Power Module

MTU 16V4000 DS2560

50 Hz: 1,914 - 2,560 kVA/400V
60 Hz: 1,807 - 2,321 kWe/480V

Optional equipment shown. Standard equipment may vary.

Certifications and standards

Emissions
— Fuel optimized

Generator set is designed and manufactured in facilities certified to standards ISO 9001:2008 and ISO 14001:2004

Container
— Designed and manufactured as special purpose container for the use as generator set container, including CSC certification

Performance assurance certification (PAC)
— Generator set tested to ISO 8528-5 for transient response
— Verified product design, quality and performance integrity
— All container systems are prototype and factory tested G3

Power rating
— Permissible average power output during 24 hours of operation is approved up to 85% for standby rated unit
— Permissible average power output during 24 hours of operation is approved up to 75% for prime rated unit
— Permissible average power output during 24 hours of operation is approved up to 100% (110%) for continuous rated unit
Application data

**Engine**
- Manufacturer: MTU
- Model: 16V4000 G63/83
- Type: 4-cycle
- Arrangement: 16V
- Displacement/cylinder: l (cu inch) 76.3 (4656)
- Bore: mm (inch) 170 (6.69)
- Stroke: mm (inch) 210 (8.27)
- Compression ratio: 16.5:1
- Rated speed: rpm/50 Hz: 1500
- Rated speed: rpm/60 Hz: 1800
- Engine governor: Electronic isochronous (ADEC)
- Standby rated power/50 Hz: kWm (hp) 2,185 (2,930)
- Standby rated power/60 Hz: kWm (hp) 2,500 (3,352)
- Prime rated power/50 Hz: kWm (hp) 1,965 (2,635)
- Prime rated power/60 Hz: kWm (hp) 2,280 (3,057)
- Continuous rated power/50 Hz: kWm (hp) 1,635 (2,192)
- Continuous rated power/60 Hz: kWm (hp) 1,950 (2,614)
- Speed regulation: ±0.25%
- Air filter: Dry

**Liquid capacity (lubrication)**
- Total oil system: l (gal) 300 (79.3)
- Total oil change: l (gal) 240 (63.4)
- Engine jacket water capacity: l (gal) 175 (46.2)
- After cooler water capacity: l (gal) 50 (13.2)
- System coolant capacity: l (gal) 852 (225)

**Electrical**
- Electric volts DC: 24
- Cold cranking amps under -17.8 °C (0 °F): 2600

**Fuel system**
- Maximum fuel lift: m (ft) 3 (10)
- Recommended fuel: Diesel #2
- Total fuel flow: l/hr (gal/hr) 1200 (317)

**Generator**
- Manufacturer: Leroy Somer
- Model: LSA 52.3 L12/4R
- Insulation class: H
- Voltage regulation (steady state): ±0.25%
- Radio interference class: N

**Fuel consumption**

<table>
<thead>
<tr>
<th>Power Setting</th>
<th>50 Hz</th>
<th>Standby</th>
<th>Prime</th>
<th>Continuous</th>
</tr>
</thead>
<tbody>
<tr>
<td>kWm (hp)</td>
<td></td>
<td>kWm (hp)</td>
<td>kWm (hp)</td>
<td>kWm (hp)</td>
</tr>
<tr>
<td>At 100% of power rating:</td>
<td></td>
<td>l/hr (gal/hr)</td>
<td>l/hr (gal/hr)</td>
<td>l/hr (gal/hr)</td>
</tr>
<tr>
<td>At 75% of power rating:</td>
<td></td>
<td>l/hr (gal/hr)</td>
<td>l/hr (gal/hr)</td>
<td>l/hr (gal/hr)</td>
</tr>
<tr>
<td>At 50% of power rating:</td>
<td></td>
<td>l/hr (gal/hr)</td>
<td>l/hr (gal/hr)</td>
<td>l/hr (gal/hr)</td>
</tr>
</tbody>
</table>

