

150W, Encapsulated, Railway Quality DC-DC Converter with built in RIA12 Protection

RWR 155 Series



- RIA12 withstand capacity
- EN50155 input ranges
- For train and mobile applications
- Rugged, field-proven design
- Full electronic protection

This fully encapsulated, railway quality DC-DC converter utilizes field proven topology to generate the required output power. It meets the requirements of EN50155 for electronic equipment used on railway rolling stock. With input voltage surge withstand capability of $3.5V_N$ for 20msec, the converter also meets the requirements of RIA12. The unit is entirely potted with a thermally conductive MIL-grade silicon rubber compound to ensure immunity to shock, vibration and humidity. Cooling is by conduction via base plate to a heatsinking surface. Full electronic protection, low component count, large design headroom, and the use of components with established reliability contribute to high MTBF. The unit is manufactured at our plant under strict quality control.

SPECIFICATIONS

Input Voltage

24Vdc (14.4 – 34V)
 36Vdc (22 – 51V)
 48Vdc (29 – 67V)
 72Vdc (43 – 101V)
 96Vdc (58 – 135V)
 110Vdc (66 – 154V)
 385Vdc max (RIA12) for
 1 second minimum
 Other inputs upon request

Input Protection

Inrush current limiting
 Varistor
 Reverse polarity protection
 Internal safety fuse
 Limiter circuit for RIA 12 surges
 Low input voltages of less than the
 specified minimum will not damage
 the unit

Isolation

1500VDC input to chassis
 3000VDC input to output
 1500VDC output to chassis

Standards

Designed to meet EN60950-1,
 EN50155 and RIA 12

Immunity

Meets EN50155, EN50121-3-2 and
 RIA12 according to:
 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 Immunity)
 EN 50155 (Voltage Variations)
 Built-in surge protection: $3.5V_N$ 20ms
 (meets RIA 12).

EMI

EN50121-3-2

Output Voltage

12Vdc, 24Vdc, 48Vdc or 110Vdc
 150W continuous output power
 Output is floating; either
 terminal can be grounded
 Other outputs on request

Redundancy Diode

None
 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

Less than 1% of output voltage
 peak to peak or 0.2% RMS of the
 output voltage (20MHz BW)

Output Overload Protection

Rectangular current limiting with
 Hiccup-type short-circuit protection
 Thermal shutdown in case of
 insufficient cooling (self-resetting)
 as option

Output Overvoltage Protection

Second regulator loop completely
 stable and independent of main
 regulator loop
 Transorb clamp installed across
 the output

Efficiency

Input/output voltage dependent.
 Typically 85% at full load

Operating Temperature Range

-40°C to 70°C cold plate
 temperature for full specification

Temperature Drift

0.03% per °C over operating
 temperature range

Cooling

Conduction via base plate to
 customer heatsink or chassis

Environmental Protection

Full encapsulation with thermally
 conductive silicon potting
 compound with UL94V-0
 flammability rating.
 Meets environmental criteria as
 requested in MIL-810C, D.

Shock/Vibration

IEC 61373 Cat 1 A&B

Humidity

5-100% non-condensing

MTBF

160,000 at 45°C
 Demonstrated MTBF is
 significantly higher

Indicators

None
 Optional

Control Input

None
 Optional

Alarm Output

Not installed
 Optional output Fail Alarm

Package/Dimensions (L x W x H)

P59: 108 x 70 x 191 mm
 (4.3" x 2.8" x 7.5")
 including mounting flanges
 Mounting holes are clear

Weight

Approx. 1.5 kg (3.2 lb)

Connections

9-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

24V, 36V, 48Vdc input:

DC OUTPUT				DC INPUT				
NOT USED	-	+	NOT USED	NOT USED	NOT USED	GND	-	+
1	2	3	4	5	6	7	8	9

72V, 96V, 110Vdc input:

DC OUTPUT				DC INPUT				
NOT USED	-	+	NOT USED	NOT USED	NOT USED	GND	+	-
1	2	3	4	5	6	7	8	9

The specifications on this data sheet are generic and are subject to change. Enhancements to these specifications can be provided upon request.

OEM of industrial & railway 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" & 23" racks since 1982. Custom or standard. ABSOPULSE is a BABT-approved facility.



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