

AUXILIARY CONVERTER

BORDLINE® M20 DC_750V For metro cars



The BORDLINE® M20 DC static converter is a compact, rugged unit developed to feed ventilators, blowers and electronic loads of metro cars.

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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/AC inverter with adjustable output frequency up to 50 Hz (Catenary/230 Vac 50 Hz 3ph) to supply AC loads on the vehicle
- N° 1 DC/DC (Catenary/48 Vdc) isolated converter to supply DC loads and charge the batteries

3ph inverters (600-750 Vdc/230 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. The galvanic separation is obtained by a 50 Hz transformer. The V/F control is implemented to limit the inrush current when a heavy load is powered (e.g. compressors). The nominal output power is 13 kVA with a 20 kVA peak up to 5 sec.

DC/DC converter (600-750 Vdc/48 Vdc)

An isolated DC/DC converter is available to convert the 600-750 Vdc catenary voltage in a 48 Vdc to supply the electronic loads of the metro and charge the batteries.

Characteristics

- IGBT technology
- Compact and robust design
- Integrated sine filter
- Fed by 600 Vdc, 750 Vdc catenary (500 Vdc - 1000 Vdc)
- Outputs: 230 Vac 50 Hz 3ph, 48 Vdc
- Output power: 13 kVA + 9 kW
- Full digital control
- Underframe installation

Technical data	BORDLINE® M20 DC_750V
Input voltage	600-750 Vdc (500 Vdc - 1000 Vdc)
AC output voltage	230 Vac 50 Hz 3ph
AC output power	13 kVA
DC output voltage	48 Vdc
DC outoput power	9 kW
Protection degree	IP65
Dimensions (L x W x H)	2090 x 540 x 415 mm
Ambient temperatures	-15°C +40°C
Weight	270 kg





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— 01 Metro cars -Great Britain

02 Block diagram of BORDLINE® M20 DC_750V

Control and monitoring

The main control is based on ABB's AC 800PEC control platform electronics and is structured so that each power section (AC or DC) can work independent of each other. Both outputs are shortcircuit proof. The control electronics also monitor voltages, currents and internal temperatures. The monitoring of the converter is supported a 14 ways connector.

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Cooling system

The converter is cooled by external forced convection.

Mechanical design

The metal structure is aluminium with IP65 protection and it has been designed for underframe mounting. As the converter has been developed for a revamping project, it has a high customized mechanical design.

Diagnostics and service

The service-friendly modular design with highly standardized components ensures high reliability, excellent spare parts availability, and optimized life cycle costs. They permit to monitor converter status and alarms history.

Application example

BORDLINE® M20 DC_750V is mounted on metro running in London (United Kingdom). ABB converter has been designed for a revamping project and it's fully compatible with the existing electro-mechanical interfaces.

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