System overview
The BORDLINE® M7 DC converter is based on modern IGBT technology.

The system is composed by:
- Input filter
- Galvanic insulated DC/DC step up converter (72 Vdc to DC link) to insulate the mains to the load for safety requirements satisfaction
- Three phases IGBT H bridge
- Control unit
- Output EMI filter

Functionality
The BORDLINE® M7 DC auxiliary converter feeds from battery (72 Vdc) to generate a three-phases output (460 Vac 3ph 60 Hz) to supply AC loads of the locomotive.

Characteristics
- DSP technology
- Compact and robust design
- Input voltage 72 Vdc, three-phases output voltage 460 Vac 60 Hz
- Natural convection cooling system
- Ethernet diagnostic
- Rack mounting
- High reliability thanks to consolidated building blocks

Technical data

<table>
<thead>
<tr>
<th>Parameter</th>
<th>BORDLINE® M7 DC_72V</th>
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</thead>
<tbody>
<tr>
<td>Input voltages</td>
<td>72 Vdc (55 to 110 Vdc)</td>
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<tr>
<td>Output voltage</td>
<td>460 Vac 60Hz 3ph</td>
</tr>
<tr>
<td>Output power</td>
<td>7.5 kVA</td>
</tr>
<tr>
<td>Protection degree</td>
<td>IP20</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>483 x 400 x 540 mm</td>
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<tr>
<td>Ambient temperatures</td>
<td>-25°C +70°C</td>
</tr>
<tr>
<td>Weight</td>
<td>70 kg</td>
</tr>
<tr>
<td>DSP Technology</td>
<td></td>
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</table>
Control and monitoring
The converter is full digital controlled (DSP technology). The monitoring of the converter is supported by Ethernet interface (via M12 connector). A web server, compatible with the most common browsers (e.g. Internet Explorer) provides monitoring of the converter status (main technical parameters, alarms codes, etc).

Cooling system
The unit is natural convection cooled. The auxiliary converter is located inside an electrical cabinet where there’s a ventilation of filtered air when the train is running.

Mechanical design
The converter is suitable to be mounted on board inside a cabinet. All electrical interfaces are located in the front for easy and fast connection.

Diagnostics and service
The service-friendly modular design with highly standardized components ensures high reliability, excellent spare parts availability, and optimized life cycle costs. For maintenance, a diagnostic interface (Ethernet) is available. It permits to monitor converter status and alarms history.

Application example
BORDLINE® M7 DC is mounted on locomotives (electric locomotives running in Israel).