The Compact Converter BORDLINE® CC400 converts 600 V_{DC} or 750 V_{DC} line voltage into propulsion power to control and drive the traction motors, and auxiliary power to supply the onboard loads.

**Characteristics**
- All power electronics (traction and auxiliary power) in one box
- Minimizes vehicle weight
- Easy maintenances
- Standard ABB modules
- Flexible mounting (roof or under-floor)

**System overview**
The BORDLINE® CC400 converters are compact, modular, rugged units based on modern IGBT technology and designed for light rail vehicle applications. BORDLINE® CC400 Compact Converter contains:
- 2 independent propulsion converters
- 2 main switches
- 2 line filters
- 2 braking choppers
- Integrated auxiliary converter (50 Hz)
- Integrated auxiliary converter (variable speed)
- Integrated battery charger
- AC 800PEC control module

**Propulsion converter**
The converter can be used for high floor "metro-type" cars (→ axle control, under-floor mounted) as well as, for low floor trams (→ no axels, individual wheel control, roof mounted). Each propulsion converter is able to control either one or two motors and the according braking chopper. During braking operation the energy will be recuperated or, if not possible, dissipated in the resistors.

**Auxiliary converter**
The auxiliary converter provides a three-phase sinusoidal AC voltage output and a DC voltage output for charging the battery. Both outputs are galvanically insulated from the DC line voltage.
Powerful control platform
ABB traction converters are built on the AC 800PEC control platform, probably the most powerful modular controller for high-speed performance on the market. This control platform is also used in a wide range of other industrial applications. The AC 800PEC software is implemented on three performance levels, and this provides an excellent range of control and communication functionality in cycle times that extend from the sub-microsecond to the millisecond level. Compared to most other commercially available traction control systems, the modular application software in the AC 800PEC speeds up train commissioning significantly.

Cooling system
The equipment is efficiently cooled using service water, allowing a very compact construction. The temperature of the coolant is lowered using an external heat exchanger.

Mechanical design
The BORDLINE® CC400 is housed in an IP65 aluminium cabinet, which results in a very low overall weight. The equipment is designed for mounting under-floor or on the roof of the vehicle. Due to its modular design, it allows an easy maintenance access in both cases.

Technical data

<table>
<thead>
<tr>
<th>Technical data</th>
<th>BORDLINE® CC400</th>
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<tbody>
<tr>
<td>AC voltage input</td>
<td>600 / 750 V_{dc}</td>
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<tr>
<td>Propulsion output</td>
<td>0...500 V_{ac}, 2 x 150 kW at wheel</td>
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<tr>
<td>Braking chopper</td>
<td>2 x 250 kW</td>
</tr>
<tr>
<td>Auxiliary converter</td>
<td>3 x 400 V / 50 Hz, 35 kVA</td>
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<tr>
<td>Blower control</td>
<td>3 x 400 V / 0...60 Hz, 5 kVA</td>
</tr>
<tr>
<td>Battery charger</td>
<td>24 / 36 / 72 / 110 V_{ac}, 8 kW</td>
</tr>
<tr>
<td>Vehicle control interface</td>
<td>Can Open, I/Os</td>
</tr>
<tr>
<td>Dimensions (L x W x H)</td>
<td>1600 x 1800 x 430 mm</td>
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<tr>
<td>Weight</td>
<td>≈ 550 kg</td>
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</tbody>
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