Diesel Generator Set

mtu 18V2000 DS1400

380V - 415V/50 Hz/standby power/fuel consumption optimized/18V2000G76F

Product highlights

Benefits
- Low fuel consumption
- Optimized system integration ability
- High reliability and availability of power
- Long maintenance intervals
- Optimized ratio between size and power
- Wide operating range without derating

Support
- Global product support offered

Standards
- Engine-generator set is designed and manufactured in facilities certified to standards ISO 2008:9001 and ISO 2004:14001
- Generator set complies to G3 according to ISO 8528
- Generator meets NEMA MG1, BS5000, ISO, DIN EN and IEC standards
- NFPA 110

Power rating
- System rating: 1400 kVA
- Accepts rated load in one step per NFPA 110
- Generator set complies to G3 according to ISO 8528-5
- Generator set exceeds load steps according to ISO 8528-5

Performance assurance certification (PAC)
- Engine-generator set tested to ISO 8528-5 for transient response
- 85% load factor for continuous power applications
- Verified product design, quality and performance integrity
- All engine systems are prototype and factory tested

Complete range of accessories available
- Control panel
- Power panel
- Fuel system
- Fuel connections with shut-off valve mounted to base frame
- Starting/charging system
- Exhaust system
- Mechanical radiator
- Water Charge-Air-Cooler
- Oversized voltage alternators

Cooling System
- Air-to-Air Charge-Air Cooling (TD)
- Water-to-Air Charge-Air Cooling (TB)

Emissions
- Fuel consumption optimized

Certifications
- CE certification option
- Unit certificate acc. to VDE-AR-N 4110
## Application data

### Engine
- **Manufacturer:** mtu
- **Model:** 18V2000G76F
- **Type:** 4-cycle
- **Arrangement:** 18V
- **Displacement:** l 40.2
- **Bore:** mm 135
- **Stroke:** mm 156
- **Compression ratio:** 17.5
- **Rated speed:** rpm 1500
- **Engine governor:** ADEC (ECU 9)
- **Speed regulation:** ± 0.25%
- **Max power:** kW 1235
- **Mean effective pressure:** bar 24.6
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### Fuel system
- **Maximum fuel lift:** m 4.0
- **Total fuel flow:** l/min 30

### Fuel consumption
1. **At 100% of power rating:** l/hr 286, g/kwh 192
2. **At 75% of power rating:** 210, 188
3. **At 50% of power rating:** 143, 192

### Lube oil system
- **Total oil system capacity:** l 110
- **Max. lube oil temperature (alarm):** °C 103
- **Max. lube oil temperature (shutdown):** °C 105
- **Min. lube oil pressure (alarm):** bar 4.5
- **Min. lube oil pressure (shutdown):** bar 4

### Combustion air requirements
- **Combustion air volume:** m³/s 1.51
- **Max. air intake restriction:** mbar 40

### Cooling/radiator system TD
- **Coolant flow rate (HT circuit):** m³/hr 46.3
- **Coolant flow rate (LT circuit for TB):** m³/hr 17.5
- **Heat radiated to charge air cooling (TB):** kW 285
- **Input pressure customer radiator (TB):** bar (rel.) 1.4
- **Max. pressure loss customer radiator (TB):** bar 0.7
- **Heat dissipated by engine coolant:** kW 475
- **Heat radiated to ambient:** kW 45
- **Air flow required for mech. radiator (40°C cooled unit):** l/min 1462
- **Air flow required for mech. radiator (50°C cooled unit):** l/min 1776
- **Engine coolant capacity (without cooling equipment):** l 73
- **Radiator coolant capacity (40°C):** l 83
- **Radiator coolant capacity (50°C):** l 106
- **Max. coolant temperature (warning):** °C 102
- **Max. coolant temperature (shutdown):** °C 105

### Exhaust system
- **Exhaust gas temp. (after turbocharger):** °C 495
- **Exhaust gas volume:** m³/s 3.95
- **Maximum allowable back pressure:** mbar 50
- **Minimum allowable back pressure:** mbar 30

### Generator
- **Protection class:** IP23
- **Insulation class:** H
- **Voltage regulation (steady state):** ± 0.25%

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1. All data refers only to the engine and is based on ISO standard conditions (25°C and 100m above sea level).
2. Values referenced are in accordance with ISO 3046-1. Conversion calculated with fuel density of 0.83 g/ml. All fuel consumption values refer to rated engine power.
Standard and optional features

System ratings (kW/kVA)

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>with mechanical radiator (TD) or charge-air-cooler (TB)**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kWeL</td>
<td>kVA*</td>
</tr>
<tr>
<td>Leroy Somer LSA 50.2 L7 (Low voltage Leroy Somer standard)</td>
<td>380 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1120</td>
</tr>
<tr>
<td>Leroy Somer LSA 50.2 L8 (Low voltage Leroy Somer oversized)</td>
<td>380 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1120</td>
</tr>
<tr>
<td>Marathon 742RSL7185 (Low voltage Marathon standard)</td>
<td>380 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>1120</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1120</td>
</tr>
<tr>
<td>Marathon 743RSL7187 (Low voltage Marathon oversized)</td>
<td>380 V</td>
<td>1120</td>
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<td>400 V</td>
<td>1120</td>
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<td></td>
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</tbody>
</table>

* cos phi = 0.8
** BE, fuel optimized: max. power available up to: open power unit 40°C/400m; NOx emission optimized, EPA Tier 2 compl., NEA: standard operating conditions/open power unit 25°C/100m

Electrical outputs may vary depending on generator voltage and ambient conditions. For power outputs consult your mtu dealer.

