

## Diesel Generator Set

# mtu 4R0120 DS80

# 80 kWe/60 Hz/Standby/208 - 600V Reference **mtu** 4R0120 DS80 (72 kWe) for Prime Rating Technical Data

# System ratings

Voltage (L-L)	240V <sup>†</sup>	240V <sup>†</sup>	208V <sup>†</sup>	240V <sup>†</sup>	380V <sup>†</sup>	480V <sup>†</sup>	600V
Phase	1	1	3	3	3	3	3
PF	1	1	0.8	0.8	0.8	0.8	0.8
Hz	60	60	60	60	60	60	60
kW	80	80	80	80	80	80	80
kVA	80	80	100	100	100	100	100
Amps	333	333	278	241	151	120	96
skVA@30% voltage dip	145	311	216	216	165	288	236
Generator model	363CSL1607	363CSL1617	362CSL1604	362CSL1604	362CSL1606	362CSL1604	362PSL1635
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	130 °C/40 °C
Connection	12 LEAD DOUBLE DELTA	4 LEAD	12 LEAD WYE	12 LEAD DELTA	12 LEAD WYE	12 LEAD WYE	4 LEAD WYE

<sup>†</sup> 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
- Power rating
  - Accepts rated load in one step per NFPA 110
- UL 2200 optional (refer to System ratings for availability)

- CSA optional
  - CSA C22.2 No. 100
  - CSA C22.2 No. 14
- CE marking provided
- 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



## Standard features\*

- Single source supplier
- Global product support
- Two (2) Year/3,000 Hour Basic Limited Warranty
- OM924LA diesel engine
  - 4.8 liter displacement
  - 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
  - 300% short circuit capability with optional Permanent Magnet Generator (PMG)
- 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
- Fuel filter with water separator
- Jacket water pump
- Thermostat
- Blower fan and fan drive
- Radiator unit mounted
- Electric starting motor 12V
- Governor electronic isochronous
- Base formed steel
- SAE flywheel and bell housing
- Charging alternator 12V
- 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
- Solid state, 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)

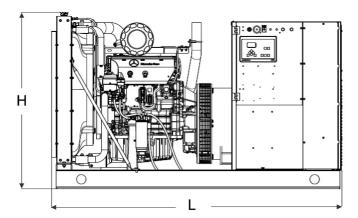
- Digital metering
- Engine parameters
- Generator protection functions
- Engine protection
- SAE J1939 engine ECU communications
- Windows®-based software
- Multilingual capability
- Communications to remote annunciator
- Programmable input and output contacts
- UL recognized, CSA certified, CE approved
- Event recording
- IP 54 front panel rating with integrated gasket
- NFPA 110 compatible

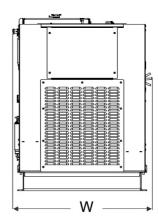
<sup>\*</sup> Represents standard product only. Consult the factory/mtu Distributor for additional configurations.

