

250W, Dual-Output Encapsulated DC/DC Converter for Railway and Extreme Environments

RWY 252H-P300H Series



- Rugged, field-proven design
- Fully independent, dual output
- Full encapsulation
- Wide temperature range
- Full electronic protection
- Wide EN50155 input ranges

This fully encapsulated, dual output, railway quality DC/DC converter uses a field-proven high efficiency power conversion topology to generate 250W output power. The unit has two fully independent, regulated isolated output stages, V1 providing up to 140W and V2 up to 110W. The design is based on the field-proven RWY 150 and RWY 100 series topology, which has a track record in numerous applications. It is entirely potted with a thermally conductive MIL-grade silicon rubber compound to ensure immunity to shock, vibration and humidity. The unit 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. It meets the requirements of EN50155 for electronic equipment used on rolling stock. The unit is also suitable for transportation, mining, military, marine and other harsh environments. The series 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
 1000Vdc output to output

Standards

Designed to meet EN60950-1, EN50155

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)

EMI

EN50121-3-2

Switching Frequency

V1: 80kHz \pm 5kHz
 V2: 130kHz \pm 5kHz

Output Voltage/Current

V1: any single voltage 5V to 110Vdc limited by 12A max current handling capacity, or power capacity 140W
 V2: any single voltage 5V to 110dc limited by 8A max current handling capacity, or power capacity 110W.
 Both outputs are individually regulated, floating and either terminal can be grounded
 Returns are separated.

Redundancy Diode

None

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) on each output

Output Overload Protection

Rectangular current limiting with short-circuit protection on each output (hiccup type).

Output Overvoltage Protection

Transzorb installed across each output

Efficiency

Typically 85% at full load 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 via baseplate to customer chassis or heat-sink

Environmental Protection

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

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 'ON' LED adapter can be installed on the terminal block.

Control Input

None

Alarm Output

None

Package/Dimensions

P300H: 113 x 60 x 200 mm (4.5" x 2.4" x 7.9") including terminal block and flanges.
 Mounting holes are clear

Weight

1.5 kg (3.3 lbs)

Connections

9 pole barrier-type terminal block with 3/8" spacing
 Cover provided on request

RoHS Compliance

Compliant

Warranty

Two years subject to application within good engineering practice.

Terminal Block pin-out

V1 OUTPUT		V2 OUTPUT		GND			INPUT	
+	-	+	-	$\frac{\pm}{\pm}$	$\frac{\pm}{\pm}$	NOT USED	+	-
1	2	3	4	5	6	7	8	9

Enhancements to these general specifications and customizing can be accommodated upon request. Specifications are 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 BABT-approved Facility.



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