



## Gas Generator Set

# mtu 12V0183 GS400

400 kWe/60 Hz/Standby 208 - 600V

Reference **mtu 12V0183 GS400 (355 kWe)** for Prime Rating Technical Data

### System ratings

| Voltage (L-L)              | 240V †               | 208V †       | 240V †        | 480V †       | 600V         |
|----------------------------|----------------------|--------------|---------------|--------------|--------------|
| Phase                      | 1                    | 3            | 3             | 3            | 3            |
| PF                         | 1                    | 0.8          | 0.8           | 0.8          | 0.8          |
| Hz                         | 60                   | 60           | 60            | 60           | 60           |
| <b>Natural Gas (NG)</b>    |                      |              |               |              |              |
| Amps                       | 1,604                | 1,388        | 1,203         | 601          | 481          |
| kW/kVA                     | 385/385              | 400/500      | 400/500       | 400/500      | 400/500      |
| <b>Liquid Propane (LP)</b> |                      |              |               |              |              |
| Amps                       | 1,187                | 1,023        | 887           | 443          | 355          |
| kW/kVA                     | 285/285              | 295/368      | 295/368       | 295/368      | 295/368      |
| <b>NG and LP</b>           |                      |              |               |              |              |
| skVA@30% voltage dip       | 760                  | 1,500        | 1,500         | 1,500        | 1,080        |
| Generator model *          | 574RSL4037           | 572RSL4029   | 572RSL4029    | 572RSL4029   | 433RSS4266   |
| Temp rise                  | 130 °C/40 °C         | 130 °C/40 °C | 130 °C/40 °C  | 130 °C/40 °C | 130 °C/40 °C |
| Connection                 | 12 LEAD DOUBLE DELTA | 12 LEAD WYE  | 12 LEAD DELTA | 12 LEAD WYE  | 4 LEAD WYE   |

\* Consult the factory for alternate configuration.

† 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\*

- Single source supplier
- Global product support
- Two (2) Year/3,000 Hour Basic Limited Warranty
- 21.9L turbo engine charge air cooling
  - 21.9 liter displacement
  - 4-cycle
- 3-way catalyst
- Optional fuel system: NG and LP vapor dual fuel
- 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 shut-off 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

### Generator

- NEMA MG1, IEEE, and ANSI standards compliance for temperature rise and motor starting
- Self-ventilated and drip-proof
- Superior voltage waveform
- Digital, volts-per-hertz regulator
- $\pm 1\%$  voltage regulation no load to full load
- Brushless alternator with brushless pilot exciter
- 4 pole, rotating field
- 130 °C maximum standby 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

### Digital control panel(s)

- Digital metering
- Engine parameters
- Generator protection functions
- Engine protection
- SAE J1939 engine ECU communications
- Windows®-based software
- Multilingual capability
- Communications to 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

|                                    |              |
|------------------------------------|--------------|
| Manufacturer                       | PSI          |
| Model                              | 21.9L CAC    |
| Type                               | 4-cycle      |
| Arrangement                        | 12-V         |
| Displacement: L (in <sup>3</sup> ) | 21.9 (1,338) |
| Bore: cm (in)                      | 12.8 (5.04)  |
| Stroke: cm (in)                    | 14.2 (5.59)  |
| Compression ratio                  | 10.5:1       |
| Rated rpm                          | 1,800        |
| Engine governor                    | Bosch        |
| Maximum power (NG): kWm (bhp)      | 456 (612)    |
| Maximum power (LP): kWm (bhp)      | 351 (471)    |
| Steady state frequency band        | ± 0.5%       |
| Air cleaner                        | dry          |

### Liquid capacity

|                                       |             |
|---------------------------------------|-------------|
| 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 |
| Batteries: group size                    | 4D    |
| Batteries: quantity                      | 2     |

### Fuel inlet

|  |                |
|--|----------------|
| Fuel supply connection size                                      | 3" NPT         |
| Fuel supply pressure: mm H <sub>2</sub> O (in. H <sub>2</sub> O) | 178–279 (7–11) |

### Fuel consumption (NG-1000 BTU/ft<sup>3</sup> / LP-2500 BTU/ft<sup>3</sup>)

|   | NG            | LPG          |
|---|---------------|--------------|
| At 100% of power rating: m <sup>3</sup> /hr (ft <sup>3</sup> /hr) | 119.8 (4,230) | 39.9 (1,407) |
| At 75% of power rating: m <sup>3</sup> /hr (ft <sup>3</sup> /hr)  | 93.4 (3,297)  | 34 (1,200)   |
| At 50% of power rating: m <sup>3</sup> /hr (ft <sup>3</sup> /hr)  | 65.5 (2,314)  | 22.9 (808)   |

