



Diesel Generator Set

mtu 12V4000 DS2000

380V – 11 kV/50 Hz/standby power/fuel consumption optimized
12V4000G84F/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: 1970 kVA - 2080 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)

Application data ¹⁾

Engine

| | |
|-------------------|-------------|
| Manufacturer | mtu |
| Model | 12V4000G84F |
| 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 | ECU 9 |
| Max power: kWm | 1750 |
| Air cleaner | dry |

Fuel system

| | |
|------------------------|----|
| Maximum fuel lift: m | 5 |
| Total fuel flow: l/min | 16 |

Fuel consumption ²⁾

| | | |
|--------------------------|-------|-------|
| | l/hr | g/kwh |
| At 100% of power rating: | 413.3 | 196 |
| At 75% of power rating: | 300.5 | 190 |
| At 50% of power rating: | 208.7 | 198 |

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: m ³ /s | 2.0 |
| Max. air intake restriction: mbar | 50 |

Cooling/radiator system

| | |
|--|-----|
| Coolant flow rate (HT circuit): m ³ /hr | 56 |
| Coolant flow rate (LT circuit): m ³ /hr | 30 |
| Heat rejection to coolant: kW | 630 |
| Heat radiated to charge air cooling: kW | 340 |
| Heat radiated to ambient: kW | 75 |
| Fan power for electr. radiator (40°C): kW | 38 |

Exhaust system

| | |
|--|-----|
| Exhaust gas temp. (after turbocharger): °C | 470 |
| Exhaust gas volume: m ³ /s | 5.1 |
| Maximum allowable back pressure: mbar | 85 |
| 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 S6 (Low voltage Leroy Somer standard) | 380 V | 1664 | 2080 | 3160 | 1624 | 2030 | 3084 |
| | 400 V | 1664 | 2080 | 3002 | 1624 | 2030 | 2930 |
| | 415 V | 1664 | 2080 | 2894 | 1624 | 2030 | 2824 |
| Leroy Somer LSA52.3 S7 (Low voltage Leroy Somer oversized) | 380 V | 1664 | 2080 | 3160 | 1624 | 2030 | 3084 |
| | 400 V | 1664 | 2080 | 3002 | 1624 | 2030 | 2930 |
| | 415 V | 1664 | 2080 | 2894 | 1624 | 2030 | 2824 |
| Marathon 744RSL7091 (Low voltage Marathon) | 380 V | 1576 | 1970 | 2993 | 1576 | 1970 | 2993 |
| | 400 V | 1624 | 2030 | 2930 | 1608 | 2010 | 2901 |
| | 415 V | 1608 | 2010 | 2796 | 1608 | 2010 | 2796 |
| Marathon 744RSL7092 (Low voltage Marathon oversized) | 380 V | 1576 | 1970 | 2993 | 1576 | 1970 | 2993 |
| | 400 V | 1624 | 2030 | 2930 | 1608 | 2010 | 2901 |
| | 415 V | 1608 | 2010 | 2796 | 1608 | 2010 | 2796 |
| Marathon 744RSL7092 (Low voltage Marathon engine output optimized) | 380 V | 1648 | 2060 | 3130 | 1616 | 2020 | 3069 |
| | 400 V | 1656 | 2070 | 2988 | 1616 | 2020 | 2916 |
| | 415 V | 1640 | 2050 | 2852 | 1616 | 2020 | 2810 |
| Marathon 1020FDH7096 (Medium volt. marathon) | 11 kV | 1656 | 2070 | 109 | 1608 | 2010 | 105 |
| Leroy Somer LSA53.2 VL7 (Medium volt. Leroy Somer) | 11 kV | 1664 | 2080 | 109 | 1624 | 2030 | 107 |

* 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
- Engine output optimized 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
- 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

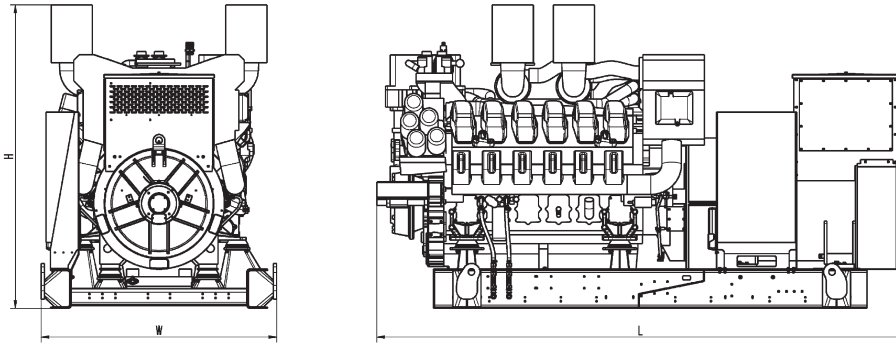
Exhaust system

- 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.

| System | Dimensions (LxWxH) | Weight (dry/less tank) |
|-----------------------|-----------------------|------------------------|
| Open power unit (OPU) | 4059 x 1810 x 2330 mm | 10949 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. No overload capability for this rating. Ratings are in accordance with ISO 8528-1, ISO-3046-1, BS 5514 and AS 2789.
Average load factor: $\leq 85\%$. Operating hours/year: max. 500.
- Consult your local **mtu** distributor for derating information.