



## IVSrail150 RAILWAY SINE WAVE INVERTER

### SERIES IVSrail150

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

It is a mature design with a track record in numerous applications. The DC/DC inputstage boosts the input voltage to a higher DC bus voltage, which feeds the DC/AC inverter to generate the required AC output. High frequency conversion enables a compact construction, low weight and high efficiency.

The unit has full electronic protection.

The input and output are filtered for low noise.

Cooling is via baseplate to a cold plate surface and by natural convection. The use of components with established reliability results in high MTBF.

The unit meets the requirements of EN 50155 for electronic equipment used on railway rolling stock.

It is manufactured at our plant under strict quality control. Customized versions are available.



Pure  
Sinewave



High  
frequency  
technology



Light weight,  
compact size



Full electronic  
protection



Extended  
temperature  
range



Conduction  
convection  
cooled



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
- Conduction / convection cooled, no fan
- High input-output isolation 3000Vrms
- 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>3000VDC Input to output  |
| Output Voltage                | 230Vac @ 50Hz/0.65A rms continuous or 115Vac @ 60Hz or 400Hz/1.3A rms continuous<br>Isolated floating output<br>Consult factory for other output requirements      |
| Output Wave Form              | Sinusoidal   |
| Total Harmonic Distortion     | Less than 5% at full load  |
| Load/Line Regulation          | ± 2% from no load to full load   |
| Load Crest Factor             | 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) EN61000-4-3 (RF Immunity) EN61000-4-4 (Fast transients) EN50155 (Surge) EN61000-4-6 (Conducted Imm.) 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 and natural convection   |
| Environmental Protection | Ruggedizing, Conformal coating   |
| Shock/Vibration          | IEC 61373 Cat 1 A&B  |
| Dimensions               | F2: 114 x 58 x 256 mm (W x H x L) including terminal block and flanges<br>Mounting holes are clear   |
| Weight                   | 1.2 Kg   |
| Connections              | Barrier type terminal block with 3/8" spacing  |
| MTBF                     | 150,000 hours at 45°C<br>Demonstrated MTBF is significantly higher   |
| Indicators               | None   |
| Control Input            | None   |
| Alarm output             | None<br>Optional output Fail Alarm (Form C)  |
| RoHS Compliance          | Fully compliant  |
| Warranty                 | 2 years  |

### Terminal Block Pin-out

| AC OUTPUT |    |    | ALARM (OPTION) |     |             | DC INPUT |   |   |
|-----------|----|----|----------------|-----|-------------|----------|---|---|
| NOT USED  | L1 | L2 | FAIL OPEN      | COM | FAIL CLOSED | GND      | + | - |
| 1         | 2  | 3  | 4              | 5   | 6           | 7        | 8 | 9 |

