

## 3000W, Rugged DC/DC Converter for Railway and other Heavy-duty Applications BAP 3KR-3U4



- Field-proven rugged design
- For train and mobile applications
- Fan cooling
- Full electronic protection
- Redundant, modular

This railway quality DC/DC converter uses a field technology to deliver the required output power. It is a mature design with a track record in numerous applications. The unit is built with four internal modules, which also provide inherent redundancy; the failure of one module would only cause a minor loss in output power. Several shelves can be paralleled for higher output power. The unit has input and output filtering in compliance with EN55022 and EN50121-3-2 conducted and radiated EMI standards. Built-in fans provide sufficient airflow for operation without de-rating to the specified temperature. Full electronic protection eliminates failure due to abnormal operational conditions, including application errors. The internal models are fully ruggedized and conformal coated for immunity to shock, vibration and moisture. Low component count, large design headroom, and the use of components with established reliability result in a high MTBF. It meets the requirements of EN50155 for electronic equipment used on railway rolling stock. The unit is manufactured at our plant under strict quality control.

### SPECIFICATIONS

<p><b>Input Voltage</b> 110Vdc (66 - 154V) Other inputs upon request</p> <p><b>Input Protection</b> Inrush current limiting. Reverse polarity protection Varistor Internal safety fuse Lower voltage than specified minimum input will not damage unit</p> <p><b>Input Isolation</b> Depends on the required input/output combination. At a minimum: 1500VDC input to chassis 3000VDC input to output 1500VDC output to chassis</p> <p><b>Standards</b> Designed to meet EN60950 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) EN 50155 (Surge) EN 61000-4-6 (Conduction Immunity) EN50155 (Voltage Variations)</p>	<p><b>EMI</b> EN50121-3-2</p> <p><b>Switching Frequency</b> 55kHz <math>\pm</math>3kHz</p> <hr/> <p><b>Output Voltage</b> 28V <math>\pm</math> 0.2V/107A Consult factory for other outputs</p> <p><b>Redundancy diodes</b> Installed on each internal module for separation and redundancy</p> <p><b>Line/Load Regulation</b> <math>\pm</math>1.5% combined from zero load to full load including redundancy 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 1% of output voltage peak to peak or 0.2% RMS of the output voltage (20MHz BW)</p> <p><b>Overload Protection</b> Rectangular current limiting with short-circuit protection Thermal shutdown with automatic reset in case of insufficient cooling (self-resetting)</p>	<p><b>Output Overvoltage Protection</b> Second regulator loop. Second loop completely stable and independent of main regulator loop</p> <p><b>Efficiency</b> Typically 90% depending on input/Output configuration</p> <p><b>Operating Temperature</b> -25 °C to +55 °C for full specification</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</p> <p><b>Environmental Protection</b> Ruggedizing Conformal coating</p> <p><b>Shock/Vibration</b> IEC61371 Cat 1 A&amp;B</p> <p><b>Humidity</b> 5 - 95% non-condensing</p> <p><b>MTBF</b> 150,000 hours @ 45 °C per internal module. Demonstrated MTBF is significantly higher.</p>	<p><b>Indicators</b> None Available as option</p> <p><b>Control Input</b> None Available as option</p> <p><b>Alarm Outputs</b> Form C contacts for module fail alarm available on request</p> <p><b>Package/Dimensions (H x W x D)</b> 3U4: 132 x 244 x 407 mm 5.2" x 9.6" x 16" including connectors, excluding flanges 19" rack mounted version also available</p> <p><b>Weight</b> 8kg (18 lbs.) approximately</p> <p><b>Connections</b> Input: HV terminal block assembly Output: Terminal block or threaded studs according to output current</p> <p><b>RoHS Compliance</b> Compliant</p> <p><b>Warranty</b> Two years subject to application within good engineering practice</p>
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Enhancements to these general specifications can be accommodated upon request. Designed to meet common approval requirements

*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*



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