# Application data

Engine         Fuel consumption*           Manufacturer         Mercedes-Benz Model         At 100% of power rating: L/hr (gal/hr)         23.1 (6.1)           Model         OM924LA A 175% of power rating: L/hr (gal/hr)         17.9 (4.7)           Type         4-cycle A-cycle At 50% of power rating: L/hr (gal/hr)         12.6 (3.3)           Arrangement Displacement: L (in³)         4.8 (293)         *Based on 362CSL1604 480 volt generator set           Bore: cm (in)         10.6 (4.17)         *Coling - radiator system           Compression ratio         17.5:1         Ambient capacity of radiator: °C (°F)         50 (122)           Rated rpm         1,800         Maximum restriction of cooling air:         Maximum restriction of cooling air:         11 (12)           Engine governor         MR2 / CPC4-ECAN         Maximum restriction of cooling air:         11 (12)           Steady state frequency band         ± 0.25%         Heat rejection to cooling air:         14 (13)           Air cleaner         dry         Heat rejection to coolant: kW (BTUM)         37.5 (2,133)           Air cleaner         dry         Heat rejection to air: kW (BTUM)         23.6 (1,342)           Heat rejection to air: kW (BTUM)         2.3 (1,410)           Total oil system: L (gal)         15.8 (4.2)           Engine jacket water capacity: L (gal)
Model         OM924LA Type         At 75% of power rating: L/hr (gal/hr)         17.9 (4.7)           Arrangement         4-cycle         450% of power rating: L/hr (gal/hr)         12.6 (3.3)           Arrangement L (in³)         4.8 (293)         *Based on 362CSL1604 480 volt generator set
Type         4-cycle         At 50% of power rating: L/hr (gal/hr)         12.6 (3.3)           Arrangement         4-inline         - * Based on 362CSL1604 480 volt generator set           Displacement: L (in³)         4.8 (293)         * Based on 362CSL1604 480 volt generator set           Bore: cm (in)         10.6 (4.17)         * Cooling - radiator system           Compression ratio         17.5:1         Ambient capacity of radiator: °C (°F)         50 (122)           Rated rpm         1,800         Maximum restriction of cooling air:         * Based on 362CSL1604 480 volt generator set           Engine governor         MR2 / CPC4-ECAN         Ambient capacity of radiator: °C (°F)         50 (122)           Rated rpm         1,800         Maximum restriction of cooling air:         * Double of capacity of radiator: kPa (in. H₂0)         0.12 (0.5)           Maximum power: kWm (bhp)         147 (197)         Water pump capacity: L/min (gpm)         143 (37)           Steady state frequency band         ± 0.25%         Heat rejection to coolant: kW (BTUM)         37.5 (2,133)           Air cleaner         dry         Heat rejection to air: kW (BTUM)         23.6 (1,342)           Liquid capacity         1 (38)         Fan power: kW (hp)         3.3 (4.4)           Eloquid capacity: L (gal)         7 (1.8)         Air requirements
Arrangement         4-inline           Displacement: L (in³)         4.8 (293)           Bore: cm (in)         10.6 (4.17)           Stroke: cm (in)         13.6 (5.35)           Compression ratio         17.5:1         Ambient capacity of radiator: °C (°F)         50 (122)           Rated rpm         1,800         Maximum restriction of cooling air: intake and discharge side of radiator: kPa (in. H₂0)         0.12 (0.5)           Engine governor         MR2 / CPC4-ECAN         Water pump capacity: L/min (gpm)         143 (37)           Maximum power: kWm (bhp)         147 (197)         Water pump capacity: L/min (gpm)         143 (37)           Steady state frequency band         ± 0.25%         Heat rejection to coolant: kW (BTUM)         37.5 (2,133)           Air cleaner         dry         Heat rejection to air: kW (BTUM)         23.6 (1,342)           Liquid capacity         Fan power: kW (hp)         3.3 (4.4)           Total oil system: L (gal)         15.8 (4.2)         Fan power: kW (hp)         8.6 (304)           Electrical         20.8 (5.5)         Aspirating: *m³/min (SCFM)         8.6 (304)           System coolant capacity: L (gal)         20.8 (5.5)         Remote cooled applications; air flow required for colled unit: *m³/min (SCFM)         20.9 (7,381)           Electrical         20.0 (5.5)         Rem
