Diesel Generator Set

MTU 12V4000 DS2250

380V – 11 kV/50 Hz/standby power/NEA (ORDE) + Tier 2 optimized
12V4000G94LF/water charge air cooling

Optional equipment and finishing shown. Standard may vary.

Product highlights

Benefits
– Low fuel consumption
– Optimized system integration ability
– High reliability
– High availability of power
– Long maintenance intervals

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 ISO 8528
– Generator meets NEMA MG1, BS5000, ISO, DIN EN and IEC standards
– NFPA 110

Power rating
– System ratings: 2300 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
– Verified product design, quality and performance integrity
– All engine systems are prototype and factory tested

Complete range of accessories available
– Control panel
– Power panel
– Circuit breaker/power distribution
– Fuel system
– Fuel connections with shut-off valve mounted to base frame
– Starting/charging system
– Exhaust system
– Mechanical and electrical driven radiators
– Medium and oversized voltage alternators

Emissions
– Tier 2 optimized engine
– NEA (ORDE) optimized engine

Certifications
– CE certification option
Application data

<table>
<thead>
<tr>
<th>Engine</th>
<th>Manufacturer</th>
<th>MTU</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>12V4000G94F</td>
<td></td>
</tr>
<tr>
<td>Type</td>
<td>4-cycle</td>
<td></td>
</tr>
<tr>
<td>Arrangement</td>
<td>12V</td>
<td></td>
</tr>
<tr>
<td>Displacement: l</td>
<td>57.2</td>
<td></td>
</tr>
<tr>
<td>Bore: mm</td>
<td>170</td>
<td></td>
</tr>
<tr>
<td>Stroke: mm</td>
<td>210</td>
<td></td>
</tr>
<tr>
<td>Compression ratio</td>
<td>16.4</td>
<td></td>
</tr>
<tr>
<td>Rated speed: rpm</td>
<td>1500</td>
<td></td>
</tr>
<tr>
<td>Engine governor</td>
<td>ADEC (ECU 9)</td>
<td></td>
</tr>
<tr>
<td>Max power: kWm</td>
<td>1930</td>
<td></td>
</tr>
<tr>
<td>Fuel system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Air cleaner</td>
<td>dry</td>
<td></td>
</tr>
<tr>
<td>Maximum fuel lift: m</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>Total fuel flow: l/min</td>
<td>27</td>
<td></td>
</tr>
<tr>
<td>Fuel consumption</td>
<td></td>
<td></td>
</tr>
<tr>
<td>l/hr</td>
<td>g/kwh</td>
<td></td>
</tr>
<tr>
<td>At 100% of power rating:</td>
<td>463</td>
<td>199</td>
</tr>
<tr>
<td>At 75% of power rating:</td>
<td>360</td>
<td>206</td>
</tr>
<tr>
<td>At 50% of power rating:</td>
<td>249</td>
<td>214</td>
</tr>
<tr>
<td>Liquid capacity (lubrication)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total oil system capacity: l</td>
<td>260</td>
<td></td>
</tr>
<tr>
<td>Engine jacket water capacity: l</td>
<td>160</td>
<td></td>
</tr>
<tr>
<td>Intercooler coolant capacity: l</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Combustion air requirements</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Combustion air volume: m³/s</td>
<td>2.4</td>
<td></td>
</tr>
<tr>
<td>Max. air intake restriction: mbar</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Cooling/radiator system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coolant flow rate (HT circuit): m³/hr</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Coolant flow rate (LT circuit): m³/hr</td>
<td>30</td>
<td></td>
</tr>
<tr>
<td>Heat rejection to coolant: kW</td>
<td>790</td>
<td></td>
</tr>
<tr>
<td>Heat radiated to charge air cooling: kW</td>
<td>480</td>
<td></td>
</tr>
<tr>
<td>Heat radiated to ambient: kW</td>
<td>75</td>
<td></td>
</tr>
<tr>
<td>Fan power for electr. radiator (40°C): kW</td>
<td>55</td>
<td></td>
</tr>
<tr>
<td>Exhaust system</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaust gas temp. (after engine): °C</td>
<td>460</td>
<td></td>
</tr>
<tr>
<td>Exhaust gas temp., max (after engine): °C</td>
<td>550</td>
<td></td>
</tr>
<tr>
<td>Exhaust gas temp. (before turbocharger): °C</td>
<td>700</td>
<td></td>
</tr>
<tr>
<td>Exhaust gas volume: m³/s</td>
<td>6.2</td>
<td></td>
</tr>
<tr>
<td>Maximum allowable back pressure: mbar</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Standard and optional features</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