### Cooling - radiator system

|  | NG and LPG    |
|--|---------------|
| Ambient capacity of radiator: °C (°F)  | 50 (122)*     |
| Maximum restriction of cooling air, intake, and discharge side of radiator: kPa (in. H <sub>2</sub> O) | 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

|   | NG and LPG     |
|---|----------------|
| Aspirating: *m <sup>3</sup> /min (SCFM)   | 24.6 (841)     |
| Air flow required for radiator cooled unit: **m <sup>3</sup> /min (SCFM)  | 1,333 (40,000) |
| Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m <sup>3</sup> /min (SCFM) | 429 (15,160)   |

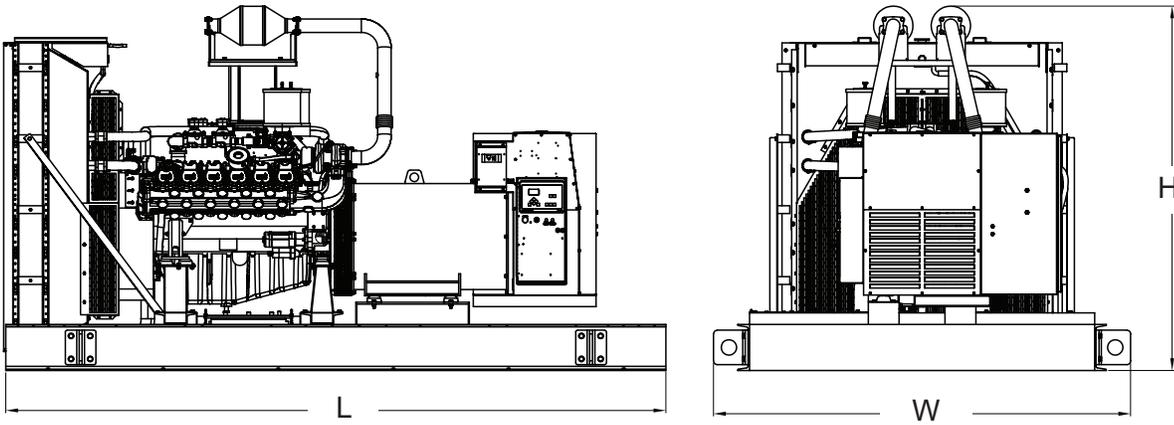
\* Air density = 1.184 kg/m<sup>3</sup> (0.0739 lbm/ft<sup>3</sup>)

\*\* At 0.25 kPa (1 in. H<sub>2</sub>O) static pressure and 52 °C (125 °F) at radiator

### Exhaust system

|  | NG and LPG   |
|--|--------------|
| Gas temperature (stack): °C (°F)   | 582 (1,080)  |
| Gas volume at stack temperature: m <sup>3</sup> /min (CFM)                                     | 72.2 (2,550) |
| Maximum allowable back pressure at outlet of engine, before piping: kPa (in. H <sub>2</sub> O) | 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.

| System                | Dimensions (L x W x H)                         | Weight               |
|-----------------------|--|----------------------|
| Open Power Unit (OPU) | 4,369 x 2,760 x 2,413 mm (172 x 108.6 x 95 in) | 5,228 kg (11,500 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            | Standby full load (NG) | Standby full load (LP) |
|----------------------|------------------------|------------------------|
| Level 0 (OPU): dB(A) | 86.2                   | 85.3                   |

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

## Emissions data

| Fuel type      | THC + NO <sub>x</sub> | CO   |
|----------------|-----------------------|------|
| Natural gas    | 0.39                  | 0.1  |
| Liquid propane | 0.06                  | 0.25 |

- 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.
- Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. No overload capability for this rating. Ratings are in accordance with ISO 3046-1, BS 5514, and AS 2789. Average load factor: ≤ 85%.
- Nominal ratings at standard conditions: 25 °C and 300 meters (77 °F and 1,000 feet).
- Deration factor:
  - Consult your local **mtu** Distributor for altitude derations.
  - Consult your local **mtu** Distributor for temperature derations.