Bore: cm (in)         10.6 (4.17)         Cooling - radiator system           Compression ratio         17.5:1         Ambient capacity of radiator: °C (°F)         50 (122)           Rated rpm         1,800         Maximum restriction of cooling air:         50 (122)           Engine governor         MR2 / CPC4-ECAN         intake and discharge side of radiator: kPa (in. H,0)         0.12 (0.5)           Maximum power: kWm (bhp)         147 (197)         Water pump capacity: L/min (gpm)         143 (37)           Steady state frequency band         ± 0.25%         Heat rejection to coolant: kW (BTUM)         37.5 (2,133)           Air cleaner         dry         Heat rejection to air: kW (BTUM)         23.6 (1,342)           Heat radiated to ambient: kW (BTUM)         24.8 (1,410)         24.8 (1,410)           Liquid capacity         15.8 (4.2)         Fan power: kW (hp)         3.3 (4.4)           Engine jacket water capacity: L (gal)         7 (1.8)         Air requirements           System coolant capacity: L (gal)         7 (1.8)         Air requirements           Electrical         20.8 (5.5)         Aspirating: *m³/min (SCFM)         8.6 (304)           Electrical         Remote cooled applications; air flow required for cooled unit: *m³/min (SCFM)         209 (7,381)           Electrices: group size         31         maximum of
Stroke: cm (in)         13.6 (5.35)         Cooling - radiator system           Compression ratio         17.5:1         Ambient capacity of radiator: °C (°F)         50 (122)           Rated rpm         1,800         Maximum restriction of cooling air:           Engine governor         MR2 / CPC4-ECAN         intake and discharge side of radiator: kPa (in. H <sub>2</sub> 0)         0.12 (0.5)           Maximum power: kWm (bhp)         147 (197)         Water pump capacity: L/min (gpm)         143 (37)           Steady state frequency band         ± 0.25%         Heat rejection to coolant: kW (BTUM)         37.5 (2,133)           Air cleaner         dry         Heat rejection to air to air: kW (BTUM)         23.6 (1,342)           Liquid capacity         15.8 (4.2)         Fan power: kW (hp)         3.3 (4.4)           Liquid capacity         20.8 (5.5)         Aspirating: *m³/min (SCFM)         8.6 (304)           Elegine jacket water capacity: L (gal)         15.8 (4.2)         Air requirements           System coolant capacity: L (gal)         20.8 (5.5)         Aspirating: *m³/min (SCFM)         8.6 (304)           Air flow required for radiator         cooled unit: *m³/min (SCFM)         209 (7,381)           Electrical         6. (304)         Remote cooled applications; air flow required for dissipation of radiated generator set heat for a         Maximum prestriction of radiat
Compression ratio         17.5:1         Ambient capacity of radiator: °C (°F)         50 (122)           Rated rpm         1,800         Maximum restriction of cooling air:           Engine governor         MR2 / CPC4-ECAN         intake and discharge side of radiator: kPa (in. H <sub>2</sub> 0)         0.12 (0.5)           Maximum power: kWm (bhp)         147 (197)         Water pump capacity: L/min (gpm)         143 (37)           Steady state frequency band         ± 0.25%         Heat rejection to coolant: kW (BTUM)         37.5 (2,133)           Air cleaner         dry         Heat rejection to air to air: kW (BTUM)         23.6 (1,342)           Heat radiated to ambient: kW (BTUM)         24.8 (1,410)         41.7 (18)           Liquid capacity         Fan power: kW (hp)         3.3 (4.4)           Fan power: kW (hp)         3.3 (4.4)         41.7 (18)           Liquid capacity: L (gal)         7 (1.8)         Air requirements           System coolant capacity: L (gal)         7 (1.8)         Air requirements           System coolant capacity: L (gal)         20.8 (5.5)         Aspirating: *m³/min (SCFM)         8.6 (304)           Air flow required for radiator         cooled unit: *m³/min (SCFM)         209 (7,381)           Electrical         8.6 (304)         8.6 (304)           Electrics: group size         31
Rated rpm         1,800         Maximum restriction of cooling air:           Engine governor         MR2 / CPC4-ECAN         intake and discharge side of radiator: kPa (in. H₂0)         0.12 (0.5)           Maximum power: kWm (bhp)         147 (197)         Water pump capacity: L/min (gpm)         143 (37)           Steady state frequency band         ± 0.25%         Heat rejection to coolant: kW (BTUM)         37.5 (2,133)           Air cleaner         dry         Heat rejection to air: kW (BTUM)         23.6 (1,342)           Heat rejection to able it kW (BTUM)         24.8 (1,410)           Fan power: kW (hp)         3.3 (4.4)           Fan power: kW (hp)         4.6 (204)           Fan power: kW (hp)         4.6 (204)           Fan power: kW (hp)         4.6 (204)
