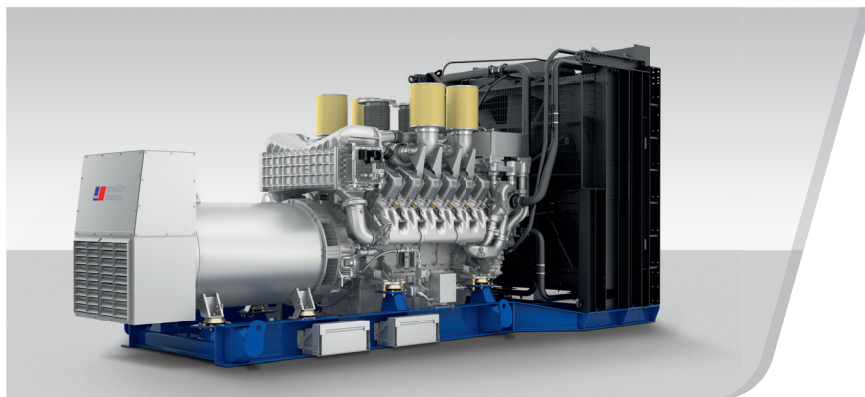


# DIESEL GENERATOR SET

## MTU 12V4000 DS1650

380V – 11 kV/50 Hz/Prime Power/NEA (ORDE) Optimized  
MTU 12V4000G23/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: 1500 kVA - 1550 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
- 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 voltage alternators

#### // Emissions

- NEA (ORDE) optimized

#### // Certifications

- CE certification option

APPLICATION DATA<sup>①</sup>

## // Engine

Manufacturer	MTU
Model	12V4000G23
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	ADEC
Max power: kWm	1420
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:	342.2	200
At 75% of power rating:	274.6	214
At 50% of power rating:	200.2	234

## // 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	1.8
Max. air intake restriction: mbar	50

## // Cooling/Radiator System

Coolant flow rate (HT circuit): m <sup>3</sup> /h	56
Coolant flow rate (LT circuit): m <sup>3</sup> /h	30
Heat rejection to coolant: kW	545
Heat radiated to charge air cooling: kW	260
Heat radiated to ambient: kW	75
Fan power for mech. radiator (40°C): kWm	55

## // Exhaust System

Exhaust gas temp. (after turbocharger): °C	505
Exhaust gas volume: m <sup>3</sup> /s	4.9
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 40°C/100m								
		without radiator			with mechanical radiator			with electr. driven radiator		
		kWel	kVA*	AMPS	kWel	kVA*	AMPS	kWel	kVA*	AMPS
Marathon 743RSL7090 (Low voltage marathon standard)	380 V	1240	1550	2355	1200	1500	2279	1200	1500	2279
	400 V	1240	1550	2237	1200	1500	2165	1200	1500	2165
	415 V	1240	1550	2156	1200	1500	2087	1200	1500	2087
Marathon 744RSL7091 (Low voltage marathon oversized)	380 V	1240	1550	2355	1200	1500	2279	1200	1500	2279
	400 V	1240	1550	2237	1200	1500	2165	1200	1500	2165
	415 V	1240	1550	2156	1200	1500	2087	1200	1500	2087
Leroy Somer LSA 51.2 S55 (Low voltage Leroy Somer)	380 V	1240	1550	2355	1200	1500	2279	1200	1500	2279
	400 V	1240	1550	2237	1200	1500	2165	1200	1500	2165
	415 V	1240	1550	2156	1200	1500	2087	1200	1500	2087
Marathon 1020FDH7095 (Medium volt. marathon)	11 kV	1240	1550	81	1200	1500	79	1200	1500	79
Leroy Somer LSA 53.1 UL70 (Medium volt. Leroy Somer)	11 kV	1240	1550	81	1200	1500	79	1200	1500	79

\* 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

- NEMA MG1, BS5000, ISO, DIN EN and IEC standards
- Self-ventilated
- Superior voltage waveform
- Solid state, volts-per-Hertz regulator
- No load to full load regulation
- ±0,25% voltage regulation no load to full load
- Brushless alternator with brushless pilot exciter
- 4 pole, rotating field
- Sustained short circuit current of up to 250% of the rated current for up to 10 seconds (marathon generator)
- Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (Leroy Somer generator)
- Marathon low voltage generator
- Leroy Somer 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

