Diesel Generator Set

MTU 12V4000 DS2000

380V – 11 kV/50 Hz/standby power/fuel consumption 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
— Fuel consumption optimized

Certifications
— CE certification option
**Application data**  

<table>
<thead>
<tr>
<th><strong>Engine</strong></th>
<th>MTU</th>
<th>12V4000G94F</th>
<th>4-cycle</th>
<th>12V</th>
<th>57.2</th>
<th>170</th>
<th>210</th>
<th>16.4</th>
<th>1500</th>
<th>ECU 9</th>
<th>1930</th>
<th>dry</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>System ratings (kW/kVA)</strong></td>
<td><strong>Generator model</strong></td>
<td><strong>Voltage</strong></td>
<td><strong>kWel</strong></td>
<td><strong>kVA</strong></td>
<td><strong>AMPS</strong></td>
<td><strong>kWel</strong></td>
<td><strong>kVA</strong></td>
<td><strong>AMPS</strong></td>
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<td></td>
</tr>
<tr>
<td>Leroy Somer LSA52.3 S7</td>
<td>380 V</td>
<td>1840</td>
<td>2300</td>
<td>3494</td>
<td>1784</td>
<td>2230</td>
<td>3388</td>
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</tr>
<tr>
<td>(Low voltage Leroy Somer standard)</td>
<td>400 V</td>
<td>1840</td>
<td>2300</td>
<td>3320</td>
<td>1784</td>
<td>2230</td>
<td>3219</td>
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<tr>
<td>415 V</td>
<td>1840</td>
<td>2300</td>
<td>3200</td>
<td>1784</td>
<td>2230</td>
<td>3102</td>
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<tr>
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<tr>
<td>(Low voltage Leroy Somer oversized)</td>
<td>400 V</td>
<td>1840</td>
<td>2300</td>
<td>3320</td>
<td>1784</td>
<td>2230</td>
<td>3219</td>
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<tr>
<td>415 V</td>
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<td>2300</td>
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<tr>
<td>Leroy Somer LSA53.2 XL9</td>
<td>11 kV</td>
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<td>2300</td>
<td>121</td>
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<tr>
<td>(Medium volt. Leroy Somer)</td>
<td>380 V</td>
<td>1824</td>
<td>2280</td>
<td>3642</td>
<td>1776</td>
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<td>3373</td>
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<tr>
<td>Marathon 744RSL7092</td>
<td>400 V</td>
<td>1824</td>
<td>2280</td>
<td>3291</td>
<td>1776</td>
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<td>3204</td>
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<tr>
<td>(Low voltage Marathon)</td>
<td>415 V</td>
<td>1808</td>
<td>2260</td>
<td>3434</td>
<td>1776</td>
<td>2220</td>
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<tr>
<td>Marathon 1020FDH7097</td>
<td>11 kV</td>
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<td>2280</td>
<td>120</td>
<td>1776</td>
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<td>117</td>
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<tr>
<td>(Medium volt. Marathon)</td>
<td>380 V</td>
<td>1824</td>
<td>2280</td>
<td>3464</td>
<td>1776</td>
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</tbody>
</table>

**Standard and optional features**

<table>
<thead>
<tr>
<th><strong>Combustion air requirements</strong></th>
<th><strong>Cooling/radiator system</strong></th>
<th><strong>Exhaust system</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Combustion air volume: m³/s</strong></td>
<td><strong>Coolant flow rate (HT circuit): m³/hr</strong></td>
<td><strong>Exhaust gas temp. (after engine): °C</strong></td>
</tr>
<tr>
<td>2.4</td>
<td>55</td>
<td>460</td>
</tr>
<tr>
<td><strong>Max. air intake restriction: mbar</strong></td>
<td><strong>Coolant flow rate (LT circuit): m³/hr</strong></td>
<td><strong>Exhaust gas temp., max (after engine): °C</strong></td>
</tr>
<tr>
<td>50</td>
<td>30</td>
<td>550</td>
</tr>
<tr>
<td><strong>Heat rejection to coolant: kW</strong></td>
<td><strong>Heat radiated to charge air cooling: kW</strong></td>
<td><strong>Exhaust gas temp. (before turbocharger): °C</strong></td>
</tr>
<tr>
<td>790</td>
<td>475</td>
<td>700</td>
</tr>
<tr>
<td><strong>Heat radiated to ambient: kW</strong></td>
<td><strong>Fan power for electr. radiator (40°C): kW</strong></td>
<td><strong>Exhaust gas volume: m³/s</strong></td>
</tr>
<tr>
<td>75</td>
<td>55</td>
<td>6.2</td>
</tr>
</tbody>
</table>

**Liquid capacity (lubrication)**

<table>
<thead>
<tr>
<th><strong>Total oil system capacity:</strong></th>
<th><strong>Engine jacket water capacity:</strong></th>
<th><strong>Intercooler coolant capacity:</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>260</td>
<td>160</td>
<td>40</td>
</tr>
</tbody>
</table>

**Fuel system**

| **Maximum fuel lift:** | **Total fuel flow:** |
| m | l/min |
| 5 | 27 |

**Fuel consumption**

| **At 100% of power rating:** | **At 75% of power rating:** | **At 50% of power rating:** |
| l/hr | g/kwh | l/hr | g/kwh |
| 463 | 199 | 339 | 194 | 233 | 200 |

**Combustion air volume:**

- 2.4 m³/s
- 55 m³/hr
- 700 °C
- 0.83 g/ml

* cos phi = 0.8

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

**Engine**
- 4-cycle
- Standard single stage air filter
- Oil drain extension & shut-off valve
- Closed crankcase ventilation
- Governor-electronic isochronous
- Common rail fuel injection
- Fuel consumption 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
- Jacket water heater
- Pulley for fan drive

**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
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.