

# 1000VA Low-profile, Railway Quality DC/AC Inverter with Sine Wave Output Voltage

## RSI 1K-F31 Series

- Sinusoidal wave shape
- Field-proven rugged design
- Cooling by conduction and aided by built-in fans
- Low profile, compact size
- Full electronic protection



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 heatsink 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. Industrial quality versions of this design are also available.

### SPECIFICATIONS

#### Input Voltage

24Vdc (17 – 34V)  
 36Vdc (25 – 51V)  
 48Vdc (33 – 67V)  
 72Vdc (50 – 101V)  
 96Vdc (67 – 135V)  
 110Vdc (77 – 154V)  
 Consult factory for other input voltages and ranges

#### 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

1500Vdc input to chassis/output  
 Output neutral is connected to the chassis internally.

#### Standards

Designed to meet  
 C22.2 No. 107.1 - 01, UL 458,  
 EN60950 and EN50155

#### 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)

#### EMI

EN50121-3-2

#### Output Voltage

115Vac/8.7Arms continuous at 60Hz or 400Hz; or  
 230Vac/4.3Arms continuous at 50Hz  
 Output neutral is connected to the chassis internally.  
 Isolated floating output available on request

#### 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.  
 A  $\pm 2\%$  load regulation option is available.

#### Load Crest Factor

2.0 at 90% load

#### Output Noise

High frequency ripple is less than 500mVrms (20MHz BW)

#### Output Overload Protection

Current limiting with short circuit protection  
 Thermal shutdown with automatic recovery in case of insufficient cooling

#### Output Overvoltage Protection

140Vac (for 115Vac output) or 280Vac (for 230Vac output) by internal supply voltage limiting

#### Efficiency

Input voltage dependent  
 Typically 80% at full load

#### Operating Temperature

-25 to +55°C cold-plate temperature for full specification

#### 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 that remove hot air from the unit

#### Environmental Protection

Ruggedizing  
 Conformal coating

#### Shock/Vibration

IEC 61373 Cat 1 A&B

#### Humidity

5 - 95% non-condensing

#### MTBF

120,000 hours at 45 °C  
 Demonstrated MTBF is significantly higher

#### Indicators

None

#### Control Input

None  
 Optional remote shut down

#### Alarm Output

None on standard version  
 Optional Output Fail Alarm (Form C)

#### Dimensions

F 31: 483 x 68 x 356 mm (19" x 2.7" x 14") including terminal blocks and flanges.  
 Mounting holes are clear.

#### Weight

7 kg (15 lb)

#### Connections

Input: Compression-type terminals or threaded studs  
 Output: Compression-type terminals

#### RoHS Compliance

Compliant

#### Warranty

Two years subject to application within good engineering practice

#### Terminal Block Pin-out



Please note that ABSOPULSE inverters are designed and built to customer specifications. The specifications on this data sheet are generic and will vary depending on input/output configuration and other customer requirements. Generic specifications are subject to change.

*Designer and manufacturer of quality converters, inverters, UPS systems, complete rack mount systems and DC-input fluorescent lamp inverters since 1982. Custom or standard. Absopulse is a BABT-approved Facility*



#### ABSOPULSE ELECTRONICS LTD

110 Walgreen Road, Ottawa, Ontario. K0A 1L0, CANADA  
 Tel: +1-613-836-3511 | Fax: +1-613-836-7488

E-mail: [absopulse@absopulse.com](mailto:absopulse@absopulse.com) | <http://www.absopulse.com>