Rated rpm         1,800         Maximum restriction of cooling air:           Engine governor         MR2 / CPC4-ECAN         intake and discharge side of radiator: kPa (in. H₂0)         0.12 (0.5)           Maximum power: kWm (bhp)         147 (197)         Water pump capacity: L/min (gpm)         143 (37)           Steady state frequency band         ± 0.25%         Heat rejection to coolant: kW (BTUM)         37.5 (2,133)           Air cleaner         dry         Heat rejection to air to air: kW (BTUM)         23.6 (1,342)           Heat rediated to ambient: kW (BTUM)         24.8 (1,410)           Fan power: kW (hp)         3.3 (4.4)           Fan power: kW (hp)         3.3 (4.4)           Engine jacket water capacity: L (gal)         7 (1.8)         Air requirements           System coolant capacity: L (gal)         7 (1.8)         Aspirating: *m³/min (SCFM)         8.6 (304)           Air flow required for radiator         cooled unit: *m³/min (SCFM)         209 (7,381)           Electrical         Remote cooled applications; air flow required for         209 (7,381)           Electrics: group size         31         maximum of 25 °F rise: *m³/min (SCFM)         90.7 (3,203)           Batteries: group size         31         maximum of 25 °F rise: *m³/min (SCFM)         90.7 (3,203)           Batteries: quantity         1
Maximum power: kWm (bhp)  147 (197)  Water pump capacity: L/min (gpm)  143 (37)  Steady state frequency band  2 0.25%  Heat rejection to coolant: kW (BTUM)  37.5 (2,133)  Air cleaner  dry  Heat rejection to air: kW (BTUM)  23.6 (1,342)  Heat radiated to ambient: kW (BTUM)  24.8 (1,410)  Liquid capacity  Fan power: kW (hp)  Total oil system: L (gal)  Engine jacket water capacity: L (gal)  7 (1.8)  Air requirements  System coolant capacity: L (gal)  20.8 (5.5)  Aspirating: *m³/min (SCFM)  Air flow required for radiator  Electrical  Electrical  Cooled unit: *m³/min (SCFM)  Electric volts DC  12  Remote cooled applications; air flow required for Cold cranking amps under -17.8 °C (0 °F)  Batteries: group size  Batteries: group size  Batteries: quantity  1  Fuel system
Maximum power: kWm (bhp)       147 (197)       Water pump capacity: L/min (gpm)       143 (37)         Steady state frequency band       ± 0.25%       Heat rejection to coolant: kW (BTUM)       37.5 (2,133)         Air cleaner       dry       Heat rejection to air to air: kW (BTUM)       23.6 (1,342)         Heat radiated to ambient: kW (BTUM)       24.8 (1,410)         Liquid capacity       Fan power: kW (hp)       3.3 (4.4)         Total oil system: L (gal)       15.8 (4.2)       Fan power: kW (hp)       8.6 (304)         Engine jacket water capacity: L (gal)       7 (1.8)       Air requirements         System coolant capacity: L (gal)       20.8 (5.5)       Aspirating: *m³/min (SCFM)       8.6 (304)         System coolant capacity: L (gal)       20.8 (5.5)       Aspirating: *m³/min (SCFM)       209 (7,381)         Electrical       cooled unit: *m³/min (SCFM)       209 (7,381)         Electric volts DC       12       Remote cooled applications; air flow required for dissipation of radiated generator set heat for a maximum of 25 °F rise: *m³/min (SCFM)       90.7 (3,203)         Batteries: group size       31       maximum of 25 °F rise: *m³/min (SCFM)       90.7 (3,203)         Batteries: quantity       *Air density = 1.184 kg/m³ (0.0739 lbm/ft³)
Air cleaner  dry Heat rejection to air to air: kW (BTUM)  Liquid capacity  Fan power: kW (hp)  Total oil system: L (gal)  Engine jacket water capacity: L (gal)  System coolant capacity: L (gal)  Electrical  Electrical  Electric volts DC  Cold cranking amps under -17.8 °C (0 °F)  Batteries: group size  Batteries: group size  Batteries: quantity  Fan power: kW (hp)  Air requirements  Aspirating: *m³/min (SCFM)  Aspirating: *m³/min (SCFM)  Electric volts DC  12  Remote cooled unit: *m³/min (SCFM)  dissipation of radiated generator set heat for a  maximum of 25 °F rise: *m³/min (SCFM)  90.7 (3,203)  Batteries: quantity  *Air density = 1.184 kg/m³ (0.0739 lbm/ft³)  Fuel system
Heat radiated to ambient: kW (BTUM)  Liquid capacity Fan power: kW (hp)  5.8 (4.2)  Engine jacket water capacity: L (gal)  System coolant capacity: L (gal)  Electrical Electrical  Cold cranking amps under -17.8 °C (0 °F)  Batteries: group size  Batteries: quantity  Fuel system  Heat radiated to ambient: kW (BTUM) Fan power: kW (hp)  Air requirements  Aspirating: *m³/min (SCFM) Aspirating: *m³/min
