

Diesel Generator Set

mtu 12V4000 DS1750

380V – 11 kV/50 Hz/data center continuous power/ fuel consumption optimized/12V4000G14F/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: 1590 kVA 1700 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)



Application data¹⁾

Engine			Liquid capacity (lubrication)	
Manufacturer		mtu	Total oil system capacity: l	260
Model	12	2V4000G14F	Engine jacket water capacity: l	160
Туре		4-cycle	Intercooler coolant capacity: I	40
Arrangement		12V		
Displacement: I		57.2	Combustion air requirements	
Bore: mm		170	Combustion air volume: m³/s	1.6
Stroke: mm		210	Max. air intake restriction: mbar	50
Compression ratio		16.4		
Rated speed: rpm		1500	Cooling/radiator system	
Engine governor		ECU 9	Coolant flow rate (HT circuit): m³/hr	56
Max power: kWm		1420	Coolant flow rate (LT circuit): m³/hr	30
Air cleaner		dry	Heat rejection to coolant: kW	540
			Heat radiated to charge air cooling: kW	200
Fuel system			Heat radiated to ambient: kW	75
Maximum fuel lift: m		5	Fan power for electr. radiator (40°C): kW	38
Total fuel flow: I/min		16		
			Exhaust system	
Fuel consumption 2)	l/hr	g/kwh	Exhaust gas temp. (after turbocharger): °C	460
At 100% of power rating:	323.3	189	Exhaust gas volume: m³/s	4.0
At 75% of power rating:	250.2	195	Maximum allowable back pressure: mbar	85
At 50% of power rating:	173.7	203	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 S5 (Low voltage Leroy Somer standard)	380 V	1360	1700	2583	1320	1650	2507	
	400 V	1360	1700	2454	1320	1650	2382	
	415 V	1360	1700	2365	1320	1650	2295	
Marathon 743RSL7090 (Low voltage Marathon)	380 V	1352	1690	2568	1312	1640	2492	
	400 V	1344	1680	2425	1312	1640	2367	
	415 V	1272	1590	2212	1272	1590	2212	
Marathon 744RSL7091 (Low voltage Marathon oversized)	380 V	1352	1690	2568	1312	1640	2492	
	400 V	1344	1680	2425	1312	1640	2367	
	415 V	1344	1680	2425	1272	1590	2212	
Marathon 1020FDH7095 (Medium volt. marathon)	11 kV	1352	1690	89	1312	1640	86	
Leroy Somer LSA53.2 VL6 (Medium volt. Leroy Somer)	11 kV	1352	1690	89	1320	1650	87	

^{*} cos phi = 0.8

All data refers only to the engine and is based on ISO standard conditions (25°C and 100m above sea level). 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-cycleStandard single stage air filterOil drain extension & shut-off valve	Closed crankcase ventilation with improved oil seperatorGovernor-electronic isochronous	Common rail fuel injectionFuel consumption optimized engineCentrifugal 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 ± 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 pumpThermostat(s)Water charge air cooling	Mechanical radiatorElectrical driven front-end coolerJacket 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) 	multiple gensets (V7) operation (V2) atic mains failure operation with 3a) atic mains failure operation ontrol of generator and mains or (V3b) parallel operation of multiple sts (V4) atic mains failure operation ontrol of generator and mains or (V3b) parallel operation of multiple sts (V4) atic mains failure operation ontrol of generator and mains or (V3b) parallel operation of multiple sts (V4) atic mains failure operation with <10s) mains parallel p synchronization (V5) parallel operation of multiple gensets (V7) Delic controller Delic contr	
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)

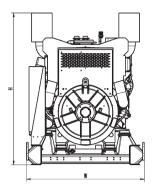
Represents standard features

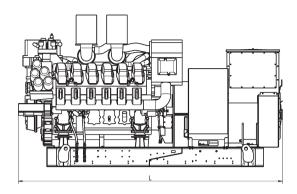
☐ Represents optional features

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 with40 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	10654 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: ≤ 100%.
- Consult your local *mtu* distributor for derating information.