

Traction inverter EmCon I1000-9AR 750V LRV application



Key benefits

- + Compact
- + Economic single inverter
- + Well-structured arrangement
- + Minimized maintenance
- + Suitable for energy storage application
- + Optimized integration with separated IO-control unit

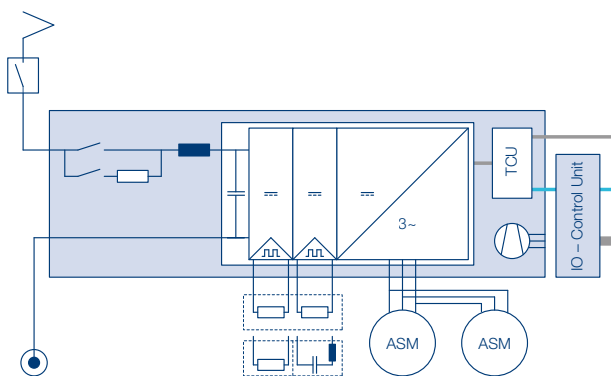
The EmCon I1000-9AR is a compact traction inverter for roof installation in 600 Vdc and 750 Vdc power supply applications such as trams and low floor light rail vehicles (LRV), in particular. It is applied in combination with a separate input/output control unit.

The traction inverter EmCon I1000-9AR represents a compact and complete traction inverter system for the control of two motors of one bogie typically. It contains the complete system. The core of the system is the power stack containing the line capacitor, inverter and double-chopper. Furthermore, the system incorporates its associated equipment such as the main contactor, charging circuit, measuring devices, etc., as well as line inductor and a fan for cooling by forced ventilation.

The system is controlled by the traction control unit (TCU), which provides the control of the three-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/analog inputs and outputs.

The double-chopper is conventionally used as brake-chopper. Alternatively, one of the two choppers can be used to integrate an energy storage system such as a supercapacitor (as shown in the block diagram) or a battery (with contactors for separation). For consideration of various requirements, an option with increased capability of the choppers is available for the EmCon I1000-9AR. In addition, a product variant is available.

Block diagram



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Input data

Input voltage nominal	750 Vdc
Rated input current	320 A
Maximum input current	640 A
Auxiliary supply voltage	24 Vdc
Fan supply voltage	3 x 400 V / 50 Hz

Inverter output

Rated output power	360 kVA
Rated output current	400 Arms
Maximum output current	800 Arms
Output voltage range	(3 x 0 - 700) Vac
Output frequency	(0 - 250) Hz
Output switching frequency	up to 2000 Hz

Brake chopper output

Rated braking power	2 x 50 kW / 65 kW opt.
Maximum braking power	2 x 225 kW / 380 kW opt.
Switching frequency	up to 2000 Hz

Energy storage chopper output (Alt. to 1 of 2 brake choppers)

Rated current	170 A / 250 A opt.
Maximum current	350 A / 500 A opt.

General data

Ambient temperature	-40°C to +45°C
Protection level	IP55
Dimensions (box)	1520 x 850 x 485 mm
Mass	300 kg
Noise level (fan)	Class N2

Standards

The EmCon I1000-9AR 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 tractive performance respective to speed, up to distances of several hundred meters.

Product variant EmCon Ie1000-9AR

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

Product variant EmCon I1000-9AU

A variant for underfloor installation in high-floor LRVs is available.

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