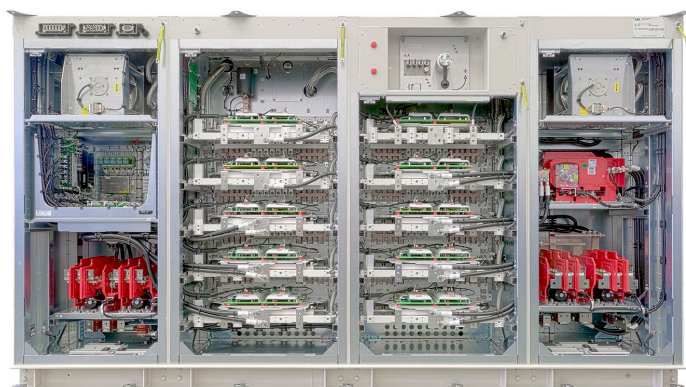


## COMPACT CONVERTER

# BORDLINE® CC1500 AC\_25kV-15kV

For high-speed trains



BORDLINE® CC1500 AC converts the power from the AC overhead line into propulsion power required for driving the traction motors and efficiently generates auxiliary power for onboard consumers.

—  
Traction converter  
BORDLINE® CC1500 AC

### Characteristics

- Innovative three-level converter technology
- Solid construction and consequent design for low maintenance
- High energy efficiency
- Motor-friendly (retrofit)
- Line-friendly
- Intelligent multi-system concept
- Integrated auxiliary converter

### System overview

Incoming power from the catenary is stepped down by the main transformer to the Compact Converters BORDLINE® CC1500 AC. They supply the motive power via the traction motors. Energy recuperated during braking is fed back through the same chain into the traction supply network.

BORDLINE® CC1500 AC Compact Converter contains:

- System switches for 15 kV and 25 kV grid voltage
- Input contactor and precharger
- Two line converters (4Q)
- DC-link and resonant filter capacitor
- One voltage limiter
- One propulsion inverter
- One auxiliary inverter (optional)
- AC 800PEC control module

### Propulsion converter

BORDLINE® CC1500 AC Compact Converter is a rugged unit incorporating modern IGBT technology. It can control a single motor or two motors in parallel. The Compact Converter is based on ABB's well proven three-level topology, which has several advantages over conventional two-level solutions: It is better for the motor, better for the grid, and it saves energy!

### 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.



01

01 High-speed train X2  
Photo: SJ  
02 Blockdiagramm  
BORDLINE® CC1500 AC

### Cooling system

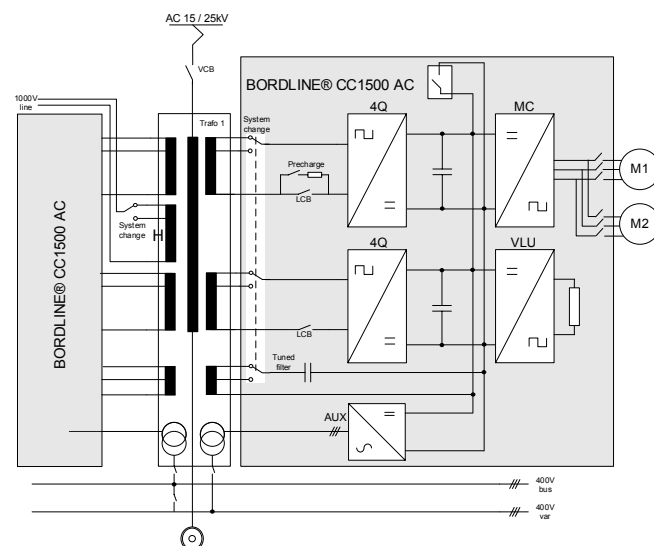
The equipment is efficiently liquid-cooled, resulting in a longer lifetime for all the components and a smaller converter size. The coolant (regular tap water with glycol) dissipates energy through an external heat exchanger.

### Mechanical design

BORDLINE® CC1500 AC is housed in an IP54 cabinet, designed for mounting within the machine room. Due to its modular design, the converter can also be adapted to different vehicle layouts and is also available for underfloor mounting. The converter allows for easy access for maintenance.

### 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.



02

### Application examples

The 25/15 kVac version of the BORDLINE® CC1500 series replaces the older gate turn-off thyristor (GTO) equipped traction converters in the Swedish X2 high-speed trains. The new Compact Converters increase train availability and significantly reduce energy consumption and operating cost. After the upgrade, all power heads will be ready for 25 kV operation in Denmark.

ABB will supply the electrical system for 36 trains, including traction transformers, traction converters, battery chargers, electrical subsystem, train control and management system, infotainment, door control (interior), interior lighting and modernisation of HVAC.

Technical data	BORDLINE® CC1500 AC_25-15kV_M_2000
AC voltage input (grid side converter)	1500 Vac
Propulsion output	0... 2000 Vac / 2 MW at wheel
Voltage limiter	included
Auxiliary converter (optional)	400 kVA
Battery charger (optional)	not equipped
Vehicle control interface	CAN or MVB, I/Os
Mounting position	machine room
dimensions (L x W x H)	3350 x 780 x 1870 mm
Weight	2200 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)

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail. ABB AG does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB AG. Copyright © 2018 ABB  
All rights reserved