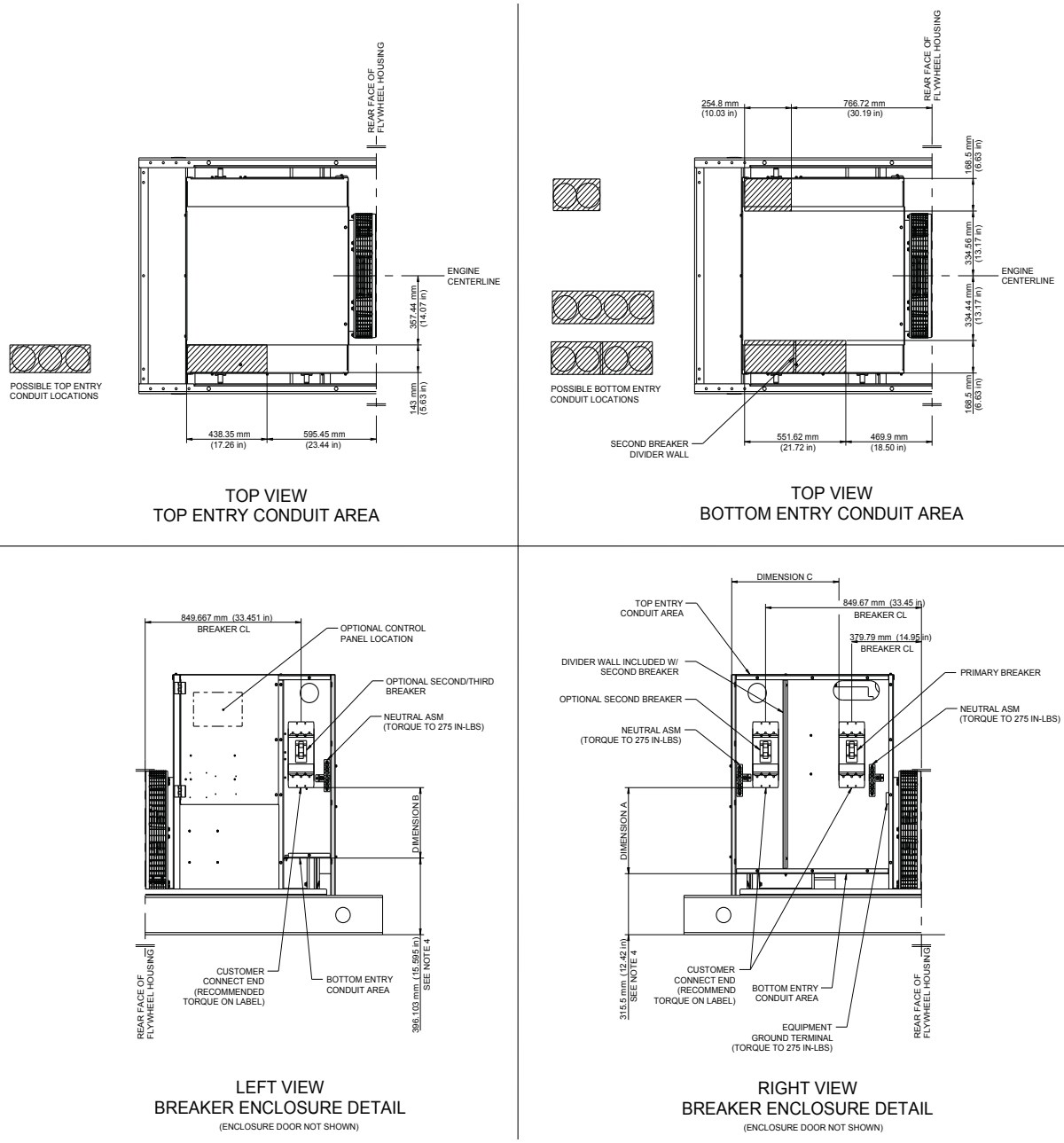


Figure 1: 430 Frame Enclosure (Drawing ID: XZG2100100041)

CIRCUIT BREAKER ENCLOSURE - DIESEL
135-200 kW Data Sheet

Available Circuit Breakers		Enclosure Data					
Breaker Frame	Amperage	Output Wire Range 90 °C Cu (wires per lug)	Wire Bending Space[1] Dimension A mm (in)	Wire Bending Space[1] Dimension B mm (in)	Wire Gutter Space[1,2] Dimension C mm (in)	Conduit Quantity	Conduit Size[3] in
H-Frame	15 - 150	(1) 4 - 3/0	532 (20.93)	451 (17.76)	602 (23.69)	1	2.5
J-Frame	175	(1) 4 - 4/0	518 (20.37)	437 (17.2)	602 (23.69)	1	2.5
J-Frame	250	(1) 3/0 - 350	518 (20.37)	437 (17.2)	602 (23.69)	1	3
L-Frame 100%	250	(1) 2/0 - 500	443 (17.44)	362 (14.27)	584 (23)	1	3.5
L-Frame 100%	400	(2) 2/0 - 500	443 (17.44)	362 (14.27)	584 (23)	2	3.5
L-Frame 80%	250	(1) 2/0 - 500	443 (17.44)	362 (14.27)	584 (23)	1	3.5
L-Frame 80%	400 - 600	(2) 2/0 - 500	443 (17.44)	362 (14.27)	584 (23)	2	3.5
P-Frame	250 - 800	(3) 250 - 500	407 (16.01)	n/a	451 (17.74)	3	3.5
P-Frame	1200	(4) 250 - 500	407 (16.01)	n/a	n/a	4	3.5

Table 1: 430 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications up to 800 amps.
3. Based on flexible metal conduit at 40% fill using THHN wire.
4. Add 205 mm (8.08 in) for bases with integrated single wall fuel tank (see Figure 1).

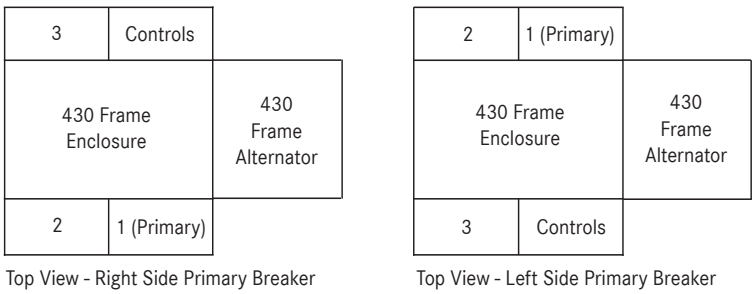


Figure 1.1: 430 Frame Breaker Mounting Positions

Breaker Frame		
Position 1 (Primary)	Position 2	Position 3
H / J / L	-	-
H / J / L	H / J / L	-
H / J / L	H / J / L	H / J / L
P		-
P		H / J / L

Table 1.1: 430 Frame Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - GAS
30 kW Data Sheet

CIRCUIT BREAKER ENCLOSURE

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation and specification requirements. This document summarizes the enclosure dimensions and mounting positions for the MTU 4R0075 GS30 circuit breakers, including 280 and 360 frame size enclosures. The dimensional drawings will govern and should be referenced for installation.

280 FRAME ENCLOSURE

- Supplied with all 280 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 1.1 and Table 1.1 for breaker mounting positions.

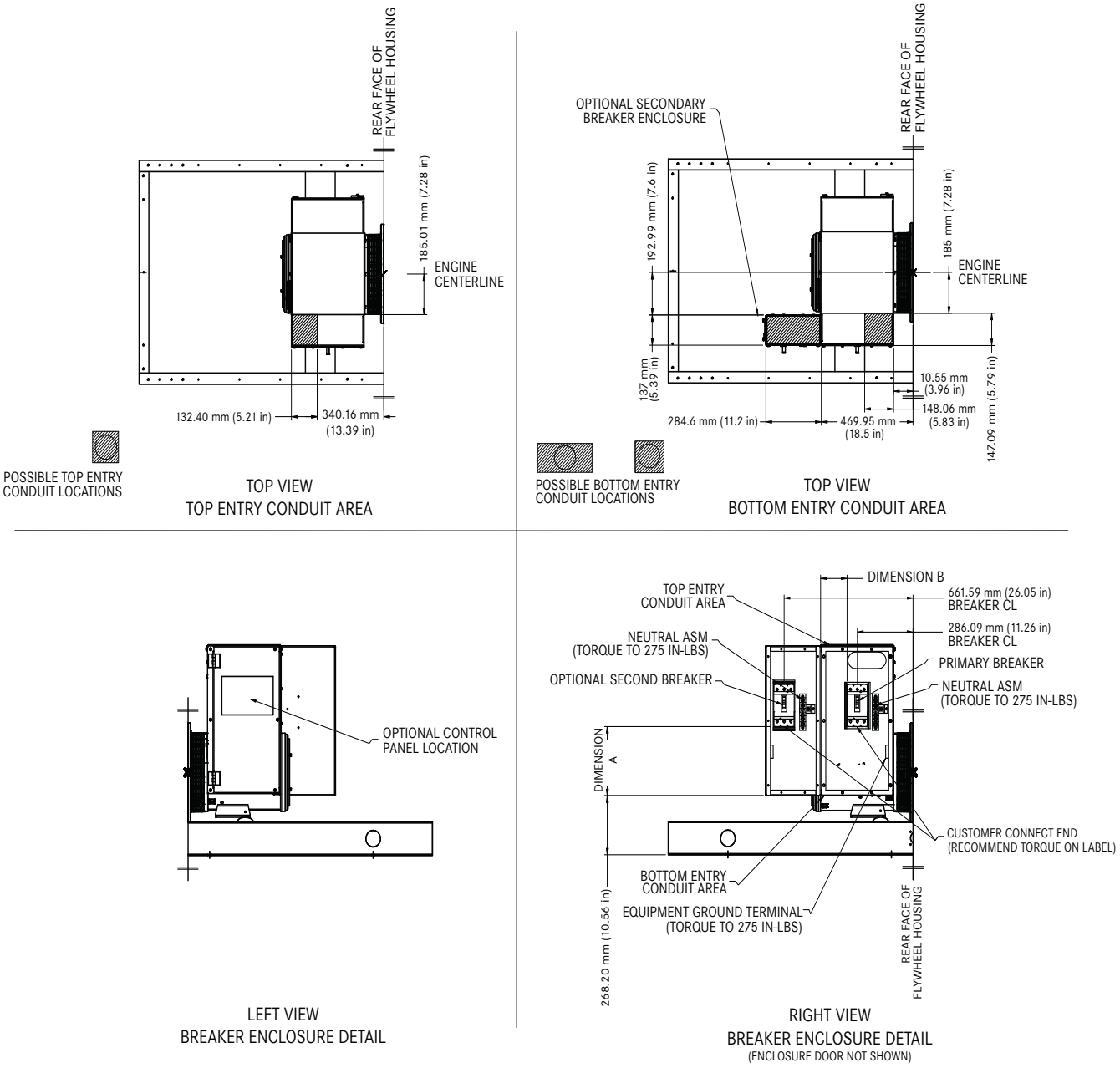


Figure 1: 280 Frame Enclosure (Drawing ID: XZG2500100029)

CIRCUIT BREAKER ENCLOSURE - GAS
30 kW Data Sheet

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	329 (12.95)	134 (5.27)	1	2.5
J-Frame	175	(1) 4 - 4/0	314 (12.36)	134 (5.27)	1	2.5
J-Frame	250	(1) 3/0 - 350	314 (12.36)	134 (5.27)	1	3

Table 1: 280 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications.
3. Based on flexible metal conduit at 40% fill using THHN wire.

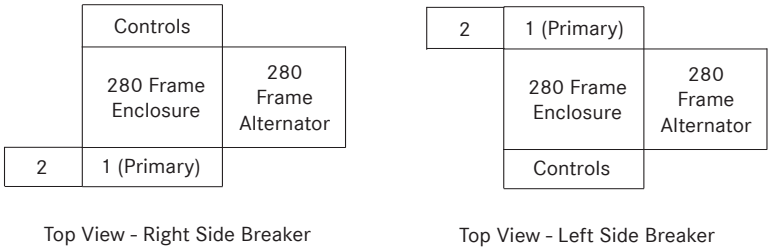


Figure 1.1: 280 Frame Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J	-
H / J	H / J

Table 1.1: 280 Frame Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - GAS
30 kW Data Sheet

360 FRAME ENCLOSURE

- Supplied with all 360 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 2.1 and Table 2.1 for breaker mounting positions.

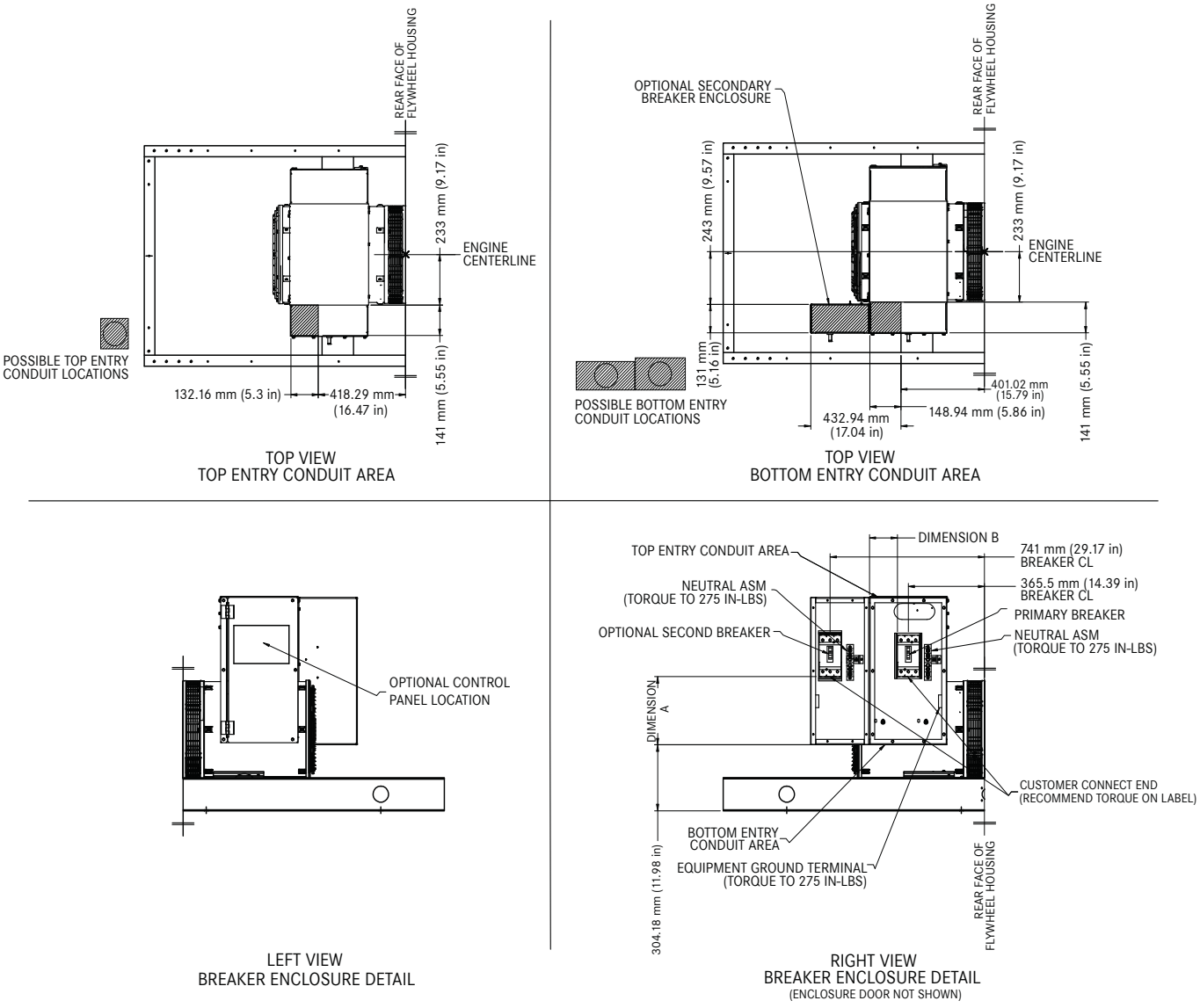


Figure 2: 360 Frame Enclosure (Drawing ID: XZG2500100029)

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	329 (12.95)	134 (5.27)	1	2.5
J-Frame	175	(1) 4 - 4/0	314 (12.36)	134 (5.27)	1	2.5
J-Frame	250	(1) 3/0 - 350	314 (12.36)	134 (5.27)	1	3

Table 2: 360 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications up to 800 amps.
3. Based on flexible metal conduit at 40% fill using THHN wire.

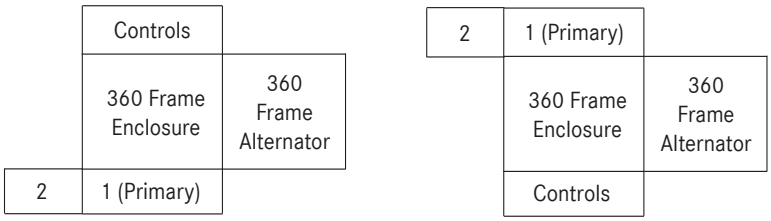


Figure 2.1: 360 Frame Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J	-
H / J	H / J

Table 2.1: 360 Frame Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - GAS
40 kW Data Sheet

CIRCUIT BREAKER ENCLOSURE

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation and specification requirements. This document summarizes the enclosure dimensions and mounting positions for the MTU 6V0072 GS40 circuit breakers, including 280 and 360 frame size enclosures. The dimensional drawings will govern and should be referenced for installation.

280 FRAME ENCLOSURE

- Supplied with all 280 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 1.1 and Table 1.1 for breaker mounting positions.

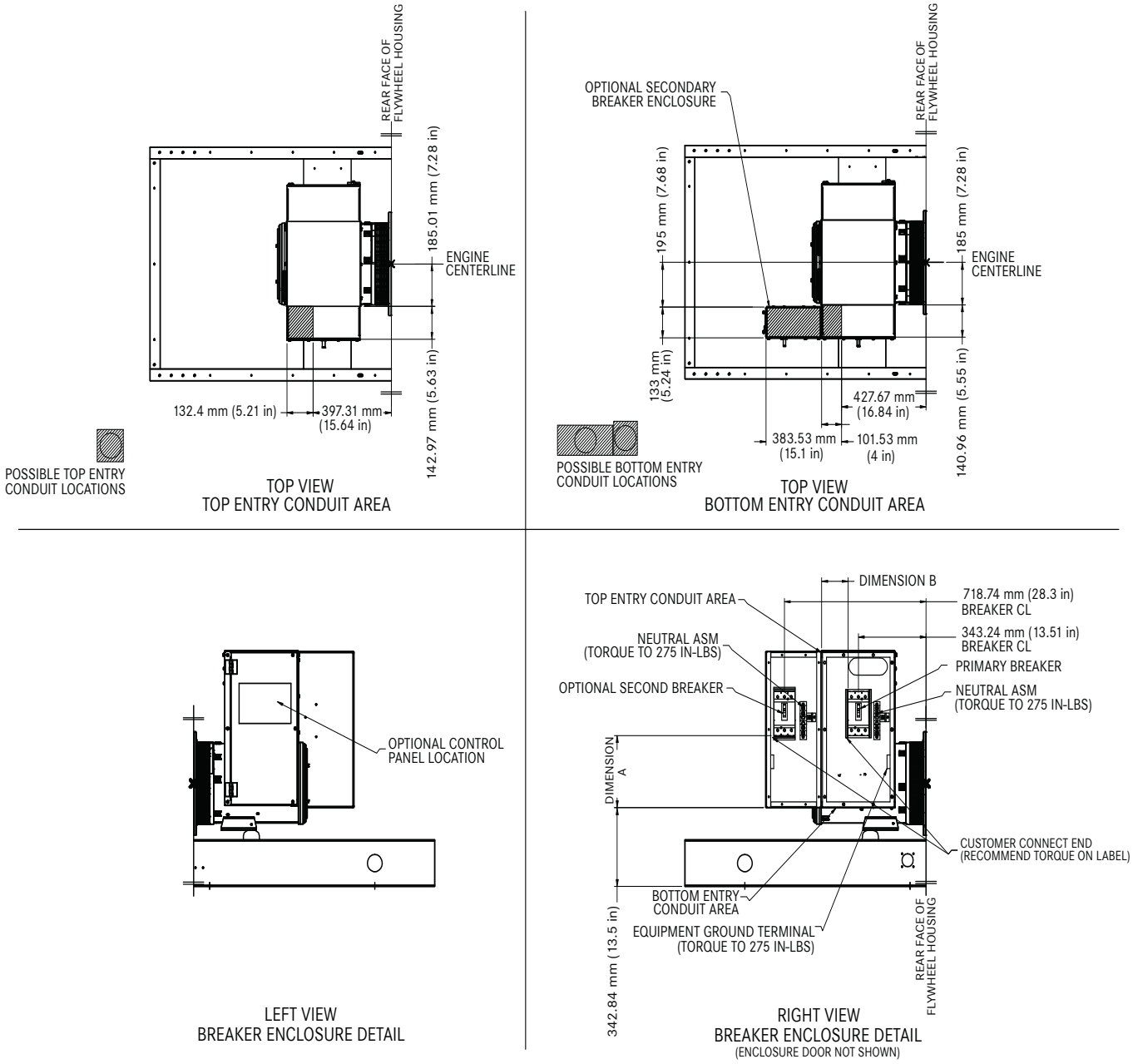


Figure 1: 280 Frame Enclosure (Drawing ID: XZG2500100030)

CIRCUIT BREAKER ENCLOSURE - GAS
40 kW Data Sheet

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	329 (12.95)	134 (5.27)	1	2.5
J-Frame	175	(1) 4 - 4/0	314 (12.36)	134 (5.27)	1	2.5
J-Frame	250	(1) 3/0 - 350	314 (12.36)	134 (5.27)	1	3

Table 1: 280 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications.
3. Based on flexible metal conduit at 40% fill using THHN wire.

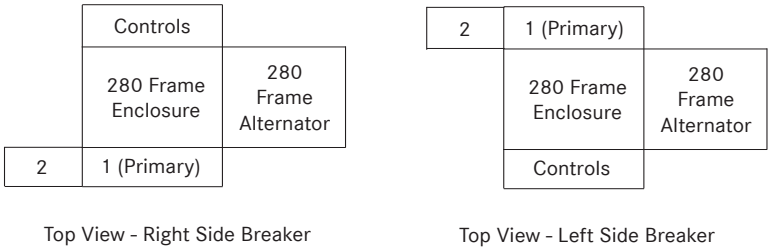


Figure 1.1: 280 Frame Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J	-
H / J	H / J

Table 1.1: 280 Frame Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - GAS
40 kW Data Sheet

360 FRAME ENCLOSURE

- Supplied with all 360 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 2.1 and Table 2.1 for breaker mounting positions.

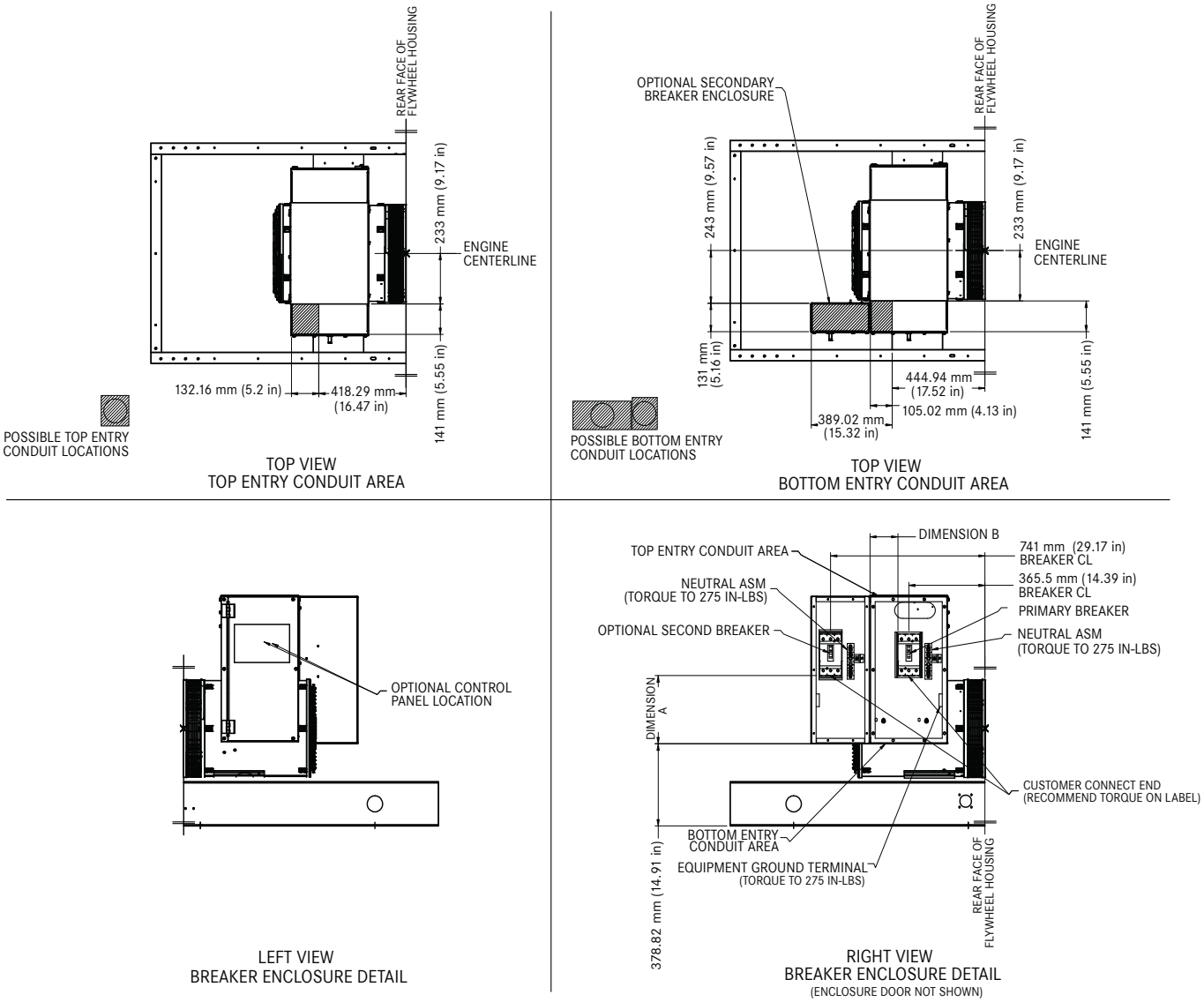


Figure 2: 360 Frame Enclosure (Drawing ID: XZG2500100030)

CIRCUIT BREAKER ENCLOSURE - GAS
40 kW Data Sheet

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	329 (12.95)	134 (5.27)	1	2.5
J-Frame	175	(1) 4 - 4/0	314 (12.36)	134 (5.27)	1	2.5
J-Frame	250	(1) 3/0 - 350	314 (12.36)	134 (5.27)	1	3

Table 2: 360 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications up to 800 amps.
3. Based on flexible metal conduit at 40% fill using THHN wire.

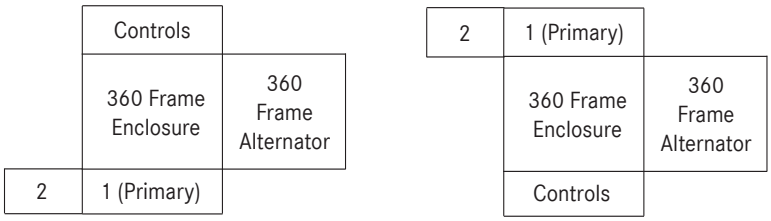


Figure 2.1: 360 Frame Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J	-
H / J	H / J

Table 2.1: 360 Frame Breaker Mounting Positions

CIRCUIT BREAKER ENCLOSURE - GAS
50-60 kW Data Sheet

CIRCUIT BREAKER ENCLOSURE

This circuit breaker enclosure data sheet is used in conjunction with dimensional drawings to assist with submittal documentation and specification requirements. This document summarizes the enclosure dimensions and mounting positions for the MTU 8V0063 GS50 and MTU 8V0071 GS60 circuit breakers, including the 360 frame size enclosure. The dimensional drawings will govern and should be referenced for installation.

360 FRAME ENCLOSURE

- Supplied with all 360 frame alternator applications.
- Right side breakers shown. Left side breakers optional.
- Reference Figure 1.1 and Table 1.1 for breaker mounting positions.

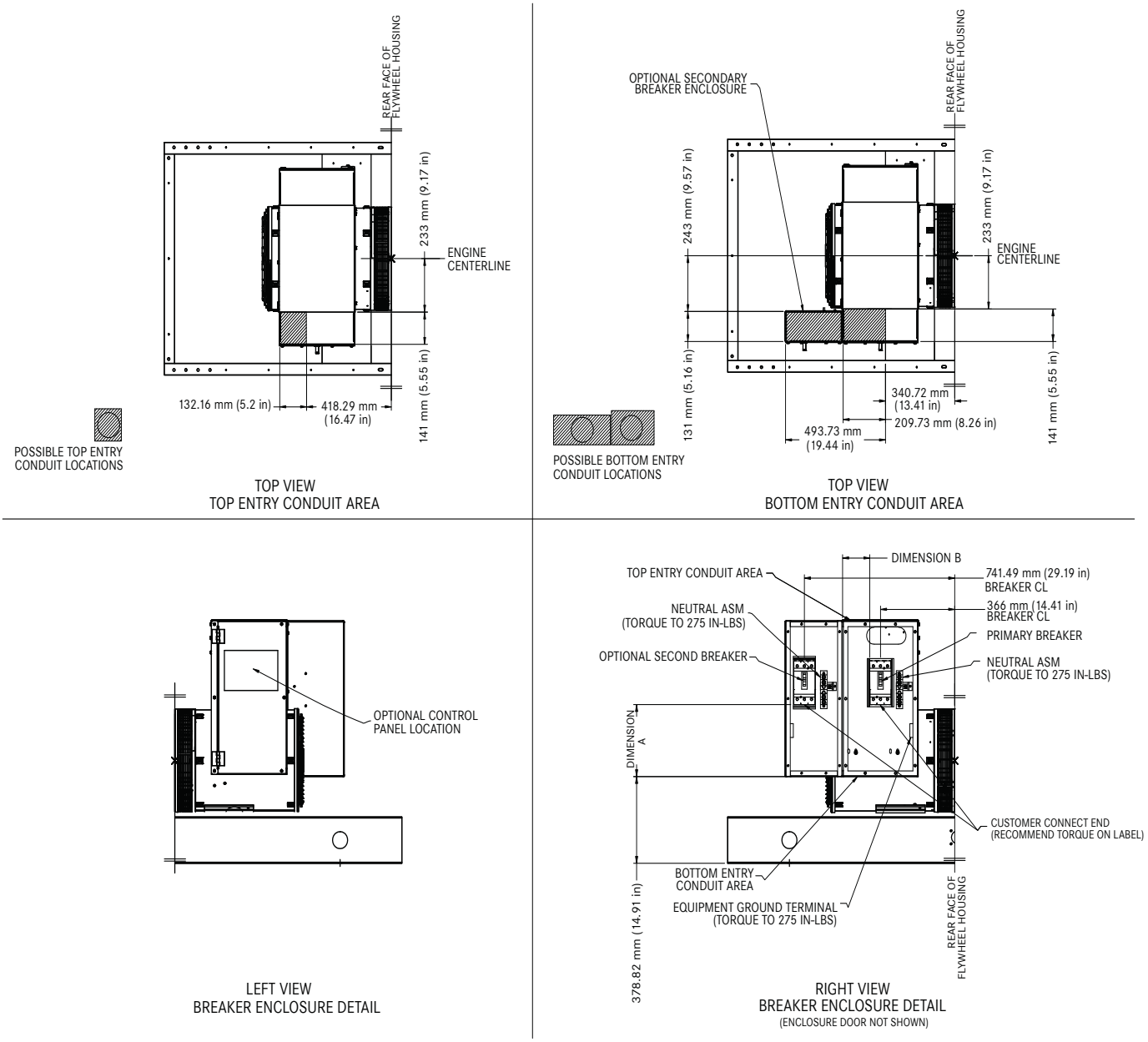


Figure 1: 360 Frame Enclosure (Drawing ID: XZG2500100031)

CIRCUIT BREAKER ENCLOSURE - GAS
50-60 kW Data Sheet

Available Circuit Breakers		Enclosure Data				
Breaker Frame	**Amperage**	**Output Wire Range 90 °C Cu (wires per lug)**	**Wire Bending Space[1] Dimension A mm (in)**	**Wire Gutter Space[1,2] Dimension B mm (in)**	**Conduit Quantity**	**Conduit Size[3] in**
H-Frame	15 - 150	(1) 4 - 3/0	329 (12.95)	134 (5.27)	1	2.5
J-Frame	175	(1) 4 - 4/0	314 (12.36)	134 (5.27)	1	2.5
J-Frame	250	(1) 3/0 - 350	314 (12.36)	134 (5.27)	1	3

Table 1: 360 Frame Enclosure Data

1. Meets or exceeds NFPA 70, NEC 312.6(A), and NEC 312.6(B).
2. Top entry only available for single breaker applications up to 800 amps.
3. Based on flexible metal conduit at 40% fill using THHN wire.

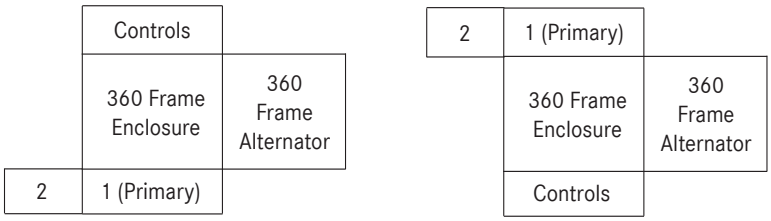


Figure 1.1: 360 Frame Breaker Mounting Positions

Breaker Frame	
Position 1 (Primary)	**Position 2**
H / J	-
H / J	H / J

Table 1.1: 360 Frame Breaker Mounting Positions

DIGITAL GENERATOR SET CONTROLLER
MGC Series Comparison Data Sheet

MTU Onsite Energy has a variety of options available when it comes to selecting a reliable, easy-to-use, and rugged generator set control system. This data sheet is intended to be used only as a reference to determine which configuration of our MTU Onsite Energy Generator Set Controllers (MGC) would best fit your needs. Detailed information can be found on the MGC-1500 Series Data Sheet, MGC-2000 Series Data Sheet, and MGC-3000 Series Data Sheet. Please contact your MTU Onsite Energy Account Manager for more information.

GENERATOR PROTECTION

	MGC-1510	MGC-1520	MGC-2010	MGC-2020	MGC-2050	MGC-3010	MGC-3050
Standard							
Phase Imbalance (47)	✓	✓		✓	✓	✓	✓
Overcurrent (50)	✓	✓					
Overvoltage (59)	✓	✓	✓	✓	✓	✓	✓
Undervoltage (27)	✓	✓	✓	✓	✓	✓	✓
Underfrequency (81U)	✓	✓	✓	✓	✓	✓	✓
Overfrequency (81O)	✓	✓	✓	✓	✓	✓	✓
Reverse Power (32)			✓	✓	✓	✓	✓
Loss of Excitation (40Q)			✓	✓	✓	✓	✓
Enhanced							
Overcurrent (51)				✓	✓	✓	✓
Vector Shift (78)				✓	✓	✓	✓
Rate of Change of Frequency (81R)				✓	✓	✓	✓
Ground Fault						✓	✓

Note: Numbers in parentheses above are ANSI standard device numbers denoting which features the controllers support.

