MTU 16V4000 DS2500

380V – 11 kV/50 Hz/data center continuous power/
fuel consumption optimized/16V4000G24F/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: 2120 kVA - 2550 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 certificate acc. to BDEW (German Grid-Code)
Application data 1)

**Engine**

Manufacturer: MTU
Model: 16V4000G24F
Type: 4-cycle
Arrangement: 16V
Displacement: 1
Bore: mm 170
Stroke: mm 210
Compression ratio 16.4
Rated speed: rpm 1500
Engine governor: ECU 9
Max power: kWm
Air cleaner: dry

**Fuel system**

Maximum fuel lift: m 5
Total fuel flow: l/min 20

**Fuel consumption**

<table>
<thead>
<tr>
<th>Power Rating (%)</th>
<th>l/hr</th>
<th>g/kwh</th>
</tr>
</thead>
<tbody>
<tr>
<td>100%</td>
<td>447.5</td>
<td>189</td>
</tr>
<tr>
<td>75%</td>
<td>339.1</td>
<td>191</td>
</tr>
<tr>
<td>50%</td>
<td>237.9</td>
<td>201</td>
</tr>
</tbody>
</table>

**Liquid capacity (lubrication)**

- Total oil system capacity: l 300
- Engine jacket water capacity: l 175
- Intercooler coolant capacity: l 50

**Combustion air requirements**

- Combustion air volume: m³/s 2.3
- Max. air intake restriction: mbar 50

**Cooling/radiator system**

- Coolant flow rate (HT circuit): m³/hr 68.5
- Coolant flow rate (LT circuit): m³/hr 30
- Heat rejection to coolant: kW 730
- Heat radiated to charge air cooling: kW 320
- Heat radiated to ambient: kW 90
- Fan power for electr. radiator (40°C): kW 44

**Exhaust system**

- Exhaust gas temp. (after turbocharger): °C 485
- Exhaust gas volume: m³/s 5.8
- Maximum allowable back pressure: mbar 85
- Minimum allowable back pressure: mbar 30

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**Standard and optional features**

**System ratings (kW/kVA)**

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>without radiator</th>
<th>with mechanical radiator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>fuel consumption optimized</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>kW/kVA* AMPS</td>
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</tr>
<tr>
<td><strong>Generator model</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Leroy Somer LSA52.3 L12</strong> (Low voltage Leroy Somer standard)</td>
<td>380 V 1888 2360 3586</td>
<td>1840 2300 3494</td>
<td></td>
</tr>
<tr>
<td></td>
<td>400 V 1888 2360 3406</td>
<td>1840 2300 3320</td>
<td></td>
</tr>
<tr>
<td></td>
<td>415 V 1888 2360 3283</td>
<td>1840 2300 3200</td>
<td></td>
</tr>
<tr>
<td><strong>Marathon 744RSL7092</strong>  (Low voltage Marathon)</td>
<td>380 V 1752 2190 3327</td>
<td>1752 2190 3327</td>
<td></td>
</tr>
<tr>
<td></td>
<td>400 V 1824 2280 3291</td>
<td>1816 2270 3276</td>
<td></td>
</tr>
<tr>
<td></td>
<td>415 V 1696 2120 2949</td>
<td>1696 2120 2949</td>
<td></td>
</tr>
<tr>
<td><strong>Marathon 1020FDL7093</strong> (Low voltage Marathon oversized)</td>
<td>380 V 1752 2190 3327</td>
<td>1752 2190 3327</td>
<td></td>
</tr>
<tr>
<td></td>
<td>400 V 1824 2280 3291</td>
<td>1816 2270 3276</td>
<td></td>
</tr>
<tr>
<td></td>
<td>415 V 1696 2120 2949</td>
<td>1696 2120 2949</td>
<td></td>
</tr>
<tr>
<td><strong>Marathon 1020FDH7099</strong> (Medium volt. marathon)</td>
<td>11 kV 1880 2350 123</td>
<td>1832 2290 120</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11 kV 1880 2350 123</td>
<td>1840 2300 121</td>
<td></td>
</tr>
</tbody>
</table>

* cos φ = 0.8

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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 with improved oil separator
- Governor-electronic isochronous
- Common rail fuel injection
- Fuel consumption optimized engine
- Centrifugal oil filter

### 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

### 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
- Seperate 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

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>4766 x 1810 x 2330 mm</td>
<td>13395 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

— Data center continuous power ratings apply to data center installations where a reliable utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or 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: ≤ 100%.

— Consult your local MTU distributor for derating information.