Diesel Generator Set

**MTU 20V4000 DS3100**

380V – 11 kV/50 Hz/prime power/NEA (ORDE) optimized
20V4000G24F/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: 2730 kVA - 2740 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 oversize voltage alternators

**Emissions**
- NEA (ORDE) optimized

**Certifications**
- CE certification option
- Unit certificate acc. to BDEW (German Grid-Code)
### Engine
- **Manufacturer**: MTU
- **Model**: 20V4000G24F
- **Type**: 4-cycle
- **Arrangement**: 20V
- **Displacement**: 95.4 l
- **Bore**: 170 mm
- **Stroke**: 210 mm
- **Compression ratio**: 16.4
- **Rated speed**: 1500 rpm
- **Engine governor**: ECU 9
- **Max. power**: 2420 kW
- **Air cleaner**: dry

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

### Fuel consumption
- **At 100% of power rating**: 574.4 l/hr, 197 g/kwh
- **At 75% of power rating**: 450.5 l/hr, 206 g/kwh
- **At 50% of power rating**: 319.3 l/hr, 219 g/kwh

### Liquid capacity (lubrication)
- **Total oil system capacity**: 390 l
- **Engine jacket water capacity**: 205 l
- **Intercooler coolant capacity**: 50 l

### Combustion air requirements
- **Combustion air volume**: 2.7 m³/s
- **Max. air intake restriction**: 50 mbar

### Cooling/radiator system
- **Coolant flow rate (HT circuit)**: 80 m³/hr
- **Coolant flow rate (LT circuit)**: 32.5 m³/hr
- **Heat rejection to coolant**: 980 kW
- **Heat radiated to charge air cooling**: 410 kW
- **Heat radiated to ambient**: 105 kW
- **Fan power for electr. radiator (40°C)**: 70 kW

### Exhaust system
- **Exhaust gas temp. (after turbocharger)**: 550 °C
- **Exhaust gas volume**: 7.1 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>NEA (ORDE) optimized</th>
<th>without radiator</th>
<th>with mechanical radiator</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>kWe</td>
<td>kVA</td>
<td>AMPS</td>
</tr>
<tr>
<td>Leroy Somer LSA53.2 M12 (Low voltage Leroy Somer standard)</td>
<td>380 V</td>
<td>2320</td>
<td>2900</td>
<td>4406</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>2320</td>
<td>2900</td>
<td>4186</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>2320</td>
<td>2900</td>
<td>4034</td>
</tr>
<tr>
<td>Marathon 1030FDL70034 (Low voltage Marathon)</td>
<td>380 V</td>
<td>2320</td>
<td>2900</td>
<td>4406</td>
</tr>
<tr>
<td></td>
<td>400 V</td>
<td>2320</td>
<td>2900</td>
<td>4186</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>2320</td>
<td>2900</td>
<td>4034</td>
</tr>
<tr>
<td>Marathon 1030FDH70101 (Medium volt. marathon)</td>
<td>11kV</td>
<td>2320</td>
<td>2900</td>
<td>152</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2328</td>
<td>2910</td>
<td>153</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 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
- NEA (ORDE) 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
- 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 heavy-duty
☐ Switchable fuel filter with water separator
☐ Separate 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>5760 x 1987 x 2332 mm</td>
<td>15819 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

— 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.