INPUTS

	MGC-1510	MGC-1520	MGC-2010	MGC-2020	MGC-2050	MGC-3010	MGC-3050
Controller							
Digital	7	7	16	16	16	16	16
Analog (Dedicated)	3	-	3	3	3	3	3
Analog	-	-	-	-	-	2	2
CEM							
Digital	-	10	10	10	10	4x10	4x10
AEM							
Analog	-	-	8	8	8	4x8	4x8
TC	-	-	2	2	2	4x2	4x2
RTD	-	-	8	8	8	4x8	4x8

DIGITAL GENERATOR SET CONTROLLER
MGC Series Comparison Data Sheet

OUTPUTS

	MGC-1510	MGC-1520	MGC-2010	MGC-2020	MGC-2050	MGC-3010	MGC-3050
Controller							
Digital Form A, 30 Amp	-	-	3	3	3	3	3
Digital Form A, 5 Amp	3	3	-	-	-	-	-
Digital Form A, 2 Amp	4	4	12	12	12	12	12
Analog	-	-	-	-	-	2	2
CEM							
Digital Form C, 4 Amp	-	12	12	12	12	4x12	4x12
Digital Form C, 1 Amp	-	12	12	12	12	4x12	4x12
AEM							
Analog	-	-	4	4	4	4x4	4x4
External to Controllers / (CEM)							
Digital Form C, 10 Amp (Interposing Relay)	-	10	10	10	10	10	10

COMMUNICATION

	MGC-1510	MGC-1520	MGC-2010	MGC-2020	MGC-2050	MGC-3010	MGC-3050
ModBus RTU (RS-485)			✓	✓	✓	✓	✓
ModBus TCP-IP						✓	✓
RDP-110	✓	✓	✓	✓	✓	✓	✓
CANBus		✓	✓	✓	✓	✓	✓
Modem Interface (RS-232)				✓	✓	✓	✓
Ethernet					✓ (LSM)	✓	✓

METERING

	MGC-1510	MGC-1520	MGC-2010	MGC-2020	MGC-2050	MGC-3010	MGC-3050
Bus 1 Voltage							
Single Phase	✓	✓	✓	✓	✓	✓	✓
Three Phase	✓	✓	✓	✓	✓	✓	✓
Bus 2 Voltage							
Single Phase							✓
Three Phase							✓
Current Transformers							
Generator	3	3	3	3	3	3	3
Auxiliary	-	-	-	-	-	1	4

DIGITAL GENERATOR SET CONTROLLER
MGC-1500 Series Data Sheet

MTU Onsite Energy's Generator Set Controllers (MGC Series) are rugged, reliable, and easy-to-use digital generator set control systems. The MGC-1500 Series is perfectly focused, combining rugged construction and microprocessor technology to offer a product that will hold up to almost any environment and is flexible enough to meet your application's needs.

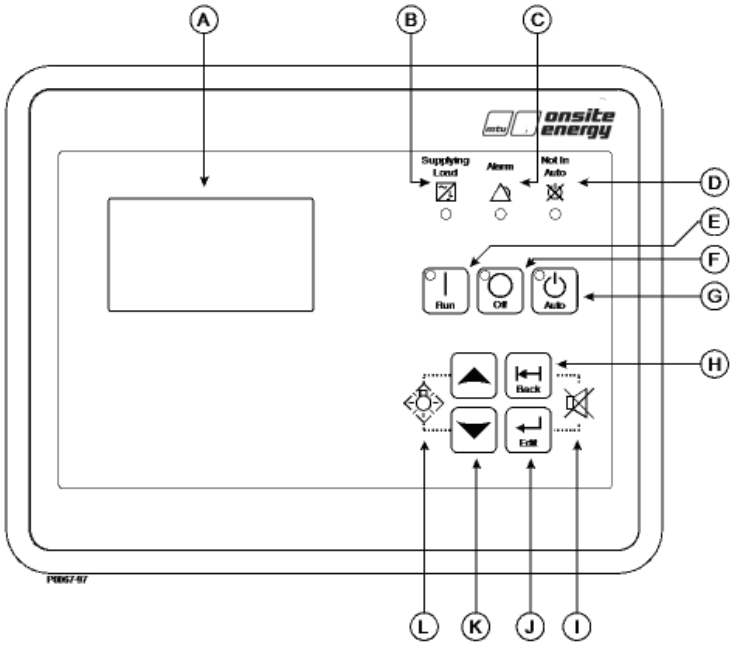
PRODUCT HIGHLIGHTS

- Three-phase generator metering
- Engine metering
- Generator set control
- Engine protection
- Generator protection
- BESTCOMS*Plus*®
  - Windows®-based software for optional remote operation (Software can be downloaded at www.mtuonsiteenergy.com)
  - Programming and setup software
  - Intuitive and powerful
  - Remote control and monitoring
  - Programmable logic
  - USB communications
- Suitable for rental generator sets with high/low sensing, single or three phase override, wye/delta/grounded delta configurable, and alternate frequency override (50/60 Hz)
- SAE J1939 Engine Control Unit (ECU) communications (optional)
- Resistive sender inputs for oil pressure and coolant temperature
- Multilingual capability
- Remote annunciation with RDP-110
- Event recording (up to 30 events in non-volatile memory)
- Extremely rugged, fully potted design
- Seven programmable contact inputs with Input 1 programmed to recognize an emergency stop
- Start, run, and prestart relays with four programmable outputs
- UL recognized, CSA certified, CE approved
- IP56 rating per IEC 60529
- NFPA-110 compatible
- Microprocessor based
- Complete system metering
- Expandable to meet customer needs

*Please refer to the MGC Series Controller Comparison Data Sheet for available configured options.

DIGITAL GENERATOR SET CONTROLLER
MGC-1500 Series Data Sheet

DIAGRAM



Front Panel Descriptions

- Liquid Crystal Display (A)
- Supplying Load Indicator (B)
- Alarm Indicator (C)
- Not in Auto Indicator (D)
- Run Pushbutton and Mode Indicator (E)
- Off Pushbutton and Mode Indicator (F)
- Auto Pushbutton and Mode Indicator (G)
- Back Pushbutton (H)
- Alarm Silence Pushbutton Combination (I)
- Edit Pushbutton (J)
- Arrow Pushbuttons (K)
- Lamp Test Pushbutton Combination (L)

FUNCTIONS

Generator Set Protection

Generator ANSI Codes

- Overvoltage (59)
- Overfrequency (81O)
- Voltage Phase Imbalance (47)
- Undervoltage (27)
- Underfrequency (81U)
- Overcurrent (50)

All generator set protection features are programmable as alarms, pre-alarms, status, or not used.

Alarms (Shutdowns)

- Low Oil Pressure
- Automatic Restart Failure
- High Coolant Temperature
- Low Coolant Temperature
- Overspeed
- Overcrank
- Fuel Leak/Fuel Sender Failure
- Engine Sender
- Emergency Stop
- Battery Charger Failure
- Critical Low Fuel Level (optional)

FUNCTIONS, Generator Set Protection, continued:

Pre-Alarms (Warnings)

- Low Oil Pressure
- Low Coolant Temperature
- Weak Battery Voltage
- Engine Sender Unit Failure
- Maintenance Interval Timer
- Low Fuel Level
- High Fuel Level (optional)
- High Coolant Temperature
- Battery Overvoltage
- Battery Charger Fail
- Engine kW Overload (three levels)
- Low Coolant Level
- Fuel Leak Detect

All alarms and pre-alarms can be enabled or disabled via the BESTCOMS*Plus*® PC software or the front panel. Additional custom alarms and pre-alarms are available upon request.

Generator Set Metering

- Generator parameters include voltage, current, real power (watts), apparent power (VA), and power factor. The view can be programmed to display up to 20 parameters using the scrolling and time delay feature.

- Engine parameters include oil pressure, coolant temperature, RPM, battery voltage, fuel level, engine runtime, and various SAE J1939 supported parameters.

Engine Control

- Cranking Control: Cycle or Continuous (Quantity and Duration fully programmable)
- Engine Cooldown: Smart Cooldown function saves time and fuel
- Successful Start Counter: Counts and records successful engine starts
- Timers:
  - Engine Cooldown Timer
  - Engine Maintenance Timer
  - Pre-Alarm Time Delays for Weak/Low Battery Voltage
  - Alarm Time Delay for Overspeed
  - Alarm Time Delay for Sender Failure
  - Arming Time Delays after Crank Disconnect:
    - Low Oil Pressure
    - High Coolant Temperature
  - Pre-Crank Delay
  - Continuous or Cycle Cranking Time Delay
  - Programmable Logic Timers

Event Recording

The MGC-1500 Series has an event recorder that provides a record of alarms, pre-alarms, engine starts, engine runtime loaded, engine runtime unloaded, last run date, and many other events that are all date and time stamped to help the user determine the cause and effect of issues related to the generator set. Contains up to 30 event records each retaining numerous occurrences in memory. Time, date, and engine hour detail are available for the most current 30 occurrences within each event record.

FUNCTIONS, continued:

Transfer Switch Control (Mains Failure) (optional)

The MGC-1500 Series has the ability to detect a mains failure via a single- or three-phase bus input. A mains failure is established when any one of the following conditions are met:

- Any phase of bus voltage falls below the dead bus threshold
- Any phase of bus voltage is unstable due to overvoltage or undervoltage
- Any phase of bus voltage is unstable due to overfrequency or underfrequency

When conditions are met, the MGC-1500 Series will start the generator set and, when ready, will send generator and mains breaker commands to apply power to the load from the generator set. The MGC-1500 Series implements open or closed breaker transitions to and from the mains. When the mains returns and is considered stable, the MGC-1500 Series will transfer the load back to the mains and stop the engine.

USB Port

The USB communication port can be used with BESTCOMS*Plus*® software to quickly configure a MGC-1500 Series with the desired settings or retrieve metering values and event log records.

Programmable Logic

The MGC-1500 Series offers a very powerful, yet easy-to-use, programmable logic scheme, BESTlogic™*Plus*, for custom programming of the various inputs, outputs, alarms, and pre-alarms. It allows these elements to be integrated into a complete logic scheme so that the user can meet even the most complex specification. The Programmable logic control includes the selection of logic gates and timers with drag-and-drop technology to make it fast and simple.

Remote Display Panel Annunciation (optional)

The MGC-1500 Series can communicate to a remote display panel, Model RDP-110. This requires only two wires to annunciate many of the alarms and pre-alarms required by NFPA-110 Level I and II. External power is required.

SAE J1939 Communications (optional)

SAE J1939 CANBus communications allows the MGC-1500 Series to communicate with the ECU to gather critical engine information like oil pressure, engine coolant temperature, RPM, battery voltage, and much more. By utilizing the ECU, the addition of analog engine senders is no longer required. This can save substantial money for the installer. It also eliminates any errors or discrepancies between the ECU data and the data displayed on the MGC-1500 Series that may be present due to analog sender inaccuracies or incompatibility. An additional benefit is access to the ECU's diagnostic troubleshooting codes (DTCs). The DTCs provide information about the engine's operating conditions and communicate these via SAE J1939 to the MGC-1500 Series, eliminating the need for hand-held service tools to diagnose simple engine issues.

SPECIFICATIONS

Operating Power

- Nominal: 12 or 24 VDC
- Range: 6 to 32 VDC
- Power Consumption:
  - Sleep Mode: 4.5 W
  - Normal Operational Mode: 6.5 W - Run mode, LCD heater off, three relays energized
  - Maximum Operational Mode: 14 W - Run mode, LCD heater on, seven relays energized
  - Battery Ride-Through: Withstands cranking ride-through down to 0 V for 50 ms (typical)

SPECIFICATIONS, continued:

Current Sensing (5 Amp CT Inputs)

- Continuous Rating: 0.1 to 5.0 Aac
- One Second Rating: 25 Aac
- Burden: 1 VA

Voltage Sensing

- Range: 12 to 576 V rms, line-to-line
- Frequency Range: 10 to 72 Hz
- Burden: 1 VA
- One Second Rating: 720 V rms

Contact Sensing/Input Contacts

- Contact sensing inputs include one emergency stop input and seven programmable inputs. The emergency stop input accepts normally closed, dry contacts. The remote emergency stop is limited to 75 ft. standard. Extended runs are available with an optional relay. All programmable inputs accept normally open, dry contacts. The factory may utilize up to three of these inputs.

Engine System Inputs

- Fuel Level Sensing Resistance Range: 5 to 250 Ω nominal
- Coolant Temperature Sensing Resistance Range: 5 to 2,750 Ω nominal
- Oil Pressure Sensing Resistance Range: 5 to 250 Ω nominal
- Engine Speed Sensing:
  - Magnetic Pickup or CANBus
    - Magnetic Pickup Voltage Range: 3 to 35 V peak (6 to 70 V peak to peak)
    - Magnetic Pickup Frequency Range: 32 to 10,000 Hz

Output Contacts

- (7) Total Outputs: (3) 5 A @ 28 VDC and (4) 2 A @ 28 VDC

- The factory utilizes the following on each generator set which can be reprogrammed as needed:
  - (3) 5 A @ 28 VDC for Pre-start, Start, and Run
  - (4) 2 A @ 28 VDC for general purpose

Metering

- Generator Voltage (rms)
  - Metering Range: 12 to 576 VAC (direct measurement), up to 9,999 VAC (with appropriate voltage transformer)
  - Accuracy: ±1% of programmed rated voltage or ±2 VAC (subject to accuracy of voltage transformer when used)
- Generator Current (rms)
  - Generator current is measured at the secondary windings of 5 A CTs.
  - Metering Range: 0 to 5,000 Aac
  - CT Primary Range: 1-5,000 Aac, in primary increments of 1 Aac
  - Accuracy: ±3% of programmed rated current or ±3 Aac (subject to accuracy of CTs)

SPECIFICATIONS, Metering, continued:

- Generator Frequency
  - Metering Range: 10 to 72 Hz
  - Accuracy: ±0.25% or 0.05 Hz
- Apparent Power
  - Indicates total kVA and individual line kVA (four-wire, line-to-neutral or three-wire, line-to-line).
  - Accuracy: ±5% of the full-scale indication or ±4 kVA
- Power Factor
  - Metering Range: 0.2 leading to 0.2 lagging
  - Accuracy: ±0.02
- Real Power
  - Indicates total kW and individual line kW (four-wire, line-to-neutral or three-wire, line-to-line)
  - Accuracy: ±5% of the full-scale indication or ±4 kW
- Oil Pressure
  - Metering Range: 0 to 150 psi or 0 to 1,034 kPa
  - Accuracy: ±3% of actual indication or ±2 psi or ±12 kPa (subject to accuracy of sender)
- Coolant Temperature
  - Metering Range: 0 °C to 204 °C (32 °F to 410 °F)
  - Accuracy: ±3% or actual indication or ±2° (subject to accuracy of sender)
- Fuel Level
  - Metering Range: 0 to 100%
  - Accuracy: ±3% (subject to accuracy of sender)
- Battery Voltage
  - Metering Range: 6 to 32 VDC
  - Accuracy: ±3% of actual indication or ±0.2 VDC
- Engine RPM
  - Metering Range: 0 to 4,500 rpm
  - Accuracy: ±2% of actual indication or ±2 rpm
- Engine Run Time
  - Engine run time is retained in non-volatile memory.
  - Metering Range: 0 to 99,999 h; Update Interval: 6 min
  - Accuracy: ±1% of actual indication or ±12 min
- Maintenance Timer
  - Maintenance timer indicates the time remaining until generator set service is due. Value is retained in non-volatile memory.
  - Metering Range: 0 to 5,000 h; Update Interval: 6 min
  - Accuracy: ±1% or actual indication or ±12 min

Generator Protection Functions

- Overvoltage (59) and Undervoltage (27)
  - Pickup Range: 70 to 576 VAC
  - Activation Delay Range: 0 to 30 s
- Overfrequency (81O) and Underfrequency (81U)
  - Pickup Range: 45 to 66 Hz
  - Pickup Increment: 0.1 Hz
  - Activation Delay Range: 0 to 30 s

SPECIFICATIONS, Generator Protection Functions, continued:

- Phase Imbalance (47)
  - Pickup Range: 5 to 100 VAC
  - Pickup Increment: 1 VAC
  - Activation Delay Range: 0 to 30 s
  - Activation Delay Increment: 0.1 s
- Overcurrent (51)
  - Pickup Range: 0.18 to 1.18 Aac (1 A current sensing)
  - Time Dial Range: 0 to 7,200 s (fixed time curve)

Environmental

- Temperature
  - Operating: -40 °C to 70 °C (-40 °F to 158 °F)
  - Storage: -40 °C to 85 °C (-40 °F to 185 °F)
- Humidity: IEC 68-2-38
- Salt Fog: ASTM B 17-73, IEC 68-2-11 (tested while operational)
- Ingress Protection: IEC IP54 for front panel
- Shock: 15 G in three perpendicular planes
- Vibration: 5 to 29 to 5 Hz at 1.5 G peak for 5 min
  29 to 52 to 29 Hz at 0.036" DECS-A for 2.5 min
  52 to 500 to 52 Hz at 5 G peak for 7.5 min
  - Swept over the above ranges for 12 sweeps in each of three mutually perpendicular planes with each 15-minute sweep.

Agency Approvals

- UL/CSA Approvals: "cURus" approved to UL 6200 and CSA C22.2 No.14
- NFPA Compliance: Complies with NFPA Standard 110, Standard for Emergency and Standby Power
- CE Marked: Complies with applicable EC Directives

ADDITIONAL SPECIFICATIONS

Battery Backup for Real Time Clock

The MGC-1500 Series provides a real-time clock with capacitor backup that is capable of operating the clock for up to 24 hours after power is removed from the controller. As the capacitor nears depletion, an internal backup battery takes over and maintains timekeeping. The battery will maintain the clock for approximately 10 years, depending on conditions. The battery is not replaceable. The clock is used by the events recorder function to timestamp events, and the exercise timer is used to start and stop the generator set when the exercise feature is utilized.

Breaker Management

The MGC-1500 Series is capable of controlling the generator breaker and the mains breaker. The status of the breakers is determined by using BESTlogic™*Plus* programmable logic to set up the GENBRK and MAINSBRK logic blocks. These logic blocks have outputs that can be configured to energize an output contact and control a breaker, as well as inputs for breaker control and status. The MGC-1500 Series will attempt to close a breaker only after verifying that it can be closed. If the breaker cannot be closed, the close request will be ignored. Only one breaker can be closed at a time. Synchronization is required before closing the breaker to a live bus. Closure to a dead bus can be performed after meeting dead bus threshold and timing requirements set by the user.

OPTIONAL ACCESSORIES

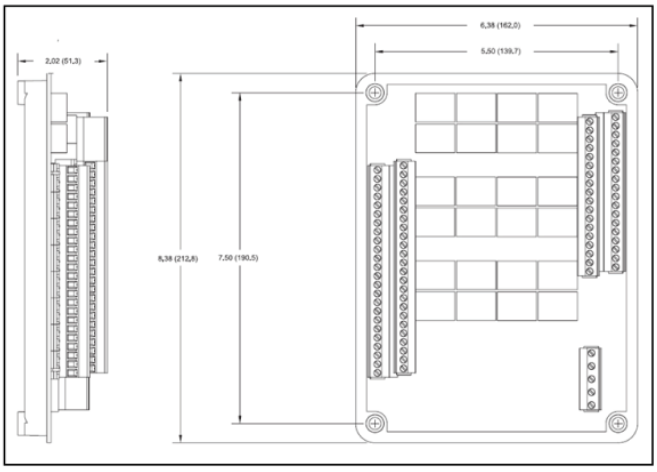
Contact Expansion Module 2020 (CEM-2020)

The CEM-2020 is a remote device that provides additional MGC-1500 Series contact inputs and outputs, giving the user flexibility to use the same model MGC-1500 Series generator set controller for simple functions or more complicated applications that require contact functionality or duplication of contacts for remote annunciation. Its features include:

- 10 Contact Inputs: The CEM-2020 provides 10 programmable contact inputs with the same functionality as the contact inputs on the MGC-1500 Series.
- 24 Contact Outputs: The CEM-2020 provides 24 Form C programmable output contacts with the same functionality as the output contacts on the MGC-1500 Series. The output ratings of the Form C contacts are:

Output No.	Rating (Cont.)	Additional Information
5–16	1 A @ 30 VDC	This is a gold flash contact for low current circuits.
17–28	4 A @ 30 VDC	

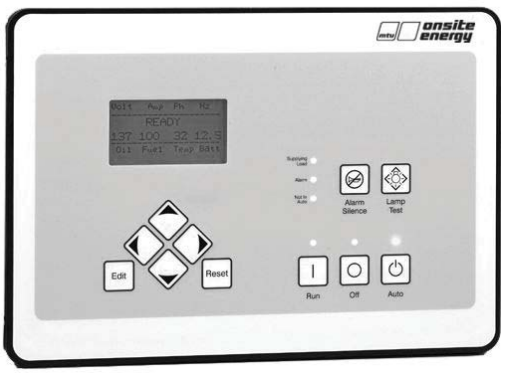
- Communications via CANBus: The CEM-2020 communicates to the MGC-1500 Series via SAE J1939 CANBus communications and allows the user to program the functionality of these inputs and outputs in the BESTCOMS*Plus*® software.
- The user can add labels for the inputs and outputs that appear in BESTCOMS®*Plus*, on the front panel, and in programmable logic. All the functionality can be assigned to these inputs and outputs as if they were an integrated part of the MGC-1500 Series. The CEM-2020 module has all of the environmental ratings of the MGC-1500 Series, including a model for UL Class1 Div2 applications. The CEM-2020 terminals accept a maximum wire size of 12 AWG, while the chassis ground requires 12 AWG wire. Flexibility is one of the benefits of the MGC-1500 Series, and this add-on module enhances that benefit even further.



CEM-2020 Overall Dimensions

100 Power Drive / Mankato, MN 56001 / 800-325-5450

DIGITAL GENERATOR SET CONTROLLER
MGC-2000 Series Data Sheet



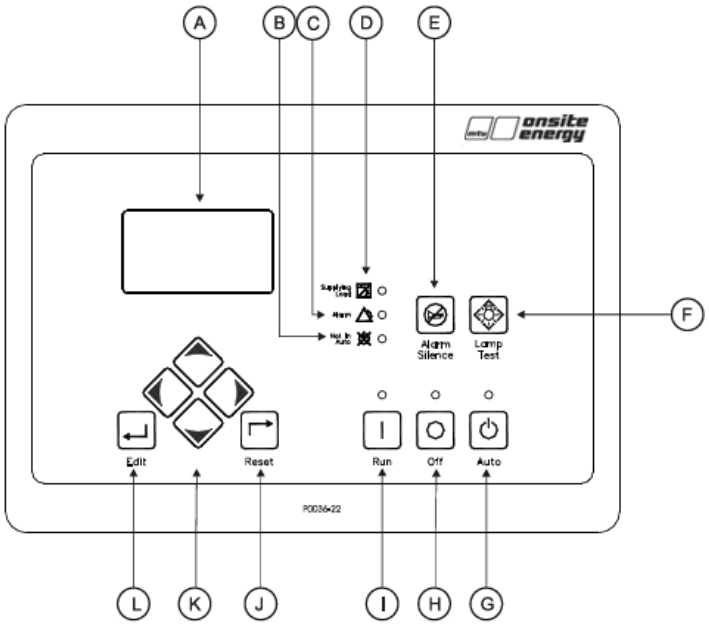
MTU Onsite Energy Generator Set Controllers (MGC Series) are highly advanced integrated digital generator set control systems. The MGC-2000 Series is perfectly focused, combining rugged construction and microprocessor technology to offer a product that will hold up to almost any environment and is flexible enough to meet your application's needs. The MGC-2000 Series provides generator set control, transfer switch control, metering, protection, and programmable logic in a simple, easy-to-use, reliable, rugged, and cost effective package.

PRODUCT HIGHLIGHTS

- Three-phase generator metering
- Engine metering
- Generator set control
- Engine protection
- Generator protection
- Var sharing over Ethernet
- BESTCOMS*Plus*®
  - Windows®-based software for optional remote operation (Software can be downloaded at www.mtuonsiteenergy.com)
  - Programming and setup software
  - Intuitive and powerful
  - Remote control and monitoring
  - Programmable logic
  - USB communications
- Automatic transfer switch compatible
- Exercise timer
- Suitable for use on rental generator sets with high/low line sensing, single or three phase sensing override, and wye/delta/grounded delta
- SAE J1939 Engine Control Unit (ECU) communications
- Automatic generator configuration detection
- Selection of integrating reset of instantaneous reset characteristics for overcurrent protection
- Multilingual capability
- Remote annunciation to RDP-110
- Extremely rugged, fully potted design
- 16 programmable contact inputs, 12 programmable contact outputs
- ModBus™ communications with RS-485 (optional)
- UL recognized, CSA certified, CE approved
- Highly Accelerated Life Tests (HALT) tested
- IP 54 front panel rating with integrated gasket
- NFPA-110 compatible
- Microprocessor based
- Complete system metering
- Expandable to meet customer needs

*Please refer to the MGC Series Controller Comparison Data Sheet for available configured options.

DIAGRAM



Front Panel Descriptions

- Liquid Crystal Display (A)
- Not in Auto Indicator (B)
- Alarm Indicator (C)
- Supplying Load Indicator (D)
- Alarm Silence Pushbutton (E)
- Lamp Test Pushbutton (F)
- Auto Pushbutton and Mode Indicator (G)
- Off Pushbutton and Mode Indicator (H)
- Run Pushbutton and Mode Indicator (I)
- Reset Pushbutton (J)
- Arrow Pushbuttons (K)
- Edit Pushbutton (L)

FUNCTIONS

Generator Set Protection

Generator ANSI Codes

- Overvoltage (59)
- Overfrequency (81O)
- Reverse Power (32)
- Overcurrent (51)
- Vector Shift (78) (optional)
- Undervoltage (27)
- Underfrequency (81U)
- Loss of Excitation (40Q)
- Phase Imbalance (47)
- Rate of Change of Frequency (ROCOF) (81R) (optional)

All generator set protection features are programmable as alarms, pre-alarms, status, or not used.

Alarms (Shutdowns)

- Low Oil Pressure
- High Coolant Temperature
- Low Coolant Level
- Overspeed
- Overcrank
- Engine Sender Unit Failure
- Fuel Leak/Fuel Sender Failure
- Emergency Stop
- Battery Charger Failure
- Critical Low Fuel Level (optional)

FUNCTIONS, Generator Set Protection, continued:

Pre-Alarms (Warnings)

- Low Oil Pressure
- High Coolant Temperature
- Low Coolant Temperature
- Battery Overvoltage
- Weak Battery Voltage
- AEM Comms Failure
- Breaker Open Failure
- CEM Comms Failure
- Reverse Rotation
- Engine kW Overload
- Maintenance Interval
- Low Coolant Level
- Low Fuel Level
- High Fuel Level
- Active DTC
- Breaker Close Failure
- Low Battery Voltage
- ECU Coms Fail
- Checksum Failure
- Loss of Sensing

All alarms and pre-alarms can be enabled or disabled via the BESTCOMS*Plus*® PC software or the front panel. Additional custom alarms and pre-alarms are available upon request.

Generator Set Metering

- Generator parameters include voltage, current, real power (watts), apparent power (VA), and power factor (PF).
- Engine parameters include oil pressure, coolant temperature, battery voltage, speed, fuel level, engine load, coolant level (from ECU), ECU specific parameters, and run-time statistics.

Engine Control

- Cranking Control: Cycle or Continuous (Quantity and Duration fully programmable)
- Engine Cooldown: Smart Cooldown function saves fuel and engine life
- Successful Start Counter: Counts and records successful engine starts
- Timers:
  - Engine Cooldown Timer
  - Engine Maintenance Timer
  - Pre-Alarm Time Delays for Weak/Low Battery Voltage
  - Alarm Time Delay for Overspeed
  - Alarm Time Delay for Sender Failure
  - Arming Time Delays after Crank Disconnect:
    - Low Oil Pressure
    - High Coolant Temperature
  - Pre-Crank Delay
  - Continuous or Cycle Cranking Time Delay
  - Programmable Logic Timers

FUNCTIONS, continued:

Event Recording

The MGC-2000 Series has an event recorder that provides a record of alarms, pre-alarms, engine starts, engine runtime loaded, engine runtime unloaded, last run date, and many other events that are all date and time stamped to help the user determine the cause and effect of issues related to the generator set. Contains 30 event records each retaining up to 99 occurrences in memory. Time, date, and engine hour detail is available for the most current 30 occurrences within each event record.

Transfer Switch Control (Mains Failure)

The MGC-2000 Series has the ability to detect a mains failure via a single- or three-phase bus input. A mains failure is established when any one of the following conditions are met:

- Any phase of bus voltage falls below the dead bus threshold
- Any phase of bus voltage is unstable due to overvoltage or undervoltage
- Any phase of bus voltage is unstable due to overfrequency or underfrequency

When conditions are met, the MGC-2000 Series will start the generator set and, when ready, will send generator and mains breaker commands to apply power to the load from the generator set. The MGC-2000 Series implements open or closed breaker transitions to and from the mains. When the mains returns and is considered stable, the MGC-2000 Series will transfer the load back to the mains and stop the engine.

ModBus™ RTU

When utilized, the user can send and receive information from the MGC-2000 Series via the RS-485 communications port and ModBus™ RTU protocol. This feature allows the MGC-2000 Series controlled generator set to be fully integrated into the building management system. Please see the *MGC-2000 Series Controller Manual* for the ModBus™ register list.

Programmable Logic

The MGC-2000 Series offers a very powerful, yet easy-to-use, programmable logic scheme, BESTlogic™*Plus*, for custom programming of the various inputs, outputs, alarms, and pre-alarms. It allows these elements to be integrated into a complete logic scheme so that the user can meet even the most complex specification. The programmable logic control includes the selection of logic gates and timers, with drag-and-drop technology to make it fast and simple.

Remote Display Panel Annunciation

The MGC-2000 Series can communicate to a remote display panel, Model RDP-110. This requires only two wires to annunciate all of the alarms and pre-alarms required by NFPA-110 Level I and II. External power is required.

External Modem Interface

The MGC-2020 and MGC-2050 controllers include an external modem interface permitting an external modem to be connected to the MGC controller via RS-232. A dial-out modem enables remote control, monitoring, and setting of the MGC-2000 Series. When an alarm or pre-alarm condition occurs, the MGC-2000 Series can dial up to four telephone numbers in sequence until an answer is received and the condition is annunciated.

Note: Only an external modem interface is provided. The external modem must be provided by a third party. The external modem is only available on the MGC-2020 and MGC-2050 controller configurations of the MGC-2000 Series.

FUNCTIONS, continued:

SAE J1939 Communications

SAE J1939 CANBus communications allows the MGC-2000 Series to communicate with the ECU to gather critical engine information like oil pressure, engine coolant temperature, RPM, battery voltage, and much more. By utilizing the ECU, the addition of analog engine senders is no longer required. This can save substantial money for the installer. It also eliminates any errors or discrepancies between the ECU data and the data displayed on the MGC-2000 Series that may be present due to analog sender inaccuracies or incompatibility. An additional benefit is access to the ECU's diagnostic troubleshooting codes (DTCs). The DTCs provide information about the engine's operating conditions and communicates these, via SAE J1939, to the MGC-2000 Series, eliminating the need for hand-held service tools to diagnose simple engine issues.

SPECIFICATIONS

Operating Power

- Nominal: 12 or 24 VDC
- Range: 6 to 32 VDC
- Power Consumption:
  - Sleep Mode: 5W with all relays non-energized
  - Normal Operational Mode: 7.9W - Run mode, LCD heater off, six relays energized
- Battery Ride-Through: Withstands cranking ride-through down to 0 V for 50 ms, starting at 10 VDC.

Current Sensing (5 A CT Inputs)

- Continuous Rating: 0.1 to 5.0 Aac
- One Second Rating: 10 Aac
- Burden: 1 VA

Voltage Sensing

- Range: 12 to 576 V rms, line-to-line
- Frequency Range: 10 to 72 Hz
- Burden: 1 VA
- One Second Rating: 720 V rms

Input Contacts

Contact sensing inputs include one emergency stop input and 16 programmable inputs. The emergency stop input accepts normally closed, dry contacts. The remote emergency stop is limited to 75 ft. standard. Extended runs are available with optional relay. All programmable inputs accept normally open, dry contacts. The factory utilizes up to three of these inputs.

Engine System Inputs

- Fuel Level Sensing Resistance Range: 0 to 250 Ω nominal
- Coolant Temperature Sensing Resistance Range: 10 to 2,750 Ω nominal
- Oil Pressure Sensing Resistance Range: 0 to 250 Ω nominal
- Engine Speed Sensing:
  - Magnetic Pickup or CANBus
    - Magnetic Pickup Voltage Range: 3 to 35 V peak (6 to 70 V peak to peak)
    - Magnetic Pickup Frequency Range: 32 to 10,000 Hz
  - Generator Frequency (alternate or redundant)
    - Voltage Range: 12 to 576 V rms

SPECIFICATIONS, continued:

Output Contacts

- (15) Total Programmable Outputs: (3) 30 A @ 28 VDC and (12) 2 A @ 30 VDC
- The factory utilizes the following on each generator set which can be reprogrammed as needed:
  - (3) 30 A @ 28 VDC for Pre-start, Start, and Run
  - (12) 2 A @ 30 VDC for General Purpose

Metering

- Generator and Bus Voltage (rms)
  - Metering Range: 0 to 576 VAC (direct measurement); up to 9,999 VAC (with appropriate voltage transformer)
  - Accuracy: ±1% of programmed rated voltage of ±2 VAC (subject to accuracy of voltage transformer when used)
- Generator Current (rms)
  - Generator current is measured at the secondary windings of 5 A CTs.
  - Metering Range: 0 to 5,000 Aac
  - CT Primary Range: 1 to 5,000 Aac, in primary increments of 1 Aac
  - Accuracy: ±1% of programmed rated current or ±2 Aac (subject to accuracy of CTs)
- Generator and Bus Frequency
  - Metering Range: 10 to 72 Hz
  - Accuracy: ±0.25% or 0.05 Hz
- Apparent Power
  - Indicates total kVA and individual line kVA (four-wire, line-to-neutral or three-wire, line-to-line).
  - Accuracy: ±3% or the full-scale indication or ±2 kVA
- Power Factor
  - Metering Range: 0.2 leading to 0.2 lagging
  - Accuracy: ±0.02
- Real Power
  - Indicates total kW and individual line kW (four-wire, line-to-neutral or three-wire, line-to-line)
  - Accuracy: ±3% of the full-scale indication or ±2 kW
- Oil Pressure
  - Metering Range: 0 to 150 psi or 0 to 1,034 kPa
  - Accuracy: ±3% of actual indication or ±2 psi or ±12 kPa (subject to accuracy of sender)
- Coolant Temperature
  - Metering Range: 0 °C to 204 °C (32 °F to 410 °F)
  - Accuracy: ±3% of actual indication or ±2° (subject to accuracy of sender)
- Fuel Level
  - Metering Range: 0 to 100%
  - Accuracy: ±2% (subject to accuracy of sender)
- Battery Voltage
  - Metering Range: 6 to 32 VDC
  - Accuracy: ±3% of actual indication or ±0.2 VDC
- Engine RPM
  - Metering Range: 0 to 4,500 rpm
  - Accuracy: ±2% of actual indication or ±2 rpm

SPECIFICATIONS, Metering, continued:

- Engine Run Time
  - Engine run time is retained in non-volatile memory.
  - Metering Range: 0 to 99,999 h; Update Interval: 6 min
  - Accuracy: ±1% of actual indication or ±12 min
- Maintenance Timer
  - Maintenance timer indicates the time remaining until generator set service is due. Value is retained in non-volatile memory.
  - Metering Range: 0 to 5,000 h; Update Interval: 6 min
  - Accuracy: ±1% of actual indication or ±12 min

Generator Protection Functions

- Overvoltage (59) and Undervoltage (27)
  - Pickup Range: 70 to 576 VAC
  - Activation Delay Range: 0 to 30 s
- Overfrequency (81O) and Underfrequency (81U)
  - Pickup Range: 45 to 66 Hz
  - Pickup Increment: 0.1 Hz
  - Activation Delay Range: 0 to 30 s
- Reverse Power (32)
  - Pickup Range: –50 to 5%
  - Pickup Increment: 0.1%
  - Hysteresis Range: 1 to 10%
  - Hysteresis Increment: 0.1%
  - Activation Delay Range: 0 to 30 s
  - Activation Delay Increment: 0.1 s
- Loss of Excitation (40Q)
  - Pickup Range: –150 to 0%
  - Pickup Increment: 0.1%
  - Hysteresis Range: 1 to 10%
  - Hysteresis Increment: 0.1%
  - Activation Delay Range: 0 to 30 s
  - Activation Delay Increment: 0.1 s
- Overcurrent (51)
  - Pickup Range: 0.18 to 1.18 Aac (1 A current sensing)
  - Time Dial Range: 0
- Phase Imbalance (47)
  - Pickup Range: 5 to 100 VAC
  - Pickup Increment: 1 VAC
  - Activation Delay Range: 0 to 30 s
  - Activation Delay Increment: 0.1 s
- ROCOF (81R) (optional)
  - Pickup Range: 0.2 to 10 Hz/s
  - Pickup Increment: 0.1 Hz/s
  - Activation Delay Range: 0 to 10,000 ms
  - Activation Delay Increment: 1 ms
  - Accuracy: 0.2 Hz/s

SPECIFICATIONS, Generator Protection Functions, continued:

- Vector Shift (78) (optional)
  - Pickup Range: 2 to 90°
  - Pickup Increment: 1°
  - Accuracy: ±1°

Environmental

- Temperature
  - Operating: -40 °C to 70 °C (-40 °F to 158 °F)
  - Storage: -40 °C to 85 °C (-40 °F to 185 °F)
- Humidity: IEC 68-2-38
- Salt Fog: ASTM B 17-73, IEC 68-2-11 (tested while operational)
- Ingress Protection: IEC IP54 for front panel
- Shock: 15 G in three perpendicular planes
- Vibration: 5 to 29 to 5 Hz at 1.5 G peak for 5 min.
  29 to 52 to 29 Hz at 0.036" DECS-A for 2.5 min.
  52 to 500 to 52 Hz at 5 G peak for 7.5 min.
  - Swept over the above ranges for 12 sweeps in each of three mutually perpendicular planes with each 15 minute sweep.

