

750Vdc Input, 300W Rugged DC-DC Converter for Railway and other Heavy-duty Applications

HVI-300R-F3 Series



- Field-proven rugged design
- For train and mobile applications
- Full electronic protection
- Conduction/convection cooled (no fans)
- Wide input range (EN50155)
- N+1 redundancy available

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). This is the traction voltage typically required for mass transit vehicles such as trams, metros and light rail, and for mining locomotives. An optional built-in redundancy diode allows for a number of units to be connected in parallel to achieve higher output power or N+1 redundancy. The output separation diode also makes the unit suitable for battery charging applications. Cooling is by conduction via baseplate. Additional cooling is achieved by natural convection through the cooling slots. All heat generating components are installed on aluminum heatsink blocks which are thermally connected to the base plate. This also provides 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

Input Voltage

750Vdc nominal
525V-975Vdc operating range
Other input voltage ranges are available 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
3000Vdc input to output
5600Vdc type test
1000Vdc output to chassis

Standards

Designed to meet EN60950-1 and EN50155

Immunity

Meets criteria as requested in EN50155 and EN50121-3-2 according to:
EN61000-4-2 (ESD)
EN61000-4-3 (RF Immunity)
EN61000-4-4 (Fast Transients)
EN50155 (Surge)
EN61000-4-6 (Conduction Imm)
EN50155 (Voltage Variations)

EMI

EN50121-3-2

Switching Frequency

55kHz \pm 3kHz

Output Voltage

12V, 24V, 48V or 110Vdc continuous
Output is floating; either terminal can be grounded
Other outputs on request

Redundancy Diode

Not installed
Available as option

Line/Load Regulation

\pm 1% 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 (no hiccup)
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 80% at full load

Operating Temperature Range

-25°C to +55°C for full specification
Extended temperature ranges available

Temperature Drift

0.03% per °C over operating temperature range

Cooling

Conduction to customer heatsink or chassis and natural convection

Environmental Protection

Ruggedizing
Conformal coating

Shock/Vibration

IEC 61373 Cat 1 A&B

Humidity

5-95%, non-condensing

MTBF

130,000 hours at 45°C
Demonstrated MTBF is significantly higher.

Indicators

Green "Output ON" LED visible through cooling slots

Control Input

None
Available as option

Alarm Outputs

None
Available as option

Dimensions (W x H x D)

F3: 132 x 64 x 300 mm (5.2" x 2.5" x 11.8") including mounting flanges and terminals
Mounting holes are clear.

Weight

2 kg (4.4 lbs)

Connections

12-pole barrier type terminal block with 3/8" spacing

RoHS Compliance

Compliant

Warranty

Two years subject to application within good engineering practice

Terminal Block Pin Out

DC OUTPUT						DC INPUT					
+	+	0V	0V	NOT USED	NOT USED	GND	NOT USED	RTN	NOT USED	+	NOT USED
1	2	3	4	5	6	7	8	9	10	11	12

Enhancements to these general specifications and customizing can be accommodated upon request. Specifications are subject to change.

Designer and manufacturer of quality ac-dc power supplies and battery chargers, converters, inverters, dc-output UPS systems, and complete rack mount systems in 19" or 23" racks. Custom or standard. ABSOPULSE is a BABT-approved Facility.



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