

# DIESEL GENERATOR SET

## MTU 12V4000 DS2000

380V – 11 kV/50 Hz/Standby Power/NEA (ORDE) Optimized  
MTU 12V4000G84F/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: 1980 kVA - 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

- NEA (ORDE) optimized

#### // Certifications

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

APPLICATION DATA<sup>①</sup>

## // Engine

Manufacturer	MTU
Model	12V4000G84F
Type	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

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:	419.6	199
At 75% of power rating:	316.9	200
At 50% of power rating:	220.3	209

## // 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: m <sup>3</sup> /s	2.1
Max. air intake restriction: mbar	50

## // Cooling/Radiator System

Coolant flow rate (HT circuit): m <sup>3</sup> /h	56.0
Coolant flow rate (LT circuit): m <sup>3</sup> /h	30
Heat rejection to coolant: kW	650
Heat radiated to charge air cooling: kW	360
Heat radiated to ambient: kW	75
Fan power for electr. radiator (40°C): kW	55

## // Exhaust System

Exhaust gas temp. (after turbocharger): °C	520
Exhaust gas volume: m <sup>3</sup> /s	5.8
Maximum allowable back pressure: mbar	85
Minimum allowable back pressure: mbar	30

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

### // System Ratings (kW/kVA)

Generator model	Voltage	NEA (ORDE) optimized					
		without radiator			with mechanical radiator		
		kWel	kVA*	AMPS	kWel	kVA*	AMPS
Leroy Somer LSA52.3 S6	380 V	1664	2080	3160	1608	2010	3054
(Low voltage	400 V	1664	2080	3002	1608	2010	2901
Leroy Somer standard)	415 V	1664	2080	2894	1608	2010	2796
Leroy Somer LSA52.3 S7	380 V	1664	2080	3160	1608	2010	3054
(Low voltage	400 V	1664	2080	3002	1608	2010	2901
Leroy Somer oversized)	415 V	1664	2080	2894	1608	2010	2796
Marathon 744RSL7091	380 V	1584	1980	3008	1576	1970	2993
(Low voltage Marathon)	400 V	1624	2030	2930	1600	2000	2887
	415 V	1608	2010	2796	1600	2000	2782
Marathon 744RSL7092	380 V	1584	1980	3008	1576	1970	2993
(Low voltage	400 V	1624	2030	2930	1600	2000	2887
Marathon oversized)	415 V	1608	2010	2796	1600	2000	2782
Marathon 1020FDH7096	11 kV	1656	2070	109	1600	2000	105
(Medium volt. marathon)							
Leroy Somer LSA53.2 VL7	11 kV	1664	2080	109	1608	2010	105
(Medium volt. Leroy Somer)							

\* cos phi = 0,8

### // Engine

- 4-Cycle
- Standard single stage air filter
- Oil drain extension & shut-off valve
- Closed crankcase ventilation
- Governor-electronic isochronous
- Common rail fuel injection
- NEA (ORDE) 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 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

■ Represents standard features

□ Represents optional features

## STANDARD AND OPTIONAL FEATURES, CONTINUATION

### // Cooling System

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Jacket water pump        | <input type="checkbox"/> Mechanical radiator                |
| <input checked="" type="checkbox"/> Thermostat(s)            | <input type="checkbox"/> Electrical driven front-end cooler |
| <input checked="" type="checkbox"/> Water charge air cooling | <input type="checkbox"/> Jacket water heater                |