Agency Approvals

- UL/CSA Approvals: "cURus" approved to UL 6200 and CSA C22.2 No.14
- NFPA Compliance: Complies with NFPA Standard 110, Standard for Emergency and Standby Power
- CE Marked: Complies with applicable EC Directives

ADDITIONAL SPECIFICATIONS

Battery Backup for Real Time Clock

The MGC-2000 Series provides a real-time clock with an internal backup battery. The battery will maintain timekeeping for approximately 10 years (depending on conditions) after power is removed from the controller. The clock is used by the event recorder and sequence of events functions to time-stamp events, and the exercise timer is used to start and stop the generator set when the exercise feature is utilized.

Breaker Management

The MGC-2000 Series is capable of controlling the generator breaker and the mains breaker. The status of the breakers is determined by using BESTlogic™*Plus* programmable logic to set up the GENBRK and MAINSBRK logic blocks. These logic blocks have outputs that can be configured to energize an output contact and control a breaker, as well as inputs for breaker control and status. The MGC-2000 Series will attempt to close a breaker only after verifying that it can be closed. If the breaker cannot be closed, the close request will be ignored. Only one breaker can be closed at a time. Synchronization is required before closing the breaker to a live bus. Closure to a dead bus can be performed after meeting dead bus threshold and timing requirements set by the user.

OPTIONAL ACCESSORIES

Analog Extension Module 2020 (AEM–2020)

The optional AEM-2020 is a remote auxiliary device that provides additional MGC-2000 Series analog inputs and outputs. Its features include:

- Eight Analog Inputs: The AEM-2020 provides eight analog inputs that are user-selectable for 4 to 20 mA or 0 to 10 VDC. Each analog input has under/over thresholds that can be configured as status only, alarm, or pre-alarm. When enabled, an out of range alarm alerts the user of an open or damaged analog input wire. The label text of each analog input is customizable.

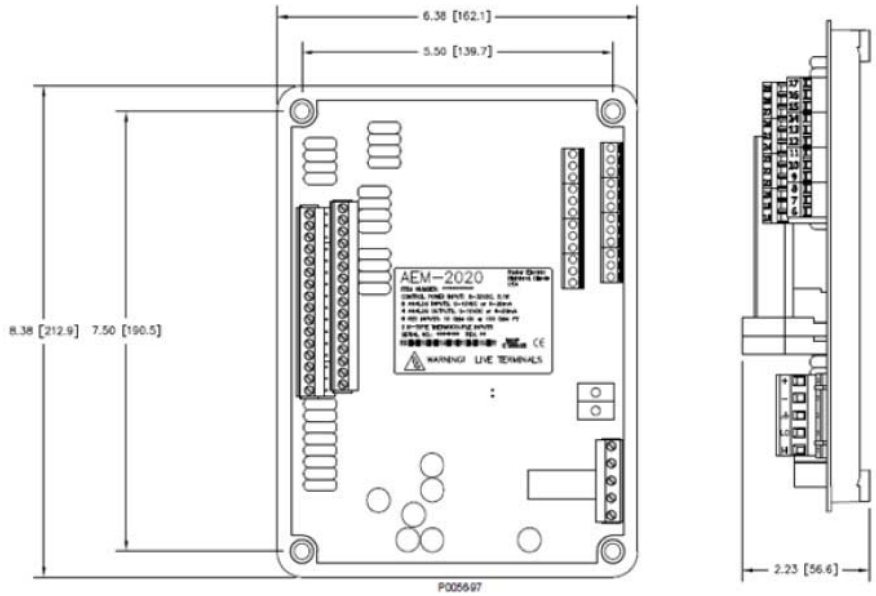
OPTIONAL ACCESSORIES, AEM-2020, continued:

- Eight Resistance Temperature Detector (RTD) Inputs: The AEM-2020 provides eight user-configurable RTD inputs for monitoring generator set temperature. Each RTD input can be configured as status only, alarm, or pre-alarm to protect against high or low temperature conditions. When enabled, an out-of-range alarm alerts the user of an open or damaged RTD input wire. The label text of each RTD input is customizable.

- Two Thermocouple Inputs: The AEM-2020 provides two thermocouple inputs for monitoring generator set temperature. Each thermocouple input can be configured as status only, alarm, or pre-alarm to protect against high or low temperature conditions. When enabled, an out-of-range alarm alerts the user of an open or damaged thermocouple input wire. The label text of each thermocouple input is customizable.

- Four Analog Outputs: The AEM-2020 provides four analog outputs that are user-selectable for 4 to 20 mA or 0 to 10 VDC. A wide selection of parameters including oil pressure, fuel level, generator voltage, and bus voltage can be configured as analog outputs. Refer to *Section 4, BESTCOMSPlus® Software* of the *MGC-2000 Series Controller Manual*, for a full list of parameter selections.

- Communications via CANBus: A Control Area Network (CAN) is a standard interface that enables communication between the AEM-2020 and the MGC-2000 Series.



Input and Output Terminals

Contact Expansion Module 2020 (CEM-2020)

The CEM-2020 is a remote device that provides additional MGC-2000 Series contact inputs and outputs, giving the user flexibility to use the same model MGC-2000 Series generator set controller for simple or complicated applications that require contact functionality or duplication of contacts for remote annunciation. Its features include:

- 10 Contact Inputs: The CEM-2020 provides 10 programmable contact inputs with the same functionality as the contact inputs on the MGC-2000 Series.

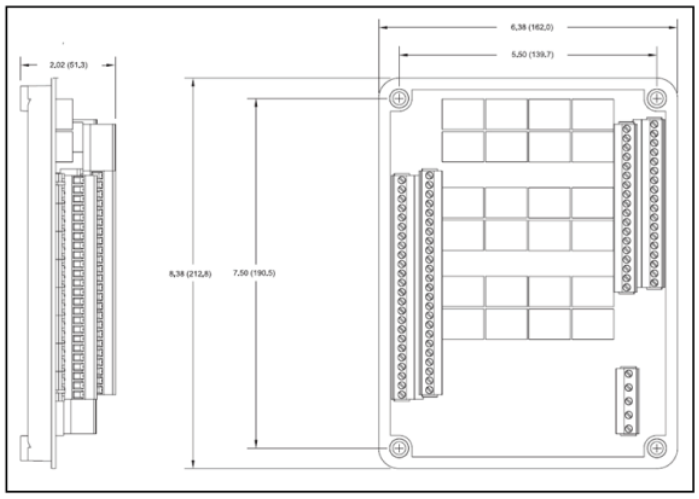
- 24 Output Contacts: The CEM-2020 provides 24 Form C programmable output contacts with the same functionality as the output contacts on the MGC-2000 Series. The output ratings of the Form C contacts are:

OPTIONAL ACCESSORIES, CEM-2020, continued:

Output No.	Rating (Cont.)	Additional Information
13–24	1 A @ 30 VDC	This is a gold flash contact for low current circuits.
25–36	4 A @ 30 VDC	

- Communications via CANBus: The CEM-2020 communicates to the MGC-2000 Series via SAE J1939 CANBus communications and allows the user to program the functionality of these inputs and outputs in the BESTCOMS*Plus*® software.

- The user can add labels for the inputs and outputs that appear in BESTCOMS*Plus*®, show up on the front panel, and in programmable logic. All the functionality can be assigned to these inputs and outputs as if they were an integrated part of the MGC-2000 Series. The CEM-2020 module has all of the environmental ratings of the MGC-2000 Series, including a model for UL Class1 Div2 applications. The CEM-2020 terminals accept a maximum wire size of 12 AWG, while the chassis ground requires 12 AWG wire. Flexibility is one of the benefits of the MGC-2000 Series, and this add-on module enhances that benefit even further.



CEM-2020 Overall Dimensions

DIGITAL GENERATOR SET CONTROLLER
MGC-3000 Series Data Sheet

MTU Onsite Energy Generator Set Controllers (MGC Series) are rugged, reliable, all-in-one digital generator set control and load share systems. The MGC-3000 Series is designed to be a high end controller that is well suited for mains fail, paralleled units, and systems with multiple buses. The MGC-3000 Series has all of the necessary items for complete generator set control, protection, and metering with a massive, but easy-to-use, programmable logic system.

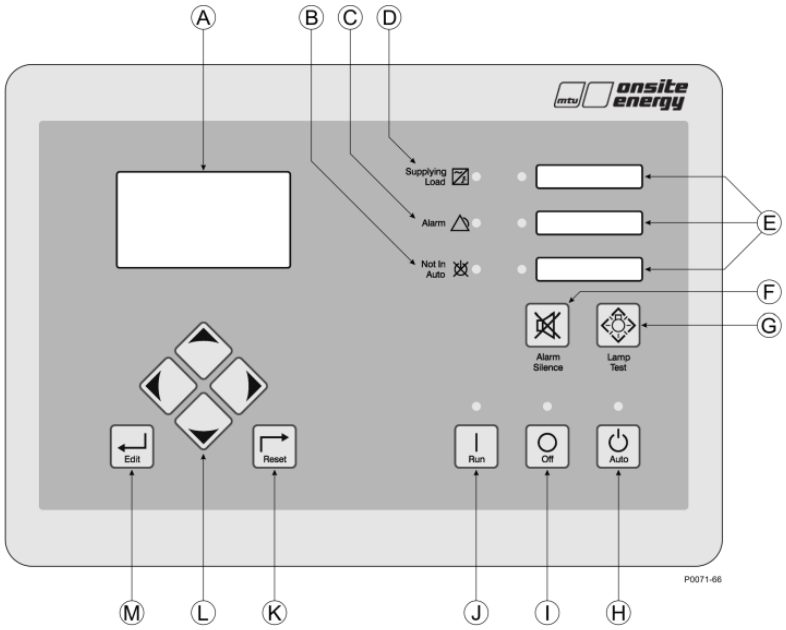
PRODUCT HIGHLIGHTS

- Three-phase generator metering
- Up to two buses with three-phase voltage metering
- Three dedicated generator CTs with up to four auxiliary CTs
- Engine metering
- Generator set control
- Generator protection
- Residual current - Equipment Ground Fault Protection (EGFP) certified to UL 1053
- BESTCOMS*Plus*®
  - Windows®-based software for optional remote operation (Software can be downloaded at www.mtuonsiteenergy.com)
  - Programming and setup software
  - Intuitive and powerful
  - Remote control and monitoring
  - Programmable logic
  - USB communications
- Automatic transfer switch compatible
- Resistor sender inputs for oil pressure and coolant pressure (option for analog senders available)
- Dual CAN bus ports [one for each SAE J1939 Engine Control Unit (ECU) and expansion modules]
- Dual Ethernet ports
- Load sharing capabilities of kW and kVARs over Ethernet
- Load share line compatibility (0-10 VDC)
- Zero power transfer capabilities
- Two analog inputs
- Governor and AVR bias outputs (reprogrammable to general analog outputs)
- 16 programmable contact inputs, 12 programmable contact outputs
- Three programmable LEDs for customized annunciation
- Connects to up to four AEM-2020s and four CEM-2020s
- Configurable protection with up to 371 different parameters
- Configurable elements for customizable alarms
- Real time analysis feature
- UL recognized, CSA certified, CE approved
- Multilingual capability
- Remote annunciation with RDP-110
- NFPA-110 compatible
- Microprocessor based
- Expandable to meet customer needs
- Optional accessories for Ethernet communication

*Please refer to the MGC Series Controller Comparison Data Sheet for available configured options.

DIGITAL GENERATOR SET CONTROLLER
MGC-3000 Series Data Sheet

DIAGRAM



Front Panel Descriptions

- Liquid Crystal Display (A)
- Not in Auto Indicator (B)
- Alarm Indicator (C)
- Supplying Load Indicator (D)
- Programmable Indicators (E)
- Alarm Silence Pushbutton (F)
- Lamp Test Pushbutton (G)
- Auto Pushbutton and Mode Indicator (H)
- Off Pushbutton and Mode Indicator (I)
- Run Pushbutton and Mode Indicator (J)
- Reset Pushbutton (K)
- Arrow Pushbuttons (L)
- Edit Pushbutton (M)

FUNCTIONS

Generator Set Protection

Generator ANSI Codes

- Overvoltage (59)
- Overfrequency (81O)
- Reverse and Forward Power (32)
- Phase Voltage Imbalance (47)
- Vector Shift (78)
- Undervoltage (27)
- Underfrequency (81U)
- Loss of Excitation (40Q)
- Overcurrent (51)
- Rate of Change of Frequency (81R)

Note: All generator set protection features are programmable as alarms, pre-alarms, status, or not used.

Residual Current - Equipment Ground Fault Protection (EGFP)

The MGC-3000 Series controller offers residual current (ground-strap) equipment ground fault protection when utilized with a ground current transformer and a shunt trip equipped service disconnect (if tripping is required). The main bonding jumper that connects the equipment ground bus to the generator neutral passes through the center of the ground current transformer to allow for detection of ground fault currents. The MGC-3000 series controller may be configured for either ground fault indication only (GFI) or ground fault indication and trip (GFIT).

FUNCTIONS, Generator Set Protection, continued:

Alarms (Shutdowns)

- Low Oil Pressure
- High Coolant Temperature
- Low Coolant Level
- Overspeed
- Overcrank
- Engine Sender Unit Failure
- Fuel Leak/Fuel Sender Failure
- Emergency Stop
- Battery Charger Failure
- Critical Low Fuel Level (optional)

Pre-Alarms (Warnings)

- Low Oil Pressure
- High Coolant Temperature
- Low Coolant Temperature
- Battery Overvoltage
- Weak Battery
- Battery Charger Failure
- Engine Sender Unit Failure
- AEM1 through AEM4 Comms Failure
- Breaker Open Failure
- CEM1 and CEM4 Comms Failure
- Generator Reverse Rotation
- ID Missing
- Intergenset Communication Failure
- Rated Data and Per Unit Values
- Engine kW Overload (three levels)
- Maintenance Interval Timer
- Low Coolant Level
- Low Fuel Level
- Fuel Leak Detect
- High Fuel Level (optional)
- Active Diagnostic Trouble Codes (DTC)
- Breaker Close Failure
- Bus1 and Bus 2 Reverse Rotation
- Ethernet 1 and Ethernet 2 Link Lost
- High Battery Voltage
- ID Repeat
- Low Battery Voltage
- Synchronizer Failure

All alarms and pre-alarms can be enabled or disabled via the BESTCOMS*Plus*® PC software or the front panel. Additional custom alarms and pre-alarms are available upon request.

Generator and Bus Protection and Metering

- Multifunction protection guards against overvoltage, undervoltage, excessive forward and reverse power, underfrequency, and overfrequency. Overcurrent, phase imbalance, and loss of mains are available as options. Each protection function has an adjustable pickup and time delay setting. 16 inverse time curves, in addition to user-programmable curves, enable the MGC-3000 Series to offer overcurrent protection in a variety of applications. Each protective element can be assigned to the generator, bus 1, or bus 2.

- Metered generator and bus parameters include voltage, current, real power (watts), apparent power (VA), and power factor (PF).

Engine Protection and Metering

- Engine protection features include oil pressure and coolant temperature monitoring, overcrank protection, ECU-specific protection elements, and diagnostic reporting.

- Metered engine parameters include oil pressure, coolant pressure, battery voltage, speed, fuel level, engine load, coolant level (from ECU), ECU-specific parameters, and run-time statistics.

FUNCTIONS, continued:

Engine Control

- Cranking Control: Cycle or Continuous (Quantity and Duration fully programmable)
- Engine Cooldown: Smart Cooldown function saves fuel and engine life.
- Successful Start Counter: Counts and records successful engine starts
- Timers:
  - Engine Cooldown Timer
  - Engine Maintenance Timer
  - Pre-Alarm Time Delays for Weak/Low Battery Voltage
  - Alarm Time Delay for Overspeed
  - Alarm Time Delay for Sender Failure
  - Arming Time Delays after Crank Disconnect:
    - Low Oil Pressure
    - High Coolant Temperature
  - Pre-Crank Delay
  - Continuous or Cycle Cranking Time Delay
  - Programmable Logic Timers

Load Sharing

The MGC-3000 Series provides analog outputs to the power system in the form of analog bias signals to the voltage regulator and speed governor. When the generator breaker is closed and load sharing is enabled, the MGC-3000 Series shares the real power load proportionally with other generators in the system. Load sharing can be implemented on the Analog Load Share Line or through Ethernet communications. Reactive power (kVAR) sharing is accomplished through Ethernet communications.

Event Recording

A history of system events are logged in non-volatile memory. The MGC-3000 Series retains records for 128 unique types of events. Each record tracks the number of times that an event has occurred and records a time stamp of the first and last occurrences.

A Sequence of Events (SER) log is also available. This log tracks the internal and external status of the MGC-3000 Series. Events are scanned at five millisecond intervals with 1,023 events stored per record. All changes of state that occur during each scan are time- and date-stamped. SER reports are available through BESTCOMS*Plus*®. Over 1,000 records can be retained in non-volatile memory. When the SER memory becomes full, the oldest record is replaced by the latest one acquired.

Transfer Switch Control (Mains Failure)

The MGC-3000 Series has the ability to detect a mains failure via a single- or three-phase bus input. A mains failure is established when any one of the following conditions are met:

- Any phase of bus voltage falls below the dead bus threshold
- Any phase of bus voltage is unstable due to overvoltage or undervoltage
- Any phase of bus voltage is unstable due to overfrequency or underfrequency

When conditions are met, the MGC-3000 Series will start the generator set and, when ready, will send generator and mains breaker commands to apply power to the load from the generator set. The MGC-3000 Series implements open or closed breaker transitions to and from the mains. When the mains returns and is considered stable, the MGC-3000 Series will transfer the load back to the mains and stop the engine. During closed breaker transitions, the Auto Synchronizer can synchronize the generator to the mains before transferring the load from generator power to utility power.

FUNCTIONS, continued:

ModBus™ RTU

MGC-3000 Series controllers can be monitored and controlled via a polled network using the ModBus™ protocol. The RS-485 port supports a user-selectable baud rate of 1,200, 2,400, 4,800, 9,600, 19,200, 38,400, 57,600, or 115,200. Seven or eight data bits per character can be selected. Odd, even, or no parity is supported. One or two stop bits are selectable. Please see the *MGC-3000 Series Controller Manual* for the ModBus™ register list.

Ethernet

Ethernet ports provide communications between the MGC-3000 Series and a PC via BESTCOMS*Plus*® or other MGC-3000 Series controller(s) in a network. An Ethernet connection to a PC running BESTCOMS*Plus*® provides remote metering, setting, annunciation, and control of the MGC-3000 Series. Ethernet communication between MGC-3000 Series controller(s) allows for generator sequencing on an islanded system.

MGC-3000 Series controllers can be monitored and controlled via Ethernet using the ModBus™ TCP/IP.

Programmable Logic

The MGC-3000 Series offers a very powerful, yet easy-to-use, programmable logic scheme, BESTlogic™*Plus*, for custom programming of the various inputs, outputs, alarms, and pre-alarms. It allows these elements to be integrated into a complete logic scheme so that the user can meet even the most complex specification. The programmable logic control includes the selection of logic gates and timers with drag-and-drop technology to make it fast and simple.

Remote Display Panel Annunciation (optional)

The MGC-3000 Series can communicate to a remote display panel, Model RDP-110. This requires only two wires to annunciate all of the alarms and pre-alarms required by NFPA-110 Level I and II. External power is required.

External Modem Interface

The MGC-3000 Series includes an external modem interface permitting an external modem to be connected to the MGC controller via RS-232. A dial-out modem enables remote control, monitoring, and setting of the MGC-3000 Series. When an alarm or pre-alarm condition occurs, the MGC-3000 Series can dial up to four telephone numbers in sequence until an answer is received and the condition is annunciated.

Note: Only an external modem interface is provided. The external modem must be provided by a third party.

CAN

MGC-3000 Series controllers have two separate CAN ports: CAN 1 and CAN 2. CAN 1 communicates solely with expansion modules. This port accommodates up to four AEM-2020s and up to four CEM-2020s simultaneously. CAN 2 is dedicated for communication with ECU and related devices.

SAE J1939 Communications

SAE J1939 CANBus communications allows the MGC-3000 Series to communicate with the ECU to gather critical engine information like oil pressure, engine coolant temperature, RPM, battery voltage, and much more. By utilizing the ECU, the addition of analog engine senders is no longer required. This can save substantial money for the installer. It also eliminates any errors or discrepancies between the ECU data and the data displayed on the MGC-3000 Series that may be present due to analog sender inaccuracies or incompatibility. An additional benefit is access to the ECU's diagnostic troubleshooting codes (DTCs). The DTCs provide information about the engine's operating conditions and communicate this information via SAE J1939 to the MGC-3000 Series, eliminating the need for hand-held service tools to diagnose simple engine issues.

SPECIFICATIONS

Operating Power

- Nominal: 12 or 24 VDC
- Range: 6 to 32 VDC
- Power Consumption:
  - Sleep Mode
  - Normal Operational Mode: For specific power consumption scenarios, refer to generator set manual.
  - Battery Ride-Through: Withstands cranking ride-through down to 0 VDC for 50 ms (typical)

Current Sensing (5 Amp CT Inputs)

- Continuous Rating: 0.1 to 7.5 Aac
- One Second Rating: 50 Aac
- Burden: 1 VA

Voltage Sensing

- Range: 12 to 576 V rms, line-to-line
- Frequency Range: 10 to 90 Hz
- Burden: 1 VA
- One Second Rating: 720 V rms

Input Contacts

- Contact sensing inputs include one emergency stop input and 15 additional programmable inputs. The emergency stop input accepts normally closed, dry contacts. The remote emergency stop is limited to 75 ft. standard. Extended runs are available with an optional relay. All programmable inputs accept normally open, dry contacts. The factory may utilize up to three contact inputs.

Engine System Inputs

- Fuel Level Sensing Resistance Range: 5 to 250 Ω nominal
- Coolant Temperature Sensing Resistance Range: 5 to 2,750 Ω nominal
- Oil Pressure Sensing Resistance Range: 5 to 250 Ω nominal
- Engine Speed Sensing:
  - Magnetic Pickup or CANBus
    - Magnetic Pickup Voltage Range: 3 to 35 V peak (6 to 70 V peak to peak)
    - Magnetic Pickup Frequency Range: 32 to 10,000 Hz
  - Generator Frequency (alternate or redundant)
    - Voltage Range: 12 to 576 V rms

Output Contacts

- (15) Total Programmable Outputs: (3) 30 A @ 28 VDC and (12) 2 A @ 30 VDC
- The factory utilizes the following on each generator set which can be reprogrammed as needed:
  - (3) 30 A @ 28 VDC for Pre-start, Start, and Run
  - (12) 2 A @ 30 VDC for general purposes

SPECIFICATIONS, continued:

Metering

- Generator Voltage (rms)
  - Metering Range: 0 to 576 VAC (direct measurement); up to 9,999 VAC (with appropriate voltage transformer)
  - Accuracy: ±1% of programmed rated voltage or ±2 VAC (subject to accuracy of voltage transformer when used)
- Generator Current (rms)
  - Generator current is measured at the secondary windings of 5 A CTs.
  - Metering Range: 0 to 5,000 Aac
  - CT Primary Range: 1 to 5,000 Aac in primary increments of 1 Aac
  - Accuracy: ±1% of programmed rated current or ±2 Aac (subject to accuracy of CTs)
- Generator Frequency
  - Metering Range: 10 to 90 Hz
  - Accuracy: ±0.25% or 0.05 Hz
- Apparent Power
  - Indicates total kVA and individual line kVA (four-wire, line-to-neutral or three-wire, line-to-line).
  - Accuracy: ±2% of the full-scale indication or ±2 kVA
- Power Factor
  - Metering Range: 0.2 leading to 0.2 lagging
  - Accuracy: ±0.01
- Real Power
  - Indicates total kW and individual line kW (four-wire, line-to-neutral or three-wire, line-to-line)
  - Accuracy: ±2% of the full-scale indication or ±2 kW
- Oil Pressure
  - Metering Range: 0 to 145 psi or 0 to 1,000 kPa
  - Accuracy: ±3% of actual indication or ±2 psi or ±12 kPa (subject to accuracy of sender)
- Coolant Temperature
  - Metering Range: 0 °C to 204 °C (32 °F to 410 °F)
  - Accuracy: ±2% of actual indication or ±2° (subject to accuracy of sender)
- Fuel Level
  - Metering Range: 0 to 100%
  - Accuracy: ±2% (subject to accuracy of sender)
- Battery Voltage
  - Metering Range: 6 to 32 VDC
  - Accuracy: ±2% of actual indication or ±0.2 VDC
- Engine RPM
  - Metering Range: 0 to 4,500 rpm
  - Accuracy: ±2% of actual indication or ±2 rpm
- Maintenance Timer
  - Maintenance timer indicates the time remaining until generator set service is due. Value is retained in non-volatile memory.
  - Metering Range: 0 to 5,000 h; Update Interval: 6 min
  - Accuracy: ±1% of actual indication or ±12 min

SPECIFICATIONS, continued:

Generator Protection Functions

- Overvoltage (59) and Undervoltage (27)
  - Pickup Range: 0 to 576 VAC
  - Activation Delay Range: 0 to 600 s
- Overfrequency (81O) and Underfrequency (81U)
  - Pickup Range: 37.5 to 66 Hz
  - Pickup Increment: 0.01 Hz
  - Activation Delay Range: 0 to 600 s
- Reverse and Forward Power (32)
  - Pickup Range: 0 to 200%
  - Pickup Increment: 0.1%
  - Activation Delay Range: 0 to 600 s
  - Activation Delay Increment: 0.1 s
- Loss of Excitation (40Q)
  - Pickup Range: –150 to 0%
  - Pickup Increment: 0.1%
  - Activation Delay Range: 0 to 600 s
  - Activation Delay Increment: 0.1 s
- Phase Voltage Imbalance (47)
  - Pickup Range: 5 to 150 VAC
  - Pickup Increment: 1 VAC
  - Activation Delay Range: 0 to 600 s
  - Activation Delay Increment: 0.1 s
- Overcurrent (51)
  - Pickup Range: 0.9 to 7.75 Aac (5 A current sensing)
  - Time Dial Range: 0 to 7,200 s (fixed time curve), 0 to 9.9 (inverse curve time multiplier)
  - Inverse Time Curves: 16 Selectable Time Overcurrent Characteristic Curves
- Vector Shift (78)
  - Pickup Range: 2 to 90°
  - Pickup Increment: 1°
  - Accuracy: ±1°
- ROCOF (81R)
  - Pickup Range: 0.2 to 10 Hz/s
  - Pickup Increment: 0.1 Hz/s
  - Activation Delay Range: 0 to 10,000 ms
  - Activation Delay Increment: 1 ms

Environment

- Temperature
  - Operating: -40 °C to 70 °C (-40 °F to 158 °F)
  - Storage: -40 °C to 85 °C (-40 °F to 185 °F)
- Humidity: IEC 68-2-38
- Salt Fog: IEC 60068
- Ingress Protection: IEC IP56 for front panel
- Shock: 15 G in 3 perpendicular planes
- Vibration: 3 to 25 Hz at 1.6 mm (0.063 in) peak amplitude
  25 to 2,000 Hz at 5 G

SPECIFICATIONS, continued:

Agency Approvals

- UL/CSA Approvals: “cURus” approved to UL 6200 and CSA C22.2 No.14
- NFPA Compliance: Complies with NFPA Standard 110, Standard for Emergency and Standby Power
- CE Marked: Complies with applicable EC Directives

ADDITIONAL SPECIFICATIONS

Battery Backup for Real Time Clock

The MGC-3000 Series provides a real-time clock with an internal backup battery. The battery will maintain timekeeping for approximately five years (depending on conditions) after power is removed from the controller. The clock is used by the event recorder and sequence of events functions to time-stamp events, and the exercise timer is used to start and stop the generator set when the exercise feature is utilized.

Breaker Management

MGC-3000 Series units are capable of controlling the generator breaker and the mains breaker. Once it is determined that a breaker close request is valid, the MGC-3000 Series attempts to operate the breaker. The user can choose to control only the generator breaker, both breakers, or none at all. Breaker management settings can be configured using BESTCOMS*Plus*® or using the front panel interface.

Synchronizer

The MGC-3000 Series has an integrated automatic synchronizer to perform synchronization. The controller monitors the voltages, frequencies, and phase relationships of both the generator and the bus. It then sends a signal to the governor to increase or decrease the speed of the engine to match the generator frequency and phase angle to the bus frequency and phase angle. It also sends a signal to the voltage regulator to match the voltage levels. Once all of these conditions are met, the controller sends a breaker close signal to the generator circuit breaker.

There are two types of automatic synchronizers available. A phase lock type of automatic synchronizer controls the frequency of the generator and brings it into the predetermined phase angle window. When a time delay expires while in the window, the close signal is given to the generator circuit breaker. The anticipatory style of automatic synchronizer controls the slip frequency between the generator and the bus. The synchronizer calculates the timing of the closing signal to allow the generator breaker to be closed when the phase angle between the two sources is at zero degrees. This calculation takes into account the slip rate, the generator breaker closing time, and the phase angle difference.

Multigen Management

Enabling sequencing on a networked group of load share units allows these units to manage load by starting and stopping appropriate units based on a factor of load demand and available capacity. The mode of operation is used to determine the order in which each generator in a group will contribute to the system’s power production upon a demand start/stop request. Modes of operation include:

- Staggered service time
- Balanced service time
- Largest size first
- Smallest size first
- Smallest unit ID

OPTIONAL ACCESSORIES

Analog Extension Module 2020 (AEM–2020)

The optional AEM-2020 is a remote auxiliary device that provides additional MGC-3000 Series analog inputs and outputs. With the MGC-3000 Series, it is possible to have up to four AEM-2020s. Its features include:

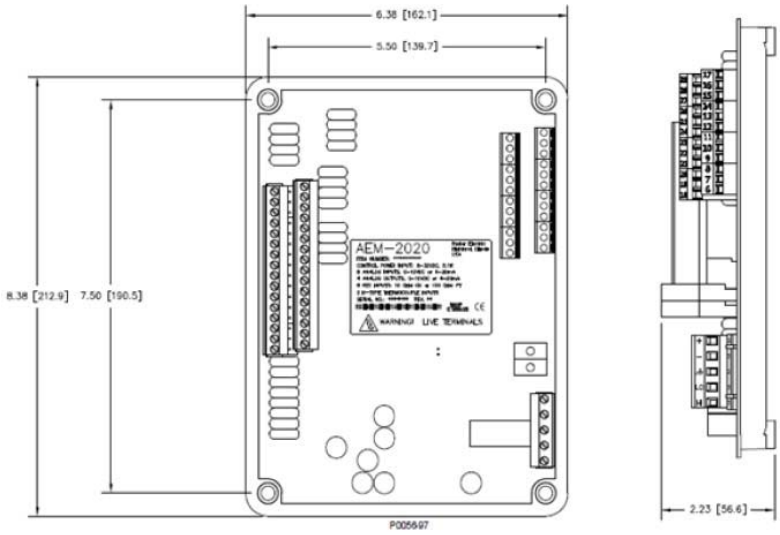
- Eight Analog Inputs: The AEM-2020 provides eight analog inputs that are user-selectable for 4 to 20 mA or 0 to 10 VDC. Each analog input has under/over thresholds that can be configured as status only, alarm, or pre-alarm. When enabled, an out-of-range alarm alerts the user of an open or damaged analog input wire. The label text of each analog input is customizable.

- Eight Resistance Temperature Detector (RTD) Inputs: The AEM-2020 provides eight user-configurable RTD inputs for monitoring generator set temperature. Each RTD input can be configured as status only, alarm, or pre-alarm to protect against high or low temperature conditions. When enabled, an out-of-range alarm alerts the user of an open or damaged RTD input wire. The label text of each RTD input is customizable.

- 2 Thermocouple Inputs: The AEM-2020 provides two thermocouple inputs for monitoring generator set temperature. Each thermocouple input can be configured as status only, alarm, or pre-alarm to protect against high or low temperature conditions. When enabled, an out-of-range alarm alerts the user of an open or damaged thermocouple input wire. The label text of each thermocouple input is customizable.

- 4 Analog Outputs: The AEM-2020 provides four analog outputs that are user-selectable for 4 to 20 mA or 0 to 10 VDC. A wide selection of parameters including oil pressure, fuel level, generator voltage, and bus voltage can be configured as analog outputs. Refer to *Section 4, BESTCOMSPlus® Software* of the *MGC-3000 Series Controller Manual*, for a full list of parameter selections.

- Communications via CANBus: A Control Area Network (CAN) is a standard interface that enables communication between the AEM-2020 and the MGC-3000 Series.



