



## Diesel Generator Set

# mtu 12V1600 DS900

820 kWe/60 Hz/Data Center Continuous Power/208 - 600V

Reference **mtu 12V1600 DS900** (900 kWe) for Standby Rating Technical Data



### System ratings

Voltage (L-L)	208V <sup>†</sup>	240V <sup>†</sup>	380V <sup>†</sup>	480V <sup>†</sup>	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	820	820	820	820	820
kVA	1,025	1,025	1,025	1,025	1,025
Amps	2,845	2,465	1,557	1,232	986
skVA@30% voltage dip	1,540	1,535	1,440	2,615	2,160
Generator model	LSA 50.2 M6	LSA 50.2 M6	LSA 50.2 S4	LSA 49.3 L9	LSA 50.2 M6
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 WYE	12 LEAD DELTA	6 LEAD WYE	6 LEAD WYE	6 LEAD WYE

<sup>†</sup> UL 2200 offered

### Certifications and standards

- Emissions
  - EPA Tier 2 certified
- Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004
- Seismic certification – optional
  - 2021 IBC certification
  - HCAI pre-approval
- 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
  - 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\*

- Single source supplier
- Global product support
- Two (2) Year/3,000 Hour Basic Limited Warranty
- 12V1600 diesel engine
  - 22.44 liter displacement
  - Common rail fuel injection
  - 4-cycle
- HVO and GtL fuels meeting fuel specification EN15940
- 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 cleaners
- Oil pump
- Oil drain extension and shut-off valve
- Full flow oil filters
- 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
- EPA certified engine

### Digital control panel(s)

- Digital metering
- Engine parameters
- Generator protection functions
- Engine protection
- CANBus 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

### 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
- Brushless alternator with brushless pilot exciter
- 4 pole, rotating field
- 130 °C prime temperature rise
- 1-bearing, sealed
- Flexible coupling
- Full amortisseur windings
- 125% rotor balancing
- 3-phase voltage sensing
- $\pm 0.25\%$  voltage regulation no load to full load
- 100% of rated load - one step
- 5% maximum total harmonic distortion

## Application data

### Engine

Manufacturer	<b>mtu</b>
Model	12V1600G41S
Type	4-cycle
Arrangement	12-V
Displacement: L (cu in)	22.44 (1,369)
Bore: cm (in)	12.6 (4.96)
Stroke: cm (in)	15 (5.91)
Compression ratio	15.89:1
Rated rpm	1,800
Engine governor	electronic isochronous (ADEC)
Maximum power: kWm (bhp)	996 (1,335)
Steady state frequency band	± 0.25%
Air cleaner	dry

### Liquid capacity

Total oil system: L (gal)	73 (19.3)
Engine jacket water capacity: L (gal)	65 (17.2)
System coolant capacity: L (gal)	109 (28.8)

### Electrical

Electric volts DC	24
Cold cranking amps under -17.8 °C (0 °F)	1,050
Batteries: group size	4D
Batteries: quantity	2

### Fuel system

Fuel supply connection size	-10 JIC 37° female
Fuel return connection size	-6 JIC 37° female
Maximum fuel lift: m (ft)	3 (10)
Recommended fuel	diesel #2/HVO
Total fuel flow: L/hr (gal/hr)	375.6 (99.2)

### Fuel consumption

At 100% of power rating: L/hr (gal/hr)	207.5 (54.8)
At 75% of power rating: L/hr (gal/hr)	155.5 (41.1)
At 50% of power rating: L/hr (gal/hr)	110.5 (29.2)

### 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 <sub>2</sub> O)	0.2 (0.8)
Water pump capacity: L/min (gpm)	517 (136.5)
Heat rejection to coolant: kW (BTUM)	350 (19,905)
Heat rejection to after cooler: kW (BTUM)	250 (14,218)
Heat radiated to ambient: kW (BTUM)	81.2 (4,615)
Fan power: kW (hp)	29 (38.9)

### Air requirements

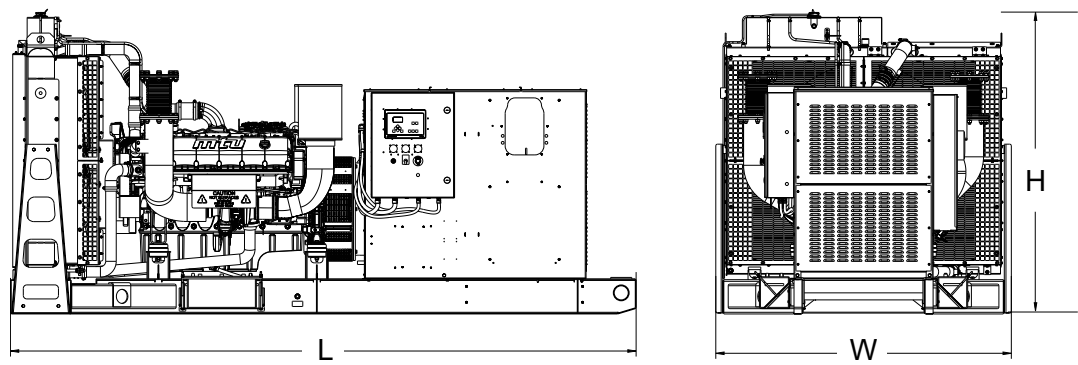
Aspirating: *m <sup>3</sup> /min (SCFM)	73.2 (2,585)
Air flow required for radiator cooled unit: *m <sup>3</sup> /min (SCFM)	1,007 (35,579)
Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m <sup>3</sup> /min (SCFM)	297 (10,537)

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

### Exhaust system

Gas temperature (stack): °C (°F)	551 (1,024)
Gas volume at stack temperature: m <sup>3</sup> /min (CFM)	195.6 (6,908)
Maximum allowable back pressure at outlet of engine, before piping: kPa (in. H <sub>2</sub> O)	5 (20.1)

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
Open Power Unit (OPU)	4,521 x 2,135 x 2,179 mm (178 x 84.1 x 85.8 in)	4,774-5,829 kg (10,524-12,850 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 O (OPU): dB(A)	94.7

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 <sub>x</sub> + NMHC	CO	PM
8.01	1.31	0.43

— All units are in g/hp-hr and shown at 110% 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%.
- 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.

C/F = Consult Factory/**mtu** Distributor  
N/A = Not Available