Diesel Generator Set

MTU 12V4000 DS1750

380V – 11 kV/50 Hz/prime power/fuel consumption optimized
12V4000G14F/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: 1590 kVA - 1700 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
- 75% 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
- Unit certificate acc. to BDEW (German Grid-Code)
**Application data 1)**

**Engine**
- **Manufacturer**: MTU
- **Model**: 4V4000G14
- **Type**: 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**: 1420 kW
- **Air cleaner**: dry

**Fuel system**
- **Maximum fuel lift**: 5 m
- **Total fuel flow**: 16 l/min

**Fuel consumption 2)**
- **At 100% of power rating**: 323.3 l/hr, 189 g/kwh
- **At 75% of power rating**: 250.2 l/hr, 195 g/kwh
- **At 50% of power rating**: 173.7 l/hr, 203 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 (HT circuit)**: 1.6 m³/s
- **Max. air intake restriction**: 50 mbar

**Cooling/radiator system**
- **Coolant flow rate (HT circuit)**: 56 l/h
- **Heat rejection to coolant**: 540 kW
- **Heat radiated to charge air cooling**: 200 kW
- **Heat radiated to ambient**: 75 kW
- **Fan power for electr. radiator (40°C)**: 38 kW

**Exhaust system**
- **Exhaust gas temp. (after turbocharger)**: 460 °C
- **Exhaust gas volume**: 5 m³/s
- **Maximum allowable back pressure**: 85 mbar
- **Minimum allowable back pressure**: 30 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>fuel consumption optimized</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>12V4000G14</td>
<td>AMPS</td>
</tr>
<tr>
<td>Leroy Somer LSA52.3 S5 (Low voltage Leroy Somer standard)</td>
<td>380 V</td>
<td>1360</td>
<td>1700</td>
</tr>
<tr>
<td>Leroy Somer LSA52.3 S6 (Low voltage Leroy Somer oversized)</td>
<td>400 V</td>
<td>1360</td>
<td>1700</td>
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<tr>
<td>Leroy Somer LSA52.3 S6 (Low voltage Leroy Somer oversized)</td>
<td>415 V</td>
<td>1360</td>
<td>1700</td>
</tr>
<tr>
<td>Marathon 743RSL7090 (Low voltage Marathon)</td>
<td>380 V</td>
<td>1352</td>
<td>1690</td>
</tr>
<tr>
<td>Marathon 744RSL7091 (Low voltage Marathon oversized)</td>
<td>400 V</td>
<td>1344</td>
<td>1680</td>
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<tr>
<td>Marathon 744RSL7091 (Low voltage Marathon oversized)</td>
<td>415 V</td>
<td>1272</td>
<td>1590</td>
</tr>
<tr>
<td>Leroy Somer LSA53.2 VL6 (Medium volt. Leroy Somer)</td>
<td>11 kV</td>
<td>1352</td>
<td>1690</td>
</tr>
</tbody>
</table>

* cos phi = 0.8

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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 1, cl. B
- Short circuit capability 3xIn for 10sec
- Winding and bearing RTDs (without monitoring)
- Excitation by AREP
- Mounting of CT’s: 2 core CT’s
- Winding pitch: 2/3 winding
- Voltage setpoint adjustment ± 10%
- 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
- Mechanical radiator
- Electrical driven front-end cooler
- 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 45kW – 75kW (PP 600x1000)

- Represents standard features
- Represents optional features
## 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
- □ Separated fuel cooler
- □ Fuel cooler integrated into cooling equipment

### Starting/charging system

- ■ 24V starter
- □ Starter batteries, cables, rack, disconnect switch
- □ Battery charger

### 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

System | Dimensions (L x W x H) | Weight (dry/less tank)
-------|-----------------------|----------------------
Open power unit (OPU) | 4059 x 1810 x 2330 mm | 10654 kg

Sound data
— Consult your local MTU distributor for sound data.

Emissions data
— Consult your local MTU distributor for emissions data.

Rating definitions and conditions
— Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for one hour in twelve. Ratings are in accordance with ISO 8528-1, ISO 3046-1, BS 5514 and AS 2789.
Average load factor: ≤ 75%.
— Consult your local MTU Distributor for derating information.

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