DIESEL GENERATOR SET
MTU 12V4000 DS1750
380V – 11 kV/50 Hz/Data Center Continuous Power/Fuel Consumption Optimized
MTU 12V4000G23/Water Charge Air Cooling

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: 1550 kVA - 1650 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
- 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
- Fuel consumption optimized

// Certifications
- CE certification option
### Application Data

#### Engine

<table>
<thead>
<tr>
<th>Specification</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturer</td>
<td>MTU</td>
</tr>
<tr>
<td>Model</td>
<td>12V4000G23</td>
</tr>
<tr>
<td>Type</td>
<td>4-cycle</td>
</tr>
<tr>
<td>Arrangement</td>
<td>12V</td>
</tr>
<tr>
<td>Displacement</td>
<td>l 57.2</td>
</tr>
<tr>
<td>Bore: mm</td>
<td>170</td>
</tr>
<tr>
<td>Stroke: mm</td>
<td>210</td>
</tr>
<tr>
<td>Compression ratio</td>
<td>16.4</td>
</tr>
<tr>
<td>Rated speed: rpm</td>
<td>1500</td>
</tr>
<tr>
<td>Engine governor</td>
<td>ADEC (ECU 7)</td>
</tr>
<tr>
<td>Max power: kWm</td>
<td>1420</td>
</tr>
<tr>
<td>Air cleaner</td>
<td>Dry</td>
</tr>
</tbody>
</table>

#### Fuel System

<table>
<thead>
<tr>
<th>Specification</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maximum fuel lift: m</td>
<td>5</td>
</tr>
<tr>
<td>Total fuel flow: l/min</td>
<td>16</td>
</tr>
</tbody>
</table>

#### Fuel Consumption

<table>
<thead>
<tr>
<th>Specification</th>
<th>l/hr</th>
<th>g/kWh</th>
</tr>
</thead>
<tbody>
<tr>
<td>At 100% of power rating:</td>
<td>323.3</td>
<td>189</td>
</tr>
<tr>
<td>At 75% of power rating:</td>
<td>250.2</td>
<td>195</td>
</tr>
<tr>
<td>At 50% of power rating:</td>
<td>173.7</td>
<td>203</td>
</tr>
</tbody>
</table>

#### Liquid Capacity (Lubrication)

<table>
<thead>
<tr>
<th>Specification</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total oil system capacity: l</td>
<td>260</td>
</tr>
<tr>
<td>Engine jacket water capacity: l</td>
<td>160</td>
</tr>
<tr>
<td>Intercooler coolant capacity: l</td>
<td>40</td>
</tr>
</tbody>
</table>

#### Combustion Air Requirements

<table>
<thead>
<tr>
<th>Specification</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Combustion air volume: m³/s</td>
<td>1.6</td>
</tr>
<tr>
<td>Max. air intake restriction: mbar</td>
<td>50</td>
</tr>
</tbody>
</table>

#### Cooling/Radiator System

<table>
<thead>
<tr>
<th>Specification</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coolant flow rate (HT circuit): m³/h</td>
<td>56</td>
</tr>
<tr>
<td>Coolant flow rate (LT circuit): m³/h</td>
<td>30</td>
</tr>
<tr>
<td>Heat rejection to coolant: kW</td>
<td>540</td>
</tr>
<tr>
<td>Heat radiated to charge air cooling: kW</td>
<td>200</td>
</tr>
<tr>
<td>Heat radiated to ambient: kW</td>
<td>75</td>
</tr>
<tr>
<td>Fan power for mech. radiator (40°C): kWm</td>
<td>38</td>
</tr>
</tbody>
</table>

#### Exhaust System

<table>
<thead>
<tr>
<th>Specification</th>
<th>Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exhaust gas temp. (after turbocharger): °C</td>
<td>430</td>
</tr>
<tr>
<td>Exhaust gas volume: m³/s</td>
<td>4.0</td>
</tr>
<tr>
<td>Maximum allowable back pressure: mbar</td>
<td>85</td>
</tr>
<tr>
<td>Minimum allowable back pressure: mbar</td>
<td>30</td>
</tr>
</tbody>
</table>
STANDARD AND OPTIONAL FEATURES