Input and Output Terminals

OPTIONAL ACCESSORIES, continued:

Contact Expansion Module 2020 (CEM-2020)

The CEM-2020 is a remote device that provides additional MGC-3000 Series contact inputs and outputs, giving the user flexibility to use the same model MGC-3000 Series generator set controller for simple or more complicated applications that require contact functionality or duplication of contacts for remote annunciation. With the MGC-3000 Series, it is possible to have up to four CEM-2020s. Its features include:

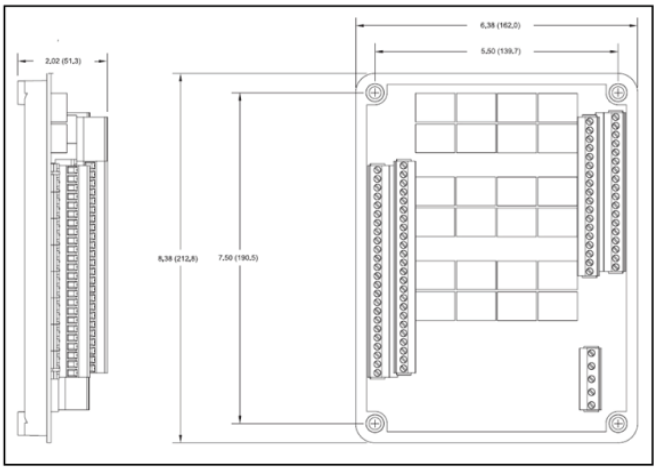
- 10 Contact Inputs: The CEM-2020 provides 10 programmable contact inputs with the same functionality as the contact inputs on the MGC-3000 Series.

- 24 Contact Outputs: The CEM-2020 provides 24 Form C programmable contact outputs with the same functionality as the output contacts on the MGC-3000 Series. The output ratings of the Form C contacts are:

Output No.	Rating (Cont.)	Additional Information
1–12	1 A @ 30 VDC	This is a gold flash contact for low current circuits.
13–24	4 A @ 30 VDC	

- Communications via CANBus: The CEM-2020 communicates to the MGC-Series 3000 via SAE J1939 CANBus communications and allows the user to program the functionality of these inputs and outputs in the BESTCOMS*Plus*® software.

- The user can add labels for the inputs and outputs that appear in BESTCOMS*Plus*®, on the front panel, and in programmable logic. All the functionality can be assigned to these inputs and outputs as if they were an integrated part of the MGC-3000 Series. The CEM-2020 module has all of the environmental ratings of the MGC-3000 Series, including a model for UL Class1 Div2 applications. The CEM-2020 terminals accept a maximum wire size of 12 AWG, while the chassis ground requires 12 AWG wire. Flexibility is one of the benefits of the MGC-3000 Series, and this add-on module enhances that benefit even further.



CEM-2020 Overall Dimensions

MASTER CONTROL PANEL
Data Sheet

MTU Onsite Energy's Master Control Panel (MCP) offers a robust HMI/PLC which is pre-programmed and tested for interface with an MGC Series digital generator set controller and Automatic Transfer Switch (ATS) paralleling systems. The 15" interactive touch screen displays a single line diagram layout along with color, and symbol status identifiers allowing for complete system monitoring, interface, and load management control from one easy-to-use interface.

PRODUCT HIGHLIGHTS

- System overview and control
- Multiple generator set monitoring
- Single line diagram format
- Color data point identifiers
- Symbol identification
- Control and monitor up to 8 generator sets and 16 Automatic Transfer Switches (delay, open, closed, bypass)*
- Simplified setup and page navigation
- Password protection
- Start signal management
- Load shed/add*
- Event log

PRODUCT FEATURES

One Line Monitoring

Generator Status

- Volt (L-L)
- Gen status
- Amps
- Gen condition
- kW total
- Breaker position

ATS Status

- Position*
- Delay
- Source status
- ATS condition
- Rating

Mains Bus Monitoring

- Mains status
- Delay
- Mains bus condition

Gen Bus Monitoring

- Volts (L-L)
- kVA
- Number of units online
- Amps
- Gen bus status
- kW
- Gen bus condition

Control

- Generator set system mode
  - **Auto**: Changes the mode of all units in the system to Auto
  - **Off**: Changes the mode of all units in the system to Off
  - **Run**: Changes the mode of all units in the system to Run
  - **Test**: Simulates a mains failure and transfers load to emergency gen bus

MASTER CONTROL PANEL
Data Sheet

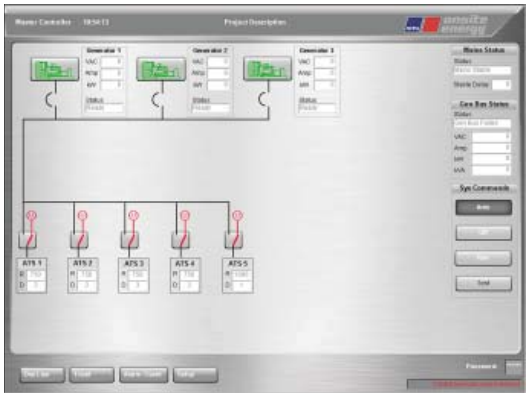
PRODUCT FEATURES, One Line Monitoring, Control, continued:

- Gen start signals
- ATS transfer inhibit*
- Load add/shed*

*ATS must have required contact signal interface.

USER INTERFACE

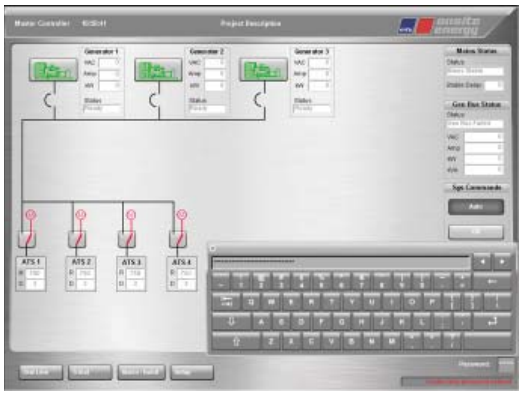
Setup



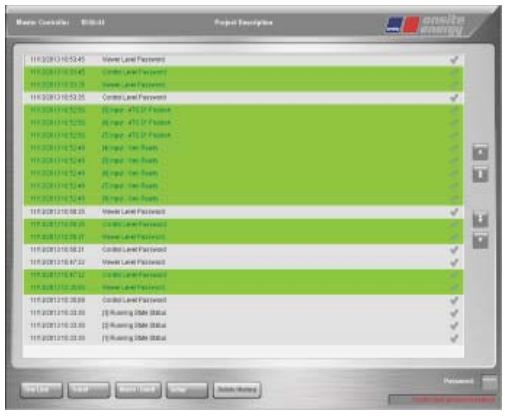
Single Line

Generator Set

Automatic Transfer Switch



Password Login



Event Log

FUNCTIONS

Generator Set Metering

Monitor an entire system or an individual generator set. The one-line overview provides for system control and monitoring. Each generator set also has a representative page for controlling one generator set independent of the system.

- Generator parameters consist of six dynamic gauges displaying pre-alarm and alarm thresholds. Generator parameters include voltage (L-L), current (Amps), frequency (Hz), real power (kW), apparent power (kVA), and power factor.
- Engine parameters consist of three dynamic gauges displaying pre-alarm and alarm thresholds. Engine parameters include oil pressure, coolant temperature, and fuel level (%).
- For greater detail, the user may access a representative page for each generator set that includes comprehensive digital gauges.

Generator Set Status

- Alarm
- Synching
- Ready
- No Comms
- Cranking
- Cool down
- Running
- Resting
- Unloading
- Not in Auto

Control

Generator Set Mode: (status of specific generator set)

- **Auto**: Changes the mode of specific unit to Auto
- **Off**: Changes the mode of specific unit to Off
- **Run**: Changes the mode of specific unit to Run

Breaker Commands: (status of specific generator set)

- **Open**: Opens specific generator set circuit breaker
- **Close**: Closes specific generator set circuit breaker (synchronizes generator set to live bus)

Event Recording

The MCP has an event recorder that provides a record of alarms, pre-alarms, and many other events that are all date and time stamped to help the user determine the cause of issues related to the generator set.

Transfer Switch Control

When utility failure is detected by a system ATS, the indication is transmitted to the MCP via the I/O interface. The MCP will send start requests to the generator set while inhibiting the transfer of loads until there is sufficient generator set capacity available to support the most critical offline ATS loads. Upon emergency system availability, the MCP will begin to transfer loads to the emergency bus. The MCP, in cooperation with the MGC Series contollers, will optimize load management for the number of generator sets operating as well as the number of transfer switches supported by the emergency power system. The standard MCP configuration is set up to interface with time delay bypass, closed transition, and open transition ATS'.

Communications

- Modbus TCP is the standard interface for MCP connection to external building management systems
- Modbus TCP is the standard interface between the MCP and the MGC Series controllers

MASTER CONTROL PANEL
Data Sheet

SPECIFICATIONS

Operating Power

With a nominal operating voltage of 24 VDC, the MCP offers two supply configurations for added reliability. The MCP supply power is sourced through a dual supply configuration allowing two sources to simultaneously or separately power the MCP. In the case of a single source failure, the redundant power sources would then solely power the MCP.

Configuration 1

- **24 VDC / 24 VDC**: Individual generator set batteries are paralleled through the source selective supply connection.

Configuration 2

- **100 - 240 VAC / 24 VDC**: Generator set battery is paralleled through a source selective supply connection with a utility fed power supply.

I/O

Contact inputs and outputs included to provide real time monitoring and control of system critical components. Expandable I/O is configured to adapt to specific system requirement.

Digital output rating

- 30 VDC / 1A

Digital input rating

- 24 VDC connection

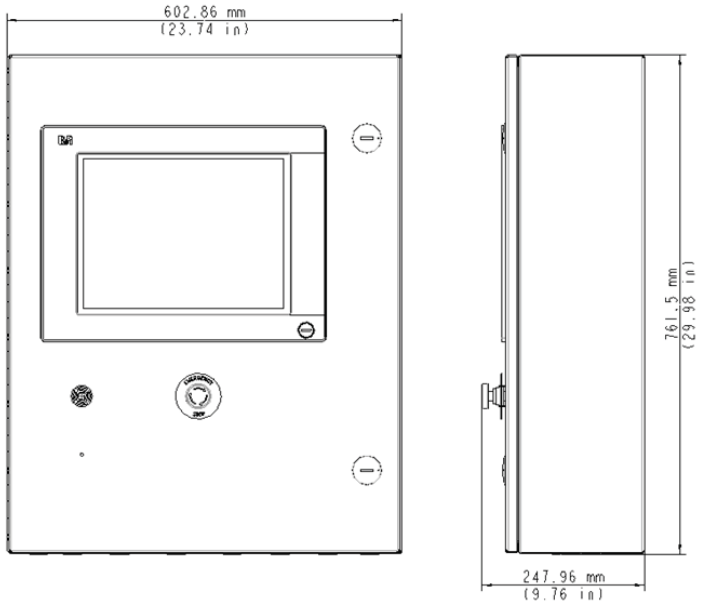
WEIGHTS AND DIMENSIONS

Weights

- **MCP only**: 45.45 kg (100 lb)
- **MCP with stand**: 72.73 kg (160 lb)

Dimensions

- **Height**: 761.5 mm (29.98 in)
- **Width**: 602.86 mm (23.74 in)
- **Depth**: 247.96 mm (9.76 in)



AGENCY APPROVALS

- UL Listed - UL508A Industrial Control Panel
- c-UL Listed - CSA C22.2 No. 14 Industrial Control Equipment

ENVIRONMENTAL

- Type 1 / NEMA 1 Enclosure
- Optional - Open Frame Construction

SAFETY OVERRIDE SWITCH
Data Sheet

HIGHLIGHTS

- Three customer-selectable settings: OFF, SAFETY OVERRIDE, CRANK
- Protective cover allows for lockout/tagout and prevents unintentional safety override
- Safety Override Switch allows engine to start in the event of dead panel

WARNING! Use of safety override disables all protective alarms and shutdowns and voids manufacturer's warranty. Not offered on UL 2200 units.

DESCRIPTION

The safety override switch allows the operator to override the engine and generator's protective safety pre-alarms and shut-down alarms. When the safety override switch is enabled, the engine will not shut down in the event of an alarm. An audible alarm will sound and the controller will display the alarm, but the engine will keep running. If the generator set controller is inoperable, the safety override switch allows the operator to crank and start the engine. An AC relay is provided to disconnect cranking when the generator builds voltage. The AC relay will also stop the engine if the generator output fails. The safety override switch will bypass the following alarms:

Engine Alarms	Overspeed (non-MTU engines only) High coolant temp Low oil pressure Low coolant level Low fuel level Loss of ECU communications
Sender Failures	Coolant temperature sender failure Oil pressure sender failure Fuel sender failure Voltage sensing failure Speed sensing failure
Generator Protection	Over/under voltage Phase imbalance Over/under frequency Overcurrent Reverse power

STANDARD FEATURES

- Heavy duty, three-position switch
- Lockable safety cover
- OFF position keeps all safety alarms active
- SAFETY OVERRIDE position disables all safety alarms
- CRANK (spring return) allows operator to crank and start the engine

SPECIFICATIONS

Construction Material:	Thermoplastic
Terminal Type:	Screw terminals
Run Circuit Rating:	2.5 Adc continuous @ 32 Vdc
Crank Circuit Current Rating:	2.5 Adc continuous @ 32 Vdc 5.7 Adc inrush @ 12 Vdc 2.8 Adc inrush @ 24 Vdc
Disconnect Relay Coil Voltage:	120, 220, or 240 Vac, 50/60 Hz. Varies with generator voltage.

PARALLELING APPLICATION GUIDE
Base Loading with Utility

SCOPE

The purpose of this document is to define a specific paralleling scenario - paralleling MTU Onsite Energy generator sets with a utility power source. Additionally, this document is intended to expand on how MTU Onsite Energy can support this paralleling scenario with simple, integrated solutions.

DEFINITION(S)

Base Loading with Utility Operation

Base loading refers to the application of the system in which the generator set will parallel to a utility power source. The amount of power exported to utility can be determined by a percentage of the generator set rating.

ABBREVIATED SEQUENCE OF OPERATION

1. A generator set base loading request is made by the customer.
   - 1.1 The customer initiates a start request to the generator set.
   - 1.2 The generator set starts and builds rated voltage and frequency.
   - 1.3 The generator set synchronizes and closes to the utility power source.
   - 1.4 The generator set begins to ramp on resistive and reactive load until the appointed percentage of load is reached.
   - 1.5 Regardless of fluctuations in the utility power source, the generator set will constantly adjust to maintain the correct percentage of load.
2. The generator set base loading request is terminated by the customer.
   - 2.1 The customer removes the start request from the generator set.
   - 2.2 The generator set sheds load until it is producing very little power.
   - 2.3 After unloading, the generator set opens its circuit breaker and disconnects from the utility power source.
   - 2.4 The generator set enters a controller-appointed, cool-down period.
   - 2.5 The generator set stops, returns to standby, and awaits the next start request.

SYSTEM OPERATION

- Real power load sharing
- Reactive power load sharing

PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY MTU ONSITE ENERGY)

- MGC-3000 Series digital generator set controller (referred to as the controller)
- Meter current transformers (CTs) and potential transformer (PT) (as needed)
- Permanent Magnet Generator (PMG)
  - DVR2000E(+) digital voltage regulator (standard)
  - DVR2000EC(+) digital voltage regulator (optional)
- Motor-operated generator circuit breaker (may or may not be mounted to the generator set)*
  - Shunt trip
  - Shunt close
  - Auxiliary switch (breaker position)
  - Motorized spring charger

**If a circuit breaker is selected, MTU Onsite Energy will supply a motor-operated breaker of the indicated configuration.*

PARALLELING APPLICATION GUIDE
Base Loading with Utility

ADDITIONAL PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY THIRD PARTY)

- Paralleling switchgear, circuit breakers, and/or disconnects
- Paralleling bus and cabling
- External start signal source and connection to generator set
- Utility bus sensing connection to generator set

PROGRAMMING AND LOGIC

- Basic programming and logic will be provided to start, synchronize, and base load with the utility power source.
- Site programming and system tuning are required by the customer for proper onsite operation.

OTHER SYSTEM CONSIDERATIONS

- For generator sets used in non-emergency applications within EPA regulated areas, Tier 4i/T4 Final certified engines must be used.

SEQUENCE OF OPERATION

Base Loading Request to Generator Set

When a customer requires the generator set to parallel to a utility power source for the purpose of supplementing utility power, a base loading request can be made. The customer issues a start request to the generator set. The start signal is a command for the generator set to start, synchronize to utility power source, and close its circuit breaker. All available generator sets will start and achieve nominal frequency and voltage.

Synchronization of Generator Set

The controller on the off-line generator set biases the digital voltage regulator and governor to match its speed and voltage to the utility bus. The controller biases the speed of the engine governor to drive the difference between the phase angle of the generator set and the phase angle of the utility bus to zero. Additionally, the controller biases the voltage regulator to match the generator set voltage to the utility bus voltage. When the synchronization window criteria are met, the generator set is considered synchronized with the utility bus, and the controller issues a command to close its circuit breaker. Once its circuit breaker is closed and the controller receives “breaker closed” feedback from the circuit breaker auxiliary switch, the generator set is considered paralleled. The controller no longer actively attempts to synchronize the generator set.

Base Loading

While paralleled, the generator set is electrically interlocked and will share real load (kW) and reactive load (kVAR) with the utility power source based on a percentage of the load capacity of the generator set. When the generator set circuit breaker is first connected, the generator set produces a negligible amount of real power. The controller will bias the engine governor to begin loading kW on the generator set at a predefined amount of load per second. Load will ramp onto the generator set until the user-defined amount of base load is met. The controller in turn biases the engine governor to control the real load on the generator set.

Reactive load is also precisely shared between the paralleled generator set and the utility power source. When the generator set circuit breaker is first connected, the generator set produces a negligible amount of reactive power. The controller will bias the voltage regulator to begin loading kVARs on the generator set at a predefined amount of load per second. Load will ramp onto the generator set until the user-defined amount of base load is met. Reactive base loading can be defined in either of two manners: percentage of VARs (leading or lagging) or Power Factor (PF) set point (- Leading / + Lagging). The controller in turn biases the voltage regulator to control the reactive load on the generator set.

As the generator set is base loading against the utility power source, the controller will constantly adjust to fluctuations in load and in the utility power source to maintain the base load level requested.

In the event that a generator experiences a fault while supporting the load, it will disconnect itself from the utility bus.

Termination of Base Loading Request to Generator Set

When the customer no longer wants the generator set to base load against the utility power source, the start request signal is removed. The controller will bias the governor and voltage regulator to ramp load off of the generator set. Once the generator set is unloaded and has reached the pre-defined breaker open set point percentage, the circuit breaker will open. The generator set will enter a cool-down period, after which time the generator set will stop, re-enter standby mode, and await the next start request.

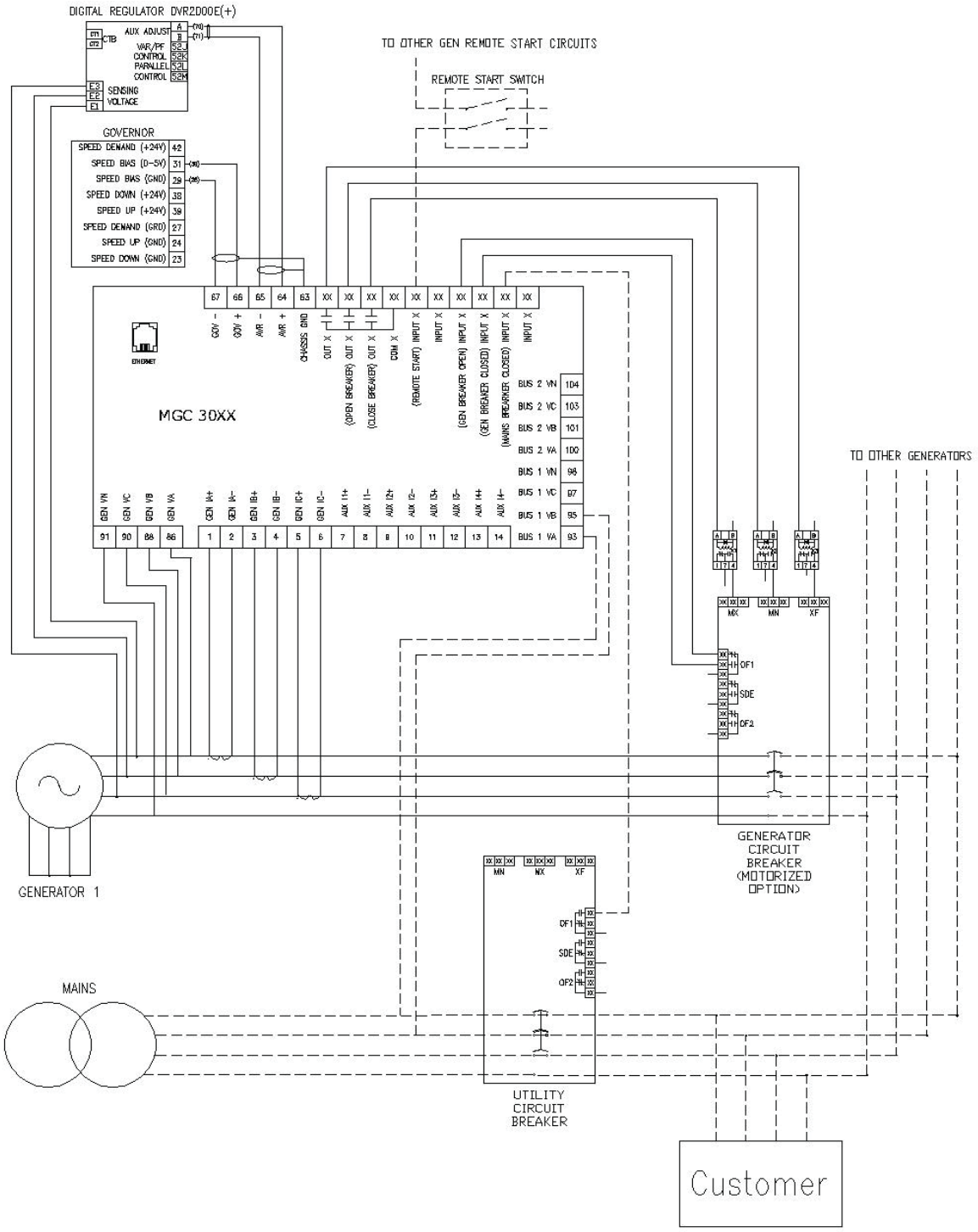


Figure 1: Base Loading with Utility

The dashed line (– – –) denotes wiring/equipment supplied by a third party

PARALLELING APPLICATION GUIDE
Generator to Generator in Island Operation

SCOPE

The purpose of this document is to define a specific paralleling scenario - paralleling MTU Onsite Energy generator sets with other MTU Onsite Energy generator sets in island operation. Additionally, this document is intended to expand on how MTU Onsite Energy can support this paralleling scenario with simple, integrated solutions.

DEFINITION(S)

Generator to Generator in Island Operation

Island refers to the application of the system. Generator to generator in island refers to an isolated system in which the generator sets will not be paralleled with any source other than the generator sets within the system. The generator sets will be connected to a common bus.

Automatic Transfer Switch (ATS)

An automatic transfer switch connects an electrical load to either of two different sources. Typically, one source is considered Normal, and the other source is considered Emergency. The ATS has the ability to sense the stability and availability of either source and can issue transference of load between either source.

Master Control Panel (MCP)

A master control panel is a third party device responsible for monitoring ATS start requests, issuing transfer inhibits and load priority commands to the ATSs, adding and shedding loads, and issuing start requests to generator sets.

MGC-3000 Series System Manager

The MGC-3000 Series System Manager is an MGC-3000 Series controller with the lowest, non-zero sequencing ID. This controller is responsible for dead bus arbitration between generator sets. The System Manager can be one of any controllers in the generator set system.

Intergenset Communication Network

The intergenset communications network consists of generator set load share modules connected together via Cat5 cable and an industrial ethernet switch. Dead bus arbitration, generator set sequencing, and load sharing commences between generator sets over this network.

ABBREVIATED SEQUENCE OF OPERATION

1. Instability or failure of the Normal Power source is detected by the ATS controllers.
   - 1.1 ATS controllers send start requests to the MCP.
   - 1.2 MCP sends individual start requests to the group of generator sets.
   - 1.3 Generator sets start and build rated voltage and frequency.
   - 1.4 Dead bus arbitration commences between the generator sets through the intergenset communication network.
     - 1.4.1 The System Manager grants to the first generator set that reaches the voltage and frequency thresholds the permission to close to the dead bus.
     - 1.4.2 All off-line generator sets at this time are inhibited from closing their circuit breakers to the bus until voltage is sensed.
     - 1.4.3 The highest priority ATS transfers to Emergency power when voltage and frequency are within the ATS controller thresholds.
     - 1.4.4 The remaining off-line generator sets synchronize and close to the live generator bus.
   - 1.5 The remaining ATSs wait for release of transfer inhibit from the MCP before connecting to Emergency power. The MCP monitors the bus and the number of generator sets online to ensure that there are enough generator sets connected to the bus to support the load requirements.
   - 1.6 Online generator sets actively share load via the intergenset communications network.

2. ATS controllers detect when the Normal power source has returned to stable conditions, and all delay timers have expired.
   2.1 ATSs return to Normal position, removing start signals to the MCP.
   2.2 MCP removes all start requests for Emergency power from the generator sets.
   2.3 The generator sets open their respective circuit breakers (disconnecting from the generator bus).
   2.4 The generator sets enter a controller-appointed, cool-down period.
   2.5 The group of generator sets stop, return to standby, and await the next start request.

SYSTEM OPERATION

- Real power load sharing
- Reactive power load sharing
- Dead bus arbitration

PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY MTU ONSITE ENERGY)

- MGC-3000 Series digital generator set controller (referred to as the controller)
- Meter current transformers (CTs) and potential transformer (PT) (as needed)
- Permanent Magnet Generator (PMG)
  - DVR2000E(+) digital voltage regulator (standard)
  - DVR2000EC(+) digital voltage regulator (optional)
- Motor-operated generator circuit breaker (may or may not be mounted to the generator set)*
  - Shunt trip
  - Shunt close
  - Auxiliary switch (breaker position)
  - Motorized spring charger

**If a circuit breaker is selected, MTU Onsite Energy will supply a motor-operated breaker of the indicated configuration.*

ADDITIONAL PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY THIRD PARTY)

- Master Control Panel (MCP) with connections for monitoring ATS start requests, issuing transfer inhibits and load priority commands to ATSs, adding and shedding loads, and issuing start requests to generator sets
- Automatic transfer switch(es) (ATS), paralleling switchgear, circuit breakers, and/or disconnects
- Paralleling bus and cabling
- Start signal source connection to generator sets
- Main bus sensing connection to generator sets
- Industrial Ethernet switch for intergenset communications network
- Cat5 cable connection from Ethernet switch to all generator sets for intergenset communications network

PROGRAMMING AND LOGIC

- Basic programming and logic will be provided to start, synchronize, and load share with other MTU Onsite Energy supplied generator sets.
- Site programming and system tuning are required by the customer for proper onsite operation.
- MCP integration and programming are required by the customer for proper onsite operation.

SEQUENCE OF OPERATION

Failure of Normal Power Source and Start Request to Emergency Power System

All ATS controllers monitor both Normal and Emergency power sources. Unless programmed otherwise, the ATSs will always be connected to the Normal source. When the voltage or frequency of the Normal source does not meet the predefined voltage and frequency thresholds, each ATS controller sends a start request signal to the MCP. The MCP then issues individual start requests to every unit in the group of generator sets composing the emergency power system. The start signal to each generator set is a command for the generator sets to start, synchronize to the generator bus, close their circuit breakers, and load share. All available generator sets will start and achieve nominal frequency and voltage.

Dead Bus Arbitration

Dead bus arbitration between generator sets commences via the intergenset communication network to ensure that two or more generator sets do not close their circuit breakers to the dead bus at the same time out of phase. The System Manager (the controller with the smallest non-zero sequencing ID) negotiates the dead bus arbitration. The first generator set to reach the voltage and frequency thresholds (adjustable from 85-95%) within the system requests permission to close its circuit breaker and is granted permission by the system manager to close to the dead bus. When this permission is given, all other generator sets are inhibited from closing to the dead bus and will not attempt to close to the bus until voltage and frequency are present and meet the predefined voltage and frequency thresholds.

Synchronization of Generator Sets

The controllers on the remaining off-line generator sets bias their digital voltage regulators and governors to match their speed and voltage to the generator bus. The controller biases the speed of the engine governor to drive the difference between the phase angle of the generator set and the phase angle of the generator bus to zero. Additionally, the controller biases the voltage regulator to match the generator set voltage to the generator bus voltage. When the synchronization window criteria are met, the generator set is considered synchronized with the generator bus, and the controller issues a command to close its breaker. Once its breaker is closed and the controller receives “breaker closed” feedback from the circuit breaker auxiliary switch, the generator set is considered paralleled. The controller no longer actively attempts to synchronize the generator set. The phase and voltage window are adjustable to allow synchronization to happen more aggressively (quickly) or passively (slowly) to meet all customer-defined requirements. Additionally, the controller synchronizer can be configured for two different modes: 1) phase lock loop synchronization for breakers that take longer to close (30 cycles after command is issued), and 2) anticipatory synchronization for reduced synchronization time and breakers that close quickly (five cycles after command is issued).

Load Sharing

While paralleled, generator sets are electrically interlocked and will share real load (kW) and reactive load (kVAR) with other paralleled generator sets. Real load is shared between paralleled generator sets via the intergenset communications network. Generator sets that have closed their circuit breakers to the generator bus broadcast their real power capacity and real power production over the intergenset communications network. The controllers divide the real power production of the system by the real power capacity of the system to produce a unitized percentage of real power to be shared by the connected generator (R. Glenn, Basler Electric). Based on this unitized percentage, the controller biases the engine governor to control the real load on the generator sets.

This method of sharing load does not require an analog load share line between generator sets which is commonly required in paralleling applications. Additionally, the unitized percentage power calculation allows generator sets of different sizes to share load proportionate to their capacities. Reactive load is shared between paralleled generator sets via the intergenset communications network. The generator sets that have closed their breakers to the generator bus broadcast their reactive power capacity and current reactive power production over the intergenset communications network. The controllers divide the reactive power production of the system by the reactive power capacity of the system to produce a unitized percentage of reactive power to be shared by the connected generator sets (R. Glenn, Basler Electric). Based on this unitized percentage, the controller biases the voltage regulator to control the reactive load on the generator sets.

Typically, generator sets that are paralleled together require voltage droop or a cross-current compensation loop to produce reactive power proportionately. Also, it is common for the voltage in these types of systems to droop below nominal, which is not ideal for some loads. However, by controlling reactive power production via the intergenset communication network, MTU Onsite Energy generator sets do not require the system to run in voltage droop and do not require an additional B phase droop current transformer (CT). This results in a generator set system that is easy to interface and has precise control over reactive power production.

Emergency System Operation

As generator sets connect and become available to the generator bus, the ATS controllers sense that the Emergency source is available. The MCP will begin to release the transfer inhibit contacts to the ATS controllers that are servicing priority loads, and these ATSs will transfer loads from the Normal source to the Emergency source. As available power on the generator bus increases (amount of available power is determined by the sum of each online generator set's kW rating), the MCP will release the transfer inhibit contacts to the ATS controllers servicing lower priority loads.

The generator sets support the loads as long as the Normal source is unavailable or does not meet the acceptance thresholds for voltage and frequency. The ATS controllers will continuously monitor Normal source voltage and frequency. Normal source is the preferred power source. If available during non-test procedures, an ATS will connect the loads to the Normal source.

In the event that a generator set experiences a fault while supporting the load, it will disconnect itself from the generator bus. The MCP will determine if there are still enough generator sets online to support the load and will shed a low priority load if necessary to adjust the bus load.

Restoration of Normal Power Source

When the Normal source returns, the ATS controllers sense availability of the Normal source, and all delays have expired (adjustable), the ATS controllers will transfer the ATSs to the Normal source position and remove their start request signals to the MCP. The generator sets remain paralleled and connected to the common bus until all ATSs have transferred back to the Normal source. Once all load has been transferred to the Normal source, the MCP will remove the individual start request signals from all generator sets. The generator sets will open their circuit breakers and enter a controller-appointed, cool-down period (adjustable), after which time they stop, re-enter standby mode, and await the next start request.

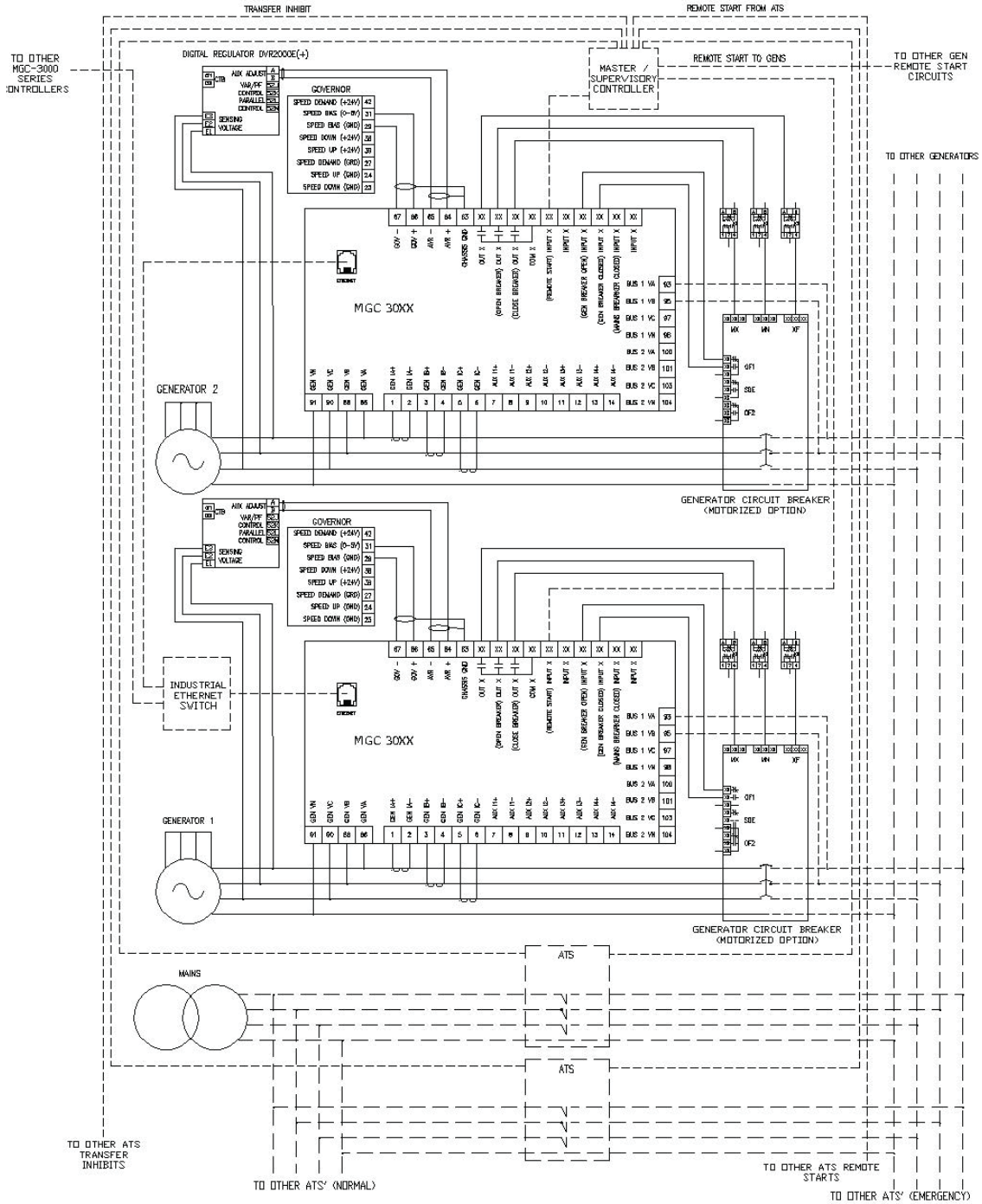


Figure 1: Generator to Generator in Island Operation (MTU Onsite Energy generator sets only)

The dashed line (– – –) denotes wiring/equipment supplied by a third party

PARALLELING APPLICATION GUIDE
Generator to Generator with Utility

SCOPE

The purpose of this document is to define a specific paralleling scenario - paralleling MTU Onsite Energy generator sets with other MTU Onsite Energy generator sets and synchronizing the system of generator sets to a utility power source. Additionally, this document is intended to expand on how MTU Onsite Energy can support this paralleling scenario with simple, integrated solutions.

