

## 750Vdc Input, 3kW Rugged DC-DC Converter for Railway & other Heavy-duty Applications HVI 3KR-3U4 Series



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

This rugged, railway quality DC-DC converter utilizes field-proven technology to generate the required output power. It is a mature design with a track record in numerous applications. The converter is designed to meet EN50155 for electronic equipment used on railway rolling stock. It accepts an input voltage of 750Vdc (525V-975Vdc range), the traction voltage typically required for mass transit vehicles such as trams, metros and light rail, and mining locomotives. The unit is built with one FID 2000 and three KHL 1500 internal modules. High quality built-in fans provide sufficient airflow for operation within the specified temperature range without de-rating. The fan draws 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. Industrial quality versions of this design are also available.

### SPECIFICATIONS

#### Input Voltage

750Vdc nominal  
525V-975Vdc operating range  
Other inputs on request

#### Input Protection

Inrush current limiting  
Varistors  
Reverse polarity protection  
Internal safety fuse  
Lower voltage than the specified minimum input will not damage the unit

#### Isolation

3000Vdc input to chassis  
4300Vdc input to output  
5600Vdc type test  
1500Vdc output to chassis

#### Standards

Designed to meet EN61010-1 and EN50155

#### Immunity

Meets criteria of EN50155 and EN 50121-3-2, including:  
EN 61000-4-2 (ESD)  
EN 61000-4-3 (RF Immunity)  
EN 61000-4-4 (Fast Transients)  
EN 50155 (Surge)  
EN 61000-4-6 (Conducted Imm.)  
EN 50155 (Voltage Variations)

#### EMI

EN50121-3-2

#### Switching Frequency

55kHz  $\pm$ 5kHz

#### Output Voltage/Current

24V, 36V, 48V or 110Vdc  
Output is floating; either terminal can be grounded  
Other outputs on request

#### Redundancy Diode

Installed internally for separation of the internal modules

#### Line/Load Regulation

$\pm$ 1.5% combined from zero load to full load

#### Dynamic Response

Max 5% voltage deviation for 10% to 50% load step, with better than 1msec recovery time

#### Output Ripple/Noise

Better than 0.2% rms or 1% pp (@ 20MHz BW)

#### Output Overload Protection

Rectangular current limiting with short-circuit protection  
Thermal shutdown in case of insufficient airflow (self-resetting)

#### Output Overvoltage Protection

Second regulator loop, completely stable and independent of main regulator loop

#### Efficiency

Typically better than 84% at full load

#### Operating Temperature Range

-25°C to 55°C for full specification without derating  
Extended temperature ranges available

#### Temperature Drift

0.03% per °C over operating temperature range

#### Cooling

Forced air by two high quality built-in fans.  
Fans draw air into the unit

#### Environmental Protection

Ruggedizing  
Conformal coating

#### Shock/Vibration

IEC 61373 Cat 1 A&B

#### Humidity

5 – 95% non-condensing

#### MTBF

110,000 hours @45°C (fans excluded)  
Demonstrated MTBF is significantly higher.

#### Indicators

Green "Output ON" LED on each internal power module, visible through the cooling slots

#### Control Input

None on standard version  
Available as option

#### Alarm Outputs

Module fail alarm.  
Form C contact

#### Package/Dimensions (H x W x D)

3U4: 132 x 244 x 407 mm  
5.2" x 9.6" x 16" including connectors, excluding flanges  
19" rack mounted version also available

#### Weight

8kg (18 lbs.) approximately

#### Connections

Input: HV terminal block assembly  
Output: Terminal block or threaded studs according to output current

#### RoHS Compliance

Compliant

#### Warranty

Two years subject to application within good engineering practice

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 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. ABSOPULSE is a BABT-approved facility.*



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