// System Ratings (kW/kVA)

<table>
<thead>
<tr>
<th>Generator model</th>
<th>Voltage</th>
<th>Fuel consumption optimized 40°C/400m</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>without radiator</td>
<td>with mechanical radiator</td>
<td>with electr. driven radiator</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>kWel</td>
<td>kVA*</td>
<td>AMPS</td>
<td>kWel</td>
<td>kVA*</td>
</tr>
<tr>
<td>Marathon 743RSL7090 (Low voltage</td>
<td>380 V</td>
<td>1320</td>
<td>1650</td>
<td>2507</td>
<td>1280</td>
<td>1600</td>
</tr>
<tr>
<td>marathon standard)</td>
<td>400 V</td>
<td>1320</td>
<td>1650</td>
<td>2382</td>
<td>1280</td>
<td>1600</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1320</td>
<td>1550</td>
<td>2156</td>
<td>1240</td>
<td>1550</td>
</tr>
<tr>
<td>Marathon 744RSL7091 (Low voltage</td>
<td>380 V</td>
<td>1320</td>
<td>1650</td>
<td>2507</td>
<td>1280</td>
<td>1600</td>
</tr>
<tr>
<td>marathon oversized)</td>
<td>400 V</td>
<td>1320</td>
<td>1650</td>
<td>2382</td>
<td>1280</td>
<td>1600</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1320</td>
<td>1550</td>
<td>2156</td>
<td>1240</td>
<td>1550</td>
</tr>
<tr>
<td>Leroy Somer LSA 51.2 S55 (Low</td>
<td>380 V</td>
<td>1320</td>
<td>1650</td>
<td>2507</td>
<td>1320</td>
<td>1650</td>
</tr>
<tr>
<td>voltage Leroy Somer)</td>
<td>400 V</td>
<td>1320</td>
<td>1650</td>
<td>2382</td>
<td>1320</td>
<td>1650</td>
</tr>
<tr>
<td></td>
<td>415 V</td>
<td>1320</td>
<td>1550</td>
<td>2295</td>
<td>1320</td>
<td>1550</td>
</tr>
<tr>
<td>Marathon 1020FDH7095 (Medium</td>
<td>11 kV</td>
<td>1320</td>
<td>1650</td>
<td>87</td>
<td>1280</td>
<td>1600</td>
</tr>
<tr>
<td>volt. marathon)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Leroy Somer LSA 53.1 UL70 (Medium</td>
<td>11 kV</td>
<td>1320</td>
<td>1650</td>
<td>87</td>
<td>1320</td>
<td>1650</td>
</tr>
<tr>
<td>volt. Leroy Somer)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|                                  | 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

- 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)
- Marathon low voltage generator
- Leroy Somer generator
- Oversized generator
- Medium voltage generator
- Sustained short circuit current of up to 300% of the rated current for up to 10 seconds (Leroy Somer generator)

* Represents standard features
□ Represents optional features

BDC for engine manuals and specs
https://barringtondieselclub.co.za/
### Standard and Optional Features, Continuation

#### Cooling System
- Jacket water pump
- Thermostat(s)
- Water charge air cooling
- Mechanical radiator
- Electrical driven front-end cooler
- 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-fuction 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
- Stand-alone solution in separate switch box

#### Fuel System
- Flexible fuel connectors mounted to base frame
- Fuel filter with water separator
- Switchable fuel filter with water separator
- Separate fuel cooler
- Fuel cooler integrated into cooling equipment

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### STANDARD AND OPTIONAL FEATURES, CONTINUATION

#### // Starting/Charging System

- ■ 24V starter
- □ Starter batteries
- □ Battery rack & cables
- □ Battery charger

#### // 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

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- ■ Represents standard features
- □ Represents optional features

**BDC for engine manuals and specs**

https://barringtondieselclub.co.za/
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.

<table>
<thead>
<tr>
<th>System</th>
<th>Dimensions (L x W x H)</th>
<th>Weight (dry/less tank)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open Power Unit (OPU)</td>
<td>4419 x 1836 x 2330 mm</td>
<td>10477 kg</td>
</tr>
</tbody>
</table>

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: ≤ 100%.

// 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.