AUXILIARY CONVERTER

BORDLINE® M230 DC_1.5kV

For metros with 1.5 kVdc grid voltage

BORDLINE® M230 DC converts the power from the 1.5kVdc line for onboard consumers (AC, DC and battery).

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BORDLINE® M230 DC
for metros

Characteristics
- Latest IGBT technology
- Solid aluminum underfloor construction
- Integrated cooling system
- ntegrated auxiliary converter, battery charger
- Flat battery start up function
- Powerful control platform

System overview
The BORDLINE® M230 DC static converter is realized with modern IGBT technology and provides a three-phase sinusoidal AC voltage output and a DC voltage output for charging the battery.

BORDLINE® M230 DC consists of:
- Line contactor
- Precharge contactor/resistor
- DC-link capacitor
- Auxiliary converter
- Battery charger
- Voltage limiter unit
- Cooling system including water to air heat exchanger, pump and fan
- AC 800PEC control module
- Flat battery start device

Auxiliary converter
The auxiliary converter provides a three-phase sinusoidal AC voltage output for the external 50 Hz auxiliary transformer.

Battery charger
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.

Voltage limiter unit
The Voltage limiter unit limits the DC-link voltage to a safe value, it is used to suppress transient DC-link voltages and actively discharges the DC-link during converter shutdown.

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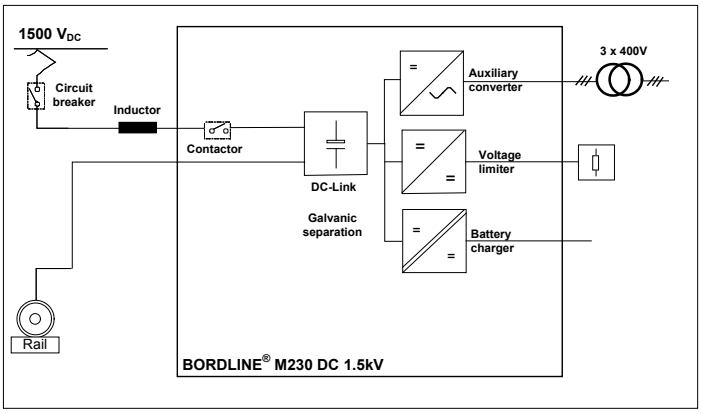

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01 Metro Nanjing, China

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02 Main circuit of BORDLINE® M230 DC

Control and monitoring
ABB's control platform AC 800PEC is used in all traction con-verters, as well as, in a wide range of industrial applications. This unit covers control and protection functions, diagnostics and interfacing to the vehicle control unit. The fast and powerful control is based on Power PCs for the industry. The modular programming ensures quick adaption of the control software, simplicity and reliability.

Cooling system
The power electronics are efficiently cooled using service water, thereby allowing for 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® M230 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.

Application example
The auxiliary converter BORDLINE® M230 DC_1.5kV is mounted in the vehicle cars of the Nanjing Metro line 1 extension south, serving the city of Nanjing, China. The six-car metro train is supplied with two BORDLINE® M230 DC_1.5kV and four BORDLINE® CC750 DC_1.5kV Compact Converters.

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.

Technical data	BORDLINE® M230 DC_1.5kV_U
DC line voltage (EN 50163)	1500 Vdc
Auxiliary converter	3 x 400 V/50 Hz, 245 kVA
Battery charger	110 Vdc, 35 kW
Vehicle control interface	CANopen, I/Os
Product option	Flat battery start device
Dimensions (L x W x H)	2000 x 2100 x 680 mm
Weight	1270 kg

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