DEFINITION(S)

Generator to Generator with Utility

Generator to generator with utility refers to the application of the system in which the generator sets will be paralleled with other generator sets on a common bus and then synchronized to another power source other than the remaining generator sets within the system.

Automatic Transfer Switch (ATS)

An automatic transfer switch connects an electrical load to either of two different sources. Typically, one source is considered Normal, and the other source is considered Emergency. ATSs have the ability to sense the stability and availability of either source and can issue transference of load between either source.

Master Control Panel (MCP)

A master control panel is a third party device responsible for monitoring ATS start requests, issuing transfer inhibits and load priority commands to ATSs, adding and shedding loads, issuing start requests to generator sets, and synchronizing the generator sets to another power source.

MGC-3000 Series System Manager

The MGC-3000 Series System Manager is an MGC-3000 Series controller with the lowest, non-zero sequencing ID. This controller is responsible for dead bus arbitration between generator sets. The System Manager can be one of any controllers in the generator set system.

Intergenset Communication Network

The intergenset communication network consists of generator set load share modules connected together via Cat5 cable and an industrial ethernet switch. Dead bus arbitration, generator set sequencing, and load sharing commences between generator sets over this network.

ABBREVIATED SEQUENCE OF OPERATION

1. Instability or failure of the Normal power source is detected by the ATS controllers.
   - 1.1 ATS controllers send start requests to the MCP.
   - 1.2 MCP sends individual start requests to the group of generator sets.
   - 1.3 Generator sets start and build rated voltage and frequency.
   - 1.4 Dead bus arbitration commences between the generator sets through the intergenset communication network.
     - 1.4.1 The System Manager grants to the first generator set that reaches the voltage and frequency thresholds the permission to close to the dead bus.
     - 1.4.2 All off-line generator sets, at this time, are inhibited from closing their circuit breakers to the bus until voltage is sensed.
     - 1.4.3 The highest priority ATS transfers to Emergency power when voltage and frequency are within the ATS controller thresholds.
     - 1.4.4 The remaining off-line generator sets synchronize and close to the live generator bus.
   - 1.5 The remaining ATSs wait for release of transfer inhibit from the MCP before connecting to Emergency power. The MCP monitors the bus and the number of generator sets online to ensure that there are enough generator sets connected to the bus to support the load requirements.
   - 1.6 Online generator sets actively share load via the intergenset communications network and analog load share line.

2. ATS controllers detect Normal power source has returned to stable conditions, and all delay timers have expired.
   2.1 The MCP synchronizes the generator set bus to the Normal power source.
   2.2 ATSs return to Normal position, removing start signals to the MCP.
   2.3 MCP removes all start requests for Emergency power from the generator sets.
   2.4 The generator sets open their respective circuit breakers (disconnecting from the generator bus).
   2.5 The generator sets enter a controller-appointed, cool-down period.
   2.6 The group of generator sets stops, returns to standby, and awaits the next start request.

SYSTEM OPERATION

- Real power load sharing (via load share line)
- Reactive power load sharing (via intergenset communication network)
- Dead bus arbitration
- Synchronization to other power source

PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY MTU ONSITE ENERGY)

- MGC-3000 Series digital generator set controller (referred to as the controller)
- Meter current transformers (CTs) and potential transformer (PT) (as needed)
- Permanent Magnet Generator (PMG)
  - DVR2000E(+) digital voltage regulator (standard)
  - DVR2000EC(+) digital voltage regulator (optional)
- Motor-operated generator circuit breaker (may or may not be mounted to the generator set)*
  - Shunt trip
  - Shunt close
  - Auxiliary switch (breaker position)
  - Motorized spring charger

  **If a circuit breaker is selected, MTU Onsite Energy will supply a motor-operated breaker of the indicated configuration.*

ADDITIONAL PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY THIRD PARTY)

- Master Control Panel (MCP) with connections for monitoring ATS start requests, issuing transfer inhibits and load priority commands to ATSs, adding and shedding loads, issuing start requests to generator sets, and load sharing (for synchronizing the generator sets to another power source)
- ATSs, paralleling switchgear, circuit breakers, and/or disconnects
- Paralleling bus and cabling
- Start signal source connection to generator sets
- Main bus sensing connection to generator sets
- Industrial Ethernet switch for intergenset communications network
- Cat5 cable connection from Ethernet switch to all generator sets for intergenset communications network
- Load share line between all generator sets and MCP

PROGRAMMING AND LOGIC

- Basic programming and logic will be provided to start, synchronize, and load share with other MTU Onsite Energy supplied generator sets.
- Site programming and system tuning are required by the customer for proper onsite operation.
- MCP integration and programming are required by the customer for proper onsite operation.

SEQUENCE OF OPERATION

Failure of Normal Power Source and Start Request to Emergency Power System

All ATS controllers monitor both Normal and Emergency power sources. Unless programmed otherwise, the ATSs will always be connected to the Normal source. When the voltage or frequency of the Normal source does not meet the predefined voltage and frequency thresholds, each ATS controller sends a start request signal to the MCP. The MCP will then issue individual start requests to every unit in the group of generator sets composing the emergency power system. The start signal to each generator set is a command for the generator sets to start, synchronize to the generator bus, close their circuit breakers, and load share. All available generator sets will start and achieve nominal frequency and voltage.

Dead Bus Arbitration

Dead bus arbitration between generator sets commences via the intergenset communication network to ensure that two or more generator sets do not close their circuit breakers to the dead bus at the same time out of phase. The System Manager (the controller with the smallest non-zero sequencing ID) negotiates the dead bus arbitration. The first generator set to reach the voltage and frequency thresholds (adjustable from 85-95%) within the system requests permission to close its circuit breaker and is granted permission by the System Manager to close to the dead bus. When this permission is given, all other generator sets are inhibited from closing to the dead bus and will not attempt to close to the bus until voltage and frequency are present and meet the predefined voltage and frequency thresholds.

Synchronization of Generator Sets

The controllers on the remaining off-line generator sets bias their digital voltage regulators and governors to match their speed and voltage to the generator bus. The controller biases the speed of the engine governor to drive the difference between the phase angle of the generator set and the phase angle of the generator bus to zero. Additionally, the controller biases the voltage regulator to match the generator set voltage to the generator bus voltage. When the synchronization window criteria are met, the generator set is considered synchronized with the generator bus, and the controller issues a command to close its circuit breaker. Once its circuit breaker is closed and the controller receives “breaker closed” feedback from the circuit breaker auxiliary switch, the generator set is considered paralleled. The controller no longer actively attempts to synchronize the generator set. The phase and voltage window are adjustable to allow synchronization to happen more aggressively (quickly) or passively (slowly) to meet all customer-defined requirements. Additionally, the controller synchronizer can be configured for two different modes: 1) phase lock loop synchronization for breakers that take longer to close (30 cycles after command is issued), and 2) anticipatory synchronization for reduced sync time and breakers that close quickly (five cycles after command is issued).

Load Sharing

While paralleled, generator sets are electrically interlocked and will share real load (kW) and reactive load (kVAR) with other paralleled generator sets. Real load is shared between paralleled generator sets via the intergenset communications network. Generator sets that have closed their circuit breakers to the generator bus broadcast their real power capacity and real power production over the intergenset communications network. The controllers divide the real power production of the system by the real power capacity of the system to produce a unitized percentage of real power to be shared by the connected generator (R. Glenn, Basler Electric). Based on this unitized percentage, the controller biases the engine governor to control the real load on the generator sets.

This method of sharing load does not require an analog load share line between generator sets which is commonly required in paralleling applications. Additionally, the unitized percentage power calculation allows generator sets of different sizes to share load proportionate to their capacities. Reactive load is shared between paralleled generator sets via the intergenset communications network. The generator sets that have closed their breakers to the generator bus broadcast their reactive power capacity and current reactive power production over the intergenset communications network. The controllers divide the reactive power production of the system by the reactive power capacity of the system to produce a unitized percentage of reactive power to be shared by the connected generator sets (R. Glenn, Basler Electric). Based on this unitized percentage, the controller biases the voltage regulator to control the reactive load on the generator sets.

Typically, generator sets that are paralleled together require voltage droop or a cross-current compensation loop to produce reactive power proportionately. Also, it is common for the voltage in these types of systems to droop below nominal, which is not ideal for some loads. However, by controlling reactive power production via the intergenset communication network, MTU Onsite Energy generator sets do not require the system to run in voltage droop and do not require an additional B phase droop current transformer (CT). This results in a generator set system that is easy to interface and has precise control over reactive power production.

Emergency System Operation

As generator sets connect and become available to the generator bus, the ATS controllers sense that the Emergency source is available. The MCP will begin to release the transfer inhibit contacts to the ATS controllers that are servicing priority loads, and these ATSs will transfer loads from the Normal source to the Emergency source. As available power on the generator bus increases (amount of available power is determined by the sum of each online generator set's kW rating), the MCP will release the transfer inhibit contacts to the ATS controllers servicing lower priority loads.

The generator sets support the loads as long as the Normal source is unavailable or does not meet the acceptance thresholds for voltage and frequency. The ATS controllers will continuously monitor Normal source voltage and frequency. Normal source is the preferred power source. If available during non-test procedures, an ATS will connect the loads to the Normal source.

In the event that a generator set experiences a fault while supporting the load, it will disconnect itself from the generator bus. The MCP will determine if there are still enough generator sets online to support the load and will shed a low priority load if necessary to adjust the bus load.

Restoration of Normal Power Source

When the Normal source returns and the ATS controllers sense availability of the Normal source, the MCP will synchronize the generator bus to the Normal source. The MCP will bias the generator set load share line to drive the difference between the phase angle of the generator set and the phase angle of the Normal source to zero. When all delays have expired (adjustable), the ATS controllers will transfer the ATSs to the Normal source position and remove their start request signals to the MCP. The generator sets remain paralleled and connected to the common bus until all ATSs have transferred back to the Normal source. Once all load has been transferred to the Normal source, the MCP will remove the individual start request signals from all generator sets. The generator sets will open their circuit breakers and enter a controller-appointed, cool-down period (adjustable), after which time they stop, re-enter standby mode, and await the next start request.

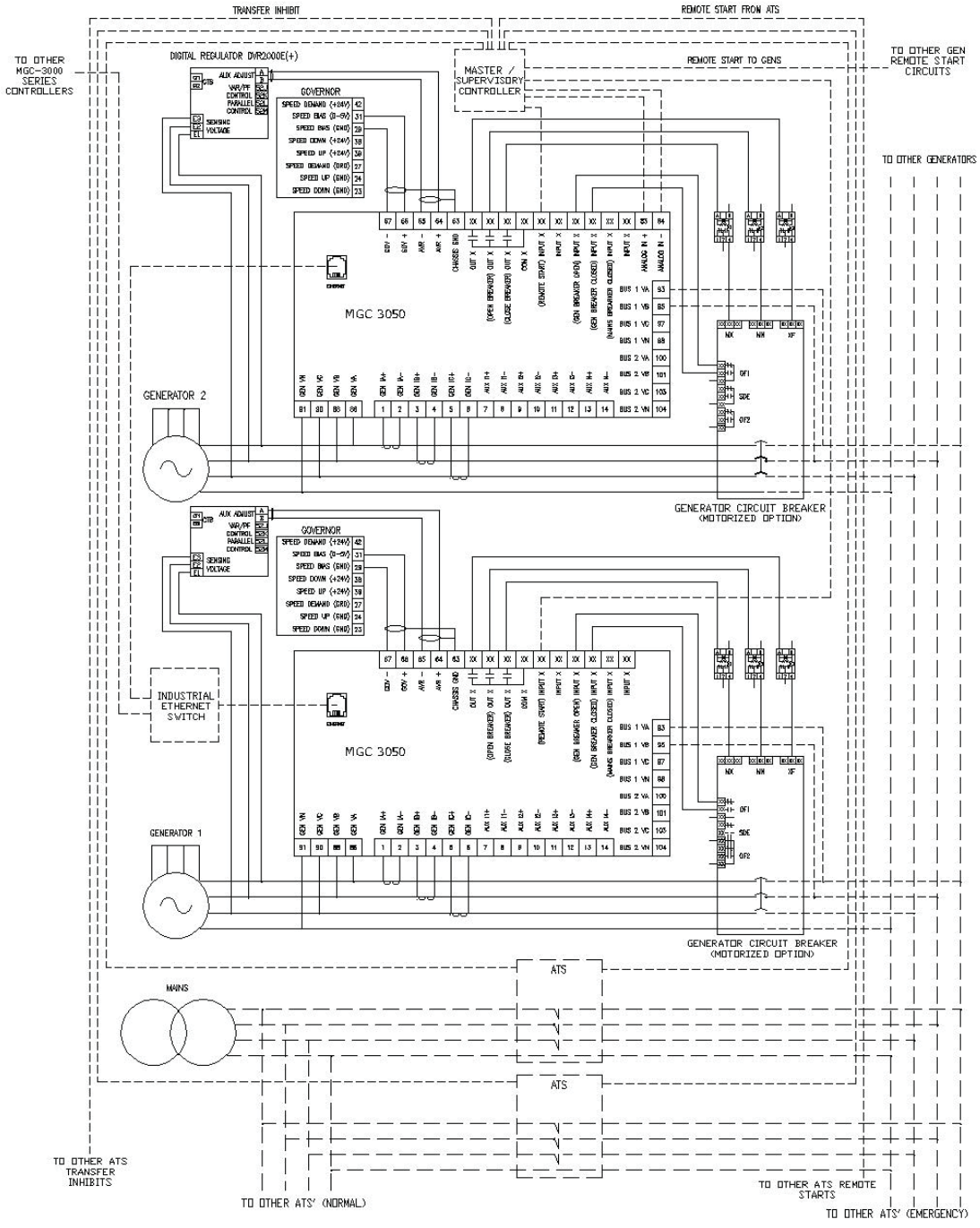


Figure 1: Generator to Generator with Utility (MTU Onsite Energy generator sets only)

The dashed line (– – –) denotes wiring/equipment supplied by a third party

PARALLELING APPLICATION GUIDE
Paralleling without MTU Onsite Energy Components

SCOPE

The purpose of this document is to define a specific paralleling scenario - paralleling MTU Onsite Energy generator sets without MTU Onsite Energy supplied or supported components.

DEFINITION(S)

Paralleling without MTU Onsite Energy Components

Paralleling without MTU Onsite Energy components refers to the application of a system in which generator sets will be paralleled without MTU Onsite Energy supplied or supported components.

ABBREVIATED SEQUENCE OF OPERATION

None indicated. Sequence of operation to be specified by customer.

SYSTEM OPERATION

None indicated. System operation to be specified by customer.

PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY MTU ONSITE ENERGY)

Generator set voltage bias and speed bias contacts will be provided for customer connection.

ADDITIONAL PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY THIRD PARTY)

- Synchronizing and load sharing controller
- ATSs, paralleling switchgear, circuit breakers, and/or disconnects
- Paralleling bus and cabling
- Start signal source connection to generator sets

PROGRAMMING AND LOGIC

- Basic programming and logic will be provided to start and operate generator set
- Site programming and system tuning are required by the customer for proper onsite for operation

SEQUENCE OF OPERATION

None indicated. Sequence of operation to be specified by customer.

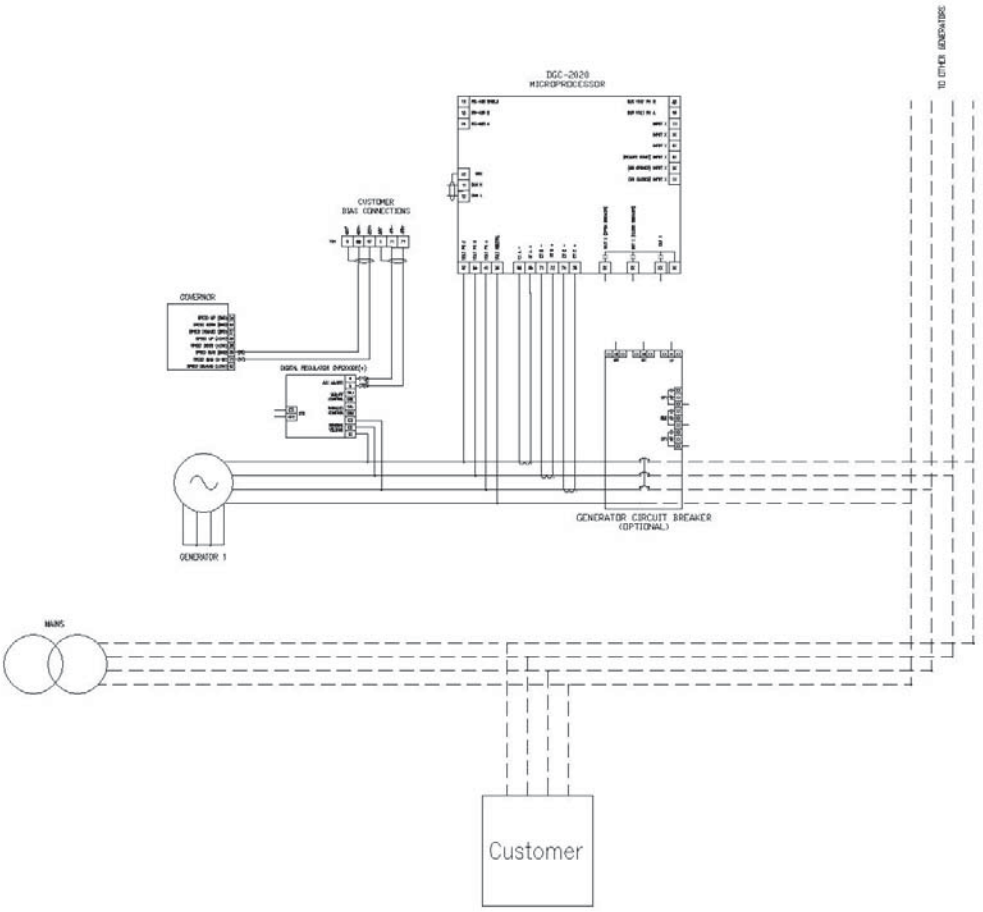


Figure 1: Paralleling without MTU Onsite Energy Components

The dashed line (– – –) denotes wiring/equipment supplied by a third party

PARALLELING APPLICATION GUIDE
Peak Shaving with Utility

SCOPE

The purpose of this document is to define a specific paralleling scenario - paralleling MTU Onsite Energy generator sets with a utility power source. Additionally, this document is intended to expand on how MTU Onsite Energy can support this paralleling scenario with simple, integrated solutions.

DEFINITION(S)

Peak Shaving with Utility Operation

Peak shaving refers to the application of the system in which the generator set will parallel to a utility power source to subsidize customer load requirements while still maintaining the contractually agreed limit of power supplied by the utility power source. Typically, this is for the purpose of avoiding excess electrical demand charges.

ELECTRICAL DEMAND CONTROLLER (EDC)

An electrical demand controller is a third-party device responsible for monitoring electrical demand from utility, issuing start requests to generator sets, and biasing generator sets to control the amount of electrical demand on a utility power source.

ABBREVIATED SEQUENCE OF OPERATION

1. EDC senses that electrical demand on the utility power source has exceeded the customer-defined threshold, and all timers have elapsed.
   - 1.1 EDC issues the start request to the generator set.
   - 1.2 The generator set starts and builds rated voltage and frequency.
   - 1.3 The generator set synchronizes and closes to the utility power source.
   - 1.4 The EDC monitors the electrical demand on the utility power source and biases the generator set in proportion to the amount of load that must be shaved from the utility power source.
   - 1.5 The generator set begins to ramp on resistive and reactive load in proportion to a bias signal provided by the EDC.
   - 1.6 Regardless of fluctuations in the utility power source or building load, the EDC will constantly make adjustments to the bias signal to the generator set to maintain the agreed electrical demand on the utility power source to avoid peak demand charges.
2. EDC senses that electrical demand on the utility power source has fallen below the customer-defined threshold, and all timers have elapsed.
   - 2.1 EDC removes the start request from the generator set.
   - 2.2 The generator set sheds load until it produces very little power.
   - 2.3 After unloading, the generator set opens its breaker and disconnects from the utility power source.
   - 2.4 The generator set enters a controller-appointed, cool-down period.
   - 2.5 The generator set stops, returns to standby and awaits the next start request.

SYSTEM OPERATION

- Real power load sharing
- Reactive power load sharing

PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY MTU ONSITE ENERGY)

- MGC-3000 Series digital generator set controller (referred to as the controller)
- Meter current transformers (CTs) and potential transformer (PT) (as needed)
- Permanent Magnet Generator (PMG)
  - DVR2000E(+) digital voltage regulator (standard)
  - DVR2000EC(+) digital voltage regulator (optional)

- Motor-operated generator circuit breaker (may or may not be mounted to the generator set)*
  - Shunt trip
  - Shunt close
  - Auxiliary switch (breaker position)
  - Motorized spring charger

**If a circuit breaker is selected, MTU Onsite Energy will supply a motor-operated breaker of the indicated configuration.*

ADDITIONAL PARALLELING CONTROLS, EQUIPMENT, AND INTERFACING (SUPPLIED BY THIRD PARTY)

- Electrical Demand Controller (EDC) with connections for monitoring electrical demand from utility, issuing start requests to generator set, and biasing generator set to control the amount of electrical demand on a utility power source
- Paralleling switchgear, circuit breakers, and/or disconnects
- Electrical demand controller with bias capabilities
- Paralleling bus and cabling
- Start signal source connection to generator set
- Utility bus sensing connection to generator set

PROGRAMMING AND LOGIC

- Basic programming and logic will be provided to start, synchronize, and accept a bias signal to peak shave with the utility power source from the EDC.
- Site programming and system tuning are required by the customer for proper onsite operation.

OTHER SYSTEM CONSIDERATIONS

- For generator sets used in non-emergency applications within EPA regulated areas, Tier 4i/T4 Final certified engines must be used.

SEQUENCE OF OPERATION

Peak Shaving Request to Generator Set

The EDC monitors the electrical demand on the utility power source. When electrical demand exceeds a customer-defined threshold (adjustable) and all applicable delay timers have elapsed, the EDC will issue a start request to the generator set. The start request is a command for the generator set to start, synchronize to utility power source, and close its circuit breaker. All available generator sets will start and achieve nominal frequency and voltage.

Synchronization of Generator Set

The controller on the off-line generator set biases its digital voltage regulator and governor to match its speed and voltage to the utility bus. The controller biases the speed of the engine governor to drive the difference between the phase angle of the generator set and the phase angle of the utility bus to zero. Additionally, the controller biases the voltage regulator to match the generator set voltage to the utility bus voltage. When the synchronization window criteria are met, the generator set is considered synchronized with the utility bus, and the controller issues a command to close its circuit breaker. Once its circuit breaker is closed and the controller receives “breaker closed” feedback from the circuit breaker auxiliary switch, the generator set is considered paralleled. The controller no longer actively attempts to synchronize the generator set.

Peak Shaving

While paralleled, the generator set is electrically interlocked and will share real load (kW) and reactive load (kVAR) with the utility power source based on a bias signal supplied by the EDC. When the generator set circuit breaker is first connected, the generator set is producing a negligible amount of real power. The EDC will begin to bias the controller while the controller in turn biases the engine governor to begin loading kW on the generator set with respect to the bias signal from the EDC. Load will ramp onto the generator set until the generator set has shaved enough load off of utility to avoid excess demand charges to the customer.

Reactive load is also precisely shared between the paralleled generator set and the utility power source. When the generator set circuit breaker is first connected, the generator set produces a negligible amount of reactive power. The controller will bias the voltage regulator to begin loading kVARs onto the generator set in proportion to the amount of real power the generator set is producing. Load will ramp onto the generator set until the user-defined Power Factor (PF) set point is met.

As the generator set is peak shaving load off of the utility power source, the controller (in response to the EDC bias signal) will constantly adjust to fluctuations in load and in the utility power source to ensure that electrical demand on the utility source does not exceed the contractually agreed limit.

If a generator set experiences a fault while peak shaving, it will disconnect itself from the utility bus.

Termination of Peak Shaving Request to Generator Set

When the EDC senses that electrical demand on utility has fallen below the customer-defined threshold and all applicable delay timers have elapsed, the EDC will reduce the bias signal to the controller. The controller will bias the governor and voltage regulator to ramp load off of the generator set. Once the generator set is unloaded and has reached the pre-defined (adjustable) breaker open set point percentage, the EDC will remove the start request, and the generator set circuit breaker will open. The generator set will enter a cool-down period, after which time the generator set will stop, re-enter standby mode, and await the next start request.

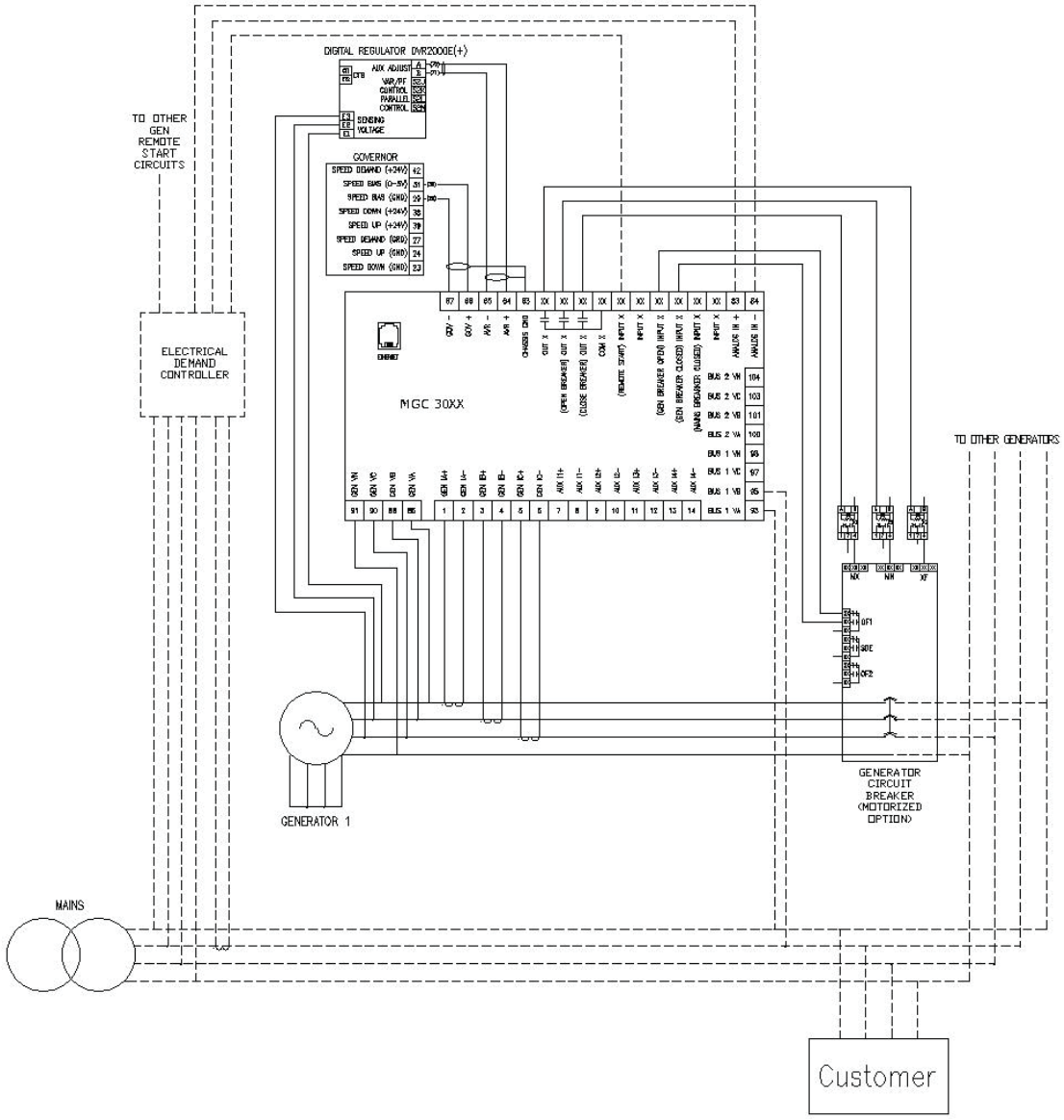


Figure 1: Peak Shaving with Utility

The dashed line (– – –) denotes wiring/equipment supplied by a third party

REMOTE DISPLAY PANEL
RDP-110 Data Sheet

HIGHLIGHTS

- Annunciation of eight alarms and seven pre-alarms as detected by the digital generator set controller
- Four programmable LEDs via BESTlogic™ *Plus*
- RS-485 communications reduces the number of interconnection wires to four
- Interconnect distance up to 4,000 ft
- UL Listed
- CSA Certified

DESCRIPTION

The RDP-110 is a remote annunciation device used in conjunction with digital generator set controllers to provide remote annunciation of the emergency standby generator system. This panel allows for two programmable alarms, two programmable pre-alarms, and is compatible with NFPA 110. The digital generator set controller detects an alarm or pre-alarm condition and communicates via RS-485 to the RDP-110. The RDP-110 is available in two mounting configurations: surface and semi-flush mount.

STANDARD FEATURES

- Eight LED Alarms
  - Low coolant level
  - Low oil pressure
  - Engine overspeed
  - Fuel leak*
  - High coolant temperature
  - Engine overcrank
  - Emergency stop activated
  - Sender failure*
- Seven LED Pre-Alarms
  - High coolant temperature
  - Low oil pressure
  - Battery overvoltage*
  - Battery charger failure*
  - Low coolant temperature
  - Low fuel level
  - Weak battery
- Three LED operating conditions
  - Switch not in auto
  - EPS supplying load
  - Display panel on
- Audible alarm horn rated at 90 dB (from a distance of two feet)
- Lamp test and alarm silence
- Power supply inputs for 12, 24 VDC, or 120 VAC (at the RDP-110 location)
- Available in two mounting configurations: semi-flush and surface mounted
- Conduit box included
- Designed for use in harsh environments

* Pre-configured, but can be reprogrammed and relabeled to match the function of the indicator.

REMOTE DISPLAY PANEL
RDP-110 Data Sheet

SPECIFICATIONS

Ordering Information

- MTU Onsite Energy Part Number (Flush mount): X00A30100046
- MTU Onsite Energy Part Number (Surface mount): X00A30100047

Power Input

- DC Voltage: 8-32 VDC (2.5W)
- AC Voltage: 80-144 VAC (5VA)

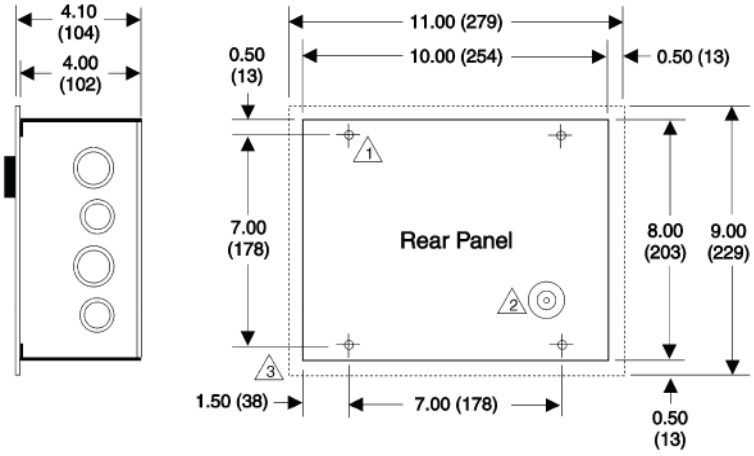
Environmental and Physical

- Operating Temperature: -40 °C to 70 °C (-40 °F to 158 °F)
- Storage Temperature: -40 °C to 85 °C (-40 °F to 185 °F)
- Salt Fog: Qualified to ASTM 117B-1989
- Vibration: The device withstands 2 g in each of the three mutually perpendicular planes, swept over the range of 10 to 500 Hz for a total of six sweeps, 15 minutes each sweep, without structural damage or degradation of performance.
- Shock: 15 g
- Weight: 6.5 lb (3 kg)

Agency Approvals

- NFPA 110 Level 1 Compliant
- UL Listed to UL 6200, file E97035
- CSA Certified to CSA C22.2 No. 14, file LR 23131

DIMENSIONS



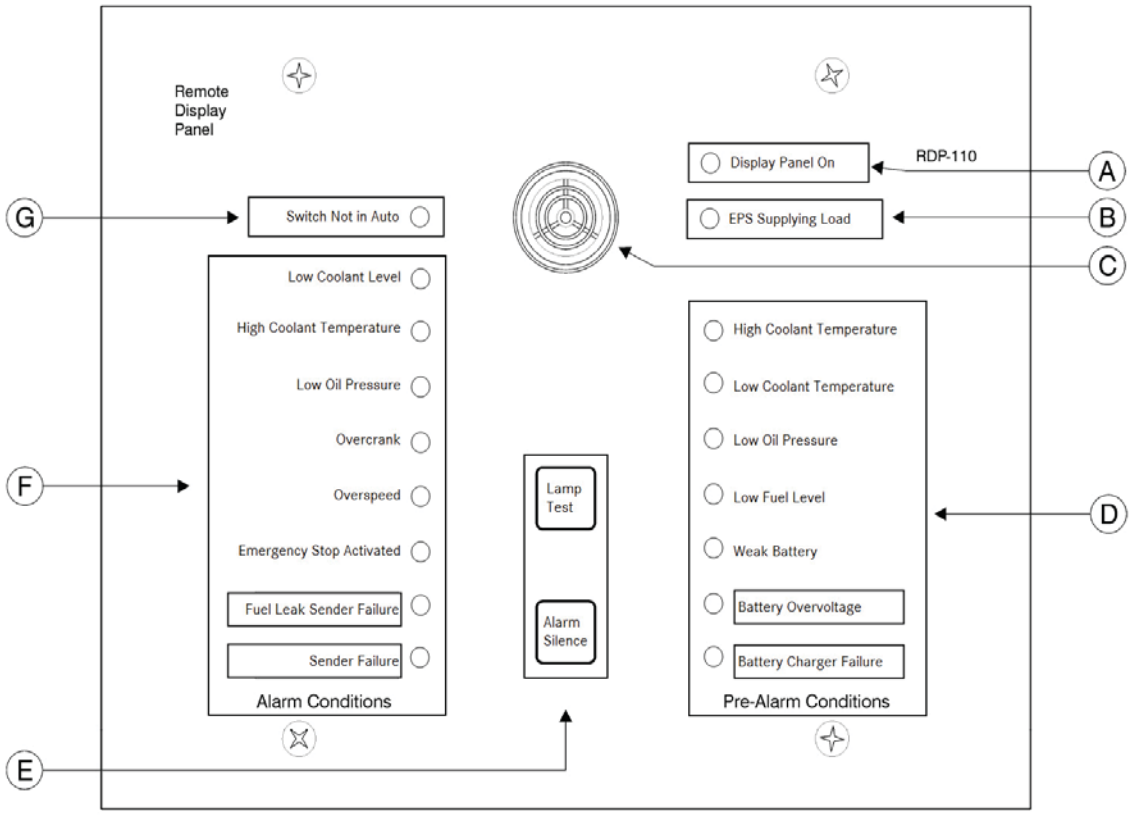
RDP-110 Mounting Dimensions

1. Mounting hole diameter (4 places, on rear wall of enclusure) is 0.281 in (7 mm).
2. Grounding point is 10-31 threaded hole.
3. Dashed line indicates outline of flush-mount panel.

