

COMPACT CONVERTER

BORDLINE® CC1500 MS_3kV

For multi-system locomotives



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BORDLINE® CC1500 MS
for multi-system
locomotives

Characteristics

- Dual power sources of 3kVdc and diesel
- Designed for cargo and passenger application
- High energy efficiency
- Light and compact design
- Single axle control for redundancy and adhesion performance
- High switching frequency for harmonic loss reduction

System overview

BORDLINE® CC1500 MS converts the variable voltage from diesel generator or DC voltage from a 3kV electric grid, into drive power for the traction motors, three-phase auxiliary power supply for the locomotive and power for onboard consumers.

BORDLINE® CC1500 MS consists of:

- 1 rectifier
- 1 braking chopper
- 1 auxiliary converter for locomotive consumption
- Optional auxiliary converter (only for passenger version)
- 3 propulsion converters
- DC-link filter
- Control platform
- Line contactor and precharge unit

BORDLINE® CC1500 MS converts power from a diesel generator or 3kVdc grid into propulsion power for the traction motors and auxiliary power for onboard consumers (AC, DC and battery).

Propulsion converter

BORDLINE® CC1500 MS is a robust and solid unit incorporating modern IGBT technology, with the ability to control each traction motor individually. With optimized switching patterns and high switching frequency, BORDLINE® CC1500 MS generates a quasi-sinusoidal current waveform, which reduces the harmonic losses, the audible noise and the mechanical stress on the traction motor.

Auxiliary converter

The auxiliary converter module supplies the electricity requirements for the locomotive (blowers, compressor and pumps) and generates a current limited three-phase 60 Hz output voltage directly from the DC-link voltage. It also acts as an additional auxiliary converter for passenger version vehicles.



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01 Dual-mode locomotive
BITRAC 3600 (CAF), Spain
02 Main Circuit of
BORDLINE® CC1500 DC

Powerful control platform

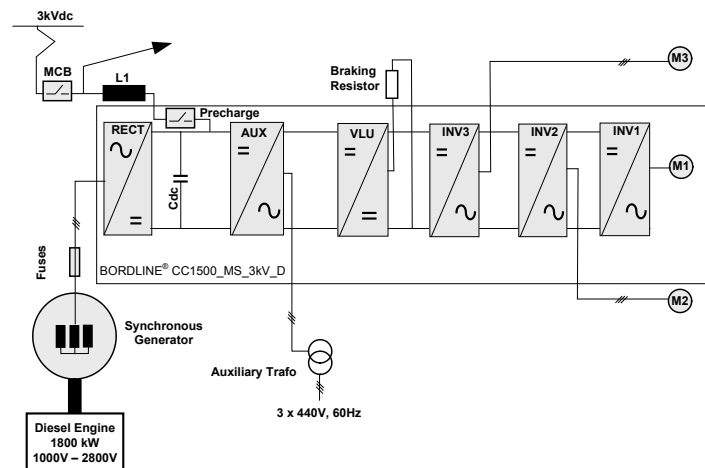
ABB traction converters are built on the AC 800PEC control platform, one of the most powerful modular controller for high-speed performance on the market. This control platform is also used in a wide range of industrial applications. The AC 800PEC software is implemented on three performance levels, 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 liquid cooled, allowing a very compact construction. The temperature of the coolant is lowered using an external heat exchanger. An additional internal blower provides forced air circulation inside the cubicle in order to avoid hot spots, passing the losses via an internal air/liquid heat exchanger to the main cooling circuit. An additional external ventilation of the power section can thus be dispensed with.

Mechanical design

BORDLINE® CC1500 MS is housed in an IP54 cabinet, designed for mounting within the machine room. Due to its modular design, it allows for easy access for maintenance.



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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

BORDLINE® CC1500 MS is mounted in CAF's hybrid locomotive BITRAC 3600 in Spain. The locomotive is able to run on routes wired at 3kVdc or on non-electrified lines. The locomotive is one of the most powerful dual-mode locomotives currently in service for the transport of goods and passengers.

Technical data	BORDLINE® CC1500 MS_3kV
Generator voltage	3 x 700 - 2600 Vrms / 60 - 180 Hz
Propulsion output	3 x 0...2250 Vrms, 770 kW at wheel
Braking chopper	900 kW
Auxiliary converter	3 x 440 V, 115 kVA
Vehicle control interface	CANopen
Mounting position	machine room
Dimensions (L x W x H)	1800 x 875 x 1990 mm
Weight	1365 kg

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