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

- **RIA12** withstand capacity
- EN50155 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 utilizes field proven topology to generate the required output power. The unit meets the requirements of EN50155 for electronic equipment used on railway rolling stock. The input voltage range ensures that the unit can withstand RIA12 surges (3.5Vn for 20msec). The converter 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, oilrigs, military and other harsh environments. It is manufactured at our plant under strict quality control. Customized versions are also available.

## **SPECIFICATIONS**

EMI

None

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

Available as option

load to full load

**Dynamic Response** 

1msec recovery time

**Output Ripple / Noise** 

Line/Load Regulation

± 1% combined from zero

Max 5% voltage deviation for 10%

to 50% load step, with better than

Less than 1% of output voltage

output voltage (20MHz BW)

**Output Overload Protection** 

Thermal shutdown in case of

as option

regulator loop

the output

peak to peak or 0.2% RMS of the

Rectangular current limiting with

Hiccup-type short-circuit protection

insufficient cooling (self-resetting)

**Output Overvoltage Protection** 

stable and independent of main

Transzorb clamp installed across

Second regulator loop completely

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

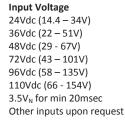
Two years subject to application within good engineering practice

**Terminal Block Pin-out** 

24V, 36V, 48Vdc input:

#### DC OUTPUT DC INPUT NOT GND NOT NOT NOT + USED ╧ USED USED USED

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



### 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 EN60950-1, EN50155, EN45545, RIA12

### 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) FN 50155 (Voltage Variations) Built-in surge protection: 3.5V<sub>N</sub> 20ms (meets RIA 12).