**Cooling/Radiator System**
- Ambient capacity of radiator: °C (°F) 50 (122)
- Max. restriction of cooling air, intake, and discharge side of rad.: kPa (in. H₂O) 0.125 (0.5)
- Water pump capacity: l/min (gpm) 1,350 (357)
- Heat rejection to coolant: kW 3B/D – 50 Hz (3B/D – 60 Hz) 904 (1085)
- Heat rejection to coolant: kW 3A – 50 Hz (3A – 50 Hz) 802 (927)
- Heat rejection to after cooler: kW 3B/D – 50 Hz (3B/D – 60 Hz) 455 (733)
- Heat rejection to after cooler: kW 3A – 60 Hz (3A – 50 Hz) 288 (566)
- Fan power: kW 3B/D – 50 Hz (3B/D – 50 Hz) 41.3 (68.8)
- Fan power: kW 3A – 50 Hz (3A – 60 Hz) 30.8 (51.4)

**Air requirements**
- Engine room: *m³/ min (SCFM) 708 (25,006)
- Air flow required for rad.: kW 3A – 60 Hz (3A – 50 Hz) 288 (566)
- Cooled unit: *m³/min (SCFM) 4,200 (148,344)

**Exhaust system**
- Gas temp. (stack): °C (°F) 505 (941)
- Gas volume at stack temp: m³/min (CFM) 504 (17,799)
- Maximum allowable back pressure: kPa (in. H₂O) 8.5 (34.1)

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1. Fuel density = 0.84 Kg/L
2. Air density = 1.184 kg/m³ (0.0739 lbm/ft³)
3. For 60 Hz standby rated power
### Standard features

- Global product support
- Consult factory for specific warranty terms
- 16V 4000 diesel engine
  - 76.3 liter displacement
  - Common rail fuel injection
  - 4-cycle
- Engine-generator resilient mounted
- Complete range of accessories

- Generator
  - Brushless, rotating field generator
  - 2/3 pitch windings
  - Leroy somer AREP, excitation with R449 AVR
  - 300% short circuit capability
- Digital control panel(s)
  - Complete metering and protection system
  - LCD display
  - TCP/IP connection for customers
- Cooling system
  - Separate room for cooling system/vertical split cores
  - Electrically driven fans/switched in 2 steps for higher efficiency

### Standard and optional features

#### System ratings (kWe/kVA)

<table>
<thead>
<tr>
<th>Voltage (L-L)</th>
<th>50 Hz</th>
<th>60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>400V</td>
<td>400V</td>
</tr>
<tr>
<td></td>
<td>480V</td>
<td>480V</td>
</tr>
<tr>
<td>Phase</td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>3</td>
<td>3</td>
</tr>
<tr>
<td>Power factor (cos phi)</td>
<td>0,8</td>
<td>0,8</td>
</tr>
<tr>
<td></td>
<td>0,8</td>
<td>0,8</td>
</tr>
<tr>
<td>kVA</td>
<td>1,914</td>
<td>2,295</td>
</tr>
<tr>
<td></td>
<td>2,259</td>
<td>2,636</td>
</tr>
<tr>
<td>kWe</td>
<td>1,531</td>
<td>1,836</td>
</tr>
<tr>
<td></td>
<td>1,807</td>
<td>2,109</td>
</tr>
<tr>
<td>AMPS</td>
<td>2,763</td>
<td>3,313</td>
</tr>
<tr>
<td></td>
<td>2,717</td>
<td>3,171</td>
</tr>
<tr>
<td>Generator manufacturer</td>
<td>Leroy Somer</td>
<td>Leroy Somer</td>
</tr>
<tr>
<td></td>
<td>Leroy Somer</td>
<td>Leroy Somer</td>
</tr>
<tr>
<td>Generator model</td>
<td>LSA 52.3 L12/4p</td>
<td>LSA 52.3 L12/4p</td>
</tr>
<tr>
<td></td>
<td>LSA 52.3 L12/4p</td>
<td>LSA 52.3 L12/4p</td>
</tr>
<tr>
<td>skVA@30% voltage dip</td>
<td>4,530</td>
<td>4,530</td>
</tr>
<tr>
<td>Temp rise</td>
<td>105°C/40°C</td>
<td>125°C/40°C</td>
</tr>
<tr>
<td></td>
<td>105°C/40°C</td>
<td>125°C/40°C</td>
</tr>
<tr>
<td>Connection</td>
<td>4 BAR WYE</td>
<td>4 BAR WYE</td>
</tr>
<tr>
<td></td>
<td>4 BAR WYE</td>
<td>4 BAR WYE</td>
</tr>
</tbody>
</table>
**Standard and optional features**

