

## COMPACT CONVERTER

# BORDLINE® CC750 DC\_1500V

For metros with 1.5 kVdc grid voltage



BORDLINE® CC750 DC converts the power from the 1.5 kVdc line into propulsion power for the traction motors and auxiliary power for onboard consumers (AC, DC and battery).

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01 BORDLINE® CC750 DC  
for metros

### Characteristics

- High power density
- Latest IGBT technology
- Solid aluminum underfloor construction
- Integrated cooling system
- Motor converter for four parallel motors
- Integrated auxiliary converter, battery charger
- Flat battery start-up function
- Powerful control platform

### System overview

BORDLINE® CC750 DC Compact Converter is realized with modern IGBT technology and converts the DC line voltage into drive power for the traction motors.

BORDLINE® CC750 DC consists of:

- Line contactor
- Precharge contactor/resistor
- DC-link capacitor
- Propulsion converter
- Braking chopper
- Battery charger
- Auxiliary converter
- Cooling system including water to air heat exchanger, pump and fan
- AC 800PEC control module

### Propulsion converter

BORDLINE® CC750 DC Compact Converter is a compact unit based on modern 3.3 kV IGBTs. It can control either one or up to four motors in parallel.

### Braking chopper

In case the DC catenary is not receptive for recuperative energy, a braking chopper with corresponding resistors is installed. The braking chopper is able to consume the total braking energy in order to ensure safe operation in all cases.

### Auxiliary converter, battery charger

The auxiliary converter provides a three-phase sinusoidal AC voltage output for the external 50 Hz auxiliary transformer. The low voltage power supply and battery charger is internally connected to the three-phase AC output of the converter. In the case of a heavily discharged vehicle battery, the electronics will be fed from a flat battery start device which is connected directly to the input voltage. Switchover occurs automatically.



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01 Metro Nanjing, China  
02 Blockdiagramm  
BORDLINE® CC750 DC

### Powerful control platform

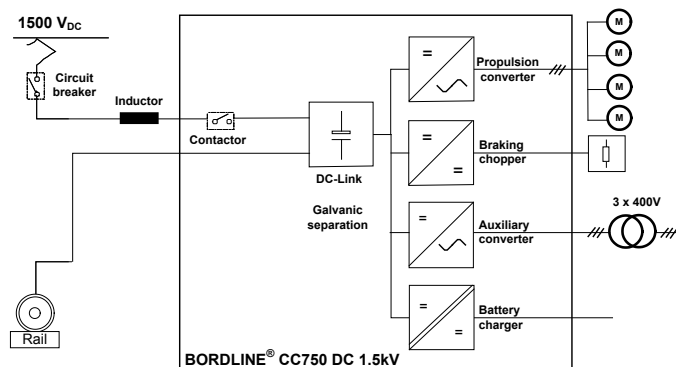
ABB traction converters are built on the AC 800PEC control platform, one of the most powerful modular controller for high-speed performance on the market. This control platform is also used in a wide range of industrial applications. The AC 800PEC software is implemented on three performance levels, 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 power electronics are efficiently cooled using service water, allowing a very compact construction. The temperature of the coolant is lowered using a heat exchanger, which is integrated into the converter cabinet. An additional internal blower provides forced air circulation inside the cubicle, in order to avoid hot spots.

### Mechanical design

BORDLINE® CC750 DC is housed in a traction proven IP65 housing, designed to be mounted under-floor. 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® CC750\_DC\_1.5kV is mounted in the vehicle cars of Nanjing Metro, line 1 extension south serving the city of Nanjing, China. The six-car metro trains are supplied with four Compact Converter BORDLINE® CC750\_DC\_1.5kV. Shenzhen's Metro (SZM), China has two BORDLINE® CC750\_DC\_1.5kV mounted in their four-car metro trains in service on line 4.

Technical data	BORDLINE® CC750 DC_1.5kV
DC line voltage (EN 50163)	1500 Vdc
Propulsion output	3 x 0...1480 Vac, 1700 kW at wheel
Braking chopper	1500 kW
Auxiliary converter	3 x 400 V / 50 Hz, 245 kVA
Battery charger	110 Vdc, 35 kW
Vehicle control interface	CANopen, I/Os
Mounting position	underfloor
Dimensionen (LxWxH)	2000 x 2100 x 680 mm
Weight	1500 kg

ABB Switzerland Ltd  
Traction  
Austrasse  
5300 Turgi, Switzerland  
sales.traction@ch.abb.com

[abb.com/railway](http://abb.com/railway)  
[abb.com/tractionconverters](http://abb.com/tractionconverters)

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