



## Diesel Generator Set

# mtu 10V1600 DS450

450 kWe/60 Hz/Standby/208 - 600V

Reference **mtu 10V1600 DS450 (400 kWe)** for Prime Rating Technical Data

### System ratings

Voltage (L-L)	208V †	240V †	380V	440V	480V †	600V
Phase	3	3	3	3	3	3
PF	0.8	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60
kW	450	450	450	450	450	450
kVA	563	563	563	563	563	563
Amps	1,561	1,353	855	738	677	541
skVA@30% voltage dip	780	586	843	900	1,490	1,041
Generator model	572RSL4027	572RSL4027	572RSL4029	572RSL4025	572RSL4025	572RSS4270
Temp rise	130 °C/40 °C	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	12 LEAD WYE	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

† UL 2200 offered

### Certifications and standards

- Emissions
  - EPA Tier 3 certified
  - South Coast Air Quality Management District (SCAQMD)
- Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004
- Seismic certification – optional
  - 2018 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
  - Accepts rated load in one step per NFPA 110
  - Permissible average power output during 24 hours of operation is approved up to 85%.

## Standard features\*

- Single source supplier
- Global product support
- Two (2) Year/3,000 Hour Basic Limited Warranty
- 10V1600 diesel engine
  - 17.5 liter displacement
  - Common rail fuel injection
  - 4-cycle
- 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 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
- EPA certified engine

### 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 maximum standby 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

### 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

## Application data

### Engine

Manufacturer	<b>mtu</b>
Model	10V1600G70S
Type	4-cycle
Arrangement	10-V
Displacement: L (cu in)	17.5 (1,068)
Bore: cm (in)	12.2 (4.8)
Stroke: cm (in)	15 (5.91)
Compression ratio	17.5:1
Rated rpm	1,800
Engine governor	electronic isochronous (ADEC)
Maximum power: kWm (bhp)	511 (685)
Steady state frequency band	± 0.25%
Air cleaner	dry

### Liquid capacity

Total oil system: L (gal)	61 (16)
Engine jacket water capacity: L (gal)	60 (15.9)
System coolant capacity: L (gal)	99.3 (26.2)

### 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 M20 x 1.5 male adapter provided
Fuel return connection size	-6 JIC 37° female M14 x 1.5 male adapter provided
Maximum fuel lift: m (ft)	5 (16)
Recommended fuel	diesel #2
Total fuel flow: L/hr (gal/hr)	401.3 (106)

### Fuel consumption

At 100% of power rating: L/hr (gal/hr)	127 (34)
At 75% of power rating: L/hr (gal/hr)	98 (26)
At 50% of power rating: L/hr (gal/hr)	73 (19)

### Cooling - radiator system

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)	0.2 (0.8)
Water pump capacity: L/min (gpm)	466 (123)
Heat rejection to coolant: kW (BTUM)	235 (13,364)
Heat rejection to after cooler: kW (BTUM)	118 (6,710)
Heat radiated to ambient: kW (BTUM)	58.6 (3,332)
Fan power: kW (hp)	17.1 (22.9)

### Air requirements

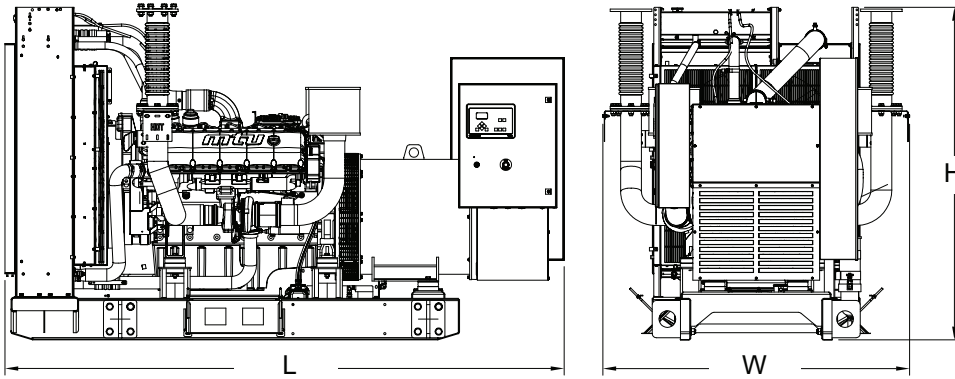
Aspirating: *m <sup>3</sup> /min (SCFM)	35 (1,250)
Air flow required for radiator cooled unit: *m <sup>3</sup> /min (SCFM)	642 (22,672)
Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m <sup>3</sup> /min (SCFM)	213 (7,516)

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

### Exhaust system

Gas temperature (stack): °C (°F)	461 (862)
Gas volume at stack temperature: m <sup>3</sup> /min (CFM)	103 (3,623)
Maximum allowable back pressure at outlet of engine, before piping: kPa (in. H <sub>2</sub> O)	8.5 (34.1)

## 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)	3,416 x 1,873 x 2,032 mm (134.5 x 73.8 x 80 in)	4,175-5,129 kg (9,205-11,308 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
Level 0 (OPU): dB(A)	93.4

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
3.31	0.37	0.03

- 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

- 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 8528-1, 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.