

DIESEL GENERATOR SET

MTU 16V2000 DS1000

PRIME POWER: 910 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: 910 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^①

// Engine

| | | Fuel consumption optimized | Emission optimized ^② |
|--------------------------|-----|----------------------------|---------------------------------|
| Manufacturer | | MTU | MTU |
| Model | | 16V2000G16F | 16V2000G16F |
| Type | | 4-cycle | 4-cycle |
| Arrangement | | 16V | 16V |
| Displacement: | l | 35.7 | 35.7 |
| 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 | 806 | 806 |
| Mean effective pressure: | bar | 18.1 | 18.1 |
| Air cleaner | | Dry | Dry |

// Fuel System

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

// Fuel Consumption^③

| | | | |
|--------------------------|------|-------|-------|
| At 100% of power rating: | l/hr | 186.5 | 196.2 |
| At 75% of power rating: | l/hr | 142.0 | 150.0 |
| At 50% of power rating: | l/hr | 99.0 | 103.9 |

// Lube oil system

| | | | |
|---------------------------------------|-----|-----|-----|
| Total oil system capacity: | l | 102 | 102 |
| 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: | m ³ /s | 0.93 | 1.10 |
| 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^①

// Cooling/Radiator System

| | | Fuel consumption optimized | Emission optimized ^② |
|--|---------------------|----------------------------|---------------------------------|
| Coolant flow rate (HT circuit): | m ³ /h | 41.6 | 41.6 |
| Heat rejection to coolant: | kW | 340 | 325 |
| Heat rejection to charge air: | kW | 115 | 170 |
| Heat radiated to ambient: | kW | 40 | 40 |
| Fan power for mech. radiator (40°C): | kWm | 43.4 | 43.4 |
| Fan power for mech. radiator (50°C): | kWm | 43.4 | 43.4 |
| Air flow required for mech. radiator (40°C) cooled unit: | m ³ /min | 1462 | 1462 |
| Air flow required for mech. radiator (50°C) cooled unit: | m ³ /min | 1462 | 1462 |
| Engine coolant capacity (without cooling equipment): | l | 70 | 70 |
| Radiator coolant capacity (40°C): | l | 83 | 83 |
| Radiator coolant capacity (50°C): | l | 104 | 104 |
| Max. coolant temperature (warning): | °C | 102 | 102 |
| Max. coolant temperature (shutdown): | °C | 105 | 105 |

// Exhaust System

| | | | |
|---|-------------------|-----|------|
| Exhaust gas temp. (after turbocharger): | °C | 540 | 520 |
| Exhaust gas volume: | m ³ /s | 2.5 | 2.85 |
| 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 740RSL7182 | 380 V | 728 | 910 | 1383 |
| Advanced: Marathon 740RSL7183 | 400 V | 728 | 910 | 1313 |
| (Low voltage Marathon standard) | 415 V | 728 | 910 | 1266 |
| Basic: Marathon 742RSL7184 | 380 V | 728 | 910 | 1383 |
| Advanced: Marathon 742RSL7185 | 400 V | 728 | 910 | 1313 |
| (Low voltage Marathon oversized) | 415 V | 728 | 910 | 1266 |
| Leroy Somer LSA 50.2 M6 | 380 V | 728 | 910 | 1383 |
| (Low voltage Leroy Somer) | 400 V | 728 | 910 | 1313 |
| | 415 V | 728 | 910 | 1266 |
| Leroy Somer LSA 50.2 L7 | 380 V | 728 | 910 | 1383 |
| (Low voltage Leroy Somer oversized) | 400 V | 728 | 910 | 1313 |
| | 415 V | 728 | 910 | 1266 |

* $\cos \phi = 0,8$

// 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
- TA-Luft optimized engine
- Tier 2 optimized engine
- 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
- Ingress protection IP 23
- 3 phase voltage sensing
- 3% maximum harmonic content
- 2/3 pitch stator windings
- No load to full load regulation
- $\pm 0.25\%$ voltage regulation no load to full load
- Brushless alternator with brushless pilot exciter
- 4 pole, rotating field
- Sustained short circuit current of up to 300% of the rated Prime Power/Continuous Power current for up to 10 seconds (Marathon Generators)
- Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (Leroy Somer Generators)
- Marathon low voltage generator
- Leroy Somer generator
- Oversized generator

Represents standard features

Represents optional features

STANDARD AND OPTIONAL FEATURES, CONTINUATION

// Cooling System

- Jacket water pump
- Thermostat(s)
- Air charge air cooling
- Mechanical radiator
- Jacket water heater

// 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)
- Basler controller
- 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
- Differential protection with multi-function protection relay
- Modbus RTU-TCP gateway

// Circuit Breaker/Power Distribution

- 3-pole circuit breaker
- 4-pole circuit breaker
- Manual-actuated circuit breaker
- Electrical-actuated circuit breaker
- Base frame mounted circuit breaker
- Stand-alone circuit breaker in separate switch box

// Fuel System

- Flexible fuel connectors mounted to base frame
- Fuel filter with water separator
- Switchable fuel filter with water separator
- Fuel cooler

STANDARD AND OPTIONAL FEATURES, CONTINUATION

// Starting/Charging System

- 24V starter
- Starter batteries
- Battery charger
- Redundant starter

// Mounting System

- Welded base frame
- Resilient engine and generator mounting
- Modular base frame design

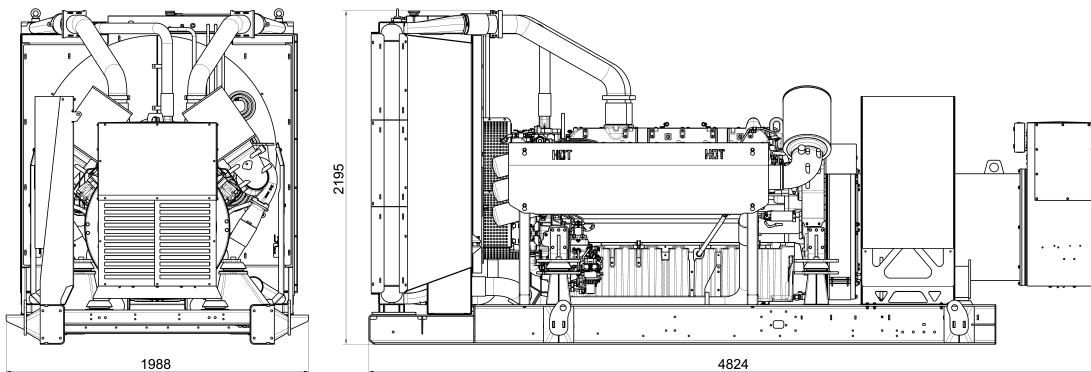
// Enclosures and Containers

- Canopy
- 20 foot container

// 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

Open Power Unit (OPU)

Dimensions (L x W x H)

4830 x 1990 x 2200 mm

Weight (dry/less tank)

7100 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

// 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 400m above sea level.

Materials and specifications subject to change without notice.

MTU Onsite Energy

A Rolls-Royce Power Systems Brand

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