DIESEL GENERATOR SET MTU 12V4000 DS1650

380V – 11 kV/50 Hz/Prime Power/TA-Luft Optimized MTU 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

// MTU Onsite Energy is a single-source supplier

// 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: 1490 kVA 1600 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
- 75% 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

- TA-Luft optimized

// Certifications

- CE certification option
- Unit certificate acc. to BDEW (German Grid-Code)



APPLICATION DATA^①

// Engine

Manufacturer	MTU
Model	12V4000G14F
Туре	4-cycle
Arrangement	12V
Displacement: I	57.2
Bore: mm	170
Stroke: mm	210
Compression ratio	16.4
Rated speed: rpm	1500
Engine governor	ECU 9
Max power: kWm	1420
Air cleaner	Dry

// Fuel System

Maximum fuel lift: m	5
Total fuel flow: I/min	16

// Fuel Consumption[®]

·	l/hr	g/kwh
At 100% of power rating:	373	218
At 75% of power rating:	272	212
At 50% of power rating:	184.8	216

// Liquid Capacity (Lubrication)

Total oil system capacity: I	260
Engine jacket water capacity: I	160
Intercooler coolant capacity: I	40

// Combustion Air Requirements

Combustion air volume: m ³ /s	2.1
Max. air intake restriction: mbar	50

// Cooling/Radiator System

Coolant flow rate (HT circuit): m ³ /h	56
Coolant flow rate (LT circuit): m ³ /h	30
Heat rejection to coolant: kW	590
Heat radiated to charge air cooling: kW	360
Heat radiated to ambient: kW	75
Fan power for electr. radiator (40°C): kW	70

// Exhaust System

Exhaust gas temp. (after turbocharger): °C	470
Exhaust gas volume: m ³ /s	5.2
Maximum allowable back pressure: mbar	85
Minimum allowable back pressure: mbar	

 $\oplus\,$ All data refers only to the engine and is based on ISO standard conditions (25 $^{\circ}\text{C}$ 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

// System Ratings (kW/kVA)

Generator model	Voltage	TA-Luft optimized					
		without radiator			with mechanical radiator		
		kWel	kVA*	AMPS	kWel	kVA*	AMPS
Leroy Somer LSA52.3 S5	380 V	1280	1600	2431	1208	1510	2294
(Low voltage	400 V	1280	1600	2309	1208	1510	2179
Leroy Somer standard)	415 V	1280	1600	2226	1208	1510	2101
Marathon 743RSL7090	380 V	1272	1590	2416	1208	1510	2294
(Low voltage Marathon)	400 V	1264	1580	2281	1208	1510	2179
	415 V	1192	1490	2073	1192	1490	2073
Marathon 744RSL7091	380 V	1272	1590	2416	1208	1510	2293
(Low voltage	400 V	1264	1580	2281	1208	1510	2179
Marathon oversized)	415 V	1192	1490	2073	1192	1490	2073
Marathon 1020FDH7095	11 kV	1272	1590	83	1200	1500	79
(Medium volt. marathon)							
Leroy Somer LSA53.2 VL6	11 kV	1272	1590	83	1208	1510	79
(Medium volt. Leroy Somer)							

* cos phi = 0,8

// Engine

- 4-Cycle
- Standard single stage air filter
- Oil drain extension & shut-off valve

// 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

- Closed crankcase ventilation
- Governor-electronic isochronous
- Common rail fuel injection
- 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

■ TA-Luft optimized engine

- Leroy Somer low voltage generator
- $\hfill\square$ Marathon low voltage generator
- □ Oversized generator
- □ Medium voltage generator

STANDARD AND OPTIONAL FEATURES, CONTINUATION

// Cooling System

- Jacket water pump
- Thermostat(s)
- Water charge air cooling

// 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)

// Power Panel

- \square Available in 600x600 and 600x1000
- \Box Phase monitoring relay 230V/400V
- □ Supply for battery charger
- $\hfill\square$ Supply for jacket water heater

// Circuit Breaker/Power Distribution

- \square 3-pole circuit breaker
- □ 4-pole circuit breaker

- Mechanical radiator
 Electrical driven front-end cooler
- □ Jacket water heater
- □ Basler controller
- \square 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

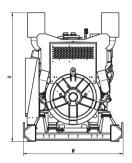
- □ Supply for anti condensation heating □ Plug socket cabinet for 230V
- compatible Euro/USA
- □ Supply electrical driven radiator from 45kW – 75kW (PP 600x1000)
- Manual-actuated circuit breaker
 Electrical-actuated circuit breaker
- □ Stand-alone solution in seperate cabinet

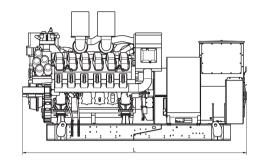
STANDARD AND OPTIONAL FEATURES, CONTINUATION

// 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 with 40 dB(A) sound attenuation 	☐ Y-connection-pipe

WEIGHTS AND DIMENSIONS





Drawing above for illustration purposes only, based an 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 Onsite Energy distributor for sound data.

EMISSIONS DATA

NO _x + NMHC	СО	РМ
1700	300	50

All units are in mg/Nm³

Emission levels of the engine may vary as a function of ambient temperature, barometric pressure, humidity, fuel type and quality, installation parameters, measuring instrumentation, etc. The data provided refers to ISO standard ambient conditions (25°C and 100m above sea level). The data provided are laboratory results from one engine representing this rating. The data was obtained under controlled environmental conditions with calibrated instrumentation.

RATING DEFINITIONS AND CONDITIONS

- // Prime power ratings apply to installations where utility power is unavailable or unreliable. At 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: ≤ 75%.
- // Consult your local MTU Onsite Energy Power Generation Distributor for derating information.

Materials and specifications subject to change without notice.

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