### // Control Panel

- |   |   |   |
|---|---|---|
| <input checked="" type="checkbox"/> Pre-wired control cabinet for easy application of customized controller (V1+)         | <input type="checkbox"/> Basler controller  | <input type="checkbox"/> Different expansion modules              |
| <input type="checkbox"/> Island operation (V2)  | <input type="checkbox"/> Deif controller  | <input type="checkbox"/> Remote annunciator                       |
| <input type="checkbox"/> Automatic mains failure operation with ATS (V3a)   | <input checked="" type="checkbox"/> Complete system metering                        | <input type="checkbox"/> Daytank control                          |
| <input type="checkbox"/> Automatic mains failure operation incl. control of generator and mains breaker (V3b)             | <input checked="" type="checkbox"/> Digital metering                                | <input type="checkbox"/> Generator winding temperature monitoring |
| <input type="checkbox"/> Island parallel operation of multiple gensets (V4)   | <input checked="" type="checkbox"/> Engine parameters                               | <input type="checkbox"/> Generator bearing temperature monitoring |
| <input type="checkbox"/> Automatic mains failure operation with short (< 10s) mains parallel overlap synchronization (V5) | <input checked="" type="checkbox"/> Generator protection functions                  | <input type="checkbox"/> Modbus TCP-IP                            |
| <input type="checkbox"/> Mains parallel operation of a single genset (V6)   | <input checked="" type="checkbox"/> Engine protection                               |   |
| <input type="checkbox"/> Mains parallel operation of multiple gensets (V7)  | <input checked="" type="checkbox"/> SAE J1939 engine ECU communications             |   |
|   | <input checked="" type="checkbox"/> Parametrization software                        |   |
|   | <input checked="" type="checkbox"/> Multilingual capability                         |   |
|   | <input checked="" type="checkbox"/> Multiple programmable contact inputs            |   |
|   | <input checked="" type="checkbox"/> Multiple contact outputs                        |   |
|   | <input checked="" type="checkbox"/> Event recording                                 |   |
|   | <input checked="" type="checkbox"/> IP 54 front panel rating with integrated gasket |   |

### // Power Panel

- |  |   |   |
|--|---|---|
| <input type="checkbox"/> Available in 600x600 and 600x1000 | <input type="checkbox"/> Supply for anti condensation heating             | <input type="checkbox"/> Supply electrical driven radiator from 45kW – 75kW (PP 600x1000) |
| <input type="checkbox"/> Phase monitoring relay 230V/400V  | <input type="checkbox"/> Plug socket cabinet for 230V compatible Euro/USA |   |
| <input type="checkbox"/> Supply for battery charger        |   |   |
| <input type="checkbox"/> Supply for jacket water heater    |   |   |

### // 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 separate cabinet |
| <input type="checkbox"/> 4-pole circuit breaker | <input type="checkbox"/> Electrical-actuated circuit breaker |   |

## STANDARD AND OPTIONAL FEATURES, CONTINUATION

### // Fuel System

- |   |  |  |
|---|--|--|
| <ul style="list-style-type: none"> <li>■ Flexible fuel connectors mounted to base frame</li> <li><input type="checkbox"/> Fuel filter with water separator</li> <li><input type="checkbox"/> Fuel filter with water separator heavy-duty</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Switchable fuel filter with water separator</li> <li><input type="checkbox"/> Switchable fuel filter with water separator heavy-duty</li> <li><input type="checkbox"/> Seperate fuel cooler</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Fuel cooler integrated into cooling equipment</li> </ul> |
|---|--|--|

### // Starting/Charging System

- |   |   |  |
|---|---|--|
| <ul style="list-style-type: none"> <li>■ 24V starter</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Starter batteries, cables, rack, disconnect switch</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Battery charger</li> </ul> |
|---|---|--|

### // Mounting System

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>■ Welded base frame</li> </ul> | <ul style="list-style-type: none"> <li>■ Resilient engine and generator mounting</li> </ul> | <ul style="list-style-type: none"> <li>■ Modular base frame design</li> </ul> |
|---|---|---|

### // Exhaust System

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> Exhaust bellows with connection flange</li> <li><input type="checkbox"/> Exhaust silencer with 10 dB(A) sound attenuation</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Exhaust silencer with 30 dB(A) sound attenuation</li> <li><input type="checkbox"/> Exhaust silencer with 40 dB(A) sound attenuation</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Y-connection-pipe</li> </ul> |
|--|--|--|

## 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

Open Power Unit (OPU)

### Dimensions (L x W x H)

4059 x 1810 x 2330 mm

### Weight (dry/less tank)

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 Onsite Energy distributor for sound data.

## EMISSIONS DATA

// Consult your local MTU Onsite Energy 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:  $\leq 85\%$ . Operating hours/year: max. 500.

// Consult your local MTU Onsite Energy Power Generation Distributor for derating information.

Materials and specifications subject to change without notice.