

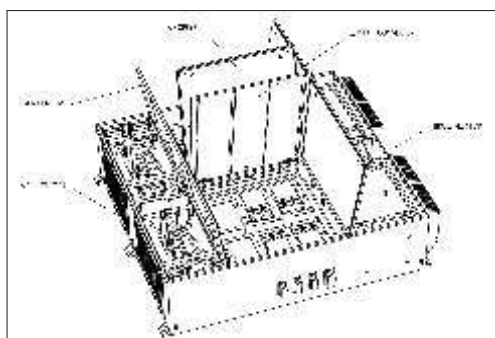
TV Europulse Traction Equipment



The air-cooled container of the CAC 1200NF drive provides power supply for two parallel connected three-phase asynchronous squirrel cage traction motors driving one tramcar bogie.

The container is equipped with the following devices necessary for the autonomous control of one traction bogie in all operation modes:

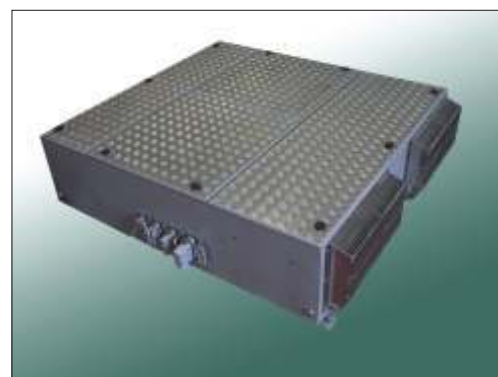
- input contactor
- LC filter of radio frequency interference
- input IGBT converter
- brake resistor
- IGBT chopper
- 3 output chokes controlling rate of voltage rise
- 3 current sensors
- 3 voltage sensors
- 2 motor-ventilators
- TRS-T microprocessor regulator



The drive container is designed to be installed on the roof of the tramcar and connected to 600 VDC trolley voltage, or 750V with positive or negative pole in the trolley conductor.

The container is of light construction. It is divided longitudinally into three main parts: space for ventilators, space for electronics and space for brake resistor.

The space for electronics is horizontally divided into the space for exciters of IGBT elements, ventilated space of IGBT coolers, space for drive regulator and panel of sensors.



Forced air-cooling is used in the container provided by two axial motor-ventilators e.g. of Cegelec type SMTK 13 with external power supply (provided by the static converter of the vehicle).

Basic parameters

Type		CAC 1200NF
Supply voltage	rated 600VDC/750VDC with positive or negative pole in trolley conductor	
	operating range	0 V to 900 V
	operating voltage limit	400 V to 900 V
Maximum inter-circuit voltage in the braking mode		1000 VDC
Output voltage of chopper	running mode (for 600 VDC)	3x0 to 430 V _{1hef}
	braking mode (for 1000 VDC)	3x0 to 710 V _{1hef}
Chopper output current maximum value		600 A _{1hef}
Output frequency		0 to 300 Hz
Chopper modulation frequency		1800 Hz
Network regenerative voltage limiting:		750V to 800 V
Brake resistor	maximal power losses	500 kW
Type of regulator		TRS-T
Control circuits supplying:	rated	24VDC
	operating range	16,8V to 30 V
	power input	200 W
Type of cooling:	forced air-cooling by its own ventilators	
Ventilator circuit supplying:	rated	3x400 VAC, 50 Hz
	operating range	3x230VAC to 3x400 VAC
	power input	900 VA
Test voltage:	traction circuit	3875VAC, 60 s
	ventilator circuit	2500 VAC, 60 s
	control circuits 24 VDC	500 VAC, 60 s
Working conditions:	ambient temperature	-25°C to +40°C
Type of enclosure:	ventilated space	IP23 by IEC 529
	non-ventilated space	IP54 by IEC 529
Dimensions and weight:	weight	410 kg
	width	1503 mm
	length	1703 mm
	height	440 mm
Type drawing		8160-20-500 (8,9)
Finishing:	powder paint	RAL 7042

Number of units in vehicle 1 unit for one traction bogie

As to the electromagnetic interference the equipment meets standard EN50121-3-1.

Maximum rate of voltage rise on the output of the traction converter in all modes is 5 kV/μs.

The drive regulation is prepared for the installation of communication interface, e.g. Can.

For the drive control signals are assumed to be led from the speed sensors of traction motors. The drive regulator cooperates with the speed sensor of type Lenord+Bauer GEL 247X-1GM150 or GEL 247-1GM150.

The delivery includes functional software with description submitted on CD ROM.

Accessories consist of the program terminal for drive diagnostics.

Technical documentation of the equipment, maintenance manual, list of recommended spare parts and type and single test protocol are also a part of the delivery.

Drive container accessories

APCE interface for connecting the PC to 2 drive regulators through the RS232 serial link.



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