

200W, Encapsulated DC/DC Converter with Built-in RIA 12 Limiter Circuit for Railway and other Heavy Duty Applications

RWR 212 Series

- ◆ Rugged, field-proven design
- ◆ Complete encapsulation
- ◆ Wide temperature range
- ◆ Full electronic protection
- ◆ EN 50155 input ranges



This fully encapsulated, railway quality DC/DC converter uses a field-proven design to generate 200W output power. It is a mature product with a track-record in numerous applications. This unit meets the requirements of EN 50155 for electronic equipment used on rolling stock. It also meets requirements for RIA 13 and RIA 20, and has a built in voltage limiter circuit to ensure input voltage surge withstand capability to meet RIA 12 (3.5Vn for 20msec). This converter is entirely potted with a thermally conductive MIL-grade silicon rubber compound to ensure immunity to high levels of shock, vibration and humidity. It is conduction cooled 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

Standard Input Voltages

24Vdc (14.4 – 34V)
 36Vdc (22 – 51V)
 48Vdc (29 – 67V)
 72Vdc (43 – 101V)
 96Vdc (58 – 135V)
 110Vdc (66 – 154V)
 Consult factory for other voltages and ranges

Input Protection

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

Isolation

1500Vdc input to chassis
 3000Vdc input to output
 1500Vdc output to chassis

Standards

Designed to meet IEC950, EN50155, RIA 12, RIA 13, RIA 20

Immunity

Meets criteria of EN50155 and EN50121-3-2 according to the following standards:
 EN 61000-4-2 (ESD)
 EN61000-4-3 (RF Immunity)
 EN61000-4-4 (Fast Transients)
 EN50155 (Surge)
 EN61000-4-6 (Conducted Imm.)
 EN50155 (Voltage Variations)
 Built-in protection against the 3.5Vn, 20ms surge according to RIA 12.

EMI

EN55022 Class B and EN50121-3-2 conducted and radiated

Switching Frequency

80kHz \pm 5kHz

Standard Output Voltages

12Vdc, 24Vdc, 36Vdc or 48Vdc
 Output is floating, either terminal can be grounded.
 Consult factory for other outputs

Redundancy Diode

None installed
 Available as option

Line/Load Regulation

\pm 1% combined from zero load to full load on each output

Dynamic Response

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

Output Ripple/Noise

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

Output Overload Protection

Rectangular current limiting with short-circuit protection (hiccup type)
 Thermal shutdown with automatic recovery in case of insufficient cooling

Output Overvoltage Protection

Second regulator loop completely stable and independent of main regulator loop

Efficiency

80 to 90% depending on input/output configuration

Operating Temperature Range

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

Temperature Drift

0.03% per °C over operating temperature range

Cooling

Conduction cooling via base plate to customer heat-sink or chassis

Environmental Protection

Full encapsulation with thermally conductive silicon potting compound with UL94V-0 flammability rating

Shock/Vibration

IEC 61373 Cat 1 A&B

Humidity

5 – 95% non-condensing
 Contact factory for higher rating

MTBF

150,000 hours @ 45 °C
 Demonstrated MTBF is significantly higher

Indicators

None.
 Optional green 'ON' LED

Control Input

None

Alarm Output

None

Package/Dimensions (W x H x L)

P200L: 94 x 60 x 230 mm
 3.7" x 2.4" x 9.1" including terminal block and flanges
 Mounting holes are clear

Weight

1.3kg (2.8 lb)

Connections

5-pole barrier-type terminal block with 3/8" spacing
 Cover can be provided upon Request

RoHS Compliance

Fully compliant

Warranty

Two years subject to application within good engineering practice.

Terminal Block pin-out

DC OUTPUT		GND	DC INPUT	
+	-		+	-
1	2	3	4	5

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



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