

150W, Fully Encapsulated DC-DC Converter with RIA12 Input Range for Railway and other Heavy-Duty Applications RWR 155-P59 Series

- RIA12 withstand capacity
- EN 50155 input ranges
- For train and mobile applications
- Full encapsulation
- Wide temperature range
- Rugged, field-proven design
- Full electronic protection



This fully encapsulated, railway quality DC-DC converter uses a field-proven design to generate the required output power. It is a mature product with a track-record in numerous applications. The unit meets the requirements of EN 50155 for electronic equipment used on rolling stock. The input voltage range withstands RIA12 surges (3.5Vn for 20msec). It is entirely potted with a thermally conductive MIL-grade silicon rubber compound to ensure immunity to high levels of shock, vibration and humidity. Cooling is by conduction via a base plate to a heat-sinking surface. Low component count, large design headroom, and the use of components with established reliability result in a high MTBF. The unit is also suitable for transportation, mining, oil rigs, military and other harsh environments. It is manufactured at our plant under strict quality control. Customized versions are also available.

SPECIFICATIONS

Input Voltage

24Vdc (14.4 – 34V)
36Vdc (22 – 51V)
48Vdc (29 – 67V)
72Vdc (43 – 101V)
96Vdc (58 – 135V)
110Vdc (66 – 154V)
3.5V_N for min 20msec
Other inputs upon request

Input Protection

Inrush current limiting
Varistor
Reverse polarity protection
Internal safety fuse
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 EN 62368-1
EN 50155, EN 45545, RIA12

Immunity

Meets EN 50155, EN 50121-3-2 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

EN 50121-3-2

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

±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 68 x 191 mm
(4.3" x 2.7" 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

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 BABT-approved Facility.

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