

AUXILIARY CONVERTER

BORDLINE® M20 DC_3kV

For coaches



The BORDLINE® M20 DC static converter is a compact, rugged unit developed to feed auxiliary services of coaches (HVAC system and AC loads).

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System overview

The BORDLINE® M20 DC converter is based on modern IGBT technology.

The system is composed by:

- N° 1 DC/DC converter, that turns catenary voltage (3000 Vdc) into internal DC link 650 Vdc to supply output stages
- N° 1 DC/AC inverter (650 Vdc/400 Vac 50 Hz 3ph) to supply HVAC system and AC loads (21 kVA)

HV module (3000 Vdc/650 Vdc)

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

3ph inverter (650 Vdc/400 Vac 50 Hz 3ph)

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.

Characteristics

- IGBT technology
- Compact, robust and lightweight design
- Integrated sine filter
- Fed by 3 kVdc catenary (1800 ÷ 4200 Vdc)
- Outputs: 400 Vac 50 Hz 3ph
- Integrated diagnostic system
- On board installation
- Integrated autoextinguisher system

Technical data	BORDLINE® M20 DC_3kV
Input voltage	3 kVdc (1800 ÷ 4200 Vdc)
Output voltage	400 Vac 50 Hz 3ph
Output power	21 kVA
Protection degree	IP54 (+ IP20)
Dimensions (L x W x H)	800 x 750 x 1800 mm
Ambient temperatures	-25°C +50°C
Weight	600 kg
Communication interface	USB, Ethernet (10/100 Mb)



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01 Medium distance coaches (Italy)
02 Block diagram of BORDLINE® M20 DC_3kV

Control and monitoring

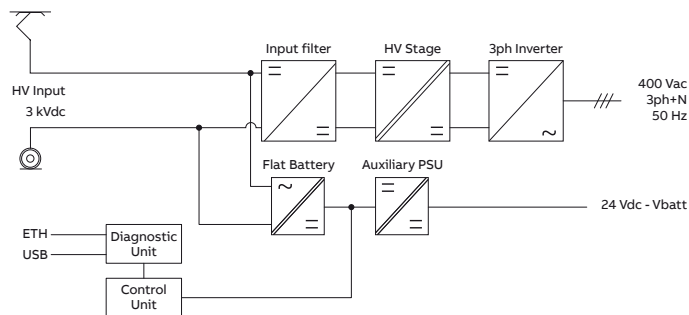
The monitoring of the converter is supported by a diagnostic card connected to vehicle control bus with Ethernet (10/100 Mb) connection. A USB connection for local monitoring and diagnostic data download is also available.

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 inside the coach. 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 (IP54) with autoextinguisher system, improves the reliability of system. 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 (USB) is available. It permits to monitor converter status and alarms history.

Application example

BORDLINE® M20 DC_3kV is mounted on Medium Distance Coaches running in Italy. ABB converter has been designed for a revamping project (HVAC system added inside the coach).