Intake air depression/mbar: 15mbar
Exhaust back pressure/mbar: 30mbar

Engine
- 4-cycle
- Closed crankcase ventilation
- Dry exhaust manifold
- Standard single stage air filter
- Governor-electronic isochronous
- Electric starting motor (24V)
- ADEC/ECU9
- Fuel consumption optimized engine
- Common rail fuel injection

Generator
- Leroy Somer low voltage generator
- Stator winding Y-connected, accessible neutral (brought out)
- Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (Leroy Somer generator)
- Meet NEMA MG1, BS5000, IEC 60034-1, VDE 0530, DIN EN 12601, AS1359 and ISO 8528-3 requirements
- Protection IP 23
- Superior voltage waveform
- Less than 5% harmonic distortion
- Solid state, volts-per-Hertz regulator
- 2/3 pitch stator windings
- 4 pole three-phase synchronous generator
- No load to full load regulation
- Brushless, self-excited, self-regulating, self-ventilated
- ± 0.25% voltage regulation no load to full load
- Digital voltage regulator
- Insulation class H, utilization acc. to H
- Anti condensation heater
- Radio suppression EN55011, group I, cl. B
- Short circuit capability 3xIn for 10sec
- Marathon low voltage generator
- Sustained short circuit current of up to 250% of the rated current for up to 10 seconds (Marathon generator)
- Oversized generator
- Mounting of CT’s: 3x 2 core CT’s
- Voltage setpoint adjustment ±10V
Standard and optional features

Cooling system

*Air-to-Air Charge-Air-Cooling TD*
- Mechanical radiator
- Jacket water pump
- Expansion tank
- Fan
- Thermostat(s)
- Pre-wired control cabinet for easy application of customized controller (V1+)
- Island operation (V2)
- Automatic mains failure operation with ATS (V3a)
- Automatic mains failure operation incl. control of generator and mains breaker (V3b)
- Island parallel operation of multiple gensets (V4)
- Automatic mains failure operation with short (< 10s) mains parallel overlap synchronization (V5)
- Mains parallel operation of a single genset (V6)
- IP 54 front panel rating with integrated gasket
- Different expansion modules
- Remote annunciator
- Daytank control
- Generator winding- and bearing temperature monitoring
- Differential protection with multi-function protection relay
- Modbus TCP-IP

*Water-to-Air Charge-Air-Cooling TB*
- Coolant pump
- Manifold with thermostatic valves
- WCAC-base frame with safety covers
- HT-piping with flexible engine connection
- Complete system metering
- Digital metering
- Engine parameters
- Generator protection functions
- Engine protection
- SAE J1939 engine ECU communications
- Parametrization software
- Multilingual capability
- Multiple programmable contact inputs
- Multiple contact outputs
- Event recording

Control panel

- IP 54 front panel rating with integrated gasket
- Different expansion modules
- Remote annunciator
- Daytank control
- Generator winding- and bearing temperature monitoring
- Differential protection with multi-function protection relay
- Modbus TCP-IP

Power panel

- Available in 600x600
- Phase monitoring relay 230V/400V
- Supply for battery charger
- Supply for jacket water heater
- Plug socket cabinet for 230V compatible Euro

Fuel system

- Flexible fuel connectors mounted to base frame
- Fuel filter with water separator
- Switchable fuel filter with water separator
- Fuel cooler (for TD-only)

Starting/charging system

- 24V starter
- Starter batteries, cables, rack, disconnect switch
- Battery charger
- Redundant starter 2x 7.5kW

Mounting system

- Welded base frame
- Resilient engine and generator mounting
- Modular base frame design

Exhaust system

- Exhaust bellows with connection flange
- Exhaust silencer with 10 dB(A) sound attenuation
- Exhaust silencer with 30 dB(A) sound attenuation
- Exhaust silencer with 40 dB(A) sound attenuation
- Y-connection-pipe
Weights and dimensions

<table>
<thead>
<tr>
<th>System</th>
<th>Dimensions (LxWxH)</th>
<th>Weight (incl. engine-oil and coolant)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open power unit (OPU)</td>
<td>4720 x 1990 x 2200 mm</td>
<td>7850 kg</td>
</tr>
<tr>
<td>Air-to-Air (TD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Open power unit (OPU)</td>
<td>4711 x 1988 x 2046 mm</td>
<td>7500 kg</td>
</tr>
<tr>
<td>Water-to-Air (TB)</td>
<td></td>
<td></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 engine-generator set.

Sound data

— Consult your local mtu distributor for sound data.

Emissions data

— Consult your local mtu distributor for emissions data.

Rating definitions and conditions

— Standby power 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%. Operating hours/year: max. 500.

— Consult your local mtu distributor for derating information.