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 **

<table>
<thead>
<tr>
<th>Voltage (L-L)</th>
<th>380V</th>
<th>400V</th>
<th>415V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase</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>
</tr>
<tr>
<td>Hz</td>
<td>50</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>kW</td>
<td>520</td>
<td>520</td>
<td>520</td>
</tr>
<tr>
<td>kVA</td>
<td>650</td>
<td>650</td>
<td>650</td>
</tr>
<tr>
<td>Amps</td>
<td>968</td>
<td>938</td>
<td>904</td>
</tr>
<tr>
<td>skVA@30% voltage dip</td>
<td>1,450</td>
<td>1,600</td>
<td>1,750</td>
</tr>
<tr>
<td>Generator model</td>
<td>573RSL4033</td>
<td>573RSL4033</td>
<td>573RSL4033</td>
</tr>
<tr>
<td>Temp rise</td>
<td>125 °C/40 °C</td>
<td>125 °C/40 °C</td>
<td>125 °C/40 °C</td>
</tr>
<tr>
<td>Connection</td>
<td>4 LEAD WYE</td>
<td>4 LEAD WYE</td>
<td>4 LEAD WYE</td>
</tr>
</tbody>
</table>

** 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 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
- 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
- Full flow oil filter
- 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
- 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
- NFPA 110 compatible
## Application data

### Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>MTU</td>
</tr>
<tr>
<td>Model **</td>
<td>12V1600G20F</td>
</tr>
<tr>
<td>Type</td>
<td>4-cycle</td>
</tr>
<tr>
<td>Arrangement</td>
<td>12-V</td>
</tr>
<tr>
<td>Displacement: L (in³)</td>
<td>21 (1,281)</td>
</tr>
<tr>
<td>Bore: cm (in)</td>
<td>12 (4.72)</td>
</tr>
<tr>
<td>Stroke: cm (in)</td>
<td>15 (5.91)</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>17.5:1</td>
</tr>
<tr>
<td>Rated rpm</td>
<td>1,500</td>
</tr>
<tr>
<td>Engine governor</td>
<td>electronic isochronous (ADEC)</td>
</tr>
<tr>
<td>Maximum power: kWm (bhp) **</td>
<td>576 (772)</td>
</tr>
<tr>
<td>Speed regulation</td>
<td>± 0.25%</td>
</tr>
<tr>
<td>Air cleaner</td>
<td>dry</td>
</tr>
</tbody>
</table>

### Liquid capacity (Lubrication)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total oil system: L (gal)</td>
<td>73 (19.3)</td>
</tr>
<tr>
<td>Engine jacket water capacity: L (gal)</td>
<td>65 (17.2)</td>
</tr>
<tr>
<td>System coolant capacity: L (gal)</td>
<td>106 (28.1)</td>
</tr>
</tbody>
</table>

### Electrical

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electric volts DC</td>
<td>24</td>
</tr>
<tr>
<td>Cold cranking amps under -17.8 °C (°F)</td>
<td>1,050</td>
</tr>
</tbody>
</table>

### Fuel system

<table>
<thead>
<tr>
<th>Specification</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fuel supply connection size</td>
<td>-10 JIC 37° female M20 x 1.5 male adapter provided</td>
</tr>
<tr>
<td>Fuel return connection size</td>
<td>-6 JIC 37° female M14 x 1.5 male adapter provided</td>
</tr>
<tr>
<td>Maximum fuel lift: m (ft)</td>
<td>5 (16)</td>
</tr>
<tr>
<td>Recommended fuel</td>
<td>diesel #2</td>
</tr>
<tr>
<td>Total fuel flow: L/hr (gal/hr)</td>
<td>341.8 (90.3)</td>
</tr>
</tbody>
</table>

### 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)
Maximum restriction of cooling air: intake and discharge side of radiator: kPa (in. H₂O) ** 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: *m³/min (SCFM) ** 48 (1,695)
Air flow required for radiator cooled unit: *m³/min (SCFM) ** 803 (28,350)
Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m³/min (SCFM) ** 216 (7,618)

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

### Exhaust system **

** Gas temp. (stack): °C (°F) ** 483 (901)
Gas volume at stack temp: m³/min (CFM) ** 126 (4,450)
Maximum allowable back pressure at outlet of engine, before piping: kPa (in. H₂O) ** 8.5 (34.1)

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** Prime technical data is for a fuel-optimized prime unit.
Weights and dimensions

<table>
<thead>
<tr>
<th>System</th>
<th>Dimensions (L x W x H)</th>
<th>Weight (dry/less tank)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open power unit (OPU)</td>
<td>3,737 x 1,899 x 2,137 mm (147.1 x 74.8 x 84.1 in)</td>
<td>5,249 kg (11,572 lb)</td>
</tr>
</tbody>
</table>

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

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

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

Emissions data

<table>
<thead>
<tr>
<th>NO₂ + NMHC</th>
<th>CO</th>
<th>PM</th>
</tr>
</thead>
<tbody>
<tr>
<td>C/F</td>
<td>C/F</td>
<td>C/F</td>
</tr>
</tbody>
</table>

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

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