Note: All dimensions are provided in inches (millimeters).

REMOTE DISPLAY PANEL
RDP-110 Data Sheet

PANEL DISPLAY



Front Panel Controls and Indicators

A Green LED lights when power is applied to the RDP-110.

B Green LED turns ON when the generator set is supplying more than 2% of rated load.

C The horn sounds when an alarm or pre-alarm exists or the connected digital generator set controller is not operating in Auto mode.

D Pre-Alarm LEDs light when the corresponding pre-alarm setting is exceeded.

E RDP-110 controls consist of two pushbuttons. The Alarm Silence pushbutton silences the horn. The Lamp Test pushbutton can be used to verify operation of all RDP-110 LEDs and the horn.

F Alarm LEDs light when the corresponding alarm setting is exceeded.

G Red LED lights when the digital generator set controller is not operating in Auto mode.

COMMERCIAL BATTERY
Data Sheet

Extra ruggedness and resistance to vibration, heat, chemicals, and physical abuse are built into every commercial battery that MTU Onsite Energy provides with their generator sets. The battery design features the latest in power storage technology for lead-acid batteries, as well as incorporates proven designs developed with the most experience in the business.

PRODUCT FEATURES

- Case Design: Tough, high-impact reinforced polypropylene case is heat sealed under extreme pressure to withstand heavy commercial service usage. This helps to prevent electrolyte leakage, improves reliability, and reduces breakage.
- Internal Design: Full-frame power path grids avoid sharp wires protruding through separators and directs the power straight to the lug for low resistance and higher cranking amps.
- Terminals: Standard terminals are solidly built preventing porosity, corrosion, black post, and harmful acid leaks.
- Power Density: Extra heavy-duty batteries deliver more cranking amps per pound.
- Maintenance: The battery uses pure de-mineralized electrolytes for reduced water loss, reduced gassing, longer battery life, and low maintenance.
- Reliability: Narrow ribs reduce separator corrosion to protect against shorts while deep-pocket envelopes dramatically improve reliability and extend service life.
- Quality: Over 250 quality control checks, combined with computer-aided design technology, provide a tough, durable battery in each commercial battery that MTU Onsite Energy provides with their generator sets.

						Overall Dimension			
BCI Group Size	Terminal Type	MTU Onsite Energy Part Number	Volt	Cranking Performance	Reserve Capacity	Length	Width	Height	Weight (Wet)
				CCA (Cold Cranking Amps) -18° C / 0° F		mm (in)	mm (in)	mm (in)	kg (lbs)
31	Post	SUA120299	12	950	175	330 (13)	171 (6.75)	241 (9.5)	25.7 (56.5)
4D	Post	SUA102493	12	1,050	290	527 (20.75)	216 (8.5)	258 (10.125)	45.2 (99.5)
8D	Post	SUA102492	12	1,400	430	527 (20.75)	279 (11)	254 (10)	59.3 (130.5)

BATTERY CHARGER
MicroGenius® 150 Battery Charger Data Sheet

The battery charger designed for heavy-duty industrial service:

- Rugged construction survives tough generator set environments
- Dynamic Boost™ Charge safely recharges faster than competitor products
- Field-selectable 12/24 volt output simplifies inventory management and field service
- Zero-volt charge automatically recharges fully discharged batteries
- Foolproof design protects against wrong AC input voltage and reverse battery polarity
- High efficiency models exceed new charger efficiency regulations

BENEFITS AND FEATURES

The MicroGenius® 150 battery charger's primary application is quick recharge and long-life maintenance of engine start batteries. Designed for emergency generator sets, the MicroGenius® 150 outperforms all competitor products with reliability, ease of use, and energy efficiency while performing the work of higher amperage chargers.

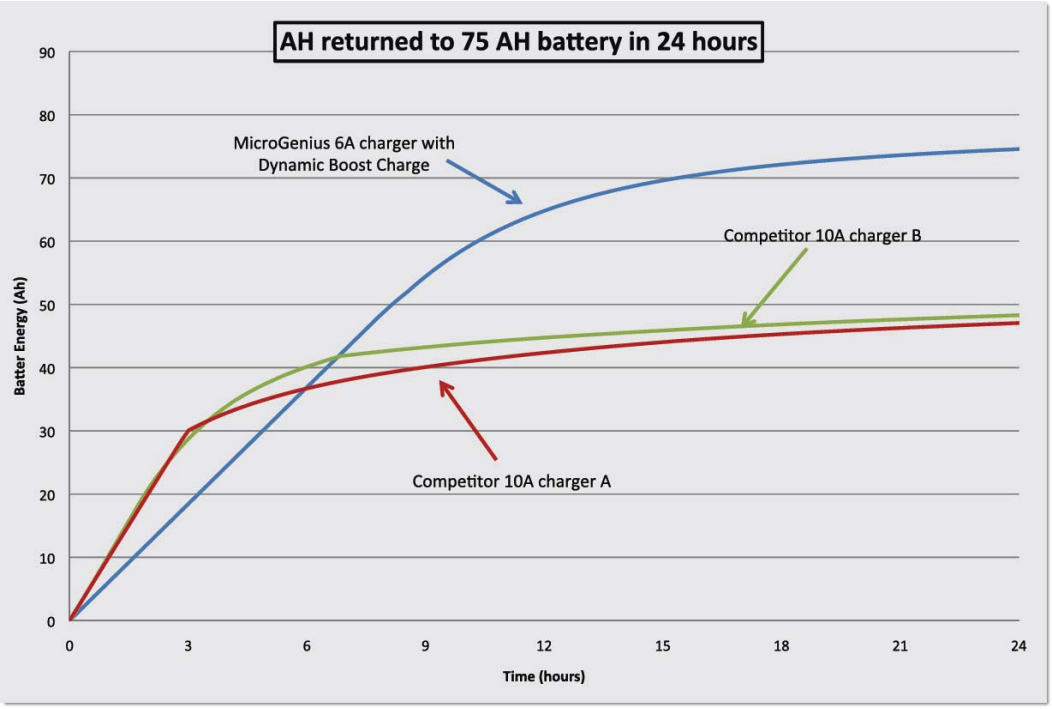
Rugged design protects from heat, cold, vibration, and water inside a generator set enclosure. Chargers can be connected to batteries that are dead with polarity reversed or the wrong voltage. MicroGenius® 150 and its NRG predecessor are the only generator set chargers that automatically protect the charger from the rigors of generator set duty.

- Universal AC input 100 - 240 VAC ±10%, 50 - 60 Hz ±5%
- 12 volts nominal or field-selectable 12/24 volts
- 150W output max; 10 amp output with 12 volt only model, 6 amp output with 12/24 volt switchable model
- Microprocessor controlled with firmware field upgrade capability
- Automatic charge algorithm: Boost mode for quick recharge, float mode for maintenance
- Precision current limiting
- ±0.5% voltage regulation
- Temperature compensated output with options of remote sensing or disabling temperature compensation
- Able to charge a dead battery
- -20 °C to 40 °C operation at full rated output, 45 °C for enclosed 12V - 6A models
- High and low temperature output power limiting permits operation at reduced output current up to 70 °C and down to -40 °C
- Conformally coated circuit boards
- Reverse battery protection
- Status indicator LEDs
- Enclosed metal chassis
- LCD display with precision digital ammeter and voltmeter, alarm relay Form C contacts
- Safety Isolated: DC output, alarm relay contacts, and external signal lines are safety isolated from the AC line. Isolation is provided by double-insulated components and by protective grounding of the metal chassis.
- MTU Onsite Energy standard warranty terms apply

BATTERY CHARGER
MicroGenius® 150 Battery Charger Data Sheet

The MicroGenius® 150 used the unique Dynamic Boost™ charge which is adaptable to changing DC loads, varying states of battery charge, and differing battery capacities. It provides protection from overcharge and damage; recharging batteries at the maximum possible rate without overcharging, while avoiding battery damage typical of older chargers set for fast recharge.

Dynamic Boost™ charge automatically and continually adjusts the charge profile, safely minimizing charge time for each generator set's unique combination of DC load, battery capacity, depth of discharge, and other real-world variables. Generator sets equipped with Dynamic Boost™ charger systems safely perform the work of higher amperage chargers, reducing charger size and cost while extending battery life.



Dynamic Boost Charge Comparison

BATTERY CHARGER
MicroGenius® 150 Battery Charger Data Sheet

SPECIFICATIONS

AC Input

Voltage and frequency	Auto ranging 100 - 240 VAC ±10% (90 - 265), 47 - 63 Hz
Input protection	1-pole fuse, transient protected
Inrush limiting	Inrush current limited to prevent fuse blowing or overstress
Efficiency	Exceeds CEC-400-2012-019-CM requirements
Power factor	Active power factor corrected to > 0.99 typical (0.95 min.) at full output

Charger Output

Nominal voltage rating	12 volt nominal or field selectable 12/24 volt nominal
Voltage adjustment	Three manually selected programs or adjustment in fine increments using optional MicroGenius® Setup Utility Kit
Current	Electronic current limiting to 6 or 10 amps depending on model
Charging characteristic	Constant voltage, current limited with variable multiple-rate boost charging
Line and load regulation	±0.5% line and load regulation
Output ripple	<100 mV wideband
Temperature compensation	Enable or disable any time; remote sensor optional
Output protection	Electronic current limit, 1-pole fuse, transient protected
Overvoltage protection	Self-resetting and selective: Overvoltage protection does not activate if the source of excessive voltage is outside the charger
Dead battery charge	Recharges from zero volts without the need for operator intervention
Load dump protection	Output voltage over-shoot is limited to 5% or less to prevent damage to connected devices in case battery is disconnected while charger is running.

Adjustments and Controls

Charge mode control	Fully automatic charging mode control. The Dynamic Boost™ Charge system maintains both lead-acid and Ni-Cad batteries at a high state of charge.
Manual adjustments	Enable 12 volt or 24 volt charging range (dual voltage models only). Select from three pre-programmed float voltage settings. Configure boost charge: No boost, moderate boost, high performance boost
Computer adjustment	Adjust output voltage, boost charge configuration, and alarm thresholds in fine increments via optional MicroGenius® Setup Utility Kit

Status Indication

LED status indicator	Two front panel LEDs indicate normal and alarm states

BATTERY CHARGER
MicroGenius® 150 Battery Charger Data Sheet

Display and Alarms

Display	Digital voltmeter accurate to ±2% and ammeter accurate to ±5% plus 20-character text display of normal and alarm status messages
LCD alpha-numeric display	Displays volts, amps, and alarm conditions
Form C alarm contacts	AC fail, charger fail, output fail, low battery volts, high battery volts
Alarm contact ratings	Rated 2A at 30 VDC, resistive load

Environmental

Operating temperature	-20 °C to 40 °C operation at full rated output, -40 °C to 70 °C at reduced output; natural convection cooled
Storage temperature	-40 °C to 85 °C
Over Temp. protection	Output current limit reduces gradually to maintain safe power device temperature
Humidity	5% to 95% non-condensing
Vibration	EN 60068-2-6 (4G, 18-500 Hz)
Shock	EN 60068-2-27 (15G)
Electrical transient immunity	See *Regulatory Compliance* section of this document

Regulatory Compliance

North America	c-UL-us Listed to UL 1236 and CSA Standard C22.2 no. 107.2
	UL file E109740
	NFPA: NFPA 70, NFPA 110
	FCC: Part 15, Class A
European Union	CE Marked
	EMC Directive: 2004/108/EC (EN 61000-60-2 and EN 61000-6-4)
	LVD Directive: 2006/95/EC (EN 60335-1 and EN 60335-2-29)
	RoHS 2 Directive: 2011/65/EU (EN 50581)
Seismic	Certified for rigid and non-structure wall mounting, maximum S_{DS} of 2.5g
	International Building Code: 2000, 2003, 2006, 2009, 2012
	California Building Code: 2007, 2010

Construction

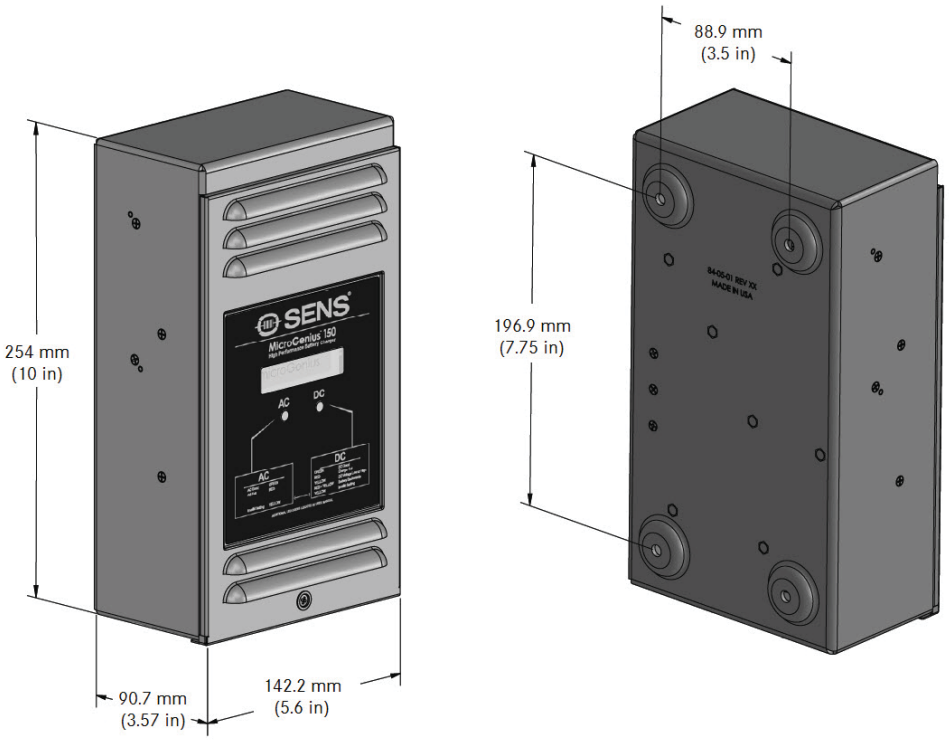
Housing configuration	IP22 powder coated aluminum; includes three 1/2" conduit openings
Dimensions	See *Diagrams and Dimensions* section of this document
Weight	1.5 kg (3.4 lbs)
Electrical connections	Charger: Terminal blocks accommodating 14 to 10 AWG
	Amp "Mate-N-Lok" connector available for volume OEM use on special order
	Alarms: Terminal blocks accommodating 28 to 16 AWG

Warranty

Standard Warranty	MTU Onsite Energy standard warranty terms apply

BATTERY CHARGER
MicroGenius® 150 Battery Charger Data Sheet

DIAGRAMS AND DIMENSIONS



MicroGenius Ordering Information				
Model	Output Volts	Output Amps	LCD Screen (Displays volts, amps, alarms)	NFPA 110 Alarm Contacts
SUA106215	12/24	6	Yes	Yes
XG3030100057	12	10	Yes	Yes

All models have auto-ranging AC supply, 100 - 240 volts, 50 - 60 Hz

BATTERY CHARGER
NRG Intelligent Engine Start Data Sheet

The Smart Choice for Mission-Critical Engine Starting:

- Fast, accurate, mission-critical charging gives best starting reliability
- 4-rate, temperature-compensated output offers longest battery life
- Replace nearly any charger without planning ahead
- Industry-first battery-fault alarm helps dispatch service early
- Lasting reliability – field MTBF > 1 million hours with industry-best warranty
- IBC seismic certification meets latest building codes, no installation delays
- Optional OSHPD pre-approval

BENEFITS AND FEATURES

Failure to start due to battery problems is the leading cause of inoperable engine generator sets.

The NRG battery charger maximizes starting system reliability while slashing generator set servicing costs:

- One NRG replaces almost any charger without extra site visits. Installers can select or change at any time 120, 208, or 240 volts AC input, 12 or 24-volt battery and output settings optimized for nearly any lead-acid or nickel cadmium battery.

- Easy to understand user interface provides state-of-the-art system status including digital metering, NFPA 110 alarms, and a battery fault alarm that can send service personnel to the site before failure to start.

- Batteries charged by NRG give higher performance and last longer. In uncontrolled environments, precision charging increases battery life and watering intervals 400% or more.

- NRG meets all relevant industry standards – including UL, NFPA 110, and CE. Seismic Certification per International Building Code (IBC) 2000, 2003, 2006. All units are C-UL listed. 50/60 Hz units add CE marking to UL agency marks.

EnerGenius reliability technology built into every charger includes:

- All-electronic operation with generous component de-rating
- Disconnected/reversed/incorrect voltage battery alarm and protection
- Protection of connected equipment against load dump transients
- Widest temperature rating and overtemperature protection
- Superior lightning and voltage transient protection
- Demonstrated field MTBF > 1 million hours
- MTU Onsite Energy standard warranty terms apply

BATTERY CHARGER
NRG Intelligent Engine Start Data Sheet

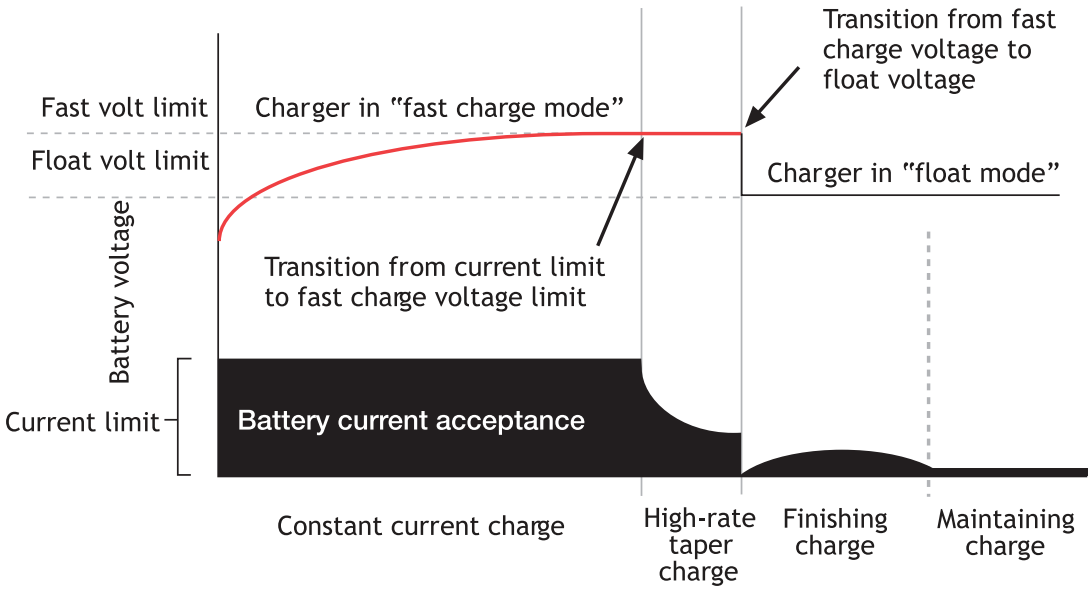
SPECIFICATIONS

AC Input

Voltage	110-120/208-240 VAC, ±10%, single phase, field selectable
Input current	10A charger: 6.6/3.3 amps maximum 20A charger: 12.6/6.3 amps maximum
Frequency	60 Hz ±5% standard; 50/60 Hz ±5% optional
Input protection	1-pole fuse, soft-start, transient suppression

Charger Output

Nominal voltage rating	12/24 volt, field selectable
Battery settings	Six discrete battery voltage programs - Low or high S.G. flooded - Low or high S.G. VRLA - Nickel cadmium 9, 10, 18, 19 or 20 cells
Regulation	±0.5% (1/2%) line and load regulation
Current	10 or 20 amps nominal
Electronic current limit	105% rated output typical—no crank disconnect required
Charge characteristic	Constant voltage, current limited, 4-rate automatic equalization
Temperature compensation	Enable or disable anytime, remote sensor optional
Output protection	Current limit, 1-pole fuse, transient suppression



Standard Four (4) Rate Charging

BATTERY CHARGER
NRG Intelligent Engine Start Data Sheet

User Interface, Indication and Alarms

Digital meter	Automatic meter alternately displays output volts, amps[1]
Accuracy	±2% volts, ±5% amp
Alarms	LED and Form C contact(s) per table:

	Alarm Code "C" (meets requirements of NFPA 110)
AC good	LED
Float mode	LED
Fast charge	LED
Temp comp active	LED
AC fail	LED and Form C contact[2]
Low battery volts	LED and Form C contact[2]
High battery volts	LED and Form C contact[2]
Charger fail	LED and Form C contact[2]
Battery Fault[3]	LED and Form C contact[2]

Front panel status display

1. Three-position jumper allows user to select from three display settings: alternating volts / amps (normal), constant volts, or constant amps
2. Contacts rated 2A at 30 VDC resistive
3. Battery fault alarm indicates these fault conditions:
- Battery disconnected - Battery polarity reversed - Mismatched charger battery voltage - Open or high resistance charger to battery connection
- Open battery cell or excessive internal resistance

Controls

AC input voltage select	Field-selectable switch
12/24-volt output select	Field-selectable two-position jumper
Battery program select	Field-selectable six-position jumper
Meter display select	Field-selectable three-position jumper
Fast charger enable/disable	Field-selectable two-position jumper
Temp compensation enable	Standard. Can be disabled or re-enabled in the field
Remote temp comp enable	Connect optional remote sensor to temp comp port

Simple field adjustments

Environmental

Operating temperature	-20 °C to 60 °C, meets full specification to 45 °C
Over temperature protection	Gradual current reduction to maintain safe power device temperature
Humidity	5% to 95%, non-condensing
Vibration (10A unit)	UL 991 Class B (2G sinusoidal)
Transient immunity	ANSI/IEEE C62.41, Cat. B, EN50082-2 heavy industrial, EN 61000-6-2
Seismic Certification	IBC 2000, 2003, 2006, 2009; Maximum S_{ds} of 2.28 g; Optional OSHPD pre-approval

BATTERY CHARGER
NRG Intelligent Engine Start Data Sheet

Agency Standards

Safety	c-UL-us Listed to UL 1236 and CSA standard 22.2 no. 107.2. UL file E109740 CE: 50/60 Hz units DOC to EN 60335
Agency marking	60 Hz: c-UL-us Listed 50/60 Hz: c-UL-us Listed plus CE marked
EMC	Emissions: FCC Part 15, Class B; EN 50081-2 Immunity: EN 61000-6-2
NFPA standards	NFPA 70, NFPA 110. (NFPA 110 requires Alarms “C”)
Optional agency compliance	OSHPD pre-approval

Construction

Material	Non-corroding aluminum enclosure
Dimensions	See *Diagrams and Dimensions* section of this document
Printed circuit card	Surface mount technology, conformal coated
Cooling	Natural convection
Protection degree	Listed housing: NEMA-1 (IP20). Optional IP21 drip shield. Optional NEMA 3R enclosure
Damage prevention	Fully recessed display and controls
Electrical connections	Compression terminal blocks

Warranty

Standard warranty	MTU Onsite Energy standard warranty terms apply

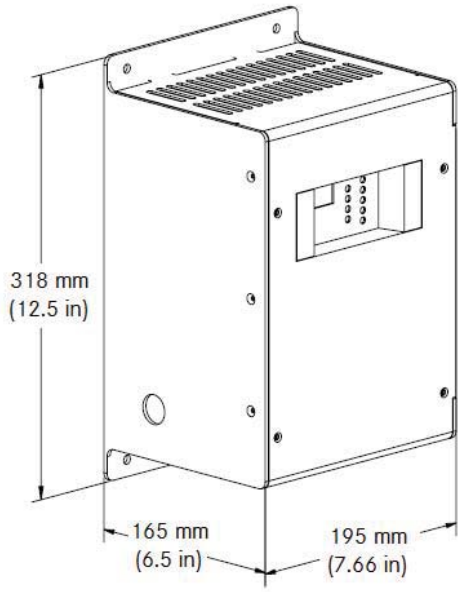
Optional Features

Input	Input frequency, 50/60 Hz
Remote temp comp sensor	Recommended where battery and charger are in different locations
Drip shield meets s/b (IP21)	Protects from dripping water
NEMA 3R housing	Enables outdoor installation (remote temp sensor recommended)

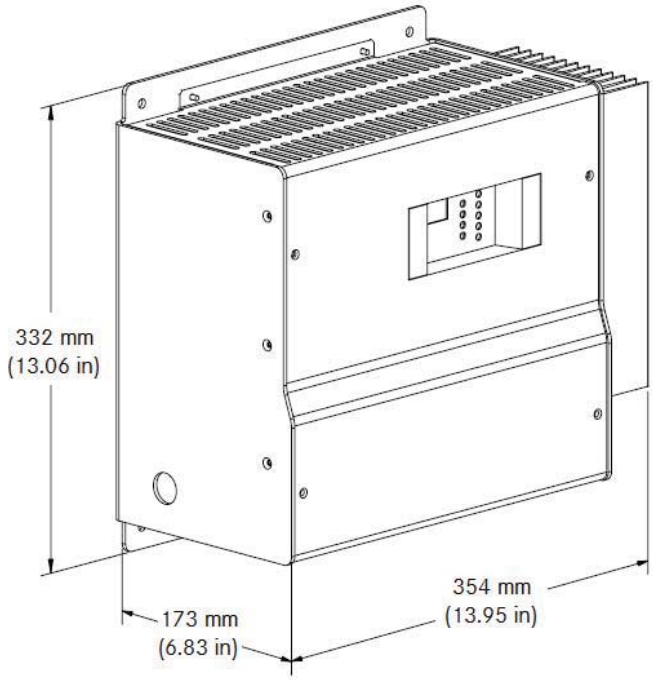
BATTERY CHARGER
NRG Intelligent Engine Start Data Sheet

DIAGRAMS AND DIMENSIONS

10A Chargers



20A Chargers



NRG Ordering Information						
Output Volts	Output Amps	Frequency	Model	Available Configurations	NFPA 110 Alarms	Weight kg (lbs)
12/24	10	60 Hz	SUA83187	Enclosed	Yes	10.4 (23)
12/24	20	60 Hz	SUA90170	Enclosed	Yes	19.1 (42)
12/24	10	50/60 Hz	SUA89983	Enclosed	Yes	10.4 (23)
12/24	20	50/60 Hz	SUA94705	Enclosed	Yes	19.1 (42)

All models offer field-selectable input 120/208-240 volts.

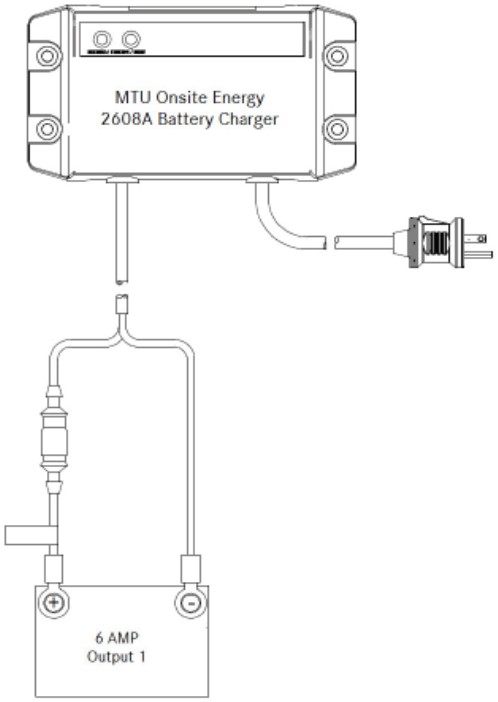
ISO 9000 · c UL us LISTED · CE · SEISMIC IBC 2006 CERTIFIED · EMC IEC 61000-6-2 IMMUNITY · oshpd PRE-APPROVED

BATTERY CHARGER
2608A Data Sheet

FEATURES
- Watertight, shock and corrosion resistant
- Short circuit and thermal protection
- LED status indicator
- Reverse polarity protection

DESCRIPTION
The 2608A battery charger is designed to recharge batteries as well as extend the battery's life in applications where it is stored for long periods of time. This charger is "3-stage" electronic, completely automatic, and lightweight. Unlike automotive trickle chargers, the 2608A will not overcharge batteries. The visible red and green LED lights on the charger faceplate allow for easy operation.

SPECIFICATIONS
- MTU Onsite Energy Part #: SUA79100
- Output Volts: 12 Volts
- Output Amps: 6 Amps
- Load Banks: 1 Bank
- DC Cable Length: 1219.2 mm (48 in)
- Dimensions (L x W x H): 88.9 mm (3.5 in) x 162.56 mm (6.4 in) x 57.15 mm (2.25 in)
- Input Volts: 115 VAC - 50/60 Hz
- Input Amps Max: 2 Amps



2608A Battery Charger Schematic

OPTIONAL COOLING PACKAGE
Data Sheet

The values on this data sheet represent optional cooling package alternatives to the standard cooling packages on our units. For data describing our standard products, please refer to individual spec sheets. Optional cooling packages are only available for the units shown on this data sheet.

Model	Power Node	Ambient Capacity: °C (°F)	Total Coolant Capacity: L (gal)	Fan Power: kW (hp)	Air Flow Required for Rad. Cooled Unit: m^3/min* (SCFM)	Maximum Cooling Air Flow Static Restriction: kPa (in. H_20)	Level 0: Open Power Unit Sound Level: dB(A)	Dimensions Height: mm (in.)	Dimensions Length: mm (in.)	Dimensions Width: mm (in.)
Series 2000 Prime										
MTU 12V2000 DS750	**680 kW**	50 (122)	294.7 (77.8)	38 (50.9)	1,132 (39,976)	0.125 (0.50)	C/F	2,222 (87.5)	4,395 (173)	1,759 (69.25)
Series 2000 Standby										
MTU 12V2000 DS750	**750 kW**	50 (122)	294.7 (77.8)	38 (50.9)	1,132 (39,976)	0.125 (0.50)	89.9	2,222 (87.5)	4,395 (173)	1,759 (69.25)
Series 4000 Prime										
MTU 12V4000 DS1500	**1,400 kW**	50 (122)	578.5 (152.8)	82.4 (110.5)	1,518 (53,608)	0.125 (0.50)	C/F	2,902 (114.25)	6,172 (243)	2,632 (103.63)
MTU 12V4000 DS1750	**1,600 kW**	50 (122)	578.5 (152.8)	76.2 (102.2)	1,702 (60,106)	0.125 (0.50)	C/F	2,902 (114.25)	6,172 (243)	2,632 (103.63)
MTU 16V4000 DS2000	**1,800 kW**	50 (122)	590.3 (155.9)	94.9 (127.2)	2,270 (80,164)	0.125 (0.50)	C/F	3,493 (137.5)	6,630 (261)	2,960 (116.5)
MTU 16V4000 DS2250	**2,045 kW**	50 (122)	609.2 (160.9)	105 (140.8)	2,520 (88,993)	0.125 (0.50)	C/F	3,493 (137.5)	6,630 (261)	2,960 (116.5)
Series 4000 Standby										
MTU 12V4000 DS1500	**1,500 kW**	50 (122)	578.5 (152.8)	82.4 (110.5)	1,518 (53,608)	0.125 (0.50)	C/F	2,902 (114.25)	6,172 (243)	2,632 (103.63)
MTU 12V4000 DS1750	**1,750 kW**	50 (122)	578.5 (152.8)	76.2 (102.2)	1,702 (60,106)	0.125 (0.50)	C/F	2,902 (114.25)	6,172 (243)	2,632 (103.63)
MTU 16V4000 DS2000	**2,000 kW**	50 (122)	590.3 (155.9)	94.9 (127.2)	2,270 (80,164)	0.125 (0.50)	C/F	3,493 (137.5)	6,630 (261)	2,960 (116.5)
MTU 16V4000 DS2250	**2,250 kW**	50 (122)	609.2 (160.9)	105 (140.8)	2,520 (88,993)	0.125 (0.50)	93.8	3,493 (137.5)	6,630 (261)	2,960 (116.5)
MTU 16V4000 DS2500	**2,500 kW**	C/F	C/F	C/F	C/F	C/F	C/F	3,454 (136)	7,315 (288)	3,023 (119)
MTU 20V4000 DS2800	**2,800 kW**	50 (122)	822.8 (217.4)	112.3 (150.6)	3,621 (127,874)	0.125 (0.50)	C/F	3,810 (150)	8,128 (320)	3,353 (132)
MTU 20V4000 DS3000	**3,000 kW**	50 (122)	1,012.1 (267.4)	115 (154.2)	3,833 (135,361)	0.125 (0.50)	94.6	3,810 (150)	8,128 (320)	3,353 (132)
MTU 20V4000 DS3250	**3,250 kW**	50 (122)	1,012.1 (267.4)	115 (154.2)	3,833 (135,361)	0.125 (0.50)	C/F	3,810 (150)	8,128 (320)	3,353 (132)

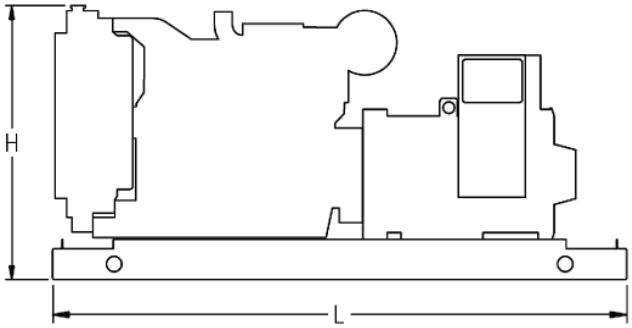
*Air density = 1.184 kg/ m^3 (0.0739 lbm/ft^3)

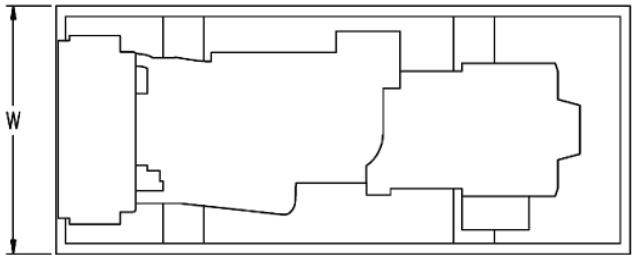
C/F = Consult Factory / MTU Onsite Energy Distributor

OPTIONAL COOLING PACKAGE
Data Sheet

NOTES:

- Data is the result of laboratory tests with engines representing these ratings.
- Site installation variables such as temperature and altitude may impact cooling performance. For site specific data, refer to PS-SPEC at www.mtuonsiteenergy.com.
- All information is based on 25 °C at 100 m operating conditions.
- Consult your MTU Onsite Energy distributor for specific generator set dimensions.





