

DIESEL GENERATOR SET

MTU 12V4000 DS1750

380V – 11 kV/50 Hz/Data Center Continuous Power/Fuel Consumption Optimized
MTU 12V4000G14F/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: 1590 kVA - 1700 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
- 100% 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

- Fuel consumption optimized

// Certifications

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

APPLICATION DATA^①

// Engine

| | |
|-------------------|-------------|
| Manufacturer | MTU |
| Model | 12V4000G14F |
| 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 | 1420 |
| Air cleaner | Dry |

// Fuel System

| | |
|------------------------|----|
| Maximum fuel lift: m | 5 |
| Total fuel flow: l/min | 16 |

// Fuel Consumption^②

| | l/hr | g/kwh |
|--------------------------|-------|-------|
| At 100% of power rating: | 323.3 | 189 |
| At 75% of power rating: | 250.2 | 195 |
| At 50% of power rating: | 173.7 | 203 |

// 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 ³ /s | 1.6 |
| Max. air intake restriction: mbar | 50 |

// Cooling/Radiator System

| | |
|---|-----|
| Coolant flow rate (HT circuit): m ³ /h | 56 |
| Coolant flow rate (LT circuit): m ³ /h | 30 |
| Heat rejection to coolant: kW | 540 |
| Heat radiated to charge air cooling: kW | 200 |
| Heat radiated to ambient: kW | 75 |
| Fan power for electr. radiator (40°C): kW | 38 |

// Exhaust System

| | |
|--|-----|
| Exhaust gas temp. (after turbocharger): °C | 430 |
| Exhaust gas volume: m ³ /s | 4.0 |
| 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 | Fuel consumption optimized | | | | | |
|----------------------------|---------|----------------------------|------|------|--------------------------|------|------|
| | | without radiator | | | with mechanical radiator | | |
| | | kWel | kVA* | AMPS | kWel | kVA* | AMPS |
| Leroy Somer LSA52.3 S5 | 380 V | 1360 | 1700 | 2583 | 1320 | 1650 | 2507 |
| (Low voltage | 400 V | 1360 | 1700 | 2454 | 1320 | 1650 | 2382 |
| Leroy Somer standard) | 415 V | 1360 | 1700 | 2365 | 1320 | 1650 | 2295 |
| Marathon 743RSL7090 | 380 V | 1352 | 1690 | 2568 | 1312 | 1640 | 2492 |
| (Low voltage Marathon) | 400 V | 1344 | 1680 | 2425 | 1312 | 1640 | 2367 |
| | 415 V | 1272 | 1590 | 2212 | 1272 | 1590 | 2212 |
| Marathon 744RSL7091 | 380 V | 1352 | 1690 | 2568 | 1312 | 1640 | 2492 |
| (Low voltage | 400 V | 1344 | 1680 | 2425 | 1312 | 1640 | 2367 |
| Marathon oversized) | 415 V | 1272 | 1590 | 2212 | 1272 | 1590 | 2212 |
| Marathon 1020FDH7095 | 11 kV | 1352 | 1690 | 89 | 1312 | 1640 | 86 |
| (Medium volt. marathon) | | | | | | | |
| Leroy Somer LSA53.2 VL6 | 11 kV | 1352 | 1690 | 89 | 1320 | 1650 | 87 |
| (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 with improved oil separator
- Governor-electronic isochronous
- Common rail fuel injection
- Fuel consumption optimized engine
- Centrifugal oil filter

// 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 $\pm 10\%$
- 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

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

- | | | |
|--|---|--|
| <input checked="" type="checkbox"/> Flexible fuel connectors mounted to base frame | <input type="checkbox"/> Switchable fuel filter with water separator | <input type="checkbox"/> Fuel cooler integrated into cooling equipment |
| <input type="checkbox"/> Fuel filter with water separator | <input type="checkbox"/> Switchable fuel filter with water separator heavy-duty | |
| <input type="checkbox"/> Fuel filter with water separator heavy-duty | <input type="checkbox"/> Seperate fuel cooler | |

// Starting/Charging System

- | | | |
|---|---|--|
| <input checked="" type="checkbox"/> 24V starter | <input type="checkbox"/> Starter batteries, cables, rack, disconnect switch | <input type="checkbox"/> Battery charger |
|---|---|--|

// 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 |
|---|---|---|

// Exhaust System

- | | | |
|---|---|--|
| <input type="checkbox"/> Exhaust bellows with connection flange | <input type="checkbox"/> Exhaust silencer with 30 dB(A) sound attenuation | <input type="checkbox"/> Y-connection-pipe |
| <input type="checkbox"/> Exhaust silencer with 10 dB(A) sound attenuation | <input type="checkbox"/> Exhaust silencer with 40 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 (L x W x H) | Weight (dry/less tank) |
|-----------------------|------------------------|------------------------|
| Open Power Unit (OPU) | 4059 x 1810 x 2330 mm | 10654 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

- // Data Center Continuous Power ratings apply to Data Center installations where a reliable utility power is available and comply with Uptime Institute Tier III and IV requirements. At constant or 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: $\leq 100\%$.
- // Consult your local MTU Onsite Energy Power Generation Distributor for derating information.

Materials and specifications subject to change without notice.