250W, Dual-Output Encapsulated DC/DC Converter for Railway and Extreme Environments
RWY 252H Series

- Rugged, field-proven design
- Fully independent, dual output
- Full encapsulation
- Wide temperature range
- Full electronic protection
- 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)
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
1000Vdc output to output

Standards
Meets EN60950 and EN50155

Immunity
Meets criteria of EN50155 and EN50121-3-2 including
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
EN55022 Class B and EN50121-3-2 Conducted and radiated

Switching Frequency
V1: 80kHz ±5kHz
V2: 130kHz ±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
±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 +70oC 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

Shock/Vibration
IEC 61373 Cat 1 A&B

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

MTBF
150,000 hours @ 45 oC
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
Fully compliant

Warranty
Two years subject to application within good engineering practice.

Terminal Block Pin-out.

V1 OUTPUT		V2 OUTPUT					INPUT	
+	-	+	-	GND ⏚	GND ⏚	Not used	+	-
1	2	3	4	5	6	7	8	9

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

ANALYTIC SYSTEMS
Power Conversion Solutions

8128 River Way, Delta B.C. V4G 1K5 Canada T. 604.946.9981 F. 604.946.9983 TF. 1.800.668.3884 (US/CANADA)

www.analyticsystems.com