FUEL LIFT PUMP
Data Sheet

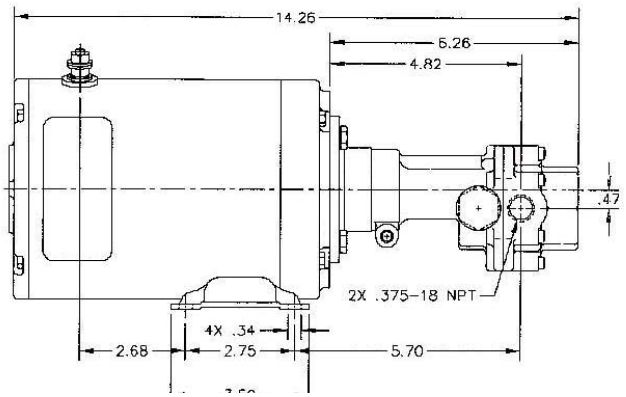
DESCRIPTION

The MTU Onsite Energy-supplied auxiliary fuel lift pump is comprised of a rotary gear pump head coupled to an electric motor. The 24 VDC permanent magnet motor is rated at 1/4 HP. The pump head features a bronze design with 303 stainless steel shafts, Viton lip seals, and an integral relief valve.* The recommended liquid temperature range is from -40 °F to 300 °F.**

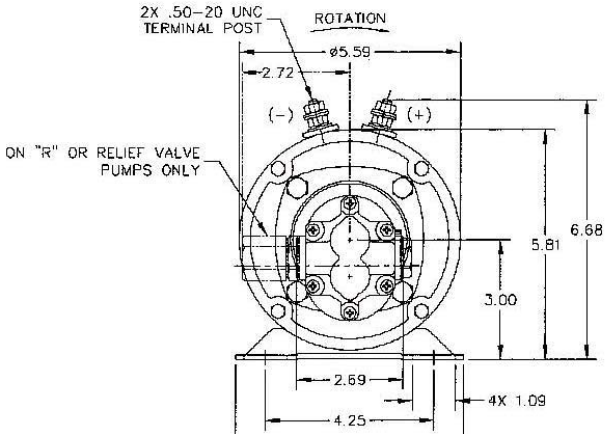
This auxiliary fuel lift pump is capable of lifting 20 ft of water when in new condition. For optimum performance, suction lines should be kept as short as possible. When drawing from distances over 3 ft, the suction lines should be sized a minimum of one or two sizes larger than the pump inlet ports.

SPECIFICATIONS

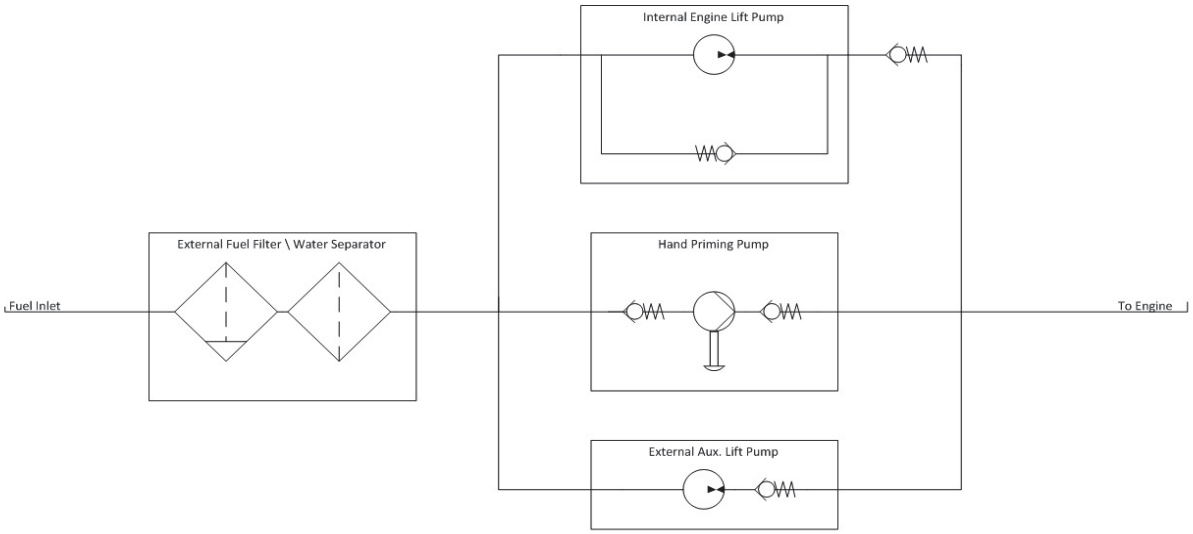
- MTU Onsite Energy Part Number: SUA104114
- Bronze and stainless steel wetted components
- Viton lip seals
- Self-lubricating bearings
- 24 VDC, 1/4 HP electric motor
- 3/8" NPT ports
- Built-in relief valve



Fuel Lift Pump: Side View



Fuel Lift Pump: Front View

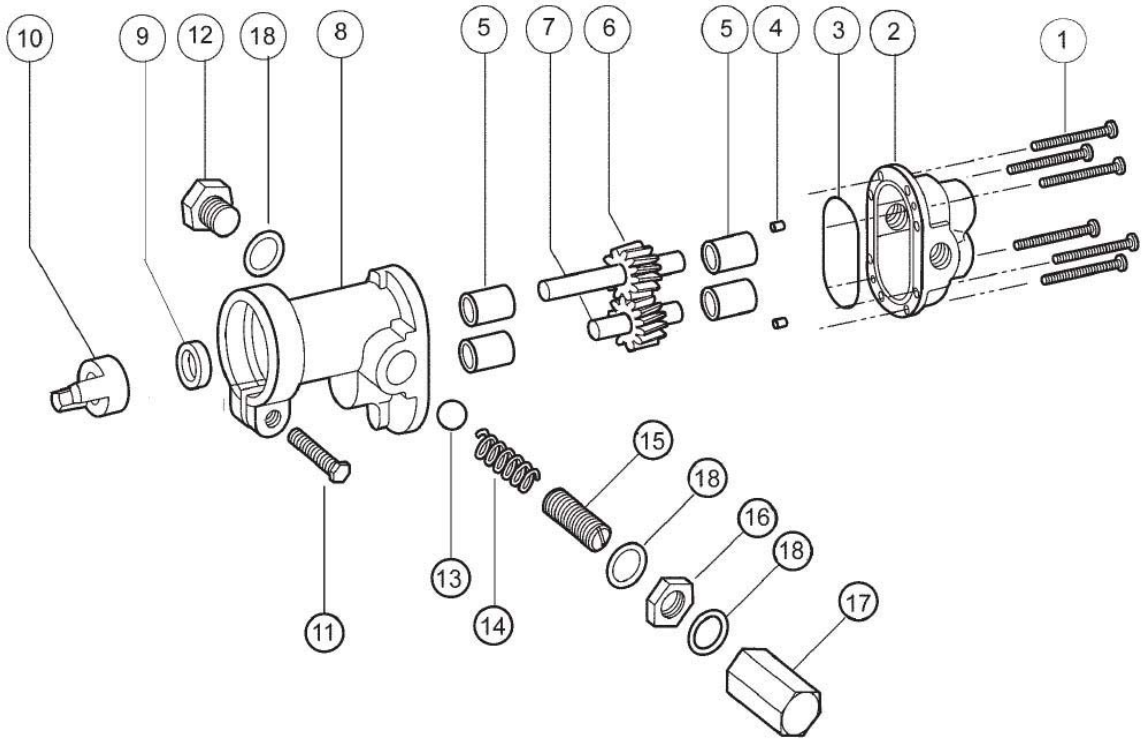


Fuel Lift Pump: Schematic

* The integral relief valve is designed as a safety against overpressurization and is not intended for continuous duty. Use in continuous duty will cause the pump to overheat.

** Liquids should not be allowed to freeze in the pump as this can cause pump damage.

FUEL LIFT PUMP
Data Sheet



Fuel Lift Pump: Exploded View

PARTS LIST

Each item in the Parts List below corresponds to its number in the diagram above.

Item #	Description	Quantity
1	Screw	6
2	Body	1
3	O-Ring	1
4	Dowel Pin	2
5	Bearing	4
6	Drive Gear Assembly	1
7	Idle Gear Assembly	1
8	Cover	1
9	Lip Seal	1

Item #	Description	Quantity
10	Coupling	1
11	Screw	1
12	Plug Nut	1
13	Ball	1
14	Spring	1
15	Adjustment Screw	1
16	Locknut	1
17	Bypass Nut	1
18	Fiber Washer	3

GASEOUS FUEL SYSTEM
Fuel System Specifications Data Sheet

MTU Onsite Energy has developed a custom fuel system using common gaseous fuel system components that features a state-of-the-art Engine Control Module (ECM) which has the latest technology available incorporated.

As today's emissions regulations get stricter on engines, other solutions are necessary to comply. This is accomplished with the new MTU Onsite Energy gaseous generator sets by using a closed loop fuel system utilizing sequential ignition and after treatment (where required). This system is capable of detecting engine faults and protecting itself from harm while also alerting the user with a Malfunction Indicator Light (MIL) through the digital generator set controller. The ECM communicates with the controller to allow a fully integrated system sharing necessary information between components reducing additional sensors. The MTU Onsite Energy fuel system is adept to operating conditions and changes parameters based on its surroundings for variables such as barometric pressure and intake air temperature. Knock sensing is also a built-in function to the fuel system allowing peak power for the environmental conditions of the unit when this protection is deemed necessary.

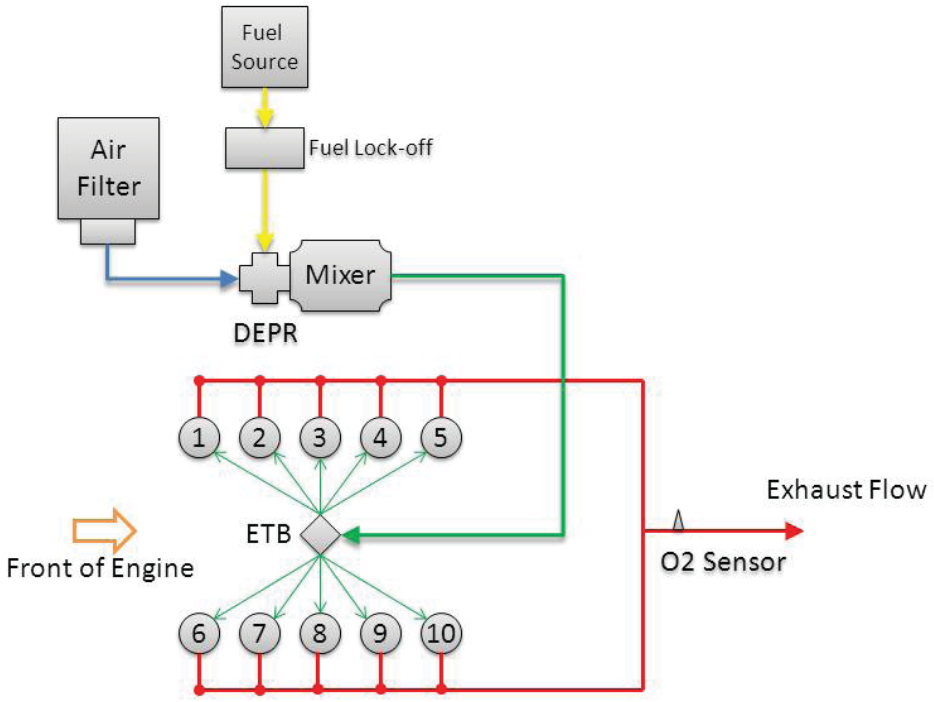
The MTU Onsite Energy fuel system utilizes a Windows®-based interface for viewing the engine parameters along with diagnostic tools for determining component failures, allowing quick solutions in the field.

PRODUCT HIGHLIGHTS

MTU Onsite Energy fuel system capabilities include (but are not limited to):

- CAN J-1939 for full communication with the digital generator set controller amongst other devices capable of reading CANBus signals
- Closed Loop Lambda Control for EPA Compliance
- Sequential Ignition System
- Electronic Governing
- Controls engines up to 10 cylinders
- Electronic Fuel Lock-Off Control
- Built-In Engine Data Logger
- Built-In Engine Protection from engine faults
- Every fuel system pre-programmed for single fuel operation on both NG or LPG fuel
- Active Knock Control (where applicable)

GASEOUS FUEL SYSTEM
Fuel System Specifications Data Sheet



Fuel System Overview Diagram (10V shown)

**DEPR = Digital Electronic Pressure Regulator

FUEL SYSTEM
Single Valve Gas Solenoid Data Sheet

Internal pilot operated solenoid valve used to control the flow of fuel gases in generator systems. This compact valve design exceeds flow requirements and is also capable of withstanding temperatures as low as -40 °F.

DESCRIPTION

- Unique double disc design with overtravel provides redundant sealing for leak tight shutoff
- For on-off control of fuel gas
- ⅛" NPT pipe taps with plugs for routine testing

VALVE CONSTRUCTION

Valve Part Materials	
Body	Aluminum
Seals and Disc	NBR
Core Tube	305 Stainless Steel
Core Guide	Acetal
Rider Ring	PTFE
Core and Plugnut	430F Stainless Steel
Springs	302 Stainless Steel
Shading Coil	Copper
Pipe Plug	Zinc-Plated Steel

ELECTRICAL

Standard Coil and Class of Insulation	B
DC Watts	14.9

VALVE RESPONSE TIME

Opening Time	Less than 1 second
Closing Time	Less than 1 second

APPROVALS

UL Listed to standard 429 “Electrically Operated Valves” Guide YIOZ, File MP618 Safety Shutoff Valves.

CSA Certified to:
1. Standard C22.2 No. 139 “Electrically Operated Valves”, File 010381
2. Automatic Gas Valves Z21.21 (6.5), C/I, File 112872
3. Automatic Gas Safety Shutoff Valves (3.9), File 112872

NPT	Voltage	Part Number
¾"	12	SUA46013
1"	12	SUA46021
1 ½"	12	SUA86725
1 ½"	24	SUA87895
2"	24	SUA86726

FUEL SYSTEM
Dual Valve Gas Solenoid Data Sheet

There are two primary types of valves. Valve 1 features two normally closed safety shutoff valves in one housing, as well as a maximum flow adjustment. Valve 2 features two normally closed safety shutoff valves with a gas pressure regulator in one housing. Both valve types are used in single and dual fuel systems to regulate the flow of gaseous fuels to generator systems, and are also fast opening and fast closing.

CERTIFICATIONS AND STANDARDS

All models are:
- CSA Certified
- UL Recognized

PART NUMBER LIST

12 Volt Systems	24 Volt Systems
SUA102426	SUA102427
SUA102428	SUA102429
	SUA97687

SPECIFICATIONS

	Valve 1	Valve 2
Part Numbers	SUA97687	SUA102426, SUA102427, SUA102428, and SUA102429
Gases	Natural Gas, Propane	Natural Gas, Propane
Maximum Operating Pressure	5 psi	5 psi
Maximum Close-Off Pressure	C/F	7 psi
Ambient Temperature	5 °F to 140 °F	-40 °F to 140 °F
Cycle Rate	C/F	60 Cycles/Hour
Operating Time	100% Duty Cycle	100% Duty Cycle
Valve Construction		
Housing	Aluminum, Steel	Aluminum, Steel
Seal on Valve Seats	NBR-based rubber	NBR-based rubber
Valve Response Time		
Opening Time	Less than 1 second	Less than 1 second
Closing Time	Less than 1 second	Less than 1 second

SUPPLEMENTAL HARDWARE

Valve	1 ½" Flange	2" Flange	Gas Pressure Switch
SUA97687	N/A	SUA97686	N/A
SUA102426	SUA91990	SUA91991	SUA91987
SUA102427	SUA91990	SUA91991	SUA91987
SUA102428	SUA91992	N/A	SUA91987
SUA102429	SUA91992	N/A	SUA91987

FUEL SYSTEM
Sub-Base Tank Data Sheet

MTU Onsite Energy's sub-base fuel tanks are manufactured and listed per UL142 and ULC-S601 standards for steel above-ground tanks. These certifications assure that our tanks meet the structural and mechanical integrity requirements for mounting generator sets directly on top, providing our customers with a safe and efficient fuel storage system. These tanks are suitable for above-ground storage of non-corrosive, stable, flammable, or combustible liquids that have a specific gravity not exceeding that of water. They are intended for installation and use in accordance with the codes referenced in the *Certifications and Standards* section. The secondary containment construction consists of a steel tank within a closed steel containment dike that is capable of being monitored for leakage.

STANDARD FEATURES

- Fuel fill drop tube
- Normal vent
- Emergency vent
- Manual fill
- Lockable fill cap
- Level alarm
- Basin drain (plugged)
- Removable supply and return dip tubes
- Leak detection
- Black paint finish
- Secondary containment
- Electrical stub-up area: Provides space for generator set electrical connections and internal wiring capabilities
- Baffles: Separates cold engine supply fuel from hot returning fuel (additional baffling as required for structural integrity)
- Fuel level gauge: A direct-reading fuel level gauge with electric sender

OPTIONAL FEATURES

- High fuel pre-alarm and low fuel level shutdown
- Five-gallon spill/fill containment box with lockable hatch
- Fuel tanks to meet local jurisdictions/codes
- IBC Certification 2006, 2009, and 2012

CERTIFICATIONS AND STANDARDS

United States

- UL 142
- NFPA 30
- NFPA 37
- NFPA 110
- International Fire Code

Canada

- ULC-S601
- Part 4: National Fire Code of Canada
- CSA B139
- CSA C282
- CCME PN 1326

OPTIONAL REGIONAL CODE KITS

MTU Onsite Energy offers pre-engineered kits that can be added to sub-base fuel tanks on 30-600 kW generator sets. These kits meet the regional codes for listed counties and states. Reference the table on page 3 for the contents of each code kit.

FUEL SYSTEM
Sub-Base Tank Data Sheet

Code Jurisdiction	Code Kit Contents																		
	Low Fuel Switch (50%)	High Fuel Switch (90%)	Critical High Switch (95%)	Fuel Alarm Panel	Fuel Fill Spill Containment (5 Gallon)	Overfill Prevention Valve (OFPV)	Fire Rated Fuel Lines	Camlock Fill	Hazmat Label	Vent Whistle	Regional Labeling	Fuel Fill Drop Tube	Fuel Supply Check Valve	Fuel Supply Ball Valve	Tank Risers*	Extended Vents (12 ft above grade)	Fuel Leak Switch	IBC (Optional)
California	x	x		x	x	x		x	x			x	x			x	x	x	x
Colorado	x	x		x	x	x		x	x			x	x		x	x	x	x	x
Dallas, TX		x		x	x	x			x			x	x			x	x	x	x
Denver, CO	x	x		x	x	x		x	x			x	x			x	x	x	x
Florida (FDEP)		x		x	x	x		x	x		x	x	x		x		x	x	x
Georgia	x	x		x	x	x		x	x			x	x			x	x	x	x
Georgia (GEFA)	x	x		x	x	x		x	x			x	x			x	x	x	x
IFC 2003 / 2006 / 2009	x	x		x	x	x		x	x			x	x			x	x	x	x
Iowa	x	x			x				x			x	x				x	x	x
King County, WA	x	x	x	x	x	x		x	x			x	x			x	x	x	x
Maryland	x	x		x	x	x		x	x			x	x				x	x	x
Massachusetts	x	x			x				x			x	x				x	x	x
Michigan		x		x	x	x	x	x	x		x	x	x		x	x	x	x	x
Montana		x		x	x	x			x			x	x		x		x	x	x
Nassau, NY	x	x		x	x	x		x	x			x	x		x	x	x	x	
Nebraska	x	x			x				x			x	x				x	x	x
New Hampshire			x	x	x	x			x			x	x	x			x	x	x
North Carolina	x	x				x		x	x			x	x				x	x	x
Ohio	x	x		x	x	x		x	x			x	x				x	x	x
Oklahoma	x	x	x	x	x	x		x	x			x	x		x	x	x	x	x
Ontario	x	x			x	x		x	x	x	x	x	x			x	x	x	x
Phoenix, AZ	x	x				x		x	x			x	x			x	x	x	x
San Francisco, CA	x	x		x	x	x		x	x			x	x			x	x	x	x
Suffolk, NY	x	x		x	x	x	x	x	x			x	x		x	x	x	x	
Washington	x	x		x	x	x		x	x			x	x			x	x	x	x
Wisconsin	x	x		x	x	x		x	x			x	x				x	x	x

* Risers meet minimum code requirements.
Note: Verify regional code requirements prior to specification.

POWER TAKE OFF SERIES™

MTU Onsite Energy's Power Take Off (PTO) Series is the most complete selection in the industry with features that assure the quality and dependability found in all MTU Onsite Energy products.

PTO Alternator Accessories/Options:

- Heavy-duty shielded power shaft
- Unit mounted vibration isolated meter panel
- Two-wheeled off-highway transport trailer
- Speed monitor for remote monitoring of alternator output
- Protective canvas cover with drawstring
- CSA approved models available
- 540 or 1000 RPM gearbox optional through 60kW single phase, or 55kW three phase; 1000 RPM standard above 60kW

PTO Performance Features:

- Five-year warranty
- 1% automatic voltage regulation
- Easy to use "speed monitor light" for precise RPM and voltage control with 99.5% accuracy
- 100% copper windings with Class H insulation
- Helical gear drive for max strength and quiet operation
- The highest efficiency ratings in the industry, 25% overspeed rated
- Four pole slow speed, 1800 RPM, 100% brushless design
- Full load connector through 105kW, with spring loaded cover
- Full load testing of each and every production unit
- Solid state full wave brushless exciter for reliability and superior motor starting
- Rated for continuous standby duty
- Drip proof design with rodent screen
- 15 amp-240 volt and 50 amp-240 volt receptacle with breaker
- External grounding terminal

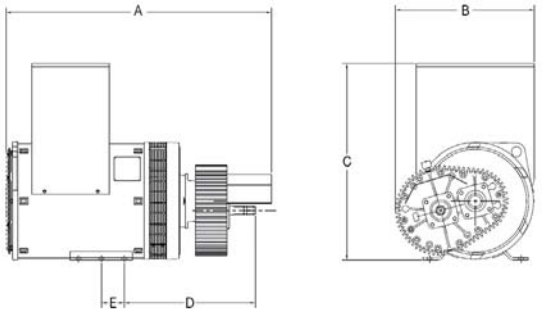
MTU Onsite Energy Corporation
A Rolls-Royce Power Systems Company

MTU Onsite Energy / 100 Power Drive / Mankato / Minnesota 56001
Phone 507 625 7973 / Fax 507 625 2968 / Toll Free 800 325 5450

www.mtuonsiteenergy.com

PTO SERIES™

DEPENDABLE POWER SOLUTIONS. IT'S ALL WE DO.



DIMENSIONS AND WEIGHTS - SINGLE PHASE MODELS

Model	kW	kVA	Momentary Surge Watts	Minimum Required HP	WEIGHT (lbs.)				DIMENSIONS (in.)				
					Approx. Net	Approx. Ship	Power Shaft	Trailer	A	B	C	D	E
KLM1-25	25	25	75,000	35	450	550	45	235	31 1/8	16 5/8	24 1/8	17 3/8	5
KLM1-40	40	40	120,000	65	735	835	45	235	40 1/2	21 1/8	29 7/8	20	3 1/2
KLM1-50	50	50	150,000	78	760	860	45	235	40 1/2	21 1/8	29 7/8	20	3 1/2
KLM1-60	60	60	180,000	92	780	880	45	235	40 1/2	21 1/8	29 7/8	20	3 1/2
KLM1-75	75	75	225,000	113	930	1030	45	235	44 1/8	21 1/8	33 7/8	22 1/4	3 1/2
KLM1-100	100	100	300,000	151	1,080	1,180	48	295	44 1/8	21 1/8	33 7/8	22 1/4	3 1/2

DIMENSIONS AND WEIGHTS - THREE PHASE MODELS

Model	kW	kVA	Momentary Surge Watts	Minimum Required HP	WEIGHT (lbs.)				DIMENSIONS (in.)				
					Approx. Net	Approx. Ship	Power Shaft	Trailer	A	B	C	D	E
KLM3-45	45	56.25	135,000	72	735	835	45	235	40 1/2	21 1/8	29 7/8	20	3 1/2
KLM3-55	55	68.75	165,000	85	755	855	45	235	40 1/2	21 1/8	29 7/8	20	3 1/2
KLM3-65	65	81.25	195,000	100	785	885	45	235	40 1/2	21 1/8	29 7/8	20	3 1/2
KLM3-85	85	106.25	255,000	131	915	1,015	45	235	44 1/8	21 1/8	33 7/8	22 1/4	3 1/2
KLM3-105	105	131.25	315,000	160	945	1,045	45	295	44 1/8	21 1/8	33 7/8	22 1/4	3 1/2
KLM3-135	135	168.75	405,000	202	1,220	1,320	63	295	44 1/8	21 1/8	33 7/8	22 1/4	3 1/2

CAUTION: If operating your PTO generator with a tractor that has an electrically engaged PTO system you will have to use a PTO shaft with a friction overrunning combination clutch feature to avoid damaging your generator drive system. Request information on shafts with this feature when ordering.

PTO DRIVE SHAFTS

Model	RPM	Gearbox Shaft (in.)	Gearbox Splines	Tractor Shaft (in.)	Tractor Splines	Compressed Length (in.)	Extended Length (in.)
44803	1000	1 3/4	20	1 3/8	21	33 1/8	51 5/7
44806	540	1 3/8	6	1 3/8	6	28 7/8	43
44811	540	1 3/8	6	1 3/8	6	29 1/8	45 1/2
44812	1000	1 3/8	6	1 3/8	21	28 7/8	43
44814	1000	1 3/4	20	1 3/4	20	33 1/8	51 5/7
44816	1000	1 3/8	6	1 3/4	20	25 3/4	39 5/8

PTO drive shafts are a heavy duty shielding shaft that provides maximum saftey for the operator.

MTU Onsite Energy Corporation
A Rolls-Royce Power Systems Company

MTU Onsite Energy / 100 Power Drive / Mankato / Minnesota 56001
Phone 507 625 7973 / Fax 507 625 2968 / Toll Free 800 325 5450

PRIME LIMITED WARRANTY
Two (2) Year / 3,000 Hour Basic

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

Engine Generator Set: Parts and labor for twenty-four (24) months will begin with the first commissioning of the product(s). In all cases, the warranty period will expire not later than thirty-six (36) months from the date of shipment ex-works MTU Onsite Energy or after 3,000 operation hours, whichever occurs first. Accessories: Parts and labor for one (1) year from date of shipment. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

LIMITED WARRANTY CONDITIONS

Before there is any protection under this Limited Warranty, the distributor must: (1) complete the MTU Onsite Energy Warranty and the Start-Up Validation and Pre-Inspection form, and return them to MTU Onsite Energy within 60 days of the start-up date, and (2) complete the engine registration form and return it to the manufacturer as stated in the instructions with engine registration form (when applicable). In addition, this Limited Warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, (2) the generator set is routinely exercised in accordance with operating instructions, and (3) the installation meets the general guidelines, standards, recommendations (as laid out in the Installation Guide provided with the product), and all local standards and codes applicable in the location of installation.

Engine generator sets that are stored by Owner / Buyer longer than 180 days from date of shipment are subject to special requirements. Contact MTU Onsite Energy's Service Center for instructions.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, see contact information at the bottom of this page.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.
MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE

PRIME LIMITED WARRANTY
Two (2) Year / 3,000 Hour Basic

FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Battery or batteries of any type or kind. The battery manufacturer's warranty, if any, is the only warranty that applies to batteries. Any warranty claim should be handled with the manufacturer according to its policies.
   b. Adjustments to fuel systems or governor system at time of start-up or any time after. A warranty claim for such adjustments is acceptable only when a defective part has been replaced, returned to the factory, and approved as defective.
   c. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   d. Due to shipping, manufacturer is not responsible for loose connections. All connections must be checked at time of start-up.
   e. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   f. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   g. Shipping damage of any type.
   h. Any installation errors or damage of the equipment when shipped as ordered.
   i. Any overtime travel or labor to make repairs under warranty.
   j. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
   k. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
   l. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.
   m. Excess mileage charges. Any authorized service provider may perform warranty service anywhere, but will only be paid for mileage expenses from the nearest service center and limited to 400 miles / 644 Kilometers round-trip.
   n. Any equipment not factory approved and engineered for use on MTU Onsite Energy products. This includes but is not limited to aftermarket items such as special fuel systems, enclosures, exhaust systems, or switch gear that had been sought out and quoted by a third party to be included in billing of the MTU Onsite Energy equipment.
   o. Misuse or abuse during installation and thereafter.
   p. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
   q. Acts of nature or acts of God such as lightning, wind, flood, tornado, hurricane, or earthquake.
   r. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
   s. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
   t. Diesel engine "Wet Stacking" due to lightly loaded diesel engines.
   u. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
   v. Travel expense on portable equipment.
   w. Trailer lights, wiring, and brakes.
   x. More than one trip to the job site because a service vehicle was not stocked with normal service parts.
   y. Lodging expense of person(s) performing service, unless approved in advance by factory.
   z. Engine fluids.

aa. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
ab. Any expenses associated with investigating performance complaints in which no defect is found.
ac. Any associated costs for replacing components that are found not to be defective.
ad. Any adjustments covered in the start-up and inspection forms that are to be completed during start-up.

2. The accessories that are limited to one (1) year parts and labor from date of shipment include but are not limited to:
   a. Cords, receptacles, and cord reels
   b. Gas flex pipes
   c. Housing lights, space heaters, and associated equipment

100 Power Drive / Mankato, MN 56001 / 800-325-5450

STANDBY LIMITED WARRANTY
Two (2) Year / 3,000 Hour Basic

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

Engine Generator Set: Parts and labor for twenty-four (24) months will begin with the first commissioning of the product(s). In all cases, the warranty period will expire not later than thirty-six (36) months from the date of shipment ex-works MTU Onsite Energy or after 3,000 operation hours, whichever occurs first. Accessories: Parts and labor for one (1) year from date of shipment. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

LIMITED WARRANTY CONDITIONS

Before there is any protection under this Limited Warranty, the distributor must: (1) complete the MTU Onsite Energy Warranty and the Start-Up Validation and Pre-Inspection form, and return them to MTU Onsite Energy within 60 days of the start-up date, and (2) complete the engine registration form and return it to the manufacturer as stated in the instructions with engine registration form (when applicable). In addition, this Limited Warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, (2) the generator set is routinely exercised in accordance with operating instructions, and (3) the installation meets the general guidelines, standards, recommendations (as laid out in the Installation Guide provided with the product), and all local standards and codes applicable in the location of installation.

Engine generator sets that are stored by Owner / Buyer longer than 180 days from date of shipment are subject to special requirements. Contact MTU Onsite Energy's Service Center for instructions.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, see contact information at the bottom of this page.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.
MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE

STANDBY LIMITED WARRANTY
Two (2) Year / 3,000 Hour Basic

FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Battery or batteries of any type or kind. The battery manufacturer's warranty, if any, is the only warranty that applies to batteries. Any warranty claim should be handled with the manufacturer according to its policies.
   b. Adjustments to fuel systems or governor system at time of start-up or any time after. A warranty claim for such adjustments is acceptable only when a defective part has been replaced, returned to the factory, and approved as defective.
   c. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   d. Due to shipping, manufacturer is not responsible for loose connections. All connections must be checked at time of start-up.
   e. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   f. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   g. Shipping damage of any type.
   h. Any installation errors or damage of the equipment when shipped as ordered.
   i. Any overtime travel or labor to make repairs under warranty.
   j. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
   k. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
   l. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.
   m. Excess mileage charges. Any authorized service provider may perform warranty service anywhere, but will only be paid for mileage expenses from the nearest service center and limited to 400 miles / 644 Kilometers round-trip.
   n. Any equipment not factory approved and engineered for use on MTU Onsite Energy products. This includes but is not limited to aftermarket items such as special fuel systems, enclosures, exhaust systems, or switch gear that had been sought out and quoted by a third party to be included in billing of the MTU Onsite Energy equipment.
   o. Misuse or abuse during installation and thereafter.
   p. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
   q. Acts of nature or acts of God such as lightning, wind, flood, tornado, hurricane, or earthquake.
   r. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
   s. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
   t. Diesel engine "Wet Stacking" due to lightly loaded diesel engines.
   u. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
   v. Travel expense on portable equipment.
   w. Trailer lights, wiring, and brakes.

x. More than one trip to the job site because a service vehicle was not stocked with normal service parts.
y. Lodging expense of person(s) performing service, unless approved in advance by factory.
z. Engine fluids.
aa. Units purchased at the standby power rating that are being used in a prime power application.
ab. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
ac. Any expenses associated with investigating performance complaints in which no defect is found.
ad. Any associated costs for replacing components that are found not to be defective.
ae. Any adjustments covered in the start-up and inspection forms that are to be completed during start-up.

2. The accessories that are limited to one (1) year parts and labor from date of shipment include but are not limited to:
   a. Cords, receptacles, and cord reels
   b. Gas flex pipes
   c. Housing lights, space heaters, and associated equipment

100 Power Drive / Mankato, MN 56001 / 800-325-5450

PRIME LIMITED WARRANTY
Two (2) Year / 6,000 Hour Basic Extended

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

Engine Generator Set: Parts and labor for twenty-four (24) months will begin with the first commissioning of the product(s). In all cases, the warranty period will expire not later than thirty-six (36) months from the date of shipment ex-works MTU Onsite Energy or after 6,000 operation hours, whichever occurs first. Accessories: Parts and labor for one (1) year from date of shipment. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

LIMITED WARRANTY CONDITIONS

Before there is any protection under this Limited Warranty, the distributor must: (1) complete the MTU Onsite Energy Warranty and the Start-Up Validation and Pre-Inspection form, and return them to MTU Onsite Energy within 60 days of the start-up date, and (2) complete the engine registration form and return it to the manufacturer as stated in the instructions with engine registration form (when applicable). In addition, this Limited Warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, (2) the generator set is routinely exercised in accordance with operating instructions, and (3) the installation meets the general guidelines, standards, recommendations (as laid out in the Installation Guide provided with the product), and all local standards and codes applicable in the location of installation.

Engine generator sets that are stored by Owner / Buyer longer than 180 days from date of shipment are subject to special requirements. Contact MTU Onsite Energy's Service Center for instructions.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, see contact information at the bottom of this page.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

PRIME LIMITED WARRANTY
Two (2) Year / 6,000 Hour Basic Extended

MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Battery or batteries of any type or kind. The battery manufacturer's warranty, if any, is the only warranty that applies to batteries. Any warranty claim should be handled with the manufacturer according to its policies.
   b. Adjustments to fuel systems or governor system at time of start-up or any time after. A warranty claim for such adjustments is acceptable only when a defective part has been replaced, returned to the factory, and approved as defective.
   c. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   d. Due to shipping, manufacturer is not responsible for loose connections. All connections must be checked at time of start-up.
   e. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   f. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   g. Shipping damage of any type.
   h. Any installation errors or damage of the equipment when shipped as ordered.
   i. Any overtime travel or labor to make repairs under warranty.
   j. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
   k. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
   l. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.
   m. Excess mileage charges. Any authorized service provider may perform warranty service anywhere, but will only be paid for mileage expenses from the nearest service center and limited to 400 miles / 644 Kilometers round-trip.
   n. Any equipment not factory approved and engineered for use on MTU Onsite Energy products. This includes but is not limited to aftermarket items such as special fuel systems, enclosures, exhaust systems, or switch gear that had been sought out and quoted by a third party to be included in billing of the MTU Onsite Energy equipment.
   o. Misuse or abuse during installation and thereafter.
   p. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
   q. Acts of nature or acts of God such as lightning, wind, flood, tornado, hurricane, or earthquake.
   r. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
   s. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
   t. Diesel engine "Wet Stacking" due to lightly loaded diesel engines.
   u. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
   v. Travel expense on portable equipment.
   w. Trailer lights, wiring, and brakes.

x. More than one trip to the job site because a service vehicle was not stocked with normal service parts.
y. Lodging expense of person(s) performing service, unless approved in advance by factory.
z. Engine fluids.
aa. Units purchased at the prime power rating that are being used in a standby power application.
ab. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
ac. Any expenses associated with investigating performance complaints in which no defect is found.
ad. Any associated costs for replacing components that are found not to be defective.
ae. Any adjustments covered in the start-up and inspection forms that are to be completed during start-up.

