

# DIESEL GENERATOR SET

## MTU 12V2000 DS1000

### STANDBY POWER: 1010 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: 1010 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 for standby 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

### // Certifications

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

APPLICATION DATA<sup>①</sup>

## // Engine

|                          | Fuel consumption optimized |      |
|--------------------------|----------------------------|------|
| Manufacturer             | MTU                        |      |
| Model                    | 12V2000G86F                |      |
| Type                     | 4-cycle                    |      |
| Arrangement              | 12V                        |      |
| Displacement:            | l                          | 26.8 |
| Bore:                    | mm                         | 135  |
| Stroke:                  | mm                         | 156  |
| Compression ratio        |                            | 17.5 |
| Rated speed:             | rpm                        | 1500 |
| Engine governor          | ADEC                       |      |
| Speed regulation         | ± 0.25%                    |      |
| Max power:               | kWm                        | 887  |
| Mean effective pressure: | bar                        | 26.5 |
| Air cleaner              | Dry                        |      |

## // Fuel System

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

// Fuel Consumption<sup>②</sup>

|                          | l/hr  |
|--------------------------|-------|
| At 100% of power rating: | 203.0 |
| At 75% of power rating:  | 150.7 |
| At 50% of power rating:  | 105.3 |

## // Lube oil system

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

## // Combustion Air Requirements

|                              | Fuel consumption optimized |      |
|------------------------------|----------------------------|------|
| Combustion air volume:       | m <sup>3</sup> /s          | 1.03 |
| Max. air intake restriction: | mbar                       | 40   |

## // Cooling/Radiator System

|  |                     |      |
|--|---------------------|------|
| Coolant flow rate (HT circuit):                          | m <sup>3</sup> /h   | 31.6 |
| Heat rejection to coolant:                               | kW                  | 330  |
| Heat rejection to charge air:                            | kW                  | 200  |
| Heat radiated to ambient:                                | kW                  | 35   |
| Fan power for mech. radiator (40°C):                     | kWm                 | 34   |
| Fan power for mech. radiator (50°C):                     | kWm                 | 51.1 |
| Air flow required for mech. radiator (40°C) cooled unit: | m <sup>3</sup> /min | 969  |
| Air flow required for mech. radiator (50°C) cooled unit: | m <sup>3</sup> /min | 1328 |
| Engine coolant capacity (without cooling equipment):     | l                   | 63   |
| Radiator coolant capacity (40°C):                        | l                   | 59   |
| Radiator coolant capacity (50°C):                        | l                   | 140  |
| Max. coolant temperature (warning):                      | °C                  | 102  |
| Max. coolant temperature (shutdown):                     | °C                  | 105  |

## // Exhaust System

|   |                   |      |
|---|-------------------|------|
| Exhaust gas temp. (after turbocharger): | °C                | 520  |
| Exhaust gas volume:                     | m <sup>3</sup> /s | 2.72 |
| Maximum allowable back pressure:        | mbar              | 50   |
| Minimum allowable back pressure:        | mbar              | 30   |

## // Generator

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

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 | with mechanical radiator |      |      |
|-------------------------------------|---------|--------------------------|------|------|
|                                     |         | kWeI                     | kVA* | AMPS |
| Basic: Marathon 575RSL7180          | 380 V   | 808                      | 1010 | 1535 |
| Advanced: Marathon 575RSL7181       | 400 V   | 808                      | 1010 | 1458 |
| (Low voltage Marathon standard)     | 415 V   | 808                      | 1010 | 1405 |
| Basic: Marathon 740RSL7182          | 380 V   | 808                      | 1010 | 1535 |
| Advanced: Marathon 740RSL7183       | 400 V   | 808                      | 1010 | 1458 |
| (Low voltage Marathon oversized)    | 415 V   | 808                      | 1010 | 1405 |
| Leroy Somer LSA 49.1 L11            | 380 V   | 808                      | 1010 | 1535 |
| (Low voltage Leroy Somer)           | 400 V   | 808                      | 1010 | 1458 |
|                                     | 415 V   | 808                      | 1010 | 1405 |
| Leroy Somer LSA 50.2 M6             | 380 V   | 808                      | 1010 | 1535 |
| (Low voltage Leroy Somer oversized) | 400 V   | 808                      | 1010 | 1458 |
|                                     | 415 V   | 808                      | 1010 | 1405 |

\* cos phi = 0,8

### // Engine

- 4-Cycle
- Standard single stage air filter
- Oil drain extension & shut-off valve
- Full flow oil filters
- Closed crankcase ventilation
- ADEC electronic isochronous engine governor
- Common rail fuel injection
- Dry exhaust manifold
- Electric starting motor (24V)
- Fuel consumption optimized engine

### // Generator

- NEMA MG1, BS5000, ISO, DIN EN and IEC standards
- Self-ventilated
- Superior voltage waveform
- Solid state, volts-per-Hertz regulator
- Ingress protection IP 23
- 3 phase voltage sensing
- 3% maximum harmonic content
- 2/3 pitch stator windings
- 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

■ 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 |
|---|---|---|

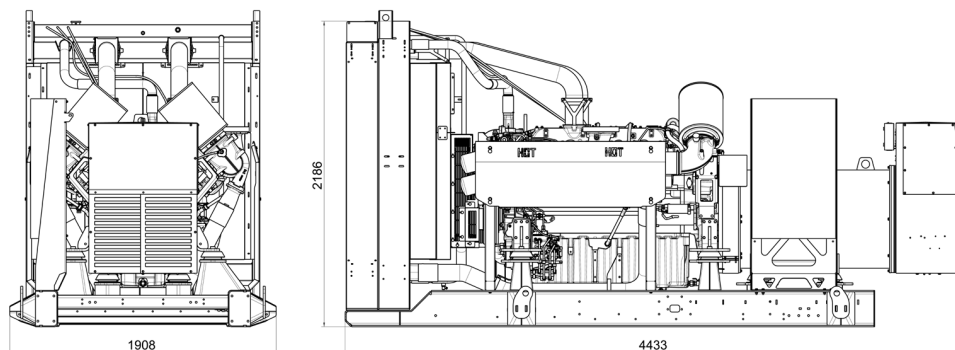
### // Enclosures and Containers

- |                                 |  |
|---------------------------------|--|
| <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

// 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.