Diesel Generator Set

MTU 12V4000 DS2250

380V – 11 kV/50 Hz/data center continuous power/
fuel consumption optimized/12V4000G34F/water charge air cooling

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: 2100 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
- 100% 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 conformity and certificate according to AR-N-4110, on request
Application data

Engine
Manufacturer: MTU
Model: 12V4000G34F
Type: 4-cycle
Arrangement: 12V
Displacement: l
57.2
Bore: mm
170
Stroke: mm
210
Compression ratio
16.4
Rated speed: rpm
1500
Engine governor: ADEC (ECU 9)
Max power: kWe
1755
Air cleaner: Dry
Fuel system
Maximum fuel lift: m
5
Total fuel flow: l/min
27
Fuel consumption
l/hr
g/kwh
At 100% of power rating:
413
195
At 75% of power rating:
307
193
At 50% of power rating:
211
199

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

Combustion air requirements
Combustion air volume: m³/s
2.2
Max. air intake restriction: mbar
50

Cooling/radiator system
Coolant flow rate (HT circuit): m³/hr
55
Coolant flow rate (LT circuit): m³/hr
30
Heat rejection to coolant: kW
690
Heat radiated to charge air cooling: kW
425
Heat radiated to ambient: kW
75
Fan power for electr. radiator (40°C): kW
55

Exhaust system
Exhaust gas temp. (after engine): ºC
440
Exhaust gas temp. (max after engine): ºC
550
Exhaust gas temp. (before turbocharger): ºC
645
Exhaust gas volume: m³/s
5.5
Maximum allowable back pressure: mbar
50

Standard and optional features

System ratings (kW/kVA)

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>kWe, kVA, AMPS</th>
<th>Fuel consumption optimized</th>
<th>kWe, kVA, AMPS</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Generator model</td>
<td>Voltage</td>
<td>without radiator</td>
<td>with radiator</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leroy Somer LSA52.3 S7</td>
<td>380 V</td>
<td>1680</td>
<td>2100</td>
<td>3191</td>
</tr>
<tr>
<td>(Low voltage Leroy Somer standard)</td>
<td>400 V</td>
<td>1680</td>
<td>2100</td>
<td>3031</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1680</td>
<td>2100</td>
<td>2922</td>
</tr>
<tr>
<td>Leroy Somer LSA52.3 L12</td>
<td>380 V</td>
<td>1680</td>
<td>2100</td>
<td>3191</td>
</tr>
<tr>
<td>(Low voltage Leroy Somer oversized)</td>
<td>400 V</td>
<td>1680</td>
<td>2100</td>
<td>3031</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1680</td>
<td>2100</td>
<td>2922</td>
</tr>
<tr>
<td>Marathon 744RSL7092</td>
<td>380 V</td>
<td>1672</td>
<td>2090</td>
<td>3175</td>
</tr>
<tr>
<td>(Low voltage Marathon)</td>
<td>400 V</td>
<td>1672</td>
<td>2090</td>
<td>3017</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1672</td>
<td>2090</td>
<td>2908</td>
</tr>
<tr>
<td>Leroy Somer LSA53.2 XL9</td>
<td>11 kV</td>
<td>1680</td>
<td>2100</td>
<td>110</td>
</tr>
<tr>
<td>(Medium volt. Leroy Somer)</td>
<td>11 kV</td>
<td>1664</td>
<td>2080</td>
<td>109</td>
</tr>
<tr>
<td>Marathon 1020FDH7097</td>
<td>11 kV</td>
<td>1680</td>
<td>2100</td>
<td>110</td>
</tr>
<tr>
<td>(Medium volt. Marathon)</td>
<td>11 kV</td>
<td>1664</td>
<td>2080</td>
<td>109</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 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 CTs
- 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

- 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
- Exhaust silencer with 50 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. A 10% overload capability 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: 100% unlimited hours.
— Consult your local MTU distributor for derating information.