



Diesel Generator Set

mtu 20V4000 DS3100

380V – 11 kV/50 Hz/data center continuous power/
fuel consumption 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: 2820 kVA - 2910 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)



A Rolls-Royce
solution

Application data ¹⁾

Engine

| | |
|-------------------|-------------|
| Manufacturer | mtu |
| Model | 20V4000G24F |
| Type | 4-cycle |
| Arrangement | 20V |
| Displacement: l | 95.4 |
| Bore: mm | 170 |
| Stroke: mm | 210 |
| Compression ratio | 16.4 |
| Rated speed: rpm | 1500 |
| Engine governor | ECU 9 |
| Max power: kWm | 2420 |
| Air cleaner | dry |

Fuel system

| | |
|------------------------|----|
| Maximum fuel lift: m | 5 |
| Total fuel flow: l/min | 27 |

Fuel consumption ²⁾

| | | |
|--------------------------|-------|-------|
| | l/hr | g/kwh |
| At 100% of power rating: | 554 | 190 |
| At 75% of power rating: | 422 | 193 |
| At 50% of power rating: | 294.5 | 202 |

Liquid capacity (lubrication)

| | |
|---------------------------------|-----|
| Total oil system capacity: l | 390 |
| Engine jacket water capacity: l | 205 |
| Intercooler coolant capacity: l | 50 |

Combustion air requirements

| | |
|--|-----|
| Combustion air volume: m ³ /s | 2.7 |
| Max. air intake restriction: mbar | 50 |

Cooling/radiator system

| | |
|--|------|
| Coolant flow rate (HT circuit): m ³ /hr | 80 |
| Coolant flow rate (LT circuit): m ³ /hr | 32.5 |
| Heat rejection to coolant: kW | 890 |
| Heat radiated to charge air cooling: kW | 350 |
| Heat radiated to ambient: kW | 105 |
| Fan power for electr. radiator (40°C): kW | 70 |

Exhaust system

| | |
|--|-----|
| Exhaust gas temp. (after turbocharger): °C | 560 |
| Exhaust gas volume: m ³ /s | 7.1 |
| 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 LSA53.2 M12 (Low voltage Leroy Somer standard) | 380 V | 2328 | 2910 | 4421 | 2264 | 2830 | 4300 |
| | 400 V | 2328 | 2910 | 4200 | 2264 | 2830 | 4085 |
| | 415 V | 2328 | 2910 | 4048 | 2264 | 2830 | 3937 |
| Marathon 1030FDL7094 (Low voltage Marathon) | 380 V | 2328 | 2910 | 4421 | 2256 | 2820 | 4285 |
| | 400 V | 2320 | 2900 | 4186 | 2256 | 2820 | 4070 |
| | 415 V | 2320 | 2900 | 4034 | 2256 | 2820 | 3923 |
| Marathon 1030FDH7101 (Medium volt. marathon) | 11 kV | 2320 | 2900 | 152 | 2256 | 2820 | 148 |
| Leroy Somer LSA53.2 ZL14 (Medium volt. Leroy Somer) | 11 kV | 2328 | 2910 | 153 | 2264 | 2830 | 149 |

* 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 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 $\pm 10\%$
- 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 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

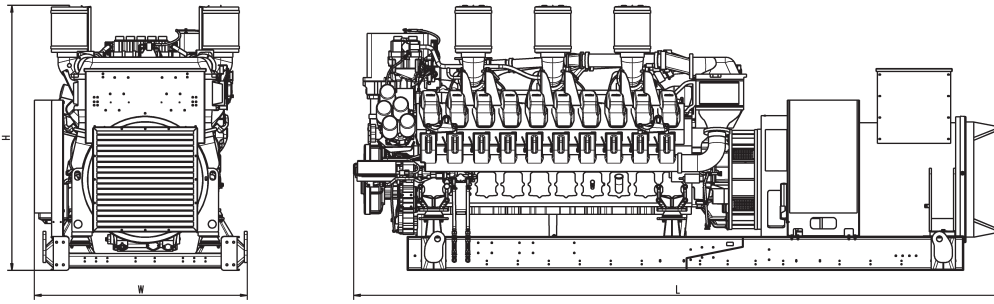
Exhaust system

- 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) | 5760 x 1887 x 2332 mm | 15819 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

- Data center continuous power ratings (DCP) 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: $\leq 100\%$.
- Consult your local **mtu** distributor for derating information.