

# DIESEL GENERATOR SET

## MTU 12V2000 DS1000

### PRIME POWER: 800 KVA

380V - 415V/50 Hz/Air Charge Air Cooling



Optional equipment and finishing shown. Standard may vary.

## PRODUCT HIGHLIGHTS

### // Benefits

- Low fuel consumption
- Optimized system integration ability
- High reliability and availability of power
- Long maintenance intervals
- Optimized ratio between size and power
- Wide operating range without derating

### // MTU Onsite Energy is a single-source supplier

### // Global product support

### // Standards

- Engine-generator set is designed and manufactured in facilities certified to standards ISO 2008:9001 and ISO 2004:14001
- Generator set complies to G3 according to ISO 8528
- Generator meets NEMA MG1, BS5000, ISO, DIN EN and IEC standards
- NFPA 110

### // Power Rating

- System rating: 800 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 for prime power applications
- 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 radiator
- Container and Canopy

### // Emissions

- Fuel consumption optimized
- TA-Luft, Tier 2 and NEA (ORDE) optimization optionally available

### // Certifications

- CE certification option
- German Grid Code Certification (BDEW) option

APPLICATION DATA<sup>①</sup>

## // Engine

		Fuel consumption optimized	Emission optimized <sup>②</sup>
Manufacturer		MTU	MTU
Model		12V2000G26F	12V2000G26F
Type		4-cycle	4-cycle
Arrangement		12V	12V
Displacement:	l	26.8	26.8
Bore:	mm	135	135
Stroke:	mm	156	156
Compression ratio		17.5	17.5
Rated speed:	rpm	1500	1500
Engine governor		ADEC	ADEC
Speed regulation		± 0.25%	± 0.25%
Max power:	kWm	709	709
Mean effective pressure:	bar	21.2	21.2
Air cleaner		Dry	Dry

## // Fuel System

Maximum fuel lift:	m	5	5
Total fuel flow:	l/min	30	30

// Fuel Consumption<sup>③</sup>

At 100% of power rating:	l/hr	162.3	167.4
At 75% of power rating:	l/hr	123.6	127.5
At 50% of power rating:	l/hr	87.1	90.1

## // Lube oil system

Total oil system capacity:	l	80	80
Max. lube oil temperature (alarm):	°C	103	103
Max. lube oil temperature (shutdown):	°C	105	105
Min. lube oil pressure (alarm):	bar	4.5	4.5
Min. lube oil pressure (shutdown):	bar	4	4

## // Combustion Air Requirements

Combustion air volume:	m³/s	0.79	0.91
Max. air intake restriction:	mbar	40	40

① All data refers only to the engine and is based on ISO standard conditions (25°C and 100m above sea level).

② Emission optimized data refer to TA-Luft optimized and NEA (ORDE) optimized/Tier 2 compliant engines.

③ 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.

APPLICATION DATA<sup>①</sup>

## // Cooling/Radiator System

		Fuel consumption optimized	Emission optimized <sup>②</sup>
Coolant flow rate (HT circuit):	m <sup>3</sup> /h	31.6	31.6
Heat rejection to coolant:	kW	290	290
Heat rejection to charge air:	kW	120	150
Heat radiated to ambient:	kW	35	35
Fan power for mech. radiator (40°C):	kWm	34	34
Fan power for mech. radiator (50°C):	kWm	51.1	51.1
Air flow required for mech. radiator (40°C) cooled unit:	m <sup>3</sup> /min	969	969
Air flow required for mech. radiator (50°C) cooled unit:	m <sup>3</sup> /min	1328	1328
Engine coolant capacity (without cooling equipment):	l	63	63
Radiator coolant capacity (40°C):	l	59	59
Radiator coolant capacity (50°C):	l	140	140
Max. coolant temperature (warning):	°C	102	102
Max. coolant temperature (shutdown):	°C	105	105

## // Exhaust System

Exhaust gas temp. (after turbocharger):	°C	540	505
Exhaust gas volume:	m <sup>3</sup> /s	2.2	2.4
Maximum allowable back pressure:	mbar	50	50
Minimum allowable back pressure:	mbar	30	30

## // Generator

Protection class	IP23	IP23
Insulation class	H	H
Voltage regulation (steady state)	± 0.25%	± 0.25%
Rado interference class	N	N

① All data refers only to the engine and is based on ISO standard conditions (25°C and 100m above sea level).

② Emission optimized data refer to TA-Luft optimized and NEA (ORDE) optimized/Tier 2 compliant engines.

## STANDARD AND OPTIONAL FEATURES

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

Generator model	Voltage	with mechanical radiator		
		kWeI	kVA*	AMPS
Basic: Marathon 575RSL7180	380 V	640	800	1215
Advanced: Marathon 575RSL7181	400 V	640	800	1155
(Low voltage Marathon standard)	415 V	640	800	1113
Basic: Marathon 740RSL7182	380 V	640	800	1215
Advanced: Marathon 740RSL7183	400 V	640	800	1155
(Low voltage Marathon oversized)	415 V	640	800	1113
Leroy Somer LSA 49.1 L11	380 V	640	800	1215
(Low voltage Leroy Somer)	400 V	640	800	1155
	415 V	640	800	1113
Leroy Somer LSA 50.2 M6	380 V	640	800	1215
(Low voltage Leroy Somer oversized)	400 V	640	800	1155
	415 V	640	800	1113

