Battery Energy Storage System

MTU ENERGYPACK QM / QL

Optional equipment shown. Standard equipment may vary.

Product highlights

Benefits
- Factory tested plug-and-play design
- Optimized system integration ability
- Highest power density
- Complete system within 20ft/40ft HC container
- High safety & reliability
  - Floodable with extinguishing water
  - Aeration in case of gas detection
- Black start capability
- Grid-supporting & grid-forming mode
- Controlled switching between modes
- Supervision of the point of common coupling
  - Control of the external mains switch
  - Detection of power outages
  - Re-synchronization after grid recovery
- Various applications in combination with MTU Microgrid Controller
- Easy integration into Rolls-Royce Microgrid Solutions

Support
- Global product support offered

System configurations
- Power and capacity can be widely adjusted according to customer and project needs. Please see graph below and consult your local distributor for your individual configuration.

Options
- 50°C ambient temperature*
- Fire suppression system
- 50% overload capacity*
- Redundant cooling*
- Silent version*
- Internal* or external transformer
- Customer branding
  ...and many more

* for selected configurations

Certifications
- CE conformity certification
- UL on request

Optional equipment shown. Standard equipment may vary.

Standards
- Battery storage is designed and manufactured in facilities certified to standards ISO 2008:9001 and ISO 2004:14001
- AS/NSZ on request
Battery energy storage systems

MTU - a Rolls-Royce solution - offers a wide portfolio of battery energy storage systems starting from 40 kVA up to 2,000 kVA and capacities up to 2,600 kWh. As integral part of flexible energy systems, energy from various distributed electricity sources can be stored in our battery energy storage systems. The MTU EnergyPacks are designed to improve reliability, quality and profitability of your individual energy system.

### Technical data - MTU EnergyPack QM / QL 1,2

<table>
<thead>
<tr>
<th>Sections</th>
<th>Value</th>
<th>Sign</th>
<th>Unit</th>
<th>MTU EnergyPack QM / QL</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Battery</strong></td>
<td>Cell chemistry</td>
<td></td>
<td></td>
<td>NCM</td>
</tr>
<tr>
<td></td>
<td>Nominal capacity QM / QL</td>
<td></td>
<td>kWh</td>
<td>up to 1,000 / up to 2,600</td>
</tr>
<tr>
<td><strong>Cooling</strong></td>
<td>Max. ambient temperature</td>
<td>$T_{\text{max}}$</td>
<td>°C</td>
<td>40 (50° C)</td>
</tr>
<tr>
<td></td>
<td>Min. ambient temperature</td>
<td>$T_{\text{min}}$</td>
<td>°C</td>
<td>-20</td>
</tr>
<tr>
<td></td>
<td>Nominal apparent power QM / QL</td>
<td>$S_{\text{nom}}$</td>
<td>kVA</td>
<td>up to 800 / up to 2,000</td>
</tr>
<tr>
<td><strong>Electrical</strong></td>
<td>AC short circuit capability</td>
<td>$f$</td>
<td>Hz</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td>Grid frequency</td>
<td></td>
<td></td>
<td>50 (60)</td>
</tr>
<tr>
<td></td>
<td>Max apparent power (1 min)</td>
<td>$S_{\text{peak}}$</td>
<td>%</td>
<td>110% (150%) of $S_{\text{nom}}$</td>
</tr>
<tr>
<td></td>
<td>Nominal voltage</td>
<td>$U_{\text{nom}}$</td>
<td>V</td>
<td>515 V (400 V with internal transformer) ³</td>
</tr>
<tr>
<td></td>
<td>Power factor range</td>
<td>$\cos \phi$</td>
<td></td>
<td>0 ind. / 1 cap</td>
</tr>
<tr>
<td></td>
<td>Black start capability</td>
<td></td>
<td></td>
<td>yes</td>
</tr>
<tr>
<td><strong>Housing</strong></td>
<td>Corrosion protection</td>
<td></td>
<td></td>
<td>C3 (C5M)</td>
</tr>
<tr>
<td></td>
<td>Height</td>
<td>$H$</td>
<td>mm</td>
<td>2,896</td>
</tr>
<tr>
<td></td>
<td>Length QM / QL</td>
<td>$L$</td>
<td>mm</td>
<td>6,058 / 12,192</td>
</tr>
<tr>
<td></td>
<td>Width</td>
<td>$W$</td>
<td>mm</td>
<td>2,438</td>
</tr>
<tr>
<td><strong>Interface</strong></td>
<td>Supported communication protocol</td>
<td></td>
<td></td>
<td>Modbus-IP (Modbus-RTU, IEC 60870-5-104, IEC 61850, DNP3)</td>
</tr>
<tr>
<td></td>
<td>Supported communication channels</td>
<td></td>
<td></td>
<td>3G / 4G 100MB/s CAT 5</td>
</tr>
<tr>
<td><strong>System</strong></td>
<td>Humidity</td>
<td>$\phi_{\text{rel}}$</td>
<td>%</td>
<td>100% condensing</td>
</tr>
<tr>
<td></td>
<td>Max. operation altitude</td>
<td>$H_{\text{max}}$</td>
<td>m</td>
<td>2,000</td>
</tr>
<tr>
<td></td>
<td>Nominal round trip efficiency (w/o HVAC)</td>
<td></td>
<td></td>
<td>up to 90%</td>
</tr>
<tr>
<td></td>
<td>Weight</td>
<td>$m$</td>
<td>kg</td>
<td>up to 38,000</td>
</tr>
</tbody>
</table>

---

1) Weights and dimensions are estimates only. Please consult the factory for accurate weights and dimensions for your specific battery storage container.
2) Product options in brackets
3) Other voltage levels available on request
4) At nominal power, excluding losses of transformer and external cabling. Depending on configuration and C-Rate.
Battery energy storage systems

Actual capacities and sizes may vary due to battery type and system configuration.

Warranty and performance guarantee

Consult your local distributor for information about warranty and performance guarantee.

Materials and specifications are subject to change without notice. Please consult your local distributor for further product information.

Sound data

Consult your local distributor for sound data.

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