2. The accessories that are limited to one (1) year parts and labor from date of shipment include but are not limited to:
   a. Cords, receptacles, and cord reels
   b. Gas flex pipes
   c. Housing lights, space heaters, and associated equipment

100 Power Drive / Mankato, MN 56001 / 800-325-5450

STANDBY LIMITED WARRANTY
Five (5) Year / 3,000 Hour Basic Extended

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons

LIMITED WARRANTY PERIOD

Engine Generator Set: Parts for sixty (60) months will begin with the first commissioning of the product(s), including labor for the first twenty-four (24) months. In all cases, the warranty period will expire not later than seventy-two (72) months from the date of shipment ex-works MTU Onsite Energy or after 3,000 operation hours, whichever occurs first. Accessories: Parts and labor for one (1) year from date of shipment. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

LIMITED WARRANTY CONDITIONS

Before there is any protection under this Limited Warranty, the distributor must: (1) complete the MTU Onsite Energy Warranty and the Start-Up Validation and Pre-Inspection form, and return them to MTU Onsite Energy within 60 days of the start-up date, and (2) complete the engine registration form and return it to the manufacturer as stated in the instructions with engine registration form (when applicable). In addition, this Limited Warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, (2) the generator set is routinely exercised in accordance with operating instructions, and (3) the installation meets the general guidelines, standards, recommendations (as laid out in the Installation Guide provided with the product), and all local standards and codes applicable in the location of installation.

Engine generator sets that are stored by Owner / Buyer longer than 180 days from date of shipment are subject to special requirements. Contact MTU Onsite Energy's Service Center for instructions.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, see contact information at the bottom of this page.

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STANDBY LIMITED WARRANTY
Five (5) Year / 3,000 Hour Basic Extended

MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Battery or batteries of any type or kind. The battery manufacturer's warranty, if any, is the only warranty that applies to batteries. Any warranty claim should be handled with the manufacturer according to its policies.
   b. Adjustments to fuel systems or governor system at time of start-up or any time after. A warranty claim for such adjustments is acceptable only when a defective part has been replaced, returned to the factory, and approved as defective.
   c. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   d. Due to shipping, manufacturer is not responsible for loose connections. All connections must be checked at time of start-up.
   e. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   f. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   g. Shipping damage of any type.
   h. Any installation errors or damage of the equipment when shipped as ordered.
   i. Any overtime travel or labor to make repairs under warranty.
   j. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
   k. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
   l. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.
   m. Excess mileage charges. Any authorized service provider may perform warranty service anywhere, but will only be paid for mileage expenses from the nearest service center and limited to 400 miles / 644 Kilometers round-trip.
   n. Any equipment not factory approved and engineered for use on MTU Onsite Energy products. This includes but is not limited to aftermarket items such as special fuel systems, enclosures, exhaust systems, or switch gear that had been sought out and quoted by a third party to be included in billing of the MTU Onsite Energy equipment.
   o. Misuse or abuse during installation and thereafter.
   p. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
   q. Acts of nature or acts of God such as lightning, wind, flood, tornado, hurricane, or earthquake.
   r. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
   s. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
   t. Diesel engine "Wet Stacking" due to lightly loaded diesel engines.
   u. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
   v. Travel expense on portable equipment.
   w. Trailer lights, wiring, and brakes.

x. More than one trip to the job site because a service vehicle was not stocked with normal service parts.
y. Lodging expense of person(s) performing service, unless approved in advance by factory.
z. Engine fluids.
aa. Units purchased at the standby power rating that are being used in a prime power application.
ab. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
ac. Any expenses associated with investigating performance complaints in which no defect is found.
ad. Any associated costs for replacing components that are found not to be defective.
ae. Any adjustments covered in the start-up and inspection forms that are to be completed during start-up.

2. The accessories that are limited to one (1) year parts and labor from date of shipment include but are not limited to:
   a. Cords, receptacles, and cord reels
   b. Gas flex pipes
   c. Housing lights, space heaters, and associated equipment

100 Power Drive / Mankato, MN 56001 / 800-325-5450

STANDBY LIMITED WARRANTY
Five (5) Year / 3,000 Hour
Comprehensive Extended

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

Engine Generator Set: Parts and labor for sixty (60) months will begin with the first commissioning of the product(s). In all cases, the warranty period will expire not later than seventy-two (72) months from the date of shipment ex-works MTU Onsite Energy or after 3,000 operation hours, whichever occurs first. Accessories: Parts and labor for one (1) year from date of shipment. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

LIMITED WARRANTY CONDITIONS

Before there is any protection under this Limited Warranty, the distributor must: (1) complete the MTU Onsite Energy Warranty and the Start-Up Validation and Pre-Inspection form, and return them to MTU Onsite Energy within 60 days of the start-up date, and (2) complete the engine registration form and return it to the manufacturer as stated in the instructions with engine registration form (when applicable). In addition, this Limited Warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, (2) the generator set is routinely exercised in accordance with operating instructions, and (3) the installation meets the general guidelines, standards, recommendations (as laid out in the Installation Guide provided with the product), and all local standards and codes applicable in the location of installation.

Engine generator sets that are stored by Owner / Buyer longer than 180 days from date of shipment are subject to special requirements. Contact MTU Onsite Energy's Service Center for instructions.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, see contact information at the bottom of this page.

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STANDBY LIMITED WARRANTY
Five (5) Year / 3,000 Hour
Comprehensive Extended

MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Battery or batteries of any type or kind. The battery manufacturer's warranty, if any, is the only warranty that applies to batteries. Any warranty claim should be handled with the manufacturer according to its policies.
   b. Adjustments to fuel systems or governor system at time of start-up or any time after. A warranty claim for such adjustments is acceptable only when a defective part has been replaced, returned to the factory, and approved as defective.
   c. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   d. Due to shipping, manufacturer is not responsible for loose connections. All connections must be checked at time of start-up.
   e. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   f. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   g. Shipping damage of any type.
   h. Any installation errors or damage of the equipment when shipped as ordered.
   i. Any overtime travel or labor to make repairs under warranty.
   j. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
   k. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
   l. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.
   m. Excess mileage charges. Any authorized service provider may perform warranty service anywhere, but will only be paid for mileage expenses from the nearest service center and limited to 400 miles / 644 Kilometers round-trip.
   n. Any equipment not factory approved and engineered for use on MTU Onsite Energy products. This includes but is not limited to aftermarket items such as special fuel systems, enclosures, exhaust systems, or switch gear that had been sought out and quoted by a third party to be included in billing of the MTU Onsite Energy equipment.
   o. Misuse or abuse during installation and thereafter.
   p. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
   q. Acts of nature or acts of God such as lightning, wind, flood, tornado, hurricane, or earthquake.
   r. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
   s. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
   t. Diesel engine "Wet Stacking" due to lightly loaded diesel engines.

u. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
v. Travel expense on portable equipment.
w. Trailer lights, wiring, and brakes.
x. More than one trip to the job site because a service vehicle was not stocked with normal service parts.
y. Lodging expense of person(s) performing service, unless approved in advance by factory.
z. Engine fluids.
aa. Units purchased at the standby power rating that are being used in a prime power application.
ab. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
ac. Any expenses associated with investigating performance complaints in which no defect is found.
ad. Any associated costs for replacing components that are found not to be defective.
ae. Any adjustments covered in the start-up and inspection forms that are to be completed during start-up.

2. The accessories that are limited to one (1) year parts and labor from date of shipment include but are not limited to:
   a. Cords, receptacles, and cord reels
   b. Gas flex pipes
   c. Housing lights, space heaters, and associated equipment

100 Power Drive / Mankato, MN 56001 / 800-325-5450

STANDBY LIMITED WARRANTY
Ten (10) Year / 3,000 Hour
Major Component Extended

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

Major Components: (Referenced below.) Parts for one hundred twenty (120) months will begin with the first commissioning of the product(s), including labor for the first sixty (60) months. Engine Generator Set: Parts for sixty (60) months will begin with the first commissioning of the product(s), including labor for sixty (60) months. In all cases, the warranty period will expire not later than one hundred thirty-two (132) months from the date of shipment ex-works MTU Onsite Energy or after 3,000 operation hours, whichever occurs first. Accessories: Parts and labor for one (1) year from date of shipment. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

LIMITED WARRANTY CONDITIONS

Before there is any protection under this Limited Warranty, the distributor must: (1) complete the MTU Onsite Energy Warranty and the Start-Up Validation and Pre-Inspection form, and return them to MTU Onsite Energy within 60 days of the start-up date, and (2) complete the engine registration form and return it to the manufacturer as stated in the instructions with engine registration form (when applicable). In addition, this Limited Warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, (2) the generator set is routinely exercised in accordance with operating instructions, and (3) the installation meets the general guidelines, standards, recommendations (as laid out in the Installation Guide provided with the product) and all local standards and codes applicable in the location of installation.

Owner / Buyer shall bear the full cost and risk of loss to transport the Product to and from the Seller's factory or other designation service outlet for service provided under this warranty.

Engine generator sets that are stored by Owner / Buyer longer than 180 days from date of shipment are subject to special requirements. Contact MTU Onsite Energy's Service Center for instructions.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, see contact information at the bottom of this page.

STANDBY LIMITED WARRANTY
Ten (10) Year / 3,000 Hour
Major Component Extended

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MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Battery or batteries of any type or kind. The battery manufacturer's warranty, if any, is the only warranty that applies to batteries. Any warranty claim should be handled with the manufacturer according to its policies.
   b. Adjustments to fuel systems or governor system at time of start-up or any time after. A warranty claim for such adjustments is acceptable only when a defective part has been replaced, returned to the factory, and approved as defective.
   c. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   d. Due to shipping, manufacturer is not responsible for loose connections. All connections must be checked at time of start-up.
   e. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   f. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   g. Shipping damage of any type.
   h. Any installation errors or damage of the equipment when shipped as ordered.
   i. Any overtime travel or labor to make repairs under warranty.
   j. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
   k. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
   l. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.
   m. Excess mileage charges. Any authorized service provider may perform warranty service anywhere, but will only be paid for mileage expenses from the nearest service center and limited to 400 miles / 644 Kilometers round-trip.
   n. Any equipment not factory approved and engineered for use on MTU Onsite Energy products. This includes but is not limited to aftermarket items such as special fuel systems, enclosures, exhaust systems, or switch gear that had been sought out and quoted by a third party to be included in billing of the MTU Onsite Energy equipment.
   o. Misuse or abuse during installation and thereafter.
   p. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
   q. Acts of nature or acts of God such as lightning, wind, flood, tornado, hurricane, or earthquake.

r. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
s. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
t. Diesel engine "Wet Stacking" due to lightly loaded diesel engines.
u. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
v. Travel expense on portable equipment.
w. Trailer lights, wiring, and brakes.
x. More than one trip to the job site because a service vehicle was not stocked with normal service parts.
y. Lodging expense of person(s) performing service, unless approved in advance by factory.
z. Engine fluids.
aa. Units purchased at the standby power rating that are being used in a prime power application.
ab. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
ac. Any expenses associated with investigating performance complaints in which no defect is found.
ad. Any associated costs for replacing components that are found not to be defective.
ae. Any adjustments covered in the start-up and inspection forms that are to be completed during start-up.

2. The accessories that are limited to one (1) year parts and labor from date of shipment include but are not limited to:
   a. Cords, receptacles, and cord reels
   b. Gas flex pipes
   c. Housing lights, space heaters, and associated equipment
3. Major Components:
   a. Engine: Cylinder block, camshaft, crankshaft, connecting rods, and flywheel.
   b. Generator end: (Alternator) Main rotor, main stator, and drive disk.
   c. Transfer Switch: Main contacts.

100 Power Drive / Mankato, MN 56001 / 800-325-5450

STANDBY LIMITED WARRANTY
Two (2) Year Basic
Automatic Transfer Switch (ATS)

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED ATS WARRANTY PERIOD

Parts and labor for two (2) years from factory invoice date. A valid warranty requires that buyer must provide proof of purchase of the original ATS at the time of request for warranty consideration.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, contact MTU Onsite Energy, Attention: Service Department, 100 Power Drive, Mankato, MN 56001, +1 507 625 7973.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

100 Power Drive / Mankato, MN 56001 / 800-325-5450

STANDBY LIMITED WARRANTY
Five (5) Year Basic Extended
Automatic Transfer Switch (ATS)

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED ATS WARRANTY PERIOD

Parts for five (5) years from factory invoice date including labor for the first two (2) years from factory invoice date. A valid warranty requires that buyer must provide proof of purchase of the original ATS at the time of request for warranty consideration.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, contact MTU Onsite Energy, Attention: Service Department, 100 Power Drive, Mankato, MN 56001, +1 507 625 7973.

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MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

100 Power Drive / Mankato, MN 56001 / 800-325-5450

STANDBY LIMITED WARRANTY
Five (5) Year Comprehensive Extended Automatic Transfer Switch (ATS)

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED ATS WARRANTY PERIOD

Parts and labor for five (5) years from factory invoice date. A valid warranty requires that buyer must provide proof of purchase of the original ATS at the time of request for warranty consideration.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, contact MTU Onsite Energy, Attention: Service Department, 100 Power Drive, Mankato, MN 56001, +1 507 625 7973.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

100 Power Drive / Mankato, MN 56001 / 800-325-5450

STANDBY LIMITED WARRANTY
Ten (10) Year Major Components Extended Automatic Transfer Switch (ATS)

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED ATS WARRANTY PERIOD

Major Components: (Main Contacts Only.) For ten (10) years, including parts and labor for the first five (5) years from factory invoice date. A valid warranty requires that buyer must provide proof of purchase of the original ATS at the time of request for warranty consideration.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, contact MTU Onsite Energy, Attention: Service Department, 100 Power Drive, Mankato, MN 56001, +1 507 625 7973.

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MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

100 Power Drive / Mankato, MN 56001 / 800-325-5450

STANDBY LIMITED WARRANTY
One (1) Year Basic Parts

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

Parts have a one (1) year limited warranty from invoice date. MTU Onsite Energy's obligation under this warranty is expressly limited to supplying replacement parts and does not cover any other associated costs incurred. Parts replaced under this warranty will carry the remaining warranty time from the original purchased part, and if required, MTU Onsite Energy has the right to request proof-of-purchase of the original purchased part. All parts being considered for warranty must be returned to MTU Onsite Energy for evaluation, unless MTU Onsite Energy authorizes the part to not be returned.

All Automatic Transfer Switches sold by MTU Onsite Energy fall within a different warranty other than the Parts Warranty.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, contact MTU Onsite Energy, Attention: Service Department, 100 Power Drive, Mankato, MN 56001, +1 507 625 7973.

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MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

100 Power Drive / Mankato, MN 56001 / 800-325-5450

CONTINUOUS (3A) LIMITED WARRANTY
Three (3) Year / 6,000 Hour Basic Power Module

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product is new and unused and is to be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

Engine Generator Set
Parts and labor for three (3) years from invoice date or 6,000 hours of use, whichever is earlier. **Accessories:** Parts only for one (1) year from invoice date or 6,000 hours of use, whichever is earlier. The warranty period can be adjusted to the date of start-up if start-up is completed within twelve (12) months of invoice date. In all cases it shall end no later than forty-eight (48) months after MTU Onsite Energy has given notification that the Goods are ready for dispatch. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

Custom Enclosure
Parts only for one (1) year from invoice date or 6,000 hours of use, whichever is earlier. **Accessories:** Parts only for one (1) year from invoice date or 6,000 hours of use, whichever is earlier. The warranty period can be adjusted to the date of start-up if start-up is completed within twelve (12) months of invoice date. In all cases it shall end no later than twenty-four (24) months after MTU Onsite Energy has given notification that the Goods are ready for dispatch. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

LIMITED WARRANTY CONDITIONS

Before there is any protection under this Limited Warranty, the distributor or factory must: (1) complete the MTU Onsite Energy Warranty and the Start-Up Validation and Pre-Inspection form, and return them to MTU Onsite Energy within 60 days of the start-up date, and (2) complete the engine registration form and return it to the manufacturer as stated in the instructions with engine registration form (when applicable). In addition, this Limited Warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, (2) the generator set is routinely exercised in accordance with operating instructions, and (3) the installation meets the general guidelines, standards, recommendations (as laid out in the Installation Guide provided with the product), and all local standards and codes applicable in the location of installation.

If MTU Onsite Energy deems the repair cannot be completed onsite, Owner/Buyer shall bear the full cost and risk of loss to transport the Product to and from the Seller's factory or other designated service outlet for service provided under this warranty.

Engine generator sets that are stored by Owner/Buyer longer than 180 days from date of shipment are subject to special requirements. Contact MTU Onsite Energy's Service Center for instructions.

CONTINUOUS (3A) LIMITED WARRANTY
Three (3) Year / 6,000 Hour Basic
Power Module

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, contact MTU Onsite Energy, Attention: Service Department, 304 Lundin Blvd., Mankato, MN 56001, +1 507 625 7973.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Engine Generator Set and Custom Enclosure Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Battery or batteries of any type or kind. The battery manufacturer's warranty, if any, is the only warranty that applies to batteries. Any warranty claim should be handled with the manufacturer according to its policies.
   b. Adjustments to fuel systems or governor system at time of start-up or any time after. A warranty claim for such adjustments is acceptable only when a defective part has been replaced, returned to the factory, and approved as defective.
   c. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   d. Due to shipping, manufacturer is not responsible for loose connections. All connections must be checked at time of start-up.
   e. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   f. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   g. Shipping damage of any type.
   h. Any installation errors or damage of the equipment when shipped as ordered.
   i. Any overtime travel or labor to make repairs under warranty.
   j. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
   k. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
   l. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.

m. Excess mileage charges. Any authorized service provider may perform warranty service anywhere, but will only be paid for mileage expenses from the nearest service center and limited to 400 miles/644 Kilometers round-trip.
n. Any equipment not factory approved and engineered for use on MTU Onsite Energy products. This includes but is not limited to aftermarket items such as special fuel systems, enclosures, exhaust systems, or switch gear that had been sought out and quoted by a third party to be included in billing of the MTU Onsite Energy equipment.
o. Misuse or abuse during installation and thereafter.
p. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
q. Acts of nature or acts of God such as lightning, wind, flood, tornado, hurricane, or earthquake.
r. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
s. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
t. Diesel engine "Wet Stacking" due to lightly loaded diesel engines.
u. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
v. Travel expense on portable equipment.
w. More than one trip to the job site because a service vehicle was not stocked with normal service parts.
x. Lodging expense of person(s) performing service, unless approved in advance by factory.
y. Engine fluids.
z. Units purchased at the standby power rating that are being used in a prime or continuous power application.
aa. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
ab. Any expenses associated with investigating performance complaints in which no defect is found.
ac. Any associated costs for replacing components that are found not to be defective.
ad. Any adjustments covered in the start-up and inspection forms that are to be completed during start-up.
ae. Any import duties, taxes, or fees required by another country if equipment is located outside of continental United Sates.

2. The Engine Generator Set accessories that are limited to one (1) year parts only from invoice date:
   a. Oil makeup system and wiring/accessories.
   b. Block heater(s) and wiring/accessories.
   c. Fuel priming pump and wiring/accessories.
   d. Battery charger.
   e. SAM module.
   f. Optional sensors/wiring including: ambient air, air inlet restriction, primary and secondary fuel pressure and/or differential, primary water in fuel, exhaust temperature.

PRIME (3B) LIMITED WARRANTY
Two (2) Year / 6,000 Hour Basic Power Module

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product is new and unused and is to be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

Engine Generator Set

Parts and labor for two (2) years from invoice date or 6,000 hours of use, whichever is earlier. **Accessories:** Parts only for one (1) year from invoice date or 6,000 hours of use, whichever is earlier. The warranty period can be adjusted to the date of start-up if start-up is completed within twelve (12) months of invoice date. In all cases it shall end no later than thirty-six (36) months after MTU Onsite Energy has given notification that the Goods are ready for dispatch. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

Custom Enclosure

Parts only for one (1) year from invoice date or 6,000 hours of use, whichever is earlier. **Accessories:** Parts only for one (1) year from invoice date or 6,000 hours of use, whichever is earlier. The warranty period can be adjusted to the date of start-up if start-up is completed within twelve (12) months of invoice date. In all cases it shall end no later than twenty-four (24) months after MTU Onsite Energy has given notification that the Goods are ready for dispatch. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

LIMITED WARRANTY CONDITIONS

Before there is any protection under this Limited Warranty, the distributor or factory must: (1) complete the MTU Onsite Energy Warranty and the Start-Up Validation and Pre-Inspection form, and return them to MTU Onsite Energy within 60 days of the start-up date, and (2) complete the engine registration form and return it to the manufacturer as stated in the instructions with engine registration form (when applicable). In addition, this Limited Warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, (2) the generator set is routinely exercised in accordance with operating instructions, and (3) the installation meets the general guidelines, standards, recommendations (as laid out in the Installation Guide provided with the product), and all local standards and codes applicable in the location of installation.

If MTU Onsite Energy deems the repair cannot be completed onsite, Owner/Buyer shall bear the full cost and risk of loss to transport the Product to and from the Seller's factory or other designated service outlet for service provided under this warranty.

Engine generator sets that are stored by Owner/Buyer longer than 180 days from date of shipment are subject to special requirements. Contact MTU Onsite Energy's Service Center for instructions.

PRIME (3B) LIMITED WARRANTY
Two (2) Year / 6,000 Hour Basic Power Module

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, contact MTU Onsite Energy, Attention: Service Department, 304 Lundin Blvd., Mankato, MN 56001, +1 507 625 7973.

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MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Engine Generator Set and Custom Enclosure Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Battery or batteries of any type or kind. The battery manufacturer's warranty, if any, is the only warranty that applies to batteries. Any warranty claim should be handled with the manufacturer according to its policies.
   b. Adjustments to fuel systems or governor system at time of start-up or any time after. A warranty claim for such adjustments is acceptable only when a defective part has been replaced, returned to the factory, and approved as defective.
   c. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   d. Due to shipping, manufacturer is not responsible for loose connections. All connections must be checked at time of start-up.
   e. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   f. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   g. Shipping damage of any type.
   h. Any installation errors or damage of the equipment when shipped as ordered.
   i. Any overtime travel or labor to make repairs under warranty.
   j. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
   k. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
   l. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.

m. Excess mileage charges. Any authorized service provider may perform warranty service anywhere, but will only be paid for mileage expenses from the nearest service center and limited to 400 miles/644 Kilometers round-trip.
n. Any equipment not factory approved and engineered for use on MTU Onsite Energy products. This includes but is not limited to aftermarket items such as special fuel systems, enclosures, exhaust systems, or switch gear that had been sought out and quoted by a third party to be included in billing of the MTU Onsite Energy equipment.
o. Misuse or abuse during installation and thereafter.
p. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
q. Acts of nature or acts of God such as lightning, wind, flood, tornado, hurricane, or earthquake.
r. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
s. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
t. Diesel engine "Wet Stacking" due to lightly loaded diesel engines.
u. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
v. Travel expense on portable equipment.
w. More than one trip to the job site because a service vehicle was not stocked with normal service parts.
x. Lodging expense of person(s) performing service, unless approved in advance by factory.
y. Engine fluids.
z. Units purchased at the standby power rating that are being used in a prime or continuous power application.
aa. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
ab. Any expenses associated with investigating performance complaints in which no defect is found.
ac. Any associated costs for replacing components that are found not to be defective.
ad. Any adjustments covered in the start-up and inspection forms that are to be completed during start-up.
ae. Any import duties, taxes, or fees required by another country if equipment is located outside of continental United Sates.

2. The Engine Generator Set accessories that are limited to one (1) year parts only from invoice date:
   a. Oil makeup system and wiring/accessories.
   b. Block heater(s) and wiring/accessories.
   c. Fuel priming pump and wiring/accessories.
   d. Battery charger.
   e. SAM module.
   f. Optional sensors/wiring including: ambient air, air inlet restriction, primary and secondary fuel pressure and/or differential, primary water in fuel, exhaust temperature.

STANDBY (3D) LIMITED WARRANTY
Two (2) Year / 3,000 Hour Basic Power Module

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product is new and unused and is to be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

Engine Generator Set
Parts and labor for two (2) years from invoice date or 3,000 hours of use, whichever is earlier. **Accessories:** Parts only for one (1) year from invoice date or 3,000 hours of use, whichever is earlier. The warranty period can be adjusted to the date of start-up if start-up is completed within twelve (12) months of invoice date. In all cases it shall end no later than thirty-six (36) months after MTU Onsite Energy has given notification that the Goods are ready for dispatch. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

Custom Enclosure
Parts only for one (1) year from invoice date or 3,000 hours of use, whichever is earlier. **Accessories:** Parts only for one (1) year from invoice date or 3,000 hours of use, whichever is earlier. The warranty period can be adjusted to the date of start-up if start-up is completed within twelve (12) months of invoice date. In all cases it shall end no later than twenty-four (24) months after MTU Onsite Energy has given notification that the Goods are ready for dispatch. For a description of accessories and items excluded from this Limited Warranty, review the listings below.

LIMITED WARRANTY CONDITIONS

Before there is any protection under this Limited Warranty, the distributor or factory must: (1) complete the MTU Onsite Energy Warranty and the Start-Up Validation and Pre-Inspection form, and return them to MTU Onsite Energy within 60 days of the start-up date, and (2) complete the engine registration form and return it to the manufacturer as stated in the instructions with engine registration form (when applicable). In addition, this Limited Warranty is not valid or enforceable unless: (1) all supporting maintenance records are kept on file with the end user and made available upon request from factory, (2) the generator set is routinely exercised in accordance with operating instructions, and (3) the installation meets the general guidelines, standards, recommendations (as laid out in the Installation Guide provided with the product), and all local standards and codes applicable in the location of installation.

If MTU Onsite Energy deems the repair cannot be completed onsite, Owner/Buyer shall bear the full cost and risk of loss to transport the Product to and from the Seller's factory or other designated service outlet for service provided under this warranty.

Engine generator sets that are stored by Owner/Buyer longer than 180 days from date of shipment are subject to special requirements. Contact MTU Onsite Energy's Service Center for instructions.

STANDBY (3D) LIMITED WARRANTY
Two (2) Year / 3,000 Hour Basic
Power Module

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, contact MTU Onsite Energy, Attention: Service Department, 304 Lundin Blvd., Mankato, MN 56001, +1 507 625 7973.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Engine Generator Set and Custom Enclosure Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Battery or batteries of any type or kind. The battery manufacturer's warranty, if any, is the only warranty that applies to batteries. Any warranty claim should be handled with the manufacturer according to its policies.
   b. Adjustments to fuel systems or governor system at time of start-up or any time after. A warranty claim for such adjustments is acceptable only when a defective part has been replaced, returned to the factory, and approved as defective.
   c. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   d. Due to shipping, manufacturer is not responsible for loose connections. All connections must be checked at time of start-up.
   e. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   f. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   g. Shipping damage of any type.
   h. Any installation errors or damage of the equipment when shipped as ordered.
   i. Any overtime travel or labor to make repairs under warranty.
   j. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
   k. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
   l. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.

m. Excess mileage charges. Any authorized service provider may perform warranty service anywhere, but will only be paid for mileage expenses from the nearest service center and limited to 400 miles/644 Kilometers round-trip.
n. Any equipment not factory approved and engineered for use on MTU Onsite Energy products. This includes but is not limited to aftermarket items such as special fuel systems, enclosures, exhaust systems, or switch gear that had been sought out and quoted by a third party to be included in billing of the MTU Onsite Energy equipment.
o. Misuse or abuse during installation and thereafter.
p. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
q. Acts of nature or acts of God such as lightning, wind, flood, tornado, hurricane, or earthquake.
r. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
s. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
t. Diesel engine "Wet Stacking" due to lightly loaded diesel engines.
u. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
v. Travel expense on portable equipment.
w. More than one trip to the job site because a service vehicle was not stocked with normal service parts.
x. Lodging expense of person(s) performing service, unless approved in advance by factory.
y. Engine fluids.
z. Units purchased at the standby power rating that are being used in a prime or continuous power application.
aa. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
ab. Any expenses associated with investigating performance complaints in which no defect is found.
ac. Any associated costs for replacing components that are found not to be defective.
ad. Any adjustments covered in the start-up and inspection forms that are to be completed during start-up.
ae. Any import duties, taxes, or fees required by another country if equipment is located outside of continental United Sates.

2. The Engine Generator Set accessories that are limited to one (1) year parts only from invoice date:
   a. Oil makeup system and wiring/accessories.
   b. Block heater(s) and wiring/accessories.
   c. Fuel priming pump and wiring/accessories.
   d. Battery charger.
   e. SAM module.
   f. Optional sensors/wiring including: ambient air, air inlet restriction, primary and secondary fuel pressure and/or differential, primary water in fuel, exhaust temperature.

STANDBY LIMITED WARRANTY
Five (5) Year Basic PTO

LIMITED WARRANTY

Your MTU Onsite Energy product has been manufactured and inspected with care by experienced craftspeople. If you are the original consumer, MTU Onsite Energy warrants, for the limited warranty period indicated below, each product will be free from defects in materials and workmanship, and will perform under normal use and service from valid start-up performed by MTU Onsite Energy. This Limited Warranty shall apply only when the product has been properly installed, serviced, and operated in accordance with the applicable MTU Onsite Energy instruction manuals. If this Limited Warranty applies, the liability of MTU Onsite Energy shall be limited to the replacement, repair, or appropriate adjustment of the product, at MTU Onsite Energy's option. This Limited Warranty does not apply to malfunctions caused by normal wear and tear, or by damage, unreasonable use, misuse, repair, or service by unauthorized persons.

LIMITED WARRANTY PERIOD

PTO Driven Alternator complete with Gear Box: Parts for five (5) years from the date of invoice by factory, including labor for the first two (2) years from the date of invoice by factory. Accessories: Parts and labor for one (1) year from the date of invoice by factory. For a description of accessories and items excluded from this Limited Warranty, review the listings on the reverse side of this document.

TO OBTAIN WARRANTY SERVICE

Warranty service may only be performed by MTU Onsite Energy authorized service providers. **Service provided by unauthorized persons will void this Limited Warranty. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.** Contact your nearest MTU Onsite Energy Service Representative to obtain warranty service. For assistance in locating your nearest authorized service representative, contact MTU Onsite Energy, Attention: Service Department, 100 Power Drive, Mankato, MN 56001, +1 507 625 7973.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. NO WARRANTIES SHALL BE IMPLIED OR OTHERWISE CREATED UNDER THE UNIFORM COMMERCIAL CODE, INCLUDING BUT NOT LIMITED TO A WARRANTY OF MERCHANTABILITY OR A WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE.

MTU ONSITE ENERGY SHALL NOT BE LIABLE FOR ANY CLAIM GREATER IN AMOUNT THAN THE PURCHASE PRICE OF THE PRODUCT AT ISSUE, AND IN NO EVENT SHALL MTU ONSITE ENERGY BE LIABLE FOR ANY SPECIAL, INDIRECT, OR CONSEQUENTIAL DAMAGES. STATE LAWS REGARDING THE RIGHTS OF CONSUMERS MAY VARY FROM STATE TO STATE.

1. The following items are not considered nor will they be covered under this Limited Warranty. If there are questions as to coverage under this Limited Warranty, it is advisable to contact the factory in advance of filing a claim.
   a. Normal maintenance costs, including but not limited to adjustments, loose and/or leaking fittings or clamps, and tune-ups performed during start-up or anytime thereafter.
   b. Non-MTU Onsite Energy replacement part(s) will void this Limited Warranty.
   c. Products that are modified in any form without the written consent of MTU Onsite Energy will void this Limited Warranty.
   d. Shipping damage of any type.
   e. Any installation errors or damage of the equipment when shipped as ordered.
   f. Any overtime travel or labor to make repairs under warranty.

g. Any special access fees required to gain access to MTU Onsite Energy equipment, including but not limited to any training or safety policy requirements to gain access.
h. Additional costs associated with inaccessible installations, including but not limited to removal and reinstallation of the generator set.
i. Rental equipment used during warranty work including but not limited to generators, rigging equipment such as a crane or boom truck, load banks, and special test equipment above factory requirements.
j. Misuse or abuse during installation and thereafter.
k. Normal wear and tear, maintenance, and consumable items that are not required as part of a warranty repair. Consumable items include but are not limited to belts, hoses, coolant, oil, filters, and fuses.
l. Acts of nature or acts of God such as lightning, wind, flood, or earthquake.
m. Any damage due to situations beyond the control of the manufacturing of the product or workmanship of the product.
n. Installation or operation outside the guidelines as stated in the Installation Guide and Owner's Manual.
o. Misapplication of the equipment such as usage outside the original design parameters as stated on the nameplate of the equipment.
p. Shaft or spline damage caused by improper shaft alignment.
q. Damage from improper storage when not in use.
r. Any repair labor time that is determined to be excessive, e.g., two or more people performing a one-person job.
s. Any expenses associated with investigating performance complaints in which no defect is found.
t. Any associated costs for replacing components that are found not to be defective.

2. The accessories that are limited to one (1) year parts and labor from invoice date include but are not limited to:
   a. Tap changing switches
   b. Circuit breakers
   c. Cords and receptacles
   d. Trailer
   e. PTO Shaft
   f. Manual Transfer Switches

100 Power Drive / Mankato, MN 56001 / 800-325-5450

ENGINEER'S GUIDEBOOK
Version History

Indicated below is a summary of changes that occurred with the current release of the Engineer's Guidebook.

Version	Release Date	Change Type	Description
2015-11	11/05/2015	New	Enclosure and Sound Data Diesel 72-200 kW (0120)
			LED Enclosure Lighting Data Sheet
			MTU 3R0096 DS30 (30 kW Standby / 27 kW Prime) Spec Sheets
			MTU 3R0096 DS34 (34 kVA Standby / 30 kVA Prime) Spec Sheets
			MTU 4R0113 DS44 (44 kVA Standby / 40 kVA Prime) Spec Sheets
			MTU 4R0113 DS55 (55 kVA Standby / 50 kVA Prime) Spec Sheets
			Spec Sheets for 60 Hz Mercedes-Benz OM900 Product
			Spec Sheets for 60 Hz and 50 Hz MTU 18V2000 Product
			Circuit Breaker Enclosure Data Diesel 27-30 kW / 30-34 kVA (0096)
			Circuit Breaker Enclosure Data Diesel 40-50 kW / 40-44 kVA (0113)
			Circuit Breaker Enclosure Data Diesel 55-60 kW / 50-55 kVA (0113)
			Circuit Breaker Enclosure Data Diesel 72-125 kW (0120)
			Circuit Breaker Enclosure Data Diesel 135-200 kW (0120)
			Circuit Breaker Enclosure Data Gas 30 kW (0075)
			Circuit Breaker Enclosure Data Gas 40 kW (0072)
			Circuit Breaker Enclosure Data Gas 50-60 kW (0063_0071)
			Safety Override Switch Data Sheet
			MicroGenius 150 Battery Charger Data Sheet
			Fuel Lift Pump Data Sheet
		Updated	How to Order or Download the Engineer's Guidebook
			Performance Assurance Certification
			Enclosure and Sound Data Sheets
			Existing Spec Sheet Changes: Please refer to the *2015 Spec Sheet Change History* on the MTU Onsite Energy Company site (www.mtuonsiteenergy.com).
			MGC Series Controller Data Sheets
			Sub-Base Tank Data Sheet
			Two (2) Year / 3000 Hour Basic Prime Limited Warranty
			Engineer's Guidebook Version History
		Deleted	MTU 4R0060 DS30 (30 kW Standby / 27 kW Prime) Spec Sheets (discontinued)

Version	Release Date	Change Type	Description
			MTU 4R0113 DS35 (35 kW Standby / 35 kW Prime) Spec Sheets (discontinued)
			Day Tank Fuel System Data Sheet (discontinued)