Diesel Generator Set

MTU 16V4000 DS2250 50 °C

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

Reference: MTU 16V4000 DS2250 (2,250 kWe) 50 °C for Standby (Fuel Consumption Optimized) Rating Technical Data

System ratings

<table>
<thead>
<tr>
<th>Voltage (L-L)</th>
<th>380V † ‡</th>
<th>416V † ‡</th>
<th>440V † ‡</th>
<th>480V † ‡</th>
<th>600V ‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>PF</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
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</tr>
<tr>
<td>Hz</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>kW</td>
<td>2,045</td>
<td>2,045</td>
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</tr>
<tr>
<td>kVA</td>
<td>2,556</td>
<td>2,556</td>
<td>2,556</td>
<td>2,556</td>
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</tr>
<tr>
<td>Amps</td>
<td>3,884</td>
<td>3,548</td>
<td>3,354</td>
<td>3,075</td>
<td>2,460</td>
</tr>
<tr>
<td>skVA@30% voltage dip</td>
<td>6,899</td>
<td>5,573</td>
<td>4,047</td>
<td>4,816</td>
<td>6,271</td>
</tr>
<tr>
<td>Generator model*</td>
<td>841-M70</td>
<td>841-L75</td>
<td>641-VL95</td>
<td>641-VL95</td>
<td>841-S60</td>
</tr>
<tr>
<td>Temp rise</td>
<td>130 °C/40 °C</td>
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</tr>
<tr>
<td>Connection</td>
<td>6 LEAD WYE</td>
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</tr>
</tbody>
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<tr>
<th>Voltage (L-L)</th>
<th>4,160V</th>
<th>12,470V</th>
<th>13,200V</th>
<th>13,800V</th>
</tr>
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<tr>
<td>Amps</td>
<td>355</td>
<td>118</td>
<td>112</td>
<td>107</td>
</tr>
<tr>
<td>skVA@30% voltage dip</td>
<td>5,852</td>
<td>4,266</td>
<td>4,017</td>
<td>4,390</td>
</tr>
<tr>
<td>Generator model*</td>
<td>841-S60</td>
<td>4P6.6-2800</td>
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* Consult the factory for alternate configuration. Generator model may end with -M or -R, depending on selection.
† UL 2200 offered
‡ CSA offered
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
- 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

**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 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 factory/MTU Distributor for additional configurations.
### Application data

#### Engine
- **Manufacturer**: MTU
- **Model**: 16V4000G24S
- **Type**: 4-cycle
- **Arrangement**: 16-V
- **Displacement**: 76.3 L (4,656)
- **Bore**: 17 cm (6.69 in)
- **Stroke**: 21 cm (8.27 in)
- **Compression ratio**: 16.5:1
- **Rated rpm**: 1,800
- **Engine governor**: electronic isochronous (ADEC)
- **Maximum power**: 2,280 kW (3,058 bhp)
- **Speed regulation**: ± 0.25%
- **Air cleaner**: dry

#### Liquid capacity (Lubrication)
- **Total oil system**: 300 L (79.3 gal)
- **Engine jacket water capacity**: 175 L (46.2 gal)
- **After cooler water capacity**: 50 L (13.2 gal)
- **System coolant capacity**: 719 L (190 gal)

#### 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
- **Fuel return connection size**: -16 JIC 37° female
- **Maximum fuel lift**: 1.3 m (3 ft)
- **Recommended fuel**: diesel #2
- **Total fuel flow**: 1,200 L/hr (317 gal/hr)

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

#### Cooling - radiator system
- **Ambient capacity of radiator**: 50 L (122 gal)
- **Maximum restriction of cooling air**: 0.12 kPa (0.5 in. H₂O)
- **Water pump capacity**: 1,350 L/min (357 gpm)
- **Heat rejection to coolant**: 840 kW (47,770 BTU)
- **Heat rejection to after cooler**: 560 kW (31,847 BTU)
- **Heat radiated to ambient**: 202.1 kW (1,149.3 BTU)
- **Fan power**: 105.9 kW (142 hp)

#### Air requirements
- **Aspirating**: 186 m³/min (6,569 SCFM)
- **Air flow required for radiator cooled unit**: 3,089 m³/min (109,079 SCFM)
- **Remote cooled applications**: 739 m³/min (26,241 SCFM)

#### Exhaust system
- **Gas temp. (stack)**: 465 °C (869 °F)
- **Gas volume at stack temp**: 456 m³/min (16,103 CFM)
- **Maximum allowable back pressure at outlet of engine, before piping**: 8.5 kPa (34.1 in. H₂O)

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MTU 16V4000 DS2250 (2,045 kWe) 50 °C - DCCP - FCO / 03
Weights and dimensions

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.

<table>
<thead>
<tr>
<th>System</th>
<th>Dimensions (L x W x H)</th>
<th>Weight (less tank)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open power unit (OPU)</td>
<td>6,474 x 2,539 x 3,434 mm (254.9 x 99.9 x 135.2 in)</td>
<td>21,554 kg (47,523 lb)</td>
</tr>
</tbody>
</table>

Sound data

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

<table>
<thead>
<tr>
<th>Unit type</th>
<th>DCCP full load</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 0: Open power unit: dB(A)</td>
<td>98.6</td>
</tr>
</tbody>
</table>

Emissions data

<table>
<thead>
<tr>
<th>NOx + NMHC</th>
<th>CO</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.23</td>
<td>0.44</td>
<td>0.05</td>
</tr>
</tbody>
</table>

— 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.