

AUXILIARY CONVERTER

## BORDLINE® M55 DC\_600V

For street cars



The BORDLINE® M55 DC static converter is a compact, rugged unit developed to feed auxiliary services of light rail vehicles and supply DC loads.

### System overview

The BORDLINE® M55 DC converter is based on modern IGBT technology.

The system is composed by:

- N° 1 DC/AC inverter (600 Vdc/230 Vac 60 Hz 3ph - 55 kVA) to supply AC loads
- N° 1 AC/AC insulation transformer (230 Vac 3ph to 120 Vac 1ph - 2,4 kVA)
- N° 1 LVPS DC/DC converter (24 Vdc – 7.5 kW), to supply DC loads at 24 Vdc and charging battery
- N° 1 AC distribution panel.

### Functionality

A not isolated three-phase inverter, due to the installed sine-filter, generates a sine wave three phase voltage at the converter output. Three-phase output also feeds 1ph transformer.

A V/F control is implemented to limit the inrush current when a heavy load is powered (e.g. compressor).

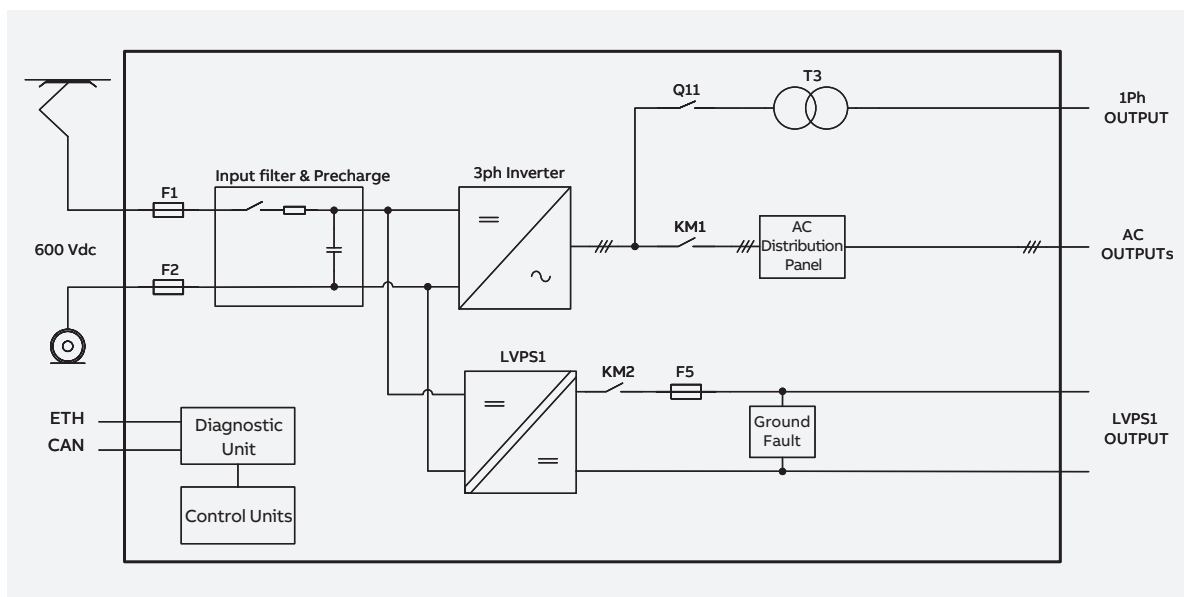
An isolated DC/DC converter is available to supply DC electronic loads of the vehicle at 24 Vdc. The LVPS2 is fed by catenary.

### Characteristics

- IGBT technology
- Compact and robust design
- Integrated sine filter
- Fed by 600 Vdc catenary (480 Vdc - 720 Vdc)
- Integrated battery charger
- Ethernet diagnostic and CANopen communication bus
- Full digital control
- Underfloor installation
- Air forced cooling

### Technical data

Input Voltages	600 Vdc (480 Vdc - 720 Vdc)
Output Voltages	230 Vac 60 Hz 3ph - 55 kVA 120 Vac 60 Hz 1ph - 2,4 kVA 24 Vdc - 7.5 kW
Protection degree	IP65
Operating temperature range	-25°...+50°C
Communication Interface	Ethernet, CANOpen
Dimensions	1483 x 1176 x 486 mm
Weight	450 kg



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01 Block diagram of  
BORDLINE® M55 DC\_600V

### Control and monitoring

The converter is full digital controlled (DSP technology) and it is structured so that each power section (AC or DC) can work independent of each other. All outputs are short-circuit proof. The control electronics also monitor voltages, currents and internal temperatures. The interface to the Train Control and Management System is managed by CANopen bus.

### Cooling system

The converter is cooled by forced air. The internally mounted fan and the air duct are integral parts of the onboard converter. A thermal monitoring device protects the converter from becoming overheated.

### Mechanical design

The metal structure, based on painted steel material (dielectric white internally and black externally), has been designed for IP65 protection and to be mounted on street cars (underfloor). The heatsinks are partitioned so that the individual modules can be easily removed and replaced.

### Diagnostics and service

The service-friendly modular design with highly standardized components ensures high reliability, excellent spare parts availability, and optimized lifecycle costs.

For maintenance a diagnostic interface (Ethernet) is available. Further data can be obtained using a standard PC and the BORDLINE® View, a diagnostic tool that includes an advanced self-diagnosis function, which provides advice and instructions for service and repair.

### Application example

BORDLINE® M55 DC\_600V has been designed for retrofit project and installed in street cars running in USA.