500W, Encapsulated DC/DC Converter for Railway and other Heavy Duty Environments
RWY 500-P500 Series

- Rugged, field-proven design
- Full 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 500W output power. It is a mature product with 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. Cooling is by conduction via 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 meets the requirements of EN50155 for electronic equipment used on rolling stock. It is also suitable for transportation, mining, oilrigs, military and other harsh environments. The converter is manufactured at our plant under strict quality control. Customized versions are also available.

SPECIFICATIONS

Standard Input Voltages
24Vdc (17 - 34V)
48Vdc (29 - 67V)
72Vdc (43 – 101V)
96Vdc (58 – 135V)
110Vdc (66 - 154V)
Other voltages and ranges available on 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 EN60950-1, 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
EN50121-3-2

Switching Frequency
55kHz ±3kHz

Standard Output Voltages
12V/40A, 24V/20A, 36V/13A, 48V/10A or 110Vdc/4.5A
Outputs are floating; either terminal can be grounded
Other outputs available on request

Redundancy Diode
Not installed
Available on request

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 short-circuit protection (non-hiccup)
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 specifications

Temperature Drift
0.03% per °C over operating temperature range

Cooling
Conduction cooling via base plate 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.

Control Input
None
Enable or inhibit input as option

Alarm Output
None.
Available on request

Package/Dimensions (W x H x L)
P 500: 138 x 65 x 257 mm
(5.5" x 2.6" x 10.1")
Includes terminal block and flanges
Mounting holes are clear

Weight
2.6 kg (5.7 lb)

Connections
10-pole barrier type terminal block

RoHS Compliance
Compliant

Warranty
Two years subject to application within good engineering practice

Terminal Block Pin-out

OUTPUT				Spares for Options			GND		INPUT	
+	+	–	–	NOT USED	NOT USED	NOT USED	⏚		–	+
1	2	3	4	5	6	7	8		9	10

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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Made in Canada