

750Vdc Input, 50W Rugged, DC/DC Converter for Railway and other Heavy-duty Applications HVI 41R-F1 Series

- No optocouplers, low component count
- High reliability
- Rugged, railway and industrial quality
- Excellent EMI performance
- High input/output isolation
- Conduction/convection cooled
- Full electronic protection
- Wide input range (EN50155)



This rugged, railway quality DC-DC converter is designed for an operating life up to 30 years. By eliminating optocouplers in the feedback loop and significantly reducing the component count, the MTBF of the unit is improved over conventional designs. The use of the latest silicon carbide (SiC) semiconductor technology contributes to high conversion efficiency, high power density and a significantly smaller size than similar designs. Cooling is by conduction via baseplate. The internal board is conformal coated for immunity to humidity and contamination. The construction is robust and withstands high levels of shock and vibration. The input and output are filtered for low noise. Full electronic protection eliminates failure due to abnormal operating conditions, including application errors. Large design headroom and the use of components with established reliability also contribute to the long operating life of the unit. The converter meets the requirements of EN50155 for electronic equipment used on railway rolling stock. It is manufactured at our plant under strict quality control.

SPECIFICATIONS

<p>Input Voltage 750Vdc 525V – 975V range Input Current: 0.12A max Other input range on request</p> <p>Input Protection Inrush current limiting Varistors Reverse polarity protection Internal safety fuse Lower voltage than the specified minimum input will not damage the unit</p> <p>Isolation 3000Vdc input to chassis 5000Vdc input to output 5600Vdc type test 1000Vdc output to chassis</p> <p>Standards EN60950-1, EN50155 and related standards</p> <p>Immunity Meets criteria of EN50155, including: EN61000-4-2 (ESD) EN61000-4-3 (RF Immunity) EN61000-4-4 (Fast Transients) EN50155 (Surge) EN61000-4-6 (Conducted Imm.) EN50155 (Voltage Variations)</p> <p>EMI EN50121-3-2 and EN55032 Class A</p>	<p>Switching Frequency 47kHz \pm5kHz</p> <hr/> <p>Output Voltage/Current 24Vdc/2A Output is floating; either terminal can be grounded Other outputs on request</p> <p>Redundancy Diode None Available as option</p> <p>Line/Load Regulation \pm2% combined from zero load to full load</p> <p>Dynamic Response Max 5% voltage deviation for 10% to 50% load step, with better than 3msec recovery time</p> <p>Output Ripple/Noise Better than 60mv rms or 300 mv pp (@ 20MHz BW)</p> <p>Output Overload Protection Rectangular current limiting with short-circuit protection (hiccup)</p> <p>Output Overvoltage Protection Transzorb across the output</p>	<p>Efficiency Typically 85% at full load</p> <p>Operating Temperature Range -25°C to 55°C for full specification with proper airflow</p> <p>Temperature Drift 0.03% per °C over operating temperature range</p> <p>Cooling Conduction to customer heatsink or chassis and natural convection</p> <p>Environmental Protection Basic ruggedizing Conformal coating Heavy ruggedizing available on request</p> <p>Shock/Vibration IEC 61373 Cat 1 A&B</p> <p>Humidity 5 – 95% non-condensing</p> <p>MTBF 160,000 hours at 45 °C Demonstrated MTBF is significantly higher.</p>	<p>Indicators Green "Output ON" LED visible through cooling slots</p> <p>Control Input None</p> <p>Alarm Outputs None.</p> <p>Package/Dimensions (W x H x L) F1: 114 x 51 x 201 mm (4.5" x 2" x 7.9") including terminal block and flanges. Mounting holes are clear</p> <p>Weight 0.8 kg (1.8lb)</p> <p>Connections Input/Output: Phoenix terminal FRONT 2.5-H/SAS</p> <p>RoHS Compliance Compliant</p> <p>Warranty Two years subject to application within good engineering practice</p>
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The specifications on this data sheet are generic and are subject to change. Enhancements to these specifications can be provided upon request.

OEM of professional quality AC/DC power supplies and battery chargers, DC/DC converters, DC-AC sine-wave inverters, phase and frequency converters, DC-output UPS systems and complete power systems in 19" and 23" racks since 1982. Custom or standard.



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