Diesel Generator Set

**MTU 12V4000 DS2250**

380V – 11 kV/50 Hz/standby power/fuel consumption optimized
12V4000G94F/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

#### Engine
**Manufacturer**: MTU 12V4000G94F  
**Model**: 4-cycle  
**Arrangement**: 12V  
**Displacement**: 57.2 l  
**Bore**: 170 mm  
**Stroke**: 210 mm  
**Compression ratio**: 16.4  
**Rated speed**: 1500 rpm  
**Engine governor**: ECU 9  
**Max power**: 1930 kW  
**Air cleaner**: dry

#### Fuel system
**Maximum fuel lift**: 5 m  
**Total fuel flow**: 27 l/min

#### Fuel consumption
1. **At 100% of power rating**: 463 l/hr, 199 g/kWh  
2. **At 75% of power rating**: 339 l/hr, 194 g/kWh  
3. **At 50% of power rating**: 233 l/hr, 200 g/kWh

#### Liquid capacity (lubrication)
- **Total oil system capacity**: 260 l  
- **Engine jacket water capacity**: 160 l  
- **Intercooler coolant capacity**: 40 l

#### Combustion air requirements
- **Combustion air volume**: 2.4 m³/s  
- **Max. air intake restriction**: 50 mbar

#### Cooling/radiator system
- **Coolant flow rate (HT circuit)**: 55 m³/hr  
- **Coolant flow rate (LT circuit)**: 30 m³/hr  
- **Heat rejection to coolant**: 790 kW  
- **Heat radiated to charge air cooling**: 475 kW  
- **Heat radiated to ambient**: 75 kW  
- **Fan power for electr. radiator (40°C)**: 55 kW

#### Exhaust system
- **Exhaust gas temp. (after engine)**: 460 °C  
- **Exhaust gas temp., max (after engine)**: 550 °C  
- **Exhaust gas temp. (before turbocharger)**: 700 °C  
- **Exhaust gas volume**: 6.2 m³/s  
- **Maximum allowable back pressure**: 50 mbar

### Standard and optional features

#### System ratings (kW/kVA)

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>fuel consumption optimized</th>
<th></th>
<th></th>
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<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>without radiator</td>
<td>fuel consumption</td>
<td></td>
<td>with mechanical</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td>kWe/kVA/AMPS</td>
<td>optimized kWe/kVA/</td>
<td></td>
<td>radiator kWe/kVA/</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>AMPS</td>
<td></td>
<td>AMPS</td>
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</tr>
<tr>
<td><strong>Leroy Somer LSA52.3 S7</strong></td>
<td>380 V</td>
<td>1840</td>
<td>2300</td>
<td>3494</td>
<td></td>
<td>1784</td>
<td>2230</td>
<td>3388</td>
</tr>
<tr>
<td>(Low voltage</td>
<td>400 V</td>
<td>1840</td>
<td>2300</td>
<td>3320</td>
<td></td>
<td>1784</td>
<td>2230</td>
<td>3219</td>
</tr>
<tr>
<td>Leroy Somer LSA52.3 L12</td>
<td>415 V</td>
<td>1840</td>
<td>2300</td>
<td>3200</td>
<td></td>
<td>1784</td>
<td>2230</td>
<td>3102</td>
</tr>
<tr>
<td>(Low voltage</td>
<td>380 V</td>
<td>1840</td>
<td>2300</td>
<td>3494</td>
<td></td>
<td>1784</td>
<td>2230</td>
<td>3388</td>
</tr>
<tr>
<td>Leroy Somer LSA53.2 XL9</td>
<td>400 V</td>
<td>1840</td>
<td>2300</td>
<td>3320</td>
<td></td>
<td>1784</td>
<td>2230</td>
<td>3219</td>
</tr>
<tr>
<td>(Medium volt. Leroy Somer)</td>
<td>415 V</td>
<td>1840</td>
<td>2300</td>
<td>3200</td>
<td></td>
<td>1784</td>
<td>2230</td>
<td>3102</td>
</tr>
<tr>
<td><strong>Marathon 744RSL7092</strong></td>
<td>11 kV</td>
<td>1840</td>
<td>2300</td>
<td>121</td>
<td></td>
<td>1792</td>
<td>2240</td>
<td>118</td>
</tr>
<tr>
<td>(Low voltage Marathon)</td>
<td>380 V</td>
<td>1824</td>
<td>2280</td>
<td>3464</td>
<td></td>
<td>1776</td>
<td>2220</td>
<td>3373</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>1824</td>
<td>2280</td>
<td>3291</td>
<td></td>
<td>1776</td>
<td>2220</td>
<td>3204</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1808</td>
<td>2260</td>
<td>3434</td>
<td></td>
<td>1776</td>
<td>2220</td>
<td>3088</td>
</tr>
<tr>
<td><strong>Marathon 1020FDH7097</strong></td>
<td>11 kV</td>
<td>1824</td>
<td>2280</td>
<td>120</td>
<td></td>
<td>1776</td>
<td>2220</td>
<td>117</td>
</tr>
</tbody>
</table>

* cos phi = 0.8

1. All data refers only to the engine and is based on ISO standard conditions (25°C and 100 m 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 I, 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)

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

#### Circuit breaker/power distribution

<table>
<thead>
<tr>
<th>Feature</th>
<th>Standard</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-pole circuit breaker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4-pole circuit breaker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manual-actuated circuit breaker</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Electrical-actuated circuit breaker</td>
<td></td>
<td></td>
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<tr>
<td>Stand-alone solution in separate cabinet</td>
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</tr>
</tbody>
</table>

#### Fuel system

<table>
<thead>
<tr>
<th>Feature</th>
<th>Standard</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flexible fuel connectors mounted to base frame</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fuel filter with water separator</td>
<td></td>
<td></td>
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<tr>
<td>Fuel filter with water separator heavy-duty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switchable fuel filter with water separator</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switchable fuel filter with water separator heavy-duty</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Seperate fuel cooler</td>
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<td></td>
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<tr>
<td>Fuel cooler integrated into cooling equipment</td>
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</tr>
</tbody>
</table>

#### Starting/charging system

<table>
<thead>
<tr>
<th>Feature</th>
<th>Standard</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>24V starter</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Starter batteries, cables, rack, disconnect switch</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Battery charger</td>
<td></td>
<td></td>
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<tr>
<td>Redundant Starter 2x 15KW</td>
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<td></td>
</tr>
</tbody>
</table>

#### Mounting system

<table>
<thead>
<tr>
<th>Feature</th>
<th>Standard</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welded base frame</td>
<td></td>
<td></td>
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<tr>
<td>Resilient engine and generator mounting</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Modular base frame design</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Exhaust system

<table>
<thead>
<tr>
<th>Feature</th>
<th>Standard</th>
<th>Optional</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhaust bellows with connection flange</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaust silencer with 10 dB(A) sound attenuation</td>
<td></td>
<td></td>
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<tr>
<td>Exhaust silencer with 30 dB(A) sound attenuation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Exhaust silencer with 40 dB(A) sound attenuation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Y-connection-pipe</td>
<td></td>
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</tr>
</tbody>
</table>
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.