



## IVSrail1000 RAILWAY SINE WAVE INVERTER

### SERIES IVSrail1000

This rugged, railway quality DC/AC inverter uses field proven, microprocessor controlled high frequency PWM technology to generate the required output power with pure sine wave output voltage.

The unit meets the requirements of EN50155 for electronic equipment used on railway rolling stock. It is a mature design with a track record in numerous applications.

The DC/DC input stage boosts the input voltage to a higher DC voltage, which feeds the DC/AC inverter to generate the required AC output.

The use of high frequency conversion enables a compact construction, low weight and high efficiency.

The input and output are filtered for low noise.

Cooling is by conduction via baseplate, with additional cooling by high quality built-in fans. 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.

All of our products are manufactured at our plant under strict quality control.



Pure Sinewave



High frequency technology



Light weight, compact size



Full electronic protection



Extended temperature range



Optional Output fail alarm (Form C)

### APPLICATIONS

- Railway Applications
- Industrial Controls
- Telecom Power Plants
- Marine & other rugged environments
- Electric Utilities and Substations
- Base Station Power

### FEATURES

- Sine wave output voltage
- Field-proven rugged design
- Low profile
- Compact size
- Designed for rolling applications according to EN50155
- Full electronic protection

# SPECIFICATIONS

|                               |  |
|-------------------------------|--|
| Input Voltage                 | 24Vdc (17-34V)<br>36Vdc (25-51V)<br>48Vdc (33-67V)<br>72Vdc (50-101V)<br>96Vdc (67-135V)<br>110Vdc (77-154V)<br>Consult factory for other inputs   |
| Input Protection              | Inrush current limiting Varistor<br>Reverse polarity protection<br>Internal safety fuse<br>Lower voltage than the specified minimum input will not damage the unit   |
| Isolation                     | 1500VDC Input to chassis<br>1500VDC Input to output  |
| Output Voltage                | 230Vac @ 50Hz/4.3A rms continuous or 115Vac @ 60Hz or 400Hz/8.7A rms continuous<br>Output neutral is connected to the chassis internally<br>Isolated floating output optional<br>Consult factory for other output requirements |
| Output Wave Form              | Sinusoidal   |
| Total Harmonic Distortion     | Less than 5% at full load  |
| Line Regulation               | Maximum 0.5%   |
| Load Regulation               | Maximum $\pm 6\%$ from no load to full load.<br>A $\pm 2\%$ load regulation option is available.   |
| Load Crest Factor             | Maximum 2.0 at 90% load  |
| Output Ripple Noise           | High frequency ripple is less than 500mVrms (20MHz BW)   |
| Efficiency                    | Typically 80% at full load<br>Dependent on input/output combination  |
| Output Overload Protection    | Current limiting with short circuit protection<br>Thermal shutdown with automatic recovery in case of insufficient cooling   |
| Output Overvoltage Protection | 280Vac (for 230Vac output) or 140Vac (for 115Vac output) by internal supply voltage limiting   |

|                          |   |
|--------------------------|---|
| Standards                | Designed to meet C22.2 No. 107.1 - 01, UL 458, EN60950, EN 62368-1, CE and EN50155  |
| EMI                      | EN55032 Class A or B according to requirements and EN50121-3-2 conducted and radiated   |
| Immunity                 | Meets criteria of EN50155 and EN50121-3-2 including EN 61000-4-2 (ESD)<br>EN61000-4-3 (RF Immunity)<br>EN61000-4-4 (Fast transients)<br>EN50155 (Surge)<br>EN61000-4-6 (Conducted Imm.)<br>EN50155 (Voltage Variations) |
| Operating Temperature    | -25 to +55°C cold-plate temperature for full specification<br>Extended temperature range available on request   |
| Humidity                 | 5 - 95% non-condensing  |
| Temperature Drift        | 0.05% per °C over operating temperature range   |
| Cooling                  | Conduction to customer heat-sink or chassis, additional cooling by high-quality built-in fans   |
| Environmental Protection | Ruggedizing, Conformal coating  |
| Shock/Vibration          | IEC 61373 Cat 1 A&B   |
| Dimensions               | F31: 483 x 68 x 356 mm (W x H x L) including terminal block and flanges<br>Mounting holes are clear   |
| Weight                   | 7 Kg  |
| Connections              | Input: Compression-type terminals or threaded studs<br>Output: Compression-type terminals   |
| MTBF                     | 120,000 hours at 45°C<br>Demonstrated MTBF is significantly higher  |
| Indicators               | None  |
| Control Input            | None<br>Optional remote shut down   |
| Alarm output             | None<br>Optional output Fail Alarm (Form C)   |
| RoHS Compliance          | Fully compliant   |
| Warranty                 | 2 years   |

### Terminal Block Pin-out