\*  $\cos \phi = 0,8$

### // Engine

- |  |  |   |
|--|--|---|
| <ul style="list-style-type: none"> <li>■ 4-Cycle</li> <li>■ Standard single stage air filter</li> <li>■ Oil drain extension &amp; shut-off valve</li> <li>■ Full flow oil filters</li> <li>■ Closed crankcase ventilation</li> </ul> | <ul style="list-style-type: none"> <li>■ ADEC electronic isochronous engine governor</li> <li>■ Common rail fuel injection</li> <li>■ Dry exhaust manifold</li> <li>■ Electric starting motor (24V)</li> </ul> | <ul style="list-style-type: none"> <li>■ Fuel consumption optimized engine</li> <li>□ TA-Luft optimized engine</li> <li>□ Tier 2 optimized engine</li> <li>□ NEA (ORDE) optimized engine</li> </ul> |
|--|--|---|

### // Generator

- |  |   |  |
|--|---|--|
| <ul style="list-style-type: none"> <li>■ NEMA MG1, BS5000, ISO, DIN EN and IEC standards</li> <li>■ Self-ventilated</li> <li>■ Superior voltage waveform</li> <li>■ Solid state, volts-per-Hertz regulator</li> <li>■ Ingress protection IP 23</li> <li>■ 3 phase voltage sensing</li> <li>■ 3% maximum harmonic content</li> <li>■ 2/3 pitch stator windings</li> </ul> | <ul style="list-style-type: none"> <li>■ No load to full load regulation</li> <li>■ <math>\pm 0.25\%</math> voltage regulation no load to full load</li> <li>■ Brushless alternator with brushless pilot exciter</li> <li>■ 4 pole, rotating field</li> <li>■ Sustained short circuit current of up to 300% of the rated Prime Power/Continuous Power current for up to 10 seconds (Marathon Generators)</li> <li>□ Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (Leroy Somer Generators)</li> </ul> | <ul style="list-style-type: none"> <li>■ Marathon low voltage generator</li> <li>□ Leroy Somer generator</li> <li>□ Oversized generator</li> </ul> |
|--|---|--|

■ Represents standard features

□ Represents optional features

## STANDARD AND OPTIONAL FEATURES, CONTINUATION

### // Cooling System

- |  |   |
|--|---|
| <input checked="" type="checkbox"/> Jacket water pump      | <input checked="" type="checkbox"/> Mechanical radiator |
| <input checked="" type="checkbox"/> Thermostat(s)          | <input type="checkbox"/> Jacket water heater            |
| <input checked="" type="checkbox"/> Air charge air cooling |   |

### // 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"/> Differential protection with multi-function protection relay |
| <input type="checkbox"/> Mains parallel operation of a single genset (V6)   | <input checked="" type="checkbox"/> Engine protection                               | <input type="checkbox"/> Modbus RTU-TCP gateway                                       |
| <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 |   |

### // Circuit Breaker/Power Distribution

- |   |  |   |
|---|--|---|
| <input type="checkbox"/> 3-pole circuit breaker | <input type="checkbox"/> Manual-actuated circuit breaker     | <input type="checkbox"/> Base frame mounted circuit breaker                 |
| <input type="checkbox"/> 4-pole circuit breaker | <input type="checkbox"/> Electrical-actuated circuit breaker | <input type="checkbox"/> Stand-alone circuit breaker in separate switch box |

### // Fuel System

- |  |                                      |
|--|--------------------------------------|
| <input checked="" type="checkbox"/> Flexible fuel connectors mounted to base frame | <input type="checkbox"/> Fuel cooler |
| <input type="checkbox"/> Fuel filter with water separator                          |                                      |
| <input type="checkbox"/> Switchable fuel filter with water separator               |                                      |

## STANDARD AND OPTIONAL FEATURES, CONTINUATION

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### // Starting/Charging System

- |   |  |
|---|--|
| <input checked="" type="checkbox"/> 24V starter | <input type="checkbox"/> Battery charger   |
| <input type="checkbox"/> Starter batteries      | <input type="checkbox"/> Redundant starter |

### // 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 |
|---|---|---|

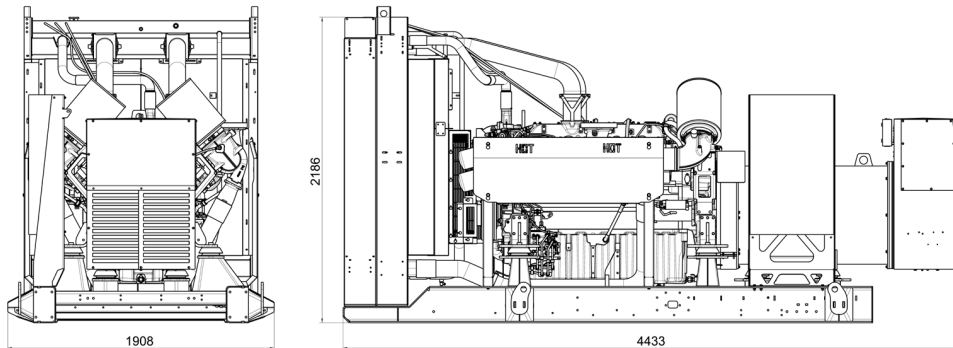
### // Enclosures and Containers

- |                                 |  |
|---------------------------------|--|
| <input type="checkbox"/> Canopy | <input type="checkbox"/> 20 foot container |
|---------------------------------|--|

### // Exhaust System

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

## 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)	4440 x 1910 x 2190 mm	6260 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:  $\leq 75\%$ . Operating hours/year: unlimited
- // Consult your local MTU Onsite Energy Power Generation Distributor for derating information.

Materials and specifications subject to change without notice.