Represents standard features

Represents optional features

## STANDARD AND OPTIONAL FEATURES, CONTINUATION

### // Control Panel

- |   |  |   |
|---|--|---|
| <ul style="list-style-type: none"> <li>■ Pre-wired control cabinet for easy application of customized controller (V1+)</li> <li><input type="checkbox"/> Island operation (V2)</li> <li><input type="checkbox"/> Automatic mains failure operation with ATS (V3a)</li> <li><input type="checkbox"/> Automatic mains failure operation incl. control of generator and mains breaker (V3b)</li> <li><input type="checkbox"/> Island parallel operation of multiple gensets (V4)</li> <li><input type="checkbox"/> Automatic mains failure operation with short (&lt; 10s) mains parallel overlap synchronization (V5)</li> <li><input type="checkbox"/> Mains parallel operation of a single genset (V6)</li> <li><input type="checkbox"/> Mains parallel operation of multiple gensets (V7)</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Basler controller</li> <li><input type="checkbox"/> Deif controller</li> <li>■ Complete system metering</li> <li>■ Digital metering</li> <li>■ Engine parameters</li> <li>■ Generator Protection Functions</li> <li>■ Engine protection</li> <li>■ SAE J1939 engine ECU communications</li> <li>■ Parametrization software</li> <li>■ Multilingual capability</li> <li>■ Multiple programmable contact inputs</li> <li>■ Multiple contact outputs</li> <li>■ Event recording</li> <li>■ IP 54 front panel rating with integrated gasket</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Different expansion modules</li> <li><input type="checkbox"/> Remote annunciator</li> <li><input type="checkbox"/> Daytank control</li> <li><input type="checkbox"/> Generator winding temperature monitoring</li> <li><input type="checkbox"/> Generator bearing temperature monitoring</li> <li><input type="checkbox"/> Differential protection with multi-function protection relay</li> <li><input type="checkbox"/> Modbus RTU-TCP gateway</li> </ul> |
|---|--|---|

### // Circuit Breaker/Power Distribution

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li><input type="checkbox"/> 3-pole circuit breaker</li> <li><input type="checkbox"/> 4-pole circuit breaker</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Manual-actuated circuit breaker</li> <li><input type="checkbox"/> Electrical-actuated circuit breaker</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Stand-alone solution in separate switch box</li> </ul> |
|--|--|--|

### // 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"/> Switchable fuel filter with water separator</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Seperate fuel cooler</li> <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> <li><input type="checkbox"/> Starter batteries</li> </ul> | <ul style="list-style-type: none"> <li><input type="checkbox"/> Battery rack &amp; cables</li> <li><input type="checkbox"/> Battery charger</li> </ul> |
|---|--|

## STANDARD AND OPTIONAL FEATURES, CONTINUATION

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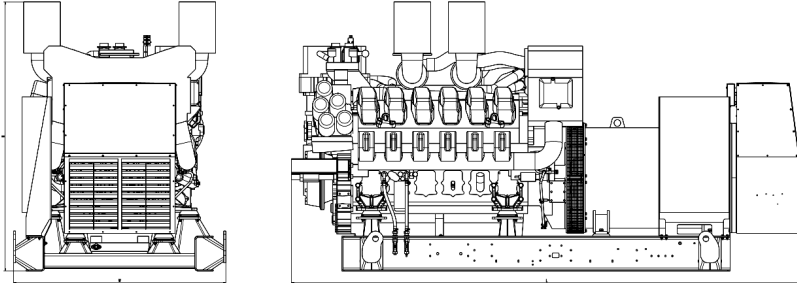
### // Mounting System

- 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 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)	4419 x 1836 x 2330 mm	10477 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

// 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:  $\leq 75\%$ .

// Deration factor:

Altitude: Consult your local MTU Onsite Energy Power Generation distributor for altitude derations.

Temperature: Consult your local MTU Onsite Energy Power Generation distributor for temperature derations.

Rated power is available up to 40°C and 100m above sea level.

Materials and specifications subject to change without notice.