



DCCrail3000 RAILWAY DC/DC CONVERTER

SERIES DCCrail3000

This rugged, railway quality DC-DC converter utilizes field-proven technology to generate the required output power. It is a mature design with a track record in numerous applications. The converter is designed to meet EN50155 for electronic equipment used on railway rolling stock. It accepts an input voltage of 750Vdc (525V-975Vdc range), the traction voltage typically required for mass transit vehicles such as trams, metros and light rail, and mining locomotives. The converter is built with three internal power modules operating parallel via redundancy diodes. This modular construction provides inherent redundancy; the failure of one internal module would cause a 33% drop in output power while the unit remains functional at 2000W. The converter can therefore also be used as a 2000W redundant power supply. The redundancy diodes also allow the connection of several units parallel. High quality built-in fans provide sufficient airflow for operation within the specified temperature range without de-rating. The fan draws air into the unit, which exhausts at the terminal side of the unit. All heat generating components are installed on aluminum heat-sink blocks which are thermally connected to the base plate. This also ensures exceptional mechanical ruggedness. Conformal coating provides protection against humidity and airborne contaminants. Full electronic protection, low component count, large design headroom and the exclusive use of components with established reliability contribute to a high MTBF. It is manufactured at our plant under strict quality control. Customized versions are also available.

APPLICATIONS

- Railway Applications
- Transportation
- Mining
- Oil Rigs
- Military Applications
- Marine / Automotive / RV
- Electric Utilities and Substations
- Telecom Power Plants
- Manufacturing Locations
- Steel Mills
- Industrial Controls
- OEM Applications

FEATURES

- Field-proven rugged design
- Wide temperature range
- Compact size
- Designed for rolling applications according to EN50155
- Full electronic protection
- Wide input range
- 3000W output power



High frequency technology



Light weight, compact size



Full electronic protection



Optional Extended temperature range



Output fail alarm Form C

SPECIFICATIONS

Input Voltage	750Vdc nominal 525V-975Vdc operating range Other inputs on request
Input Protection	Inrush current limiting Varistor Reverse polarity protection Internal safety fuse Lower voltage than the specified minimum input will not damage the unit
Isolation	3000Vdc input to chassis 4300Vdc input to output 5600Vdc type test 1000V/1500Vdc output to chassis
Switching Frequency	55kHz \pm 5kHz
Output Voltage	24V, 36V, 48V or 110V Outputs is floating; either terminal can be grounded Other inputs on request
Redundancy Diode	Installed internally for separation of the internal modules
Load/Line Regulation	\pm 1.5% combined from zero load to full load
Dynamic Response	Max 5% voltage deviation for 10% to 50% load step, with better than 1msec recovery time
Output Ripple Noise	Better than 0.2% rms or 1% pp (@ 20MHz BW)
Efficiency	Typically better than 84% at full load
Output Overload Protection	Rectangular current limiting with short-circuit protection Thermal shutdown in case of insufficient airflow (self-resetting)
Output Overvoltage Protection	Second regulator loop completely stable and independent of main regulator loop
Standards	Designed to meet EN60950-1, EN 62368-1, CE, EN50155 and related standards
EMI	EN50121-3-2 and EN 55032 Class A

Immunity	Meets criteria of EN 50155 and EN 50121-3-2, including: EN 61000-4-2 (ESD) EN 61000-4-3 (RF Immunity) EN 61000-4-4 (Fast Transients) EN 50155 (Surge) EN 61000-4-6 (Conducted Imm.) EN 50155 (Voltage Variations)
Operating Temperature	-25 to +55° C for full specification without derating Extended temperature ranges available
Humidity	5 - 95% non-condensing
Temperature Drift	0.03% per °C over operating temperature range
Cooling	Forced air by two high quality built-in fans. Fans draw air into the unit
Environmental Protection	Ruggedizing Conformal coating
Shock/Vibration	IEC 61373 Cat 1 A&B
Dimensions	3U4: 132 x 244 x 407 mm including connectors, excluding flanges 19" rack mounted version also available
Weight	8 Kg
Connections	Input: HV terminal block assembly Output: Terminal block or threaded studs according to output current
MTBF	110,000 hours @ 45°C (fans excluded) Demonstrated MTBF is significantly higher.
Indicators	Green "Output ON" LED on each internal power module, visible through the cooling slots
Control Input	None on standard version Available as option
Alarm output	Module fail alarm, Form C contact
RoHS Compliance	Fully compliant
Warranty	2 years

