EFFICIENT POWER FOR TRUE PASSENGER COMFORT

TURBO POWER SYSTEMS
Powering Intelligent Solutions

AIR CONDITIONING INVERTER FOR LOCOMOTIVE CABS

2.5 kW Inverter for Trans-Elektro & Ned Trains

Key Technical Features

- ✓ Primary source – 1.5kVdc rectified rail vehicle supply
- ✓ Input filter to withstand traction environment
- ✓ Input diode to prevent damage due to reverse polarity connection and to prevent energy feeding back to track supply
- ✓ High Voltage IGBT Inverter bridges in series
- ✓ High frequency transformers
- ✓ Three phase 400Vac 50Hz inverter with sinusoidal filter, transformer and filter providing 24VDC nominal at 25 amps
- ✓ Soft start for motor
- ✓ Enclosure rated to IP54 and Magnetic components to IP42
- ✓ Designed to withstand transients to EN50155/UIC550
- ✓ RS232 serial port incorporated for diagnostics
- ✓ Enclosure is fabricated from natural stainless steel and is unpainted

Key Benefits to Rail Operators / Transit Authorities

- ✓ Light weight and compact (100Kgs)
- ✓ Electronic short circuit and overload protection
- ✓ Very high efficiency i.e. > 90%
- ✓ Natural air cooled design
- ✓ Reliable operation under transients
- ✓ Modular approach to component placement for efficient maintenance and minimal downtime
- ✓ Silent in operation i.e. < 65dBA at 1m
- ✓ 25 year lifetime
- ✓ Full suite of diagnostics software included

Input Voltage	1500 Vdc
Input Voltage Range	1000 Vdc to 1800 Vdc at full load
Maximum short-term voltage	1950 Vdc for 5min
Maximum over voltage	2540 Vdc for 20ms
Input isolation to earth	3.875 kV rms for 1 minute
Reverse current protection	Input diode prevents energy returning to the track
Output Voltage 3phase Inverter	380 Vac ±5% at 47.5Hz ±5%
Rated Power	2.65 kW Continuous, 0.85PF
Output THD	< 5%
Motor Starts	The output voltage is ramped up, frequency remains constant at 47.5Hz, to provide a soft start for the motor
Low Voltage DC Output	24 Vdc ±10%, negative connected to chassis
Low Voltage rated power	600 W continuous
Protection	Electronic short-circuit and overload protection
Efficiency	> 90% at full load
Weight	100 Kgs
Dimensions	1000mm (h) x 500mm (w) x 300mm (d)
Design Life	25 years
Operating temperature and Humidity	-35^0 C to $+55^0$ C and relative humidity at maximum of 100%
Cooling	Naturally air cooled
Portable Test Equipment (PTE)	Remote condition and fault monitoring

The converter unit comprises of the following: input filter, high voltage IGBT bridges, high frequency transformers, a three phase 400V AC 50Hz Inverter with a sinusoidal filter and a transformer and filter providing 24V DC nominal at 25Amps.This equipment is mounted in an IP54 enclosure to be mounted within the vehicle, the magnetic components may be mounted in an IP42 section of the enclosure but are fully environmentally protected. The converter primary power source is from the nominal 1500VDC, six or twelve pulse rectified rail vehicle supply.

The high frequency bridge pairs operate at 5.6 kHz PWM providing galvanic isolation between the input 1500Vdc and the outputs. They are designed as individual modules each producing a regulated 3 phase AC waveform and each transformer secondary voltage are connected in parallel and then filtered to remove any high frequency component to provide a 3-phase 380Vac, low distortion waveform and allows the use of commercial industrial motors. A second 3-phase winding on each transformer is rectified and filtered to provide a 24Vdc output.

We will be happy to discuss your project or enquiries, please contact our marketing department at marketing@turbopowersystems.com to get in touch or ring us on +44 (0) 191 482 9288/9251/9278.

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