

RIA12, 100W Rugged Railway Quality DC/DC Converter DCR 100R-F0-110/24FT



- RIA12 withstand capacity
- EN50155 input range
- Field-proven rugged design concept
- For train and mobile applications
- Conduction/convection cooled – no fan
- Full electronic protection

This rugged, railway quality DC/DC converter utilizes field proven DCW 100 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). Cooling is by conduction via baseplate. Additional cooling is achieved by natural convection through the cooling slots. All heat generating components are installed on aluminum heatsink blocks which are thermally connected to the base plate. This also provides exceptional mechanical ruggedness. Conformal coating provides protection against humidity and airborne contaminants. Full electronic protection, low component count, large design headroom and the exclusive use of components with established reliability contribute to a high MTBF.

SPECIFICATIONS

Input Voltage

110Vdc nominal
66-154Vdc operating range
385Vdc max (RIA12) for 1 minute min.
Input current: 1.8A max.
Other inputs upon request

Input Protection

Inrush current limiting
Varistor
Reverse polarity protection
Internal safety fuse
Lower voltage than the specified minimum input 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 and RIA 12

Immunity

Meets criteria as requested in EN50155 and EN50121-3-2 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)
Surpasses requirement for RIA 12 with very large time margins

EMI

EN50121-3-2

Switching Frequency

47kHz \pm 3kHz

Output Voltage/Current

24V \pm 0.2V/4A
Output is floating, either terminal can be grounded
Consult factory for other voltages and higher power rating

Redundancy diode

None

Line/Load Regulation

\pm 1% combined from no 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

Better than 1% of output voltage peak to peak or 0.2% RMS of the output voltage (20MHZ BW)

Overload Protection

Rectangular current limiting with hiccup-type short-circuit protection
Current Limit set to: 4.5A \pm 0.4A

Output Overvoltage Protection

Double regulator loop and transorb across the output

Efficiency

85% typical at full load

Operating Temperature

-25°C to +55°C cold plate temperature for full specification

Temperature Drift

0.03% per °C over operating temperature range

Cooling

Conduction via base plate to customer heat-sink or chassis and natural convection

Environmental Protection

Ruggedizing
Conformal coating
Heavy ruggedizing available on request

Shock/Vibration

IEC 61373 Cat 1 A&B

Humidity

95% non-condensing

MTBF

Min. 150,000 hours @45°C
Demonstrated MTBF is significantly higher

Indicators

None

Control Input

None

Alarm Output

None

Package/Dimensions (W x H x L)

F0: 94 x 48 x 160 mm (3.7" x 1.9" x 6.3") including terminal block and flanges
Mounting holes are clear.

Weight

0.55 kg (1.2 lbs)

Connections

6-pole barrier-type terminal block, 3/8" spacing
Snap-on cover included.

RoHS

Compliant

Warranty

Two years subject to application within good engineering practice

Standard Terminal Block Pin-Out

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

The specifications on this data sheet are generic and are subject to change. Enhancements to these specifications can be provided upon request.

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ABSOPULSE ELECTRONICS LTD

110 Walgreen Road, Ottawa, Ontario. K0A 1L0. CANADA

Tel: +1-613-836-3511 | Fax: +1-613-836-7488

E-mail: absopulse@absopulse.com | <http://www.absopulse.com>