System ratings (kW/kVA)

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>NEA (ORDE) + Tier 2 optimized</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>without radiator</td>
<td>with mechanical radiator</td>
</tr>
<tr>
<td></td>
<td>kWel</td>
<td>kVA*</td>
</tr>
<tr>
<td>Leroy Somer LSA52.3 S7 (Low voltage Leroy Somer standard)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>380 V</td>
<td>1840</td>
<td>2300</td>
</tr>
<tr>
<td>400 V</td>
<td>1840</td>
<td>2300</td>
</tr>
<tr>
<td>415 V</td>
<td>1840</td>
<td>2300</td>
</tr>
<tr>
<td>Leroy Somer LSA52.3 L12 (Low voltage Leroy Somer oversized)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>380 V</td>
<td>1840</td>
<td>2300</td>
</tr>
<tr>
<td>400 V</td>
<td>1840</td>
<td>2300</td>
</tr>
<tr>
<td>415 V</td>
<td>1840</td>
<td>2300</td>
</tr>
<tr>
<td>Leroy Somer LSA53.2 XL9 (Medium volt. Leroy Somer)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 kV</td>
<td>1840</td>
<td>2300</td>
</tr>
<tr>
<td>Marathon 744RL7092 (Low voltage Marathon)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>380 V</td>
<td>1824</td>
<td>2280</td>
</tr>
<tr>
<td>400 V</td>
<td>1824</td>
<td>2280</td>
</tr>
<tr>
<td>415 V</td>
<td>1808</td>
<td>2260</td>
</tr>
<tr>
<td>Marathon 1020FDH7097 (Medium volt. Marathon)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 kV</td>
<td>1824</td>
<td>2280</td>
</tr>
</tbody>
</table>

* cos phi = 0.8
### Engine
- 4-cycle
- Standard single stage air filter
- Oil drain extension & shut-off valve
- Closed crankcase ventilation
- Governor-electronic isochronous
- Common rail fuel injection
- Tier 2 optimized engine
- NEA (ORDE) optimized engine

### Generator
- 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 IP23
- Insulation class H, utilization acc. to H
- Radio suppression EN55011, group 1, cl. B
- Short circuit capability 3xIn for 10sec
- Winding and bearing RTDs (without monitoring)
- Excitation by AREP + PMI
- Mounting of CT’s: 3x 2 core CT’s
- Winding pitch: 2/3 winding
- Voltage setpoint adjustment ± 5%
- Meets NEMA MG-1, BS 5000, IEC 60034-1, VDE 0530, DIN EN 12601, AS1359 and ISO 8528 requirements
- Leroy Somer low voltage generator
- Marathon low voltage generator
- Oversized generator
- Medium voltage generator

### Cooling system
- Jacket water pump
- Thermostat(s)
- Water charge air cooling
- Mechanical radiator
- Electrical driven front-end cooler
- Pulley for Fan drive
- 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 temperature monitoring
- Generator bearing temperature monitoring
- Modbus TCP-IP

### Power panel
- Available in 600x600 and 600x1000
- Phase monitoring relay 230V/400V
- Supply for battery charger
- Supply for jacket water heater
- Supply for anti condensation heating
- Plug socket cabinet for 230V compatible Euro/USA
- Supply for electrical driven radiator from 55kW (PP 600x1000)
## Standard and optional features

### Circuit breaker/power distribution

- 3-pole circuit breaker
- 4-pole circuit breaker
- Manual-actuated circuit breaker
- Electrical-actuated circuit breaker
- Stand-alone solution in separate cabinet

### Fuel system

- Flexible fuel connectors mounted to base frame
- Fuel filter with water separator
- Fuel filter with water separator heavy-duty
- Switchable fuel filter with water separator
- Switchable fuel filter with water separator heavy-duty
- Separate fuel cooler
- Fuel cooler integrated into cooling equipment

### Starting/charging system

- 24V starter
- Starter batteries, cables, rack, disconnect switch
- Battery charger
- Redundant Starter 2x 15kW

### 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>4077 x 1810 x 2330 mm</td>
<td>11.130 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

— 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%. operating hours/year: max. 500.
— Consult your local MTU distributor for derating information.