Diesel Generator Set

MTU 16V4000 DS2250 40 °C

2,045 kWe/60 Hz/Data Center Continuous Power (Fuel Consumption Optimized) 380 - 13,800V

Reference: MTU 16V4000 DS2250 (2,250 kWe) 40 °C for Standby (Fuel Consumption Optimized) Rating Technical Data

System ratings

Voltage (L-L)	380V † ‡	416V † ‡	440V † ‡	480V † ‡	600V ‡
Phase	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60
kW	2,045	2,045	2,045	2,045	2,045
kVA	2,556	2,556	2,556	2,556	2,556
Amps	3,884	3,548	3,354	3,075	2,460
skVA@30% voltage dip	6,899	5,573	4,047	4,816	6,271
Generator model*	841-M70-M	841-L75-M	641-VL95-M	641-VL95-M	841-S60-M
Temp rise	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

Voltage (L-L)	4,160V	12,470V	13,200V	13,800V
Phase	3	3	3	3
PF	0.8	0.8	0.8	0.8
Hz	60	60	60	60
kW	2,045	2,045	2,045	2,045
kVA	2,556	2,556	2,556	2,556
Amps	355	118	112	107
skVA@30% voltage dip	5,852	4,266	4,017	4,390
Generator model*	841-S60-M	4P6.6-2800-M	4P6.6-2800-M	4P6.6-2800-M
Temp rise	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

* Consult the factory for alternate configuration.

† UL 2200 offered

‡ CSA offered

A Rolls-Royce solution

Certifications and standards

- Emissions
  - Fuel Consumption Optimized (FCO)
- 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 - optional (refer to *System ratings* for availability)
- CSA - optional (refer to *System ratings* for availability)
  - CSA C22.2 No. 100
  - CSA C22.2 No. 14
- 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 rated load in one step per NFPA 110

Standard features*

- MTU 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
- Cooling system
  - Integral set-mounted
  - Engine-driven fan
- 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

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
- Fuel Consumption Optimized

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
- NFPA 110 compatible

* Represents standard product only. Consult the factory/MTU Distributor for additional configurations.

Application data

Engine

Manufacturer	MTU
Model	16V4000G24S
Type	4-cycle
Arrangement	16-V
Displacement: L (in³)	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)
Maximum 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)	547 (145)

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)	1,200 (317)

Fuel consumption

At 100% of power rating: L/hr (gal/hr)	536 (142)
At 75% of power rating: L/hr (gal/hr)	398 (105)
At 50% of power rating: L/hr (gal/hr)	277 (73)

Cooling - radiator system

Ambient capacity of radiator: °C (°F)	40 (104)
Maximum restriction of cooling air: intake and discharge side of radiator: 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)	560 (31,847)
Heat radiated to ambient: kW (BTUM)	202.1 (11,493)
Fan power: kW (hp)	95.4 (128)

Air requirements

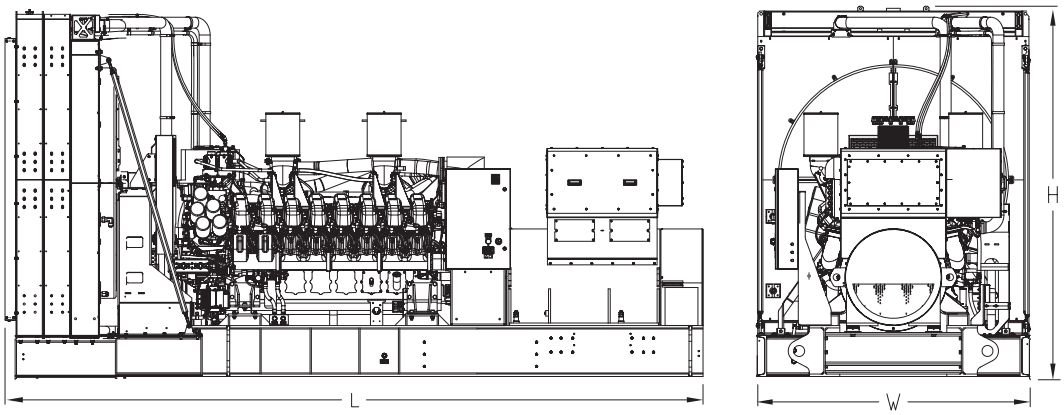
Aspirating: *m³/min (SCFM)	186 (6,569)
Air flow required for radiator cooled unit: *m³/min (SCFM)	2,053 (72,500)
Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m³/min (SCFM)	739 (26,241)

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

Exhaust system

Gas temp. (stack): °C (°F)	465 (869)
Gas volume at stack temp: m³/min (CFM)	456 (16,103)
Maximum allowable back pressure at outlet of engine, before piping: 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)	6,432 x 2,338 x 3,191 mm (253.2 x 92 x 125.6 in)	20,720 kg (45,687 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)	98.6

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
6.23	0.44	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%.
- Consult your local MTU Distributor for derating information.

Subject to change. | 231236 | 2020-02