**Auxiliary converter**

**BORDLINE® M75 AC**

Auxiliary converter for rolling stock applications

BORDLINE® M75 AC converts the power from the 25 kV/50 Hz line into 415 V\textsubscript{AC}, three-phase auxiliary power for running auxiliaries of rolling stock applications.

**System overview**

Incoming single-phase supply (25 kV / 50 Hz) from the catenary is stepped down by the on-board traction transformer (875 V\textsubscript{AC}) and fed to the BORDLINE® M75 AC auxiliary converter. The auxiliary converter delivers the required power for the auxiliaries in the Rolling Stock or EMU.

Each auxiliary converter BORDLINE® M75 AC contains the following main parts:
- AC/DC rectifier module
- Intermediate DC-link filter
- IGBT based DC to AC inverter.
- Three phase sine filter module.
- PEC80 (PP D234A) control module.

**Auxiliary converter**

BORDLINE® M75 AC auxiliary converters are compact rugged units equipped with state of the art IGBT based Power Electronic Building Blocks (PEBBs), specially designed for use in railway vehicles. These PEBB modules, together with their hardware managers, provide a modular and reliable solution for auxiliary applications. With optimized switching patterns and switching frequency, BORDLINE® M75 AC generates a sinusoidal voltage waveform, which reduces the harmonic losses, the audible noise and the mechanical stress on the motor.

**Characteristics**

- Air cooled Power Electronic Building Blocks (PEBB)
- AC/DC half controlled asymmetric rectifier
- Auxiliary control platform (PEC80)
- IGBT based Three Phase Inverter with sine filter
- Energy efficient power conversion
- Closed IP65 Power cabinet
- Service-friendly construction with 'handy' modular building blocks

**Technical data**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>BORDLINE® M75 AC</th>
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</thead>
<tbody>
<tr>
<td>Input Voltages</td>
<td>875V\textsubscript{AC} (700...1050V\textsubscript{AC})</td>
</tr>
<tr>
<td>Output Voltages</td>
<td>415 Vac 50 Hz 3ph, 90 kVA</td>
</tr>
<tr>
<td>Operating temperature range</td>
<td>-5 ... +50 °C</td>
</tr>
<tr>
<td>Communication Interface</td>
<td>CANOpen</td>
</tr>
<tr>
<td>Fire Protection</td>
<td>EN 45545-2, HL-2</td>
</tr>
<tr>
<td>Housing dimensions (L x B x H)</td>
<td>2190 x 936 x 533 mm</td>
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<tr>
<td>Weight</td>
<td>268 kg</td>
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Powerful control platform
ABB’s control platform PEC80 (PP D234A) is used in all auxiliary converters, as well as in a wide range of industrial applications.

The auxiliary converter has a powerful processor paired with an intelligent control and real time monitoring system best suited for traction applications.

Control Interface
The auxiliary converter is compatible with CANopen and MICAS-S2 or TCN based vehicle control unit through Multifunctional Vehicle Bus (MVB) interface via OGF/EMD/ESD.

Cooling system
The equipment is efficiently air cooled. An internal blower provides forced air circulation inside the cubicle.

Mechanical design
BORDLINE® M75 AC is housed in an IP65 compartment for control electronics, power modules, power supplies, switch gear, sine filter capacitor, resistors and internal churning fans, designed for mounting underframe. Due to its modular design, it allows easy maintenance access.

Diagnostic and service
The service-friendly modular design with highly standardized components ensures high reliability, excellent spare parts availability, and optimized life-cycle costs. The auxiliary converter is delivered with BORDLINE® View, a diagnostic tool that visualizes signals, various parameters and the state of the converter. It consists of an advanced self-diagnosis function, which provides advice and instructions for service and repair. BORDLINE® View is easy to use and runs on a standard PC.

Example of application
BORDLINE® M75 AC is in operation in the EMU application for Queensland Rail, Australia.