

100W, Encapsulated DC/DC Converter with RIA12 Input Range for Railway and other Heavy Duty Applications PDR 100R-P99 Series

- RIA12 withstand capacity
- EN50155 input ranges
- For train and mobile applications
- Full encapsulation
- Wide temperature range
- Rugged, field-proven design
- Full electronic protection



This fully encapsulated, railway quality DC-DC converter utilizes field proven topology to generate the required output power. The unit meets the requirements of EN50155 for electronic equipment used on railway rolling stock. The input voltage range ensures that the unit can withstand RIA12 surges (3.5Vn for 20msec). The converter is entirely potted with a thermally conductive MIL-grade silicon rubber compound to ensure immunity to high levels of shock, vibration and humidity. Cooling is by conduction 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

Input Voltage

24Vdc (14.4 – 34V)
36Vdc (22 – 51V)
48Vdc (29 – 67V)
72Vdc (43 – 101V)
96Vdc (58 – 135V)
110Vdc (66 – 154V)
3.5V_N for min 20msec
Other inputs upon request

Input Protection

Inrush current limiting
Varistor
Reverse polarity protection
Internal safety fuse
Low input voltages of less than the specified minimum will not damage the unit

Isolation

1500VDC input to chassis
3000VDC input to output
1500VDC output to chassis

Standards

Designed to meet EN60950-1,
EN50155, EN45545, RIA12

Immunity

Meets EN50155, EN50121-3-2 and
RIA12 according to:
EN 61000-4-2 (ESD)
EN 61000-4-3 (RF Immunity)
EN 61000-4-4 (Fast Transients)
EN 50155 (Surge)
EN 61000-4-6 (Conducted Immunity)
EN 50155 (Voltage Variations)
Built-in surge protection: 3.5V_N 20ms
(meets RIA 12).

EMI

EN50121-3-2

Output Voltage

12Vdc, 24Vdc, 48Vdc or 110Vdc
150W continuous output power
Output is floating; either
terminal can be grounded
Other outputs on request

Redundancy Diode

None
Available as option

Line/Load Regulation

± 1% combined from zero
load to full load

Dynamic Response

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

Output Ripple / Noise

Less than 1% of output voltage
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 in case of
insufficient cooling (self-resetting)
as option

Output Overvoltage Protection

Second regulator loop completely
stable and independent of main
regulator loop
Transzorb clamp installed across
the output

Efficiency

Input/output voltage dependent.
Typically 85% at full load

Operating Temperature Range

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

Temperature Drift

0.03% per °C over operating
temperature range

Cooling

Conduction via base plate to
customer heatsink or chassis

Environmental Protection

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

Shock/Vibration

IEC 61373 Cat 1 A&B

Humidity

5-100% non-condensing

MTBF

160,000 at 45°C
Demonstrated MTBF is
significantly
higher

Indicators

None
Optional

Control Input

None
Optional

Alarm Output

Not installed
Optional output Fail Alarm

Package/Dimensions (W x H x L)

P99: 81 x 66 x 156 mm
(3.2" x 2.6" x 6.2")
Mounting holes are clear

Weight

1 kg (2.1 lbs)

Connections

6-pole barrier type terminal block
with 3/8" spacing
Snap-on covers included

RoHS Compliance

Compliant

Warranty

Two years subject to application
within good engineering practice

Terminal Block Pin Out

≤71Vdc input

OUTPUT			INPUT		
-	+	NOT USED	GND	-	+
1	2	3	4	5	6

≥72Vdc input

OUTPUT			INPUT		
-	+	NOT USED	GND	+	-
1	2	3	4	5	6



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