

# **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

- Approved for renewable fuels (e.g. HVO)
- 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 EC 60034-1, ISO 8528-3; IEC 60044-1; Declaration of conformity; EN55011, group 1, cl. B
- NFPA 110\*

## **Power rating**

- System ratings: 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 VDE-AR-N 4110



## Application data<sup>1)</sup>

#### Engine

Manufacturer	mtu
Model	12V4000G84F
Туре	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

r aor system		
Fuel specification	EN 590, Grade No.1-D/2-D (A	ASTM D975-00),
	EN 1	5940 (e.g. HVO)
Maximum fuel lift: m		5
Total fuel flow: l/min		16
Fuel consumption <sup>2)</sup>	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: m³/s	2.0
Max. air intake restriction: mbar	50
Cooling/radiator system	
Coolant flow rate (HT circuit): m3/hr	56
Coolant flow rate (LT circuit): m3/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: m³/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	380 V	1664	2080	3160	1624	2030	3084
(Low voltage	400 V	1664	2080	3002	1624	2030	2930
Leroy Somer standard)	415 V	1664	2080	2894	1624	2030	2824
Leroy Somer LSA52.3 S7	380 V	1664	2080	3160	1624	2030	3084
(Low voltage	400 V	1664	2080	3002	1624	2030	2930
Leroy Somer oversized)	415 V	1664	2080	2894	1624	2030	2824
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 EN 55011, group 1, cl. B
- Short circuit capability 3xln for 10secWinding 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, AS 1359 and ISO 8528-3 requirements
- Leroy Somer low voltage generator
- Oversized generator
- □ Medium voltage generator

Oil system

 $\Box$  Automatic oil refilling system

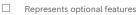
 Extended test run kit (including pre-lubrication pump)

## Cooling system

- Jacket water pump
- Thermostat(s)
- Water charge air cooling
- **Control panel**
- Unit cabling with coded plugs for easy connection of customer-specific controls (VO)
- Pre-wired control cabinet for easy application of customized controller (V1+)
- $\hfill\square$  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)

- Mechanical radiator
- □ Electrical driven front-end cooler
- □ Jacket water heater
- Mains parallel operation of a single genset (V6)
- Mains parallel operation of multiple gensets (V7)
- Basler controller
- Deif controller
- $\hfill\square$  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

- □ Jacket water heater with plate heat exchanger
- Pulley for fan drive
- 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



## Standard and optional features

## Connectivity

The engine system automatically collects and transfers engine data to the manufacturer from time to time. The data is used by the

manufacturer for the purposes of product development and improvement as well as service optimization.

Users can log in or register via https://mtu-go.com and also gain insight into the data.

## Power panel

□ Supply electrical driven radiator from 45kW - 75kW

## Circuit breaker/power distribution

<ul> <li>3-pole circuit breaker</li> <li>4-pole circuit breaker</li> </ul>	Electrical-actuated circuit breaker	Base frame mounted GCB, pre-wired with generator, ready for commissioning		
Fuel system				
Flexible fuel connectors mounted to base frame	<ul> <li>Switchable fuel filter with water separator</li> <li>Switchable fuel filter with water separator</li> </ul>	Fuel cooler integrated into cooling equipment		

- □ Switchable fuel filter with water separator heavy-duty
- □ Seperate fuel cooler

equipment

#### Starting/charging system

□ Fuel filter with water separator

□ Fuel filter with water separator heavy-duty

24V starter Redundant starting system □ Starter batteries, cables, rack, disconnect switch (lockable)

□ Battery charger □ Alternator

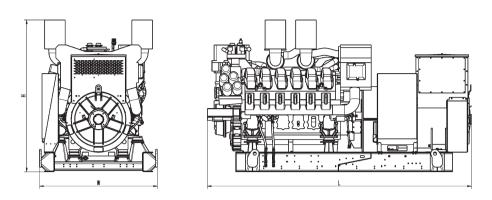
## Mounting system

- Welded base frame Resilient engine and generator mounting
- Modular base frame design □ Base frame mounting on foundation/base plate with using clamping brackets
- □ Spring mounts with 95% degree of isolation

#### **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)	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

## **Emissions data**

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