Liquid capacityFan power: kW (hp)3.3 (4.4)Total oil system: L (gal)15.8 (4.2)Engine jacket water capacity: L (gal)7 (1.8)Air requirementsSystem coolant capacity: L (gal)20.8 (5.5)Aspirating: *m³/min (SCFM)8.6 (304)Electricalcooled unit: *m³/min (SCFM)209 (7,381)Electric volts DC12Remote cooled applications; air flow required forCold cranking amps under -17.8 °C (0 °F)950dissipation of radiated generator set heat for aBatteries: group size31maximum of 25 °F rise: *m³/min (SCFM)90.7 (3,203)Batteries: quantity1* Air density = 1.184 kg/m³ (0.0739 lbm/ft³)
Total oil system: L (gal)  Engine jacket water capacity: L (gal)  System coolant capacity: L (gal)  Electrical  Electric volts DC  Cold cranking amps under -17.8 °C (0 °F)  Batteries: group size  Batteries: quantity  Fuel system  15.8 (4.2)  7 (1.8)  Air requirements  Aspirating: *m³/min (SCFM)  Aspirating: *m³/min (SCFM)  Aspirating: *m³/min (SCFM)  Aspirating: *m³/min (SCFM)  Remote cooled unit: *m³/min (SCFM)  (dissipation of radiated generator set heat for a maximum of 25 °F rise: *m³/min (SCFM)  *Air density = 1.184 kg/m³ (0.0739 lbm/ft³)  Fuel system
Engine jacket water capacity: L (gal)  7 (1.8)  Air requirements  20.8 (5.5)  Aspirating: *m³/min (SCFM)  Air flow required for radiator  cooled unit: *m³/min (SCFM)  Electrical  Electric volts DC  Cold cranking amps under -17.8 °C (0 °F)  Batteries: group size  Batteries: quantity  1  *Air density = 1.184 kg/m³ (0.0739 lbm/ft³)  Fuel system  7 (1.8)  Air requirements  Aspirating: *m³/min (SCFM)  8.6 (304)  Air flow required for radiator  cooled unit: *m³/min (SCFM)  209 (7,381)  Electric volts DC  12  Remote cooled applications; air flow required for dissipation of radiated generator set heat for a  maximum of 25 °F rise: *m³/min (SCFM)  90.7 (3,203)  *Air density = 1.184 kg/m³ (0.0739 lbm/ft³)  Fuel system
System coolant capacity: L (gal)  20.8 (5.5) Aspirating: *m³/min (SCFM) Air flow required for radiator cooled unit: *m³/min (SCFM) Electrical Electric volts DC 12 Remote cooled applications; air flow required for Cold cranking amps under -17.8 °C (0 °F) 950 dissipation of radiated generator set heat for a Batteries: group size 31 maximum of 25 °F rise: *m³/min (SCFM) 90.7 (3,203) Batteries: quantity  * Air density = 1.184 kg/m³ (0.0739 lbm/ft³)  Fuel system
Air flow required for radiator  cooled unit: *m³/min (SCFM)  209 (7,381)  Electric volts DC  12 Remote cooled applications; air flow required for  Cold cranking amps under -17.8 °C (0 °F)  950 dissipation of radiated generator set heat for a  Batteries: group size  31 maximum of 25 °F rise: *m³/min (SCFM)  90.7 (3,203)  Batteries: quantity  * Air density = 1.184 kg/m³ (0.0739 lbm/ft³)  Fuel system
Electricalcooled unit: *m³/min (SCFM)209 (7,381)Electric volts DC12Remote cooled applications; air flow required forCold cranking amps under -17.8 °C (0 °F)950dissipation of radiated generator set heat for aBatteries: group size31maximum of 25 °F rise: *m³/min (SCFM)90.7 (3,203)Batteries: quantity1*Air density = 1.184 kg/m³ (0.0739 lbm/ft³)Fuel system
Electric volts DC  Cold cranking amps under -17.8 °C (0 °F)  Batteries: group size  Batteries: quantity  1  *Air density = 1.184 kg/m³ (0.0739 lbm/ft³)  Fuel system
Cold cranking amps under -17.8 °C (0 °F)  Batteries: group size  31 maximum of 25 °F rise: *m³/min (SCFM)  Batteries: quantity  1  *Air density = 1.184 kg/m³ (0.0739 lbm/ft³)  Fuel system
Batteries: group size       31 maximum of 25 °F rise: *m³/min (SCFM)       90.7 (3,203)         Batteries: quantity       1 *Air density = 1.184 kg/m³ (0.0739 lbm/ft³)         Fuel system
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* Air density = 1.184 kg/m³ (0.0739 lbm/ft³)  Fuel system
Fuel system
·
Fuel supply connection size -6 JIC Exhaust system
· · · · · · · · · · · · · · · · · · ·
Fuel supply hose size 3/8" ID Gas temperature (stack): °C (°F) 354 (669)
Fuel return connection size -6 JIC Gas volume at stack temperature: m³/min (CFM) 21.6 (763)
Fuel return hose size 3/8" ID Maximum allowable back pressure at
Maximum fuel lift: m (ft) 2.7 (9) outlet of engine, before piping: kPa (in. $H_2$ 0) 6.5 (26)
Recommended fuel diesel #2
Total fuel flow: L/hr (gal/hr) 328.2 (86.7)

## 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 (LxWxH)	Weight
Open Power Unit (OPU)	2,336 x 1,121 x 1,422 mm (92 x 44.1 x 56 in)	1,216-1,830 kg (2,682-4,034 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)	83	

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	СО	PM
3.61	1.42	0.08

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 3046-1, BS 5514, and AS 2789. Average loadfactor: ≤ 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.