### Engine
- Air cleaners
- Oil pump
- Oil drain extension & S/O valve
- Lube oil sight glass
- (Oil reservoir 60 liter with automatic refilling)
- Return fuel cooler
- Fuel cleaner with water separator switchable
- Lube oil multi-stage filter
- Closed crankcase ventilation
- Air-filter (Heavy duty air-filter)
- Jacket water pump
- Thermostats
- Radiator - remote mounted
- Electric starting motor - 24V
- Governor - electronic isochronous
- Base - formed steel
- SAE flywheel & bell housing
- Battery rack & cables
- Fuel optimized (both 50 Hz and 60 Hz)

### Digital control panel(s)
- Digital metering
- Engine/generator protection functions
- CANBus ECU communications
- Multilingual capability
- Programmable contact outputs
- TCP/IP connection for customers

### Generator *
- Leroy Somer LSA 52.3 L12/4R
- NEMA MG1-32, IEC 60034.1-60034.2 and standards compliance for temperature rise and motor starting
- Sustained short circuit current of up to 300% of the rated current for up to 10 seconds
- Self-ventilated IP 22
- Superior voltage waveform
- Analog AVR R449 (Digital AVR D510)
- No load to full load regulation
- Brushless alternator with brushless pilot exciter
- 4 pole, rotating field
- 2 bearing, regreasable
- Close coupling
- Full amortisseur windings
- 125% rotor balancing
- ±0.25% voltage accuracy regulation
- 100% of rated load - one step
- 5% maximum THD total harmonic distortion

### Container
- 40’ high cube ISO container with CSC certification
- Rear container double doors
- Three lockable personnel access doors
- 1,500 liters diesel fuel tank
- Externally roof mounted critical grade exhaust silencer (stored during transport between the split core radiator)
- Generator circuit breaker wall mounted with access from outside
- Generator circuit breaker rated 3A 3,200A 3B/D 4,000A 100kA
- 24 VDC LED lights with battery backup

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* Note: Air filter will cause 5% derate in power output (kWe) and may also affect fuel consumption.
Weights and dimensions

Drawing above for illustration purposes only. Do not use for installation design.

<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>Power module</td>
<td>12,203 x 2,438 x 2,896 mm (480 x 96 x 114 inch)</td>
<td>32,246 kg (71090 lbs)</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

<table>
<thead>
<tr>
<th>Unit type</th>
<th>Full load - standby</th>
<th>Full load - prime</th>
<th>Full load - continuous</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power module</td>
<td>C/F</td>
<td>C/F</td>
<td>C/F</td>
</tr>
</tbody>
</table>

Sound data is provided at 7 m (23 ft). Generator set tested in accordance with ISO 8528-10 and with infinite exhaust.

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: ≤ 85%. Standby 50 Hz operating hours per year: Max. 500.
- Prime power and continuous ratings apply to installations where utility power is unavailable or unreliable. At varying load for prime power ratings or non-varying load for continuous ratings, 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%. Operating hours/year: unlimited.
- Continuous power ratings apply to installations where the generator set serves as utility. At constant 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: ≤ 75% (prime) ≤ 100% (continuous).

Product intended for use outside of the United States.
C/F = Consult Factory/MTU distributor
N/A = Not Available

Rolls-Royce Group
www.mtu-solutions.com/powergen