

DC/AC CONVERTER

BORDLINE® M1 DC_24V

DC/AC converter for rolling stock applications



The BORDLINE® M1 converter is a compact, rugged unit developed for coaches and locomotives.

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01 BORDLINE® M1 DC
for all rolling stock
applications

System overview

The BORDLINE® M1 DC is a DC/AC converter, with voltage/frequency control, to supply single-phase loads in railway applications. It's based on modern MOSFET technology.

BORDLINE® M1 DC contains:

- Input fuse and LC filter
- Buck and push-pull converter
- Insulation transformer: insulates the mains to the load for safety requirements satisfaction
- AC ground fault detector
- DSP control unit
- Diagnostic and communication port

Functionality

The BORDLINE® M1 DC converter turns an input nominal DC voltage of 24V from batteries to an output sinusoidal voltage to supply 1 phase AC loads. The converters operate at high switching frequencies allowing for low ripple voltage and compact build size.

Characteristics

- DSP technology
- Compact and rugged design
- On board installation
- High reliability thanks to consolidated building blocks

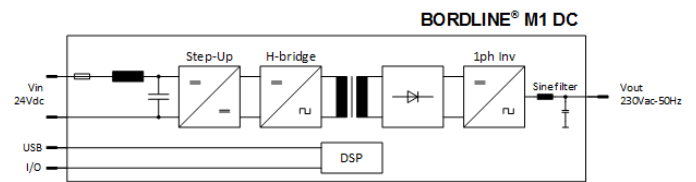
Technical data	BORDLINE® M1 DC_24V
DC voltage input	24 V _{DC} (16,8 V _{DC} - 36 V _{DC})
DC voltage output, nominal	220 V _{AC} 50 Hz
DC output power	1.4 kVA
Protection degree (rack-mounted)	IP20
Operating temperature range	-25°C +70°C
Diagnostic interface	USB
Dimensionen (L x W x H)	330 x 300 x 445 mm
Weight	19 kg



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01 MD coaches
for Trenitalia (Italy)
Photo: Trenitalia

02 Block diagram of
BORDLINE® BC



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Control and monitoring

The converter is fully digital controlled by using a digital signal processor (DSP). The control unit monitors voltages, currents and internal temperatures to protect the device. External overload conditions such as short circuit, excessive ambient temperature, overvoltage are handled safely. The driver electronics supply the trigger signals for the power semiconductors and are also responsible for the protection of the power semiconductors. All outputs are short-circuit proof.

Control interface

Monitoring and configuration of the converter is provided by means of a USB interface.

Cooling system

The unit is cooled by natural convection

Mechanical design

The equipment has a light and compact structure; it can be mounted on board of coaches or in the machine room in vertical position.

Diagnostics and service

The converter has been designed with highly standardized components, high reliability, excellent spare parts availability, and optimized life-cycle costs. For maintenance, an USB communication interface is available.

Application example

BORDLINE® M1 DC is mounted on medium distance coaches. Each coach train is equipped with one converter. It's installed to feed the electrical fans on coach heating system.

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