

# 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  
 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)	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 <sub>2</sub> O)	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 <sup>3</sup> /min (SCFM)	36 (1,271)
Air Flow Required for Rad. Cooled Unit: *m <sup>3</sup> /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 <sup>3</sup> /min (SCFM)	194 (6,861)

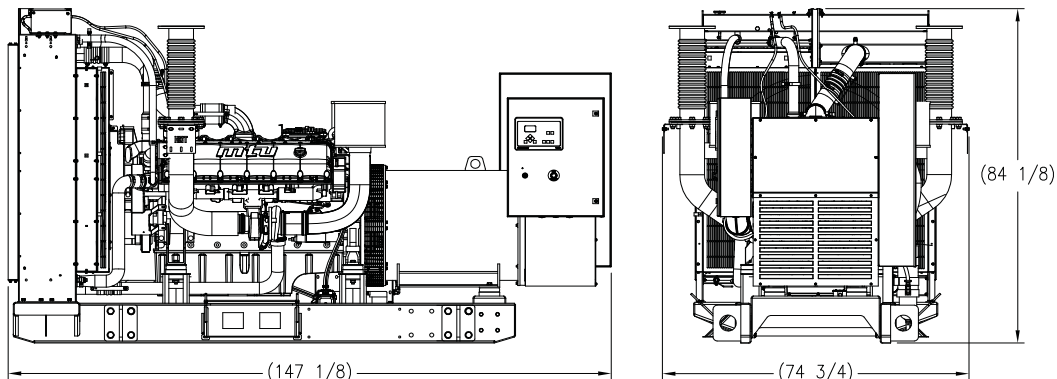
\* Air density = 1.184 kg/m<sup>3</sup> (0.0739 lbm/ft<sup>3</sup>)

### // Exhaust System \*\*

Gas Temp. (Stack): °C (°F)	482 (900)
Gas Volume at Stack Temp: m <sup>3</sup> /min (CFM)	90 (3,178)
Max. Allowable Back Pressure: kPa (in. H <sub>2</sub> O)	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 (LxWxH)	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 <sub>x</sub> + 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