Diesel Generator Set

MTU 12V2000 DS1000

380V - 415V/50 Hz/standardized backup/fuel consumption optimized
12V20000G86F/air charge air cooling

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: 1010 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
- Oversized voltage alternators

Emissions
- Fuel consumption optimized

Certifications
- CE certification option
- VDE4110 certification
### Fuel consumption optimized

**Engine**
- Manufacturer: MTU
- Model: 12V2000G86F
- Type: 4-cycle
- Arrangement: 12V
- Displacement: l 26.8
- Bore: mm 135
- Stroke: mm 156
- Compression ratio: 17.5
- Rated speed: rpm 1500
- Engine governor: ADEC (ECU 9)

**Fuel system**
- Maximum fuel lift: m 5
- Total fuel flow: l/min 30

**Fuel consumption**

<table>
<thead>
<tr>
<th></th>
<th>l/hr</th>
<th>g/kwh</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 100% of power rating:</td>
<td>203</td>
<td>190</td>
</tr>
<tr>
<td>At 75% of power rating:</td>
<td>151</td>
<td>188</td>
</tr>
<tr>
<td>At 50% of power rating:</td>
<td>105</td>
<td>197</td>
</tr>
</tbody>
</table>

**Lube oil system**
- Total oil system capacity: l 80
- 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 1.03
- Max. air intake restriction: mbar 40

**Cooling/radiator system**
- Coolant flow rate (HT circuit): m³/hr 31.6
- Max. air intake restriction: mbar 40
- Engine coolant capacity: l 63
- Radiator coolant capacity (40°C): l 59
- Radiator coolant capacity (50°C): l 140
- Max. coolant temperature (warning): °C 102
- Max. coolant temperature (shutdown): °C 105

**Exhaust system**
- Exhaust gas temp. (after turbocharger): °C 520
- Exhaust gas volume: m³/s 2.72
- 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%
- Radio interference class: N
Standard and optional features

System ratings (kW/kVA)

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>with mechanical radiator**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>kWeL</td>
<td>kVA*</td>
</tr>
<tr>
<td>Leroy Somer LSA 49.3 L9 (Low voltage Leroy Somer standard)</td>
<td>380 V</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>800</td>
</tr>
<tr>
<td>Leroy Somer LSA 50.2 M6 (Low voltage Leroy Somer oversized)</td>
<td>380 V</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>800</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>800</td>
</tr>
<tr>
<td>Marathon 575RSL7181 (Low voltage Marathon standard)</td>
<td>380 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>808</td>
</tr>
<tr>
<td>Marathon 740RSL7183 (Low voltage Marathon oversized)</td>
<td>380 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>808</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>808</td>
</tr>
</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
- Standard single stage air filter
- Oil drain extension & shut-off valve
- Full flow oil filters
- Closed crankcase ventilation
- Governor-electronic isochronous ADEC/ECU9
- Common rail fuel injection
- Dry exhaust manifold
- Electric starting motor (24V)
- Fuel consumption optimized engine

Generator
- Leroy Somer low voltage generator
- Meets NEMA MG1, BS5000, IEC 60034-1, VDE 0530, DIN EN 12601, AS1359 and ISO 8528 requirements
- Superior voltage waveform
- Solid state, volts-per-Hertz regulator
- 4 pole three-phase synchronous generator
- Brushless, self-excited, self-regulating, self-ventilated
- Digital voltage regulator
- Anti condensation heater
- Stator winding Y-connected, accessible neutral (brought out)
- Protection IP 23
- less than 5% harmonic distortions
- 2/3 pitch stator windings
- No load to full load regulation
- ± 0.25% voltage regulation no load to full load
- Insulation class H, utilization acc. to H
- Radio suppression EN55011, group 1, cl. B
- Short circuit capability 3xIn for 10sec
- Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (Leroy Somer generator)
- Winding and bearing RTDs (without monitoring)
- Excitation by AREP + PMI
- Mounting of CT’s: 3x 2 core CT’s
- Voltage setpoint adjustment ±10V
- Sustained short circuit current of up to 250% of the rated current for up to 10 seconds (Marathon generator)
- Marathon low voltage generator
- Oversized generator

- Represents standard features
- Represents optional features
## Standard and optional features

### Cooling system
- Jacket water pump
- Thermostat(s)
- Air charge air cooling
- Mechanical radiator
- Jacket water heater

### Control panel
- 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)
- Mains parallel operation of multiple gensets (V7)
- Basler controller
- Deif controller
- 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
- 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

### 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

• Represents standard features
• Represents optional features
Weights and dimensions

Drawing above for illustration purposes only, based on a standard open power 400 Volt engine-generator set. Lengths may vary with other voltages. Do not use for installation design. See website for unit specific template drawings.

<table>
<thead>
<tr>
<th>System</th>
<th>Dimensions (L x W x H)</th>
<th>Weight (dry/less tank)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open power unit (OPU)</td>
<td>4120 x 1910 x 2190 mm</td>
<td>5800 kg</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

— Standardized backup 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.