

AUXILIARY CONVERTER

BORDLINE® M260 DC_1500-3kV

For locomotives



The BORDLINE® M260 DC static converter is a compact, rugged unit developed to feed auxiliary services of locomotives (air compressors, fans for braking system and motor cooling and other AC loads, DC loads and batteries).

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BORDLINE® M260
DC_1500-3kV for
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System overview

The BORDLINE® M260 DC converter is based on modern IGBT technology.

The converter is made of two independent units, each of them is composed by:

- N° 1 input filter that allows connecting the unit directly to catenary voltage
- N° 1 DC/DC converter, that turns catenary voltage into internal DC link 700 Vdc to supply output stages
- N° 1 DC/AC inverter to supply three-phase loads
- N° 1 DC/DC converter to charge the batteries and supply low voltage loads

Functionality

It is configured in an insulated DC/DC full bridge. It generates the internal DC link at 700 Vdc, stabilised and filtered. To minimize dimensions and weight the stage is designed with ABB patented H bridge configuration. An autostarter system is provided to switch on the converter when the battery voltage is insufficient or totally absent. The three-phase inverter, due to the installed sine filter, generates a sine wave three-phase voltage at the converter output. A V/F control is implemented to limit the inrush current when a heavy load is powered. Output frequency is adjusted thorough commutation bus (30÷60 Hz).

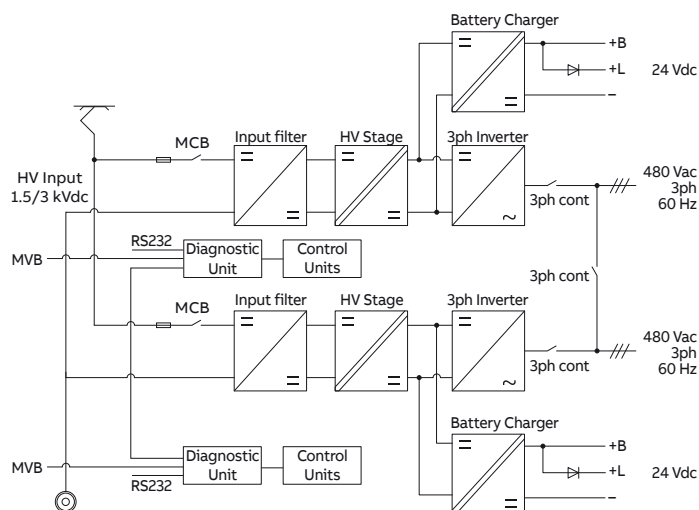
An insulated DC/DC converter is available to convert the 700 Vdc bus in a 24 Vdc to supply low voltage

loads and charge the batteries. Each power module includes all components for the specific function to simplify maintenance.

The substitution of fault module solves the problem in the section. The quick release system (cooling and power connections) minimizes time of service and not working vehicle too. The use of modular technology and liquid cooled system allows to obtain an excellent ratio between dimensions and weight.

Characteristics

- IGBT technology
- Integrated sine filter
- Two independent systems with redundant feature
- Wide range input voltages (900 Vdc ÷ 4200 Vdc)
- Modular concept with independent and extractable power modules
- Integral liquid cooling system with fast on/fast off pipes connections
- Easy and fast maintenance
- Diagnostic interface
- Workshop connection to feed MT loads and battery chargers



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01 E464 Locomotive, Italy

02 Block diagram of
BORDLINE® M260
DC_1500-3kV

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Technical data	BORDLINE® M260 DC_1500-3kV
Input voltages	1500-3000 Vdc (900 Vdc - 4200 Vdc)
AC nominal output power unit 1	60 kW at 150 ÷ 450 Vac 20 ÷ 60 Hz 3ph
AC nominal output power unit 2	80 kW at 450 Vac 60 Hz 3ph
Pmax for each power unit	120 kW at 450 Vac 60 Hz 3ph
DC loads and battery charger for each power unit	8,8 kW Vfloat 20°C: 31,4 Vdc; Vmax 32,8 Vdc; Imax 280 A
Protection degree	IP20
Dimensions (L x W x H)	1800 x 1010 x 2046 mm
Ambient temperatures	-25°C +50°C
Weight	1680 kg
Vehicle communication interface	MVB

Control and monitoring

The monitoring of the converter is supported by a diagnostic card connected to vehicle control bus with MVB connection. A RS232 connection for local monitoring and diagnostic data download is also available.

Cooling system

The converter is cooled by liquid cooling with fast on/fast off system without liquid leakage.

Mechanical design

The metal structure, based on stainless steel material, has been designed to be mounted inside the machine room of the locomotive.

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 modular concept with three independent and extractable modules (high voltage HV, three-phase inverter 3ph, battery charger BC) minimizes time of service and not working vehicle too. For maintenance a diagnostic interface (RS232) is available. It permits to monitor converter status, check alarms history.

Application example

BORDLINE® M260 DC_1500-3kV is mounted on electric locomotives running in Europe.