

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



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 | 20V4000G14S |
| 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 (3,339) |
| 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) | 50 (13.2) |
| 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 ₂ O) | 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

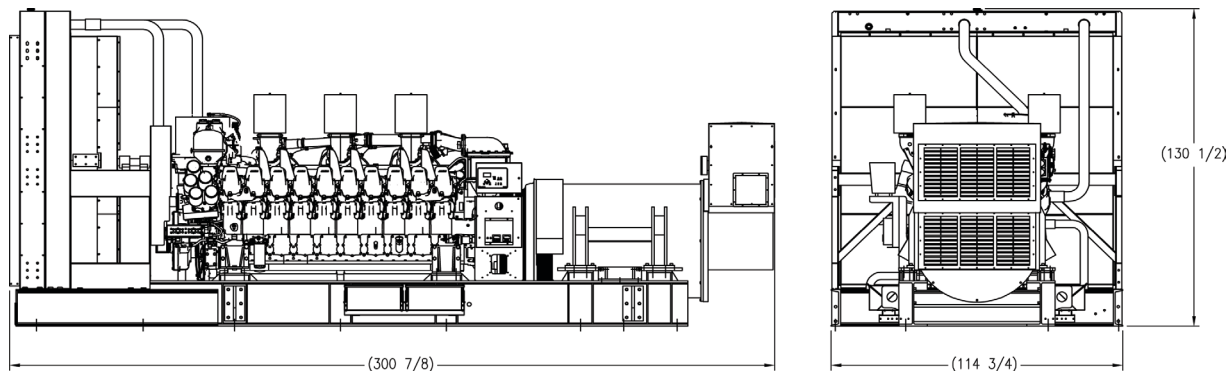
| | |
|---|-----------------|
| Aspirating: *m ³ /min (SCFM) | 228 (8,052) |
| Air Flow Required for Rad. Cooled Unit: *m ³ /min (SCFM) | 2,895 (102,247) |
| Remote Cooled Applications; Air Flow Required for Dissipation of Radiated Generator Set Heat for a Max. of 25 °F Rise: *m ³ /min (SCFM) | 744 (26,119) |

* Air density = 1.184 kg/m³ (0.0739 lbm/ft³)

// 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 ₂ O) | 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

Open Power Unit (OPU)

Dimensions (L x W x H)

7,640 x 2,915 x 3,310 mm (300.88 x 114.75 x 130.5 in)

Weight (less tank)

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

Level 0: Open Power Unit dB(A)

DCCP Full Load

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

6.12

CO

0.37

PM

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

MTU Onsite Energy

A Rolls-Royce Power Systems Brand

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