

# Double traction inverter EmCon DI1000-5AR 750V LRV application



## Key benefits

- + High performance
- + Highest redundancy
- + Well-structured arrangement
- + Minimized maintenance
- + Suitable for energy storage application
- + Optimized integration with separated IO-Control Unit

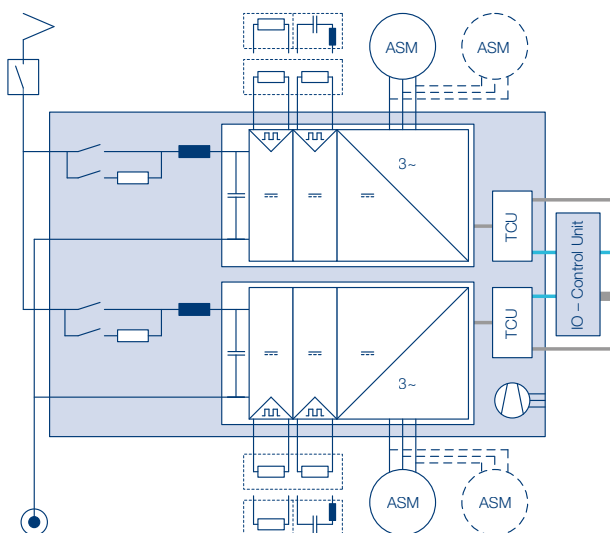
The EmCon DI1000-5AR is a high performance double traction inverter for roof installation in 600 Vdc and 750 Vdc power supply applications such as Trams and low-floor Light Rail Vehicles (LRV) in particular. It is applied in combination with a separated IO-Control Unit.

The double traction inverter EmCon DI1000-5AR represents a compact and complete double traction inverter system for independent control of two motors or two pairs of motors typically. It contains two separated systems. Each system has its own power stack containing the line capacitor, inverter and double-chopper. Furthermore each system incorporates its associated equipment such as main contactor, charging circuit, measuring devices etc. as well as line inductor. A fan for cooling by forced ventilation is shared by the two systems.

Each system is controlled by its dedicated Traction Control Unit (TCU) which provides the control of the 3-phase inverter and the double-chopper. Project specific control tasks are performed by the IO-Control Unit (Voith VPort), which is arranged outside for optimized interfacing of the systems with the vehicle controls. Communication takes place via CAN-Bus as well as an appropriate number of digital/analogue inputs and outputs.

The double-choppers are conventionally used as brake-choppers. Alternatively, one of the two choppers (of each double-chopper) can be used to integrate energy storage systems such as super-capacitors (as shown in the block diagram) or batteries (with contactors for separation).

### Block diagram



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### Input data

Input voltage nominal	750 Vdc
Rated input current	2 x 200 A
Maximum input current	2 x 400 A
Auxiliary supply voltage	24 Vdc
Fan supply voltage	3 x 400 V / 50 Hz

### Inverter output

Rated output power	2 x 225 kVA
Rated output current	2 x 250 Arms
Maximum output current	2 x 500 Arms
Output voltage range	2 x (3 x 0 - 700) Vac
Output frequency	2 x (0 - 250) Hz
Output switching frequency	up to 2000 Hz

### Brake chopper output

Rated braking power	2 x 2 x 30 kW
Maximum braking power	2 x 2 x 225 kW
Switching frequency	up to 2000 Hz

### Energy storage chopper output (Alt. to 2 of 4 brake choppers)

Rated current	2 x 170 A
Maximum current	2 x 350 A

### General data

Ambient temperature	-40°C to +45°C
Protection level	IP55
Dimensions (box)	1480 x 1110 x 450 mm
Mass	350 kg
Noise level at low/high fan speed	Class N3/N2

### Standards

The EmCon DI1000-5AR complies with the relevant standards such as IEC 61287, IEC 60571 (EN 50155), IEC 62236 (EN 50121), IEC 61373 as well as EN 45545.

### Capability with energy storage application

The capability of the choppers provides energy saving and line power reduction as well as occasional catenary free operation with reduced traction performance respectively speed, up to distances of several hundred meters.

### Product-variant EmCon DIe1000-5AR

A variant with significant more powerful energy storage choppers is available. It allows a continuous, cyclic catenary free operation with full performance similarly to catenary operation.

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