

AUXILIARY CONVERTER

BORDLINE® M45 MS_UIC

For passenger coaches



The BORDLINE® M45 MS static converter is a sealed, compact, rugged unit developed to feed auxiliary services of passenger coaches (HVAC system, DC loads, battery charger).

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BORDLINE® M45 MS_UIC
for intercity coaches

System overview

The BORDLINE® M45 MS converter is based on modern IGBT technology.

The system is composed by:

- N° 1 AC or DC to DC converter, that turns catenary voltage (1000 Vac, 1500 Vac/Vdc, 3000 Vdc) into internal DC link 650 Vdc to supply output stages
- N° 1 DC/AC inverter (650 Vdc/380 Vac 50 Hz 3ph) to supply HVAC system and AC loads (45 kVA)
- N° 1 DC/DC battery charger (650 Vdc/24 Vdc), to supply batteries and DC loads (5 kW)

Functionality

It is configured in an insulated AC or DC to DC full bridge. It generates the internal DC link at 650Vdc, stabilised and filtered. To minimize dimensions and weight the stage is designed with ABB patented H bridge configuration.

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 (e.g. HVAC compressor) with externally controlled normally close output contactor.

An insulated DC/DC converter is available to convert the 650 Vdc bus in a 24 Vdc to supply the electronic loads of the coach and charge batteries. A control for compensation in temperature of batteries charging voltage is integrated. In case of no input

voltage the converter can be fed directly by a 3ph voltage (400 Vac 50 Hz) from depot supply in order to supply the battery charger/DC load outputs.

Characteristics

- IGBT technology
- Suitable for all UIC voltages
- Compact, robust and lightweight design
- Integrated sine filter
- Integrated battery charger
- Integrated diagnostic system
- Safety earthing switch
- Workshop supply input (400 Vac 50 Hz 3ph)
- Underfloor installation

Technical data	BORDLINE® M45 MS_UIC
Input voltages	1 kVac 16,7 or 50 Hz; 1,5 kVac 50 Hz; 1,5 kVdc; 3 kVdc
Output voltages	380 Vac 50 Hz 3ph 24 Vdc
Output power	45 kVA + 5 kW
Protection degree	IP55 (+ IP20)
Dimensions (L x W x H)	3420 x 1140 x 620 mm
Ambient temperatures	-25°C +50°C
Weight	< 1350 kg
Communication interface	RS232, MVB



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01 Intercity Coaches - Italy

02 Block diagram of
BORDLINE® M45 MS_UIC

Control and monitoring

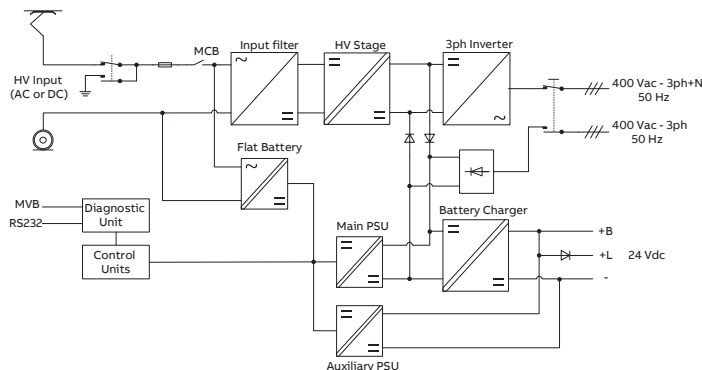
The monitoring of the converter is supported by a diagnostic card connected to vehicle control bus with MVB connection. A RS232 connection for local monitoring and diagnostic data download is also available.

Cooling system

The converter is cooled by forced air.

Mechanical design

The metal structure, based on stainless steel material, has been designed to be mounted underfloor. The design concept of an air force cooling system with a “dirty” zone water-resistant (IP20) and a waterproof “clean” zone containing electronics and other components (IP55), improves the reliability of the converters. As the converter has been developed for a revamping project, it has a high customized mechanical design.



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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. For maintenance a diagnostic interface (RS232) is available. It permits to monitor converter status and alarms history.

Application example

BORDLINE® M45 MS_UIC is mounted on Intercity Coaches running in Europe. ABB converter has been designed for a revamping project (HVAC system added inside the coach).