

COMPACT CONVERTER

BORDLINE® CC750 DE

For diesel-electric regional trains (DMU)



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BORDLINE® CC750 DE
for DMU, under-floor
and machine room
mounted version

Characteristics

- Best fuel efficiency control
- All power electronics in one unit (propulsion, auxiliary converter, and battery charger)
- Very compact and lightweight
- Modular design allows flexible mechanical layout (i. e., machine room, under-floor or roof mounted)

System overview

BORDLINE® CC750 DE employs an active inverter module (IGBT) rectifying the asynchronous generator voltage to feed the DC-link. This completely decouples the DC-link voltage from the engine speed. Hence, the engine always runs at optimal efficiency. An identical inverter module is used to control the traction motor, which greatly simplifies the component set-up.

BORDLINE® CC750 DE Compact Converter contains:

- Active rectifier
- DC-link filter
- Braking chopper
- Propulsion converter
- Integrated auxiliary converter
- Integrated battery charger
- AC 800PEC control

BORDLINE® CC750 DE converts diesel generator power into propulsion power for the traction motors and auxiliary power for onboard consumers (AC, DC, and battery).

Propulsion converter

and solid unit incorporating modern IGBT technology, that can control a single motor or two motors in parallel. With a constant high switching frequency of 2 kHz, BORDLINE® CC750 DE generates a quasi-sinusoidal current waveform, which drastically reduces losses, audible noise and mechanical stress on the traction motor.

Auxiliary converter, battery charger

The auxiliary converter provides a three-phase sinusoidal AC voltage output and a DC voltage output for charging the battery. It is directly coupled to the main DC-link.



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01 Stadler's GTW design for STA in Merano, Italy
Photo: Stadler

02 Block diagram of BORDLINE® CC 750 DE

Powerful control platform

ABB traction converters are built on the AC 800PEC control platform, one of the most powerful modular controller for high-speed performance on the market. This control platform is also used in a wide range of industrial applications. The AC 800PEC software is implemented on three performance levels, thus providing 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 reduces train commissioning time significantly.

Cooling system

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

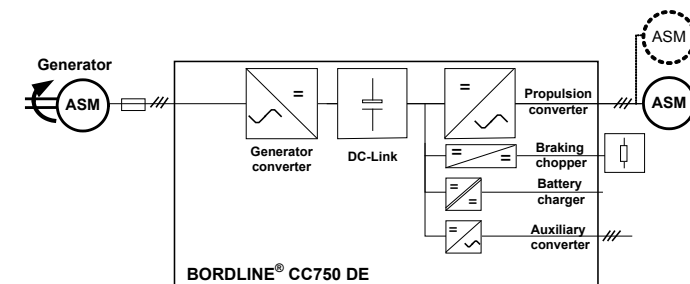
Mechanical design

The BORDLINE® CC750 DE is housed in a compact cabinet, which results in very low overall weight. Currently, there is an aluminum cabinet (IP65) version for under-floor and a steel cabinet (IP54) version for machine room installation. Both solutions allow for easy maintenance access, due to its modular design.

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Diagnostics and service

The service-friendly modular design with highly standardized components ensures high reliability, excellent spare parts availability, and optimized life-cycle costs. The Compact Converter is delivered with BORDLINE® View, a diagnostic tool that visualizes signals, various parameters and the state of the traction system. 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.

Application example

The largest quantity of BORDLINE® CC750 DE is installed in Stadler's DMU fleet (GTW) in Austria, Germany, Greece, Italy, the Netherlands, Spain, Switzerland and the USA.

Technical data	BORDLINE® CC750 DE
Generator voltage	0 ... 500 Vac
Propulsion output	0...500 Vac, 500 kW
Braking chopper	500 kW
Auxiliary converter	3 x 400 V / 50 Hz, 50 kVA
Battery charger	24 / 36 / 72 / 110 Vdc, 8 kW
Vehicle control interface	CANopen, I/Os
Weight	500 kg
Type	BORDLINE® CC750 DE D_M_400
Mounting position	machine room, IP54
Dimensions (L x W x H)	900 x 850 x 1400 mm
Type	BORDLINE® CC750 DE D_U_600
Mounting position	under-floor, IP65
Dimensions (L x W x H)	2100 x 1300 x 625 mm

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