Gas Generator Set

MTU 12V0183 GS400

355 kWe/60 Hz/Prime/208 - 600V
Reference MTU 12V0183 GS400 (400 kWe) for Standby Rating Technical Data

System ratings

<table>
<thead>
<tr>
<th>Voltage (L-L)</th>
<th>240V †</th>
<th>208V †</th>
<th>240V †</th>
<th>480V †</th>
<th>600V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phase</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>PF</td>
<td>1</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Hz</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>Natural gas ratings: Amps</td>
<td>1,458</td>
<td>1,232</td>
<td>1,068</td>
<td>534</td>
<td>427</td>
</tr>
<tr>
<td>Natural gas ratings: kW/kVA</td>
<td>350/350</td>
<td>355/443</td>
<td>355/443</td>
<td>355/443</td>
<td>355/443</td>
</tr>
<tr>
<td>skVA@30% voltage dip</td>
<td>760</td>
<td>1,500</td>
<td>1,500</td>
<td>1,500</td>
<td>1,450</td>
</tr>
<tr>
<td>Generator model</td>
<td>574RSL4037</td>
<td>572RSL4029</td>
<td>572RSL4029</td>
<td>572RSL4029</td>
<td>572RSS4272</td>
</tr>
<tr>
<td>Temp rise</td>
<td>105 °C/40 °C</td>
<td>105 °C/40 °C</td>
<td>105 °C/40 °C</td>
<td>105 °C/40 °C</td>
<td>105 °C/40 °C</td>
</tr>
<tr>
<td>Connection</td>
<td>12 LEAD DOUBLE DELTA</td>
<td>12 LEAD LOW WYE</td>
<td>12 LEAD HI DELTA</td>
<td>12 LEAD HI WYE</td>
<td>4 LEAD WYE</td>
</tr>
</tbody>
</table>

† UL 2200 offered

Certifications and standards

- Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004
- UL 2200 - optional (refer to System ratings for availability)
- CSA - optional
  - 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
  - Accepts rated load in one step per NFPA 110
Standard features*

- MTU is a single source supplier
- Global product support
- 2 year standard warranty
- 21.9L turbo engine charge air cooling
  - 21.9 liter displacement
  - 4-cycle
- 3-way catalyst
- Engine-generator resilient mounted
- Complete range of accessories
- Cooling system
  - Integral set-mounted
  - Engine-driven fan

Generator

- Brushless, rotating field generator
- 2/3 pitch windings
- Permanent Magnet Generator (PMG) 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 cleaner
- Oil pump
- Oil drain extension and S/O valve
- Full flow oil filter
- 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
- EPA certified engine

**Digital control panel(s)**

- Digital metering
- Engine parameters
- Generator protection functions
- Engine protection
- SAE J1939 engine 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

**Generator**

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
- Sustained short circuit of up to 300% of rated current for up to 10 seconds
- Self-ventilated and drip-proof
- Superior voltage waveform
- Digital, volts-per-hertz regulator
- ±1% voltage regulation no load to full load
- 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
- 100% of rated load - one step
- 5% maximum total harmonic distortion

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

<table>
<thead>
<tr>
<th>Engine</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>PSI HD</td>
</tr>
<tr>
<td>Model</td>
<td>21.9L CAC</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>21.9 (1,338)</td>
</tr>
<tr>
<td>Bore: cm (in)</td>
<td>12.8 (5.04)</td>
</tr>
<tr>
<td>Stroke: cm (in)</td>
<td>14.2 (5.59)</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>10.5:1</td>
</tr>
<tr>
<td>Rated RPM</td>
<td>1,800</td>
</tr>
<tr>
<td>Engine governor</td>
<td>Bosch</td>
</tr>
<tr>
<td>Maximum power (NG): kWm (bhp)</td>
<td>410 (550)</td>
</tr>
<tr>
<td>Speed regulation</td>
<td>± 0.5%</td>
</tr>
<tr>
<td>Air cleaner</td>
<td>dry</td>
</tr>
</tbody>
</table>

### Liquid capacity (Lubrication)

- Total oil system: L (gal) | 47.1 (12.4)
- Engine jacket water capacity: L (gal) | 52.3 (11.5)
- System coolant capacity: L (gal) | 291 (64)

### Electrical

- Electric volts DC | 24
- Cold cranking amps under -17.8 °C (0 °F) | 1,050

### Fuel inlet

- Fuel supply connection size | 3" NPT
- Fuel supply pressure: mm H₂O (in. H₂O) | 178-279 (7-11)

### Fuel consumption (NG-1000 BTU/ft³)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Value (kWm (bhp))</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 100% of power rating:</td>
<td>410 (550)</td>
</tr>
<tr>
<td>At 75% of power rating:</td>
<td>312 (410)</td>
</tr>
<tr>
<td>At 50% of power rating:</td>
<td>247 (320)</td>
</tr>
</tbody>
</table>

### 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) | 0.12 (0.5)
- Water pump capacity: L/min (gpm) | 660 (174)
- Heat rejection to coolant: kW (BTUM) | 453 (25,760)
- Heat radiated to ambient: kW (BTUM) | 118.2 (6,720)
- Fan power: kW (hp) | 31.3 (42)

* Installation of enclosures reduces the ambient capacity of the cooling system by 1 °C (1.8 °F). Gravity exhaust louvers reduce ambient capacity of the cooling system by an additional 3 °C (5.5 °F).

### Air requirements

- Aspirating: *m³/min (SCFM) | 24.6 (841)
- Air flow required for radiator cooled unit: **m³/min (SCFM) | 1,133 (40,000)
- Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m³/min (SCFM) | 429 (15,160)

* Air density = 1.184 kg/m³ (0.0739 lbm/ft³)
** At 0.25 kPa (1 in. H₂O) static pressure and 52 °C (125 °F) at radiator

### Exhaust system

- Gas temp. (stack): °C (°F) | 582 (1,080)
- Gas volume at stack temp: m³/min (CFM) | 72.2 (2,550)
- Maximum allowable back pressure at outlet of engine, before piping: kPa (in. H₂O) | 2.5 (10.25)
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.

<table>
<thead>
<tr>
<th>System</th>
<th>Dimensions (L x W x H)</th>
<th>Weight (dry)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open power unit (OPU)</td>
<td>4,369 x 2,760 x 2,413 mm (172 x 108.6 x 95 in)</td>
<td>5,228 kg (11,500 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 (NG)</th>
<th>Prime full load (LP)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 0: Open power unit: dB(A)</td>
<td>85.5</td>
<td>C/F</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>Fuel type</th>
<th>THC + NOx</th>
<th>CO</th>
</tr>
</thead>
<tbody>
<tr>
<td>Natural gas</td>
<td>0.39</td>
<td>0.1</td>
</tr>
</tbody>
</table>

All units are in g/hp-hr and are 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.

Rating definitions and conditions

- Ambient capability factor at 984 ft (300 m). Consult your local MTU Distributor for other altitudes.
- 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%. For limited running time and base load ratings, consult the factory.
- Consult your local MTU Distributor for derating information.