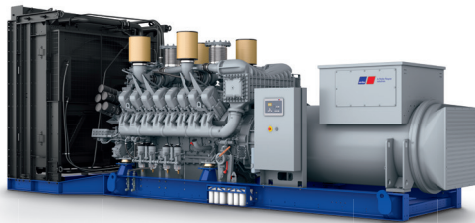




Diesel Generator Set

mtu 16V4000 DS2500

380V – 11 kV/50 Hz/prime power for stationary emergency/
fuel consumption optimized/16V4000G24F/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: 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
- 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
- Unit certificate acc. to BDEW (German Grid-Code)



A Rolls-Royce
solution

Application data ¹⁾

| Engine | | | Liquid capacity (lubrication) | |
|--------------------------------|-------------|-------|--|------|
| Manufacturer | mtu | | Total oil system capacity: l | 300 |
| Model | 16V4000G24F | | Engine jacket water capacity: l | 175 |
| Type | 4-cycle | | Intercooler coolant capacity: l | 50 |
| Arrangement | 16V | | Combustion air requirements | |
| Displacement: l | 76.3 | | | |
| Bore: mm | 170 | | | |
| Stroke: mm | 210 | | Combustion air volume: m³/s | 2.3 |
| Compression ratio | 16.4 | | Max. air intake restriction: mbar | 50 |
| Rated speed: rpm | 1500 | | Cooling/radiator system | |
| Engine governor | ECU 9 | | | |
| Max power: kWm | 1965 | | | |
| Air cleaner | dry | | Coolant flow rate (HT circuit): m³/hr | 68.5 |
| Fuel system | | | 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 |
| Maximum fuel lift: m | 5 | | Exhaust system | |
| Total fuel flow: l/min | 20 | | | |
| Fuel consumption ²⁾ | | | | |
| | l/hr | g/kwh | Exhaust gas temp. (after turbocharger): °C | 485 |
| At 100% of power rating: | 447.5 | 189 | Exhaust gas volume: m³/s | 5.8 |
| At 75% of power rating: | 339.1 | 191 | Maximum allowable back pressure: mbar | 85 |
| At 50% of power rating: | 237.9 | 201 | Minimum allowable back pressure: mbar | 30 |

Standard and optional features

System ratings (kW/kVA)

| Generator model | Voltage | fuel consumption optimized | | | | | |
|--|---------|----------------------------|------|------|--------------------------|------|------|
| | | without radiator | | | with mechanical radiator | | |
| | | kWel | kVA* | AMPS | kWel | kVA* | AMPS |
| Leroy Somer LSA52.3 L12 (Low voltage Leroy Somer standard) | 380 V | 1888 | 2360 | 3586 | 1840 | 2300 | 3494 |
| | 400 V | 1888 | 2360 | 3406 | 1840 | 2300 | 3320 |
| | 415 V | 1888 | 2360 | 3283 | 1840 | 2300 | 3200 |
| Marathon 744RSL7092 (Low voltage Marathon) | 380 V | 1752 | 2190 | 3327 | 1752 | 2190 | 3327 |
| | 400 V | 1824 | 2280 | 3291 | 1816 | 2270 | 3276 |
| | 415 V | 1696 | 2120 | 2949 | 1696 | 2120 | 2949 |
| Marathon 1020FDL7093 (Low voltage Marathon oversized) | 380 V | 1752 | 2190 | 3327 | 1752 | 2190 | 3327 |
| | 400 V | 1824 | 2280 | 3291 | 1816 | 2270 | 3276 |
| | 415 V | 1696 | 2120 | 2949 | 1696 | 2120 | 2949 |
| Marathon 1020FDH7099 (Medium volt. marathon) | 11 kV | 2040 | 2550 | 134 | 1832 | 2290 | 120 |
| Leroy Somer LSA53.2 XL11 (Medium volt. Leroy Somer) | 11 kV | 1880 | 2350 | 123 | 1840 | 2300 | 121 |

* 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
- Mounting of CT's: 2 core CT's
- Winding pitch: 2/3 winding
- Voltage setpoint adjustment $\pm 10\%$
- 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 seperate 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

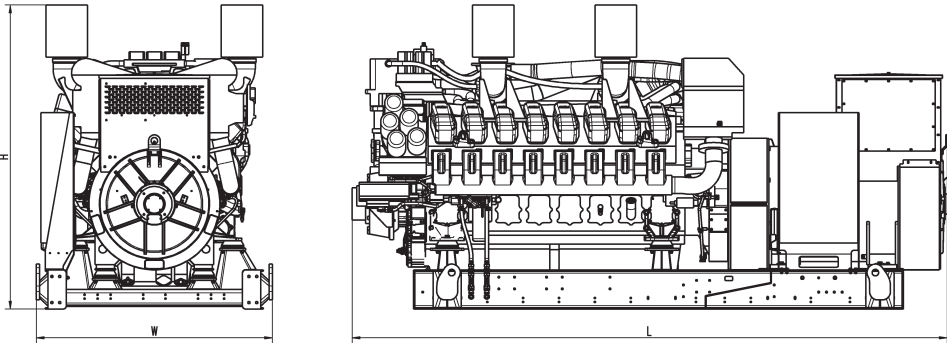
Mounting system

- ☒ 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

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.

| System | Dimensions (LxWxH) | Weight (dry/less tank) |
|-----------------------|-----------------------|------------------------|
| Open power unit (OPU) | 4766 x 1810 x 2330 mm | 13395 kg |

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 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: ≤ 85%. Operating hours/year: max. 500.
- Consult your local **mtu** distributor for derating information.