

## 200W, Encapsulated DC/DC Converter for Railway and other Heavy Duty Applications RWR 212 Series



- Rugged, field-proven design
- Complete encapsulation
- Very wide temperature range
- Full electronic protection
- Wide input ranges

The RWR 212 Series fully encapsulated, single output 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 shock, vibration and humidity. It is conduction cooled via a base plate to a heatsinking surface. Low component count, large design headrooms, 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. The RWR 212 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)  
Other inputs upon request

#### 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

#### Output Voltage

12Vdc, 24Vdc, 36Vdc or 48Vdc  
Output is floating, either terminal can be grounded.  
Other outputs upon request

#### Redundancy Diode

None

#### Line/Load Regulation

+/- 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 hiccup type short-circuit protection  
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

Meets IEC 61373  
Cat 1 A&B and Cat 2 as a min.

#### 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 2.36" x 9.05" including terminal block and flanges  
Mounting holes are clear

#### Weight

1.3kg (2.9 lbs.)

#### 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.

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

*Designer and manufacturer of quality ac-dc power supplies and battery chargers, converters, inverters, dc-output UPS systems, complete rack mount systems and DC-input fluorescent lamp inverters since 1982. Custom or standard. Absopulse is a ABBT-approved Facility.*



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