



Diesel Generator Set

mtu 12V4000 DS2000

380V – 11 kV/50 Hz/grid stability power/
fuel consumption optimized/12V4000G24F/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: 1820 kVA - 1880 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			Liquid capacity (lubrication)	
Manufacturer		<i>mtu</i>	Total oil system capacity: l	260
Model		12V4000G24F	Engine jacket water capacity: l	160
Type		4-cycle	Intercooler coolant capacity: l	40
Arrangement		12V	Combustion air requirements	
Displacement: l		57.2	Combustion air volume: m³/s	1.8
Bore: mm		170	Max. air intake restriction: mbar	50
Stroke: mm		210	Cooling/radiator system	
Compression ratio		16.4	Coolant flow rate (HT circuit): m³/hr	56
Rated speed: rpm		1500	Coolant flow rate (LT circuit): m³/hr	30
Engine governor		ECU 9	Heat rejection to coolant: kW	580
Max power: kWm		1575	Heat radiated to charge air cooling: kW	260
Air cleaner		dry	Heat radiated to ambient: kW	75
Fuel system			Fan power for electr. radiator (40°C): kW	38
Maximum fuel lift: m		5	Exhaust system	
Total fuel flow: l/min		16	Exhaust gas temp. (after turbocharger): °C	440
Fuel consumption ²⁾			Exhaust gas volume: m³/s	4.5
At 100% of power rating:	l/hr	g/kwh	Maximum allowable back pressure: mbar	85
At 75% of power rating:	364.3	192	Minimum allowable back pressure: mbar	30
At 50% of power rating:	274.7	193		
	189.8	200		

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	1504	1880	2856	1472	1840	2796
	400 V	1504	1880	2714	1472	1840	2656
	415 V	1504	1880	2615	1472	1840	2560
Marathon 743RSL7091 (Low voltage Marathon)	380 V	1496	1870	2841	1456	1820	2765
	400 V	1504	1880	2714	1456	1820	2627
	415 V	1496	1870	2602	1456	1820	2532
Marathon 744RSL7092 (Low voltage Marathon oversized)	380 V	1496	1870	2841	1456	1820	2765
	400 V	1504	1880	2714	1456	1820	2627
	415 V	1496	1870	2602	1456	1820	2532
Marathon 1020FDH7096 (Medium volt. marathon)	11 kV	1496	1870	98	1456	1820	96
Leroy Somer LSA53.2 VL7 (Medium volt. Leroy Somer)	11 kV	1504	1880	99	1472	1840	97

* 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

- | | | |
|---|--|---|
| <input type="checkbox"/> 3-pole circuit breaker | <input type="checkbox"/> Manual-actuated circuit breaker | <input type="checkbox"/> Stand-alone solution in seperate cabinet |
| <input type="checkbox"/> 4-pole circuit breaker | <input type="checkbox"/> Electrical-actuated circuit breaker | |

Fuel system

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Flexible fuel connectors mounted to base frame | <input type="checkbox"/> Switchable fuel filter with water separator | <input type="checkbox"/> Fuel cooler integrated into cooling equipment |
| <input type="checkbox"/> Fuel filter with water separator | <input type="checkbox"/> Switchable fuel filter with water separator heavy-duty | |
| <input type="checkbox"/> Fuel filter with water separator heavy-duty | <input type="checkbox"/> Seperate fuel cooler | |

Starting/charging system

- | | | |
|---|---|--|
| <input checked="" type="checkbox"/> 24V starter | <input type="checkbox"/> Starter batteries, cables, rack, disconnect switch | <input type="checkbox"/> Battery charger |
|---|---|--|

Mounting system

- | | | |
|---|---|---|
| <input checked="" type="checkbox"/> Welded base frame | <input checked="" type="checkbox"/> Resilient engine and generator mounting | <input checked="" type="checkbox"/> Modular base frame design |
|---|---|---|

Exhaust system

- | | | |
|---|---|---|
| <input type="checkbox"/> Exhaust bellows with connection flange | <input type="checkbox"/> Exhaust silencer with 30 dB(A) sound attenuation | <input type="checkbox"/> Exhaust silencer with 40 dB(A) sound attenuation |
| <input type="checkbox"/> Exhaust silencer with 10 dB(A) sound attenuation | | <input type="checkbox"/> 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

- Grid stability power ratings apply to installations serving electric utility programs. At constant or varying load, the number of generator set operating hours is limited to 1000 hours per year with no more than 500 hours per year at 100% load without interruption. 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: ≤ 100%.
- Consult your local **mtu** distributor for derating information.