

# 750Vdc Input, 2kW Rugged DC-DC Converter for Railway & other Heavy-duty Applications

## HVI 2KR-3U3 Series



- Field-proven rugged design
- For train and mobile applications
- Wide input ranges (EN50155)
- Redundancy diode
- Full electronic protection
- Cooling by high quality built-in fans

This rugged, railway quality DC-DC converter utilizes field-proven technology to generate the required output power. The converter is designed to meet EN50155 for electronic equipment used on railway rolling stock. It accepts an input voltage of 750Vdc (525V-1300Vdc range), the traction voltage typically required for mass transit vehicles such as trams, metros and light rail, and mining locomotives. The system is built with one FID 2000 input filter and two KHI 1200 boards. High quality built-in fans provide sufficient airflow for operation within the specified temperature range without de-rating. The fans draw air into the unit, which exhausts at the terminal side of the unit. 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. It is manufactured at our plant under strict quality control.

### SPECIFICATIONS

<p><b>Input Voltage</b> 750Vdc nominal 525V-1300Vdc operating range 1700Vdc surge for 100msec Input current: 4.3Arms max. Other inputs on request</p> <p><b>Input Protection</b> Inrush current limiting Varistors Reverse polarity protection Internal safety fuse Lower voltage than the specified minimum input will not damage the unit</p> <p><b>Isolation</b> 3000Vdc input to chassis 4300Vdc input to output 5600Vdc type test 1500Vdc output to chassis</p> <p><b>Standards</b> Designed to meet EN62368-1 and EN50155</p> <p><b>Immunity</b> Meets criteria as requested in EN50155 and EN50121-3-2 according to the following standards: EN61000-4-2 (ESD) EN61000-4-3 (RF Immunity) EN61000-4-4 (Fast Transients) EN50155 (Surge) EN61000-4-6 (Conducted Immun.) EN50155 (Voltage Variations)</p> <p><b>EMI</b> EN50121-3-2</p>	<p><b>Switching Frequency</b> 55kHz <math>\pm</math>5kHz</p> <p><b>Output Voltage/Current</b> 24V, 36V, 48V or 110Vdc Output is floating; either terminal can be grounded Other outputs on request</p> <p><b>Redundancy Diode</b> Installed internally for separation of the internal modules</p> <p><b>Line/Load Regulation</b> <math>\pm</math>1% combined from zero load to full load including output separation diode</p> <p><b>Dynamic Response</b> Max 5% voltage deviation for 10% to 50% load step, with better than 1msec recovery time</p> <p><b>Output Ripple/Noise</b> Better than 0.2% rms or 1% pp of the output voltage (@ 20MHz BW)</p> <p><b>Output Overload Protection</b> Continuous current limiting with short circuit protection (no hiccup) Thermal shutdown in case of insufficient airflow (self-resetting) Crowbar diode against accidental reverse connection of the battery (No output breaker, customer must provide it on system level)</p> <p><b>Output Overvoltage Protection</b> Second regulator loop, completely stable and independent of main regulator loop</p>	<p><b>Efficiency</b> Typically 85% at full load depending on input/output combination</p> <p><b>Operating Temperature Range</b> -25°C to +55°C for full specification Extended temperature ranges available</p> <p><b>Temperature Drift</b> 0.03% per °C over operating temperature range</p> <p><b>Cooling</b> Forced air by high quality built-in fans and conduction to customer heat sink or chassis. Fans draw air into the unit.</p> <p><b>Environmental Protection</b> Basic ruggedizing Conformal coating</p> <p><b>Shock/Vibration</b> IEC 61373 Cat 1 A&amp;B</p> <p><b>Humidity</b> 5-95% non-condensing</p> <p><b>MTBF</b> 115,000 hours @45°C (fans excluded) Demonstrated MTBF is significantly higher.</p>	<p><b>Indicators</b> Green "Output ON" LED visible through rear perforation</p> <p><b>Control Input</b> None Available as option</p> <p><b>Alarm Outputs</b> Not installed Module fail alarm Form C contacts as option</p> <p><b>Package/Dimensions (W x H x D)</b> 3U3: 132 x 187 x 381 mm 5.2 x 7.4 x 15" enclosure size without terminals and mounting hardware. 19" rack mounting hardware is also available.</p> <p><b>Weight</b> 6.5kg (14 lbs.)</p> <p><b>Connections</b> Input: Terminal block Phoenix HV assembly Output: Terminal block Phoenix 125A type</p> <p><b>RoHS Compliance</b> Compliant</p> <p><b>Warranty</b> Two years subject to application within good engineering practice Contamination related failures and shipping cost excluded.</p>
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ABSOPULSE power supplies are designed and built to customer requirements. The specifications on this data sheet are generic guidelines only and are subject to change.

OEM of industrial and railway quality DC-DC converters, AC-DC power supplies and battery chargers, 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. ABSOPULSE is a ABAT-approved Facility.



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