

RIA12, 50W Rugged Railway Quality DC-DC Converter DCR 50R-F0

- 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 MIW 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
24Vdc (15-34V)
48Vdc (29-67V)
72Vdc (43-101V)
96Vdc (58-135V)
110Vdc (66-154Vdc)
RIA12 surges (3.5Vn for 20msec).
Other input voltages 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
12V \pm 0.2V/4A
24V \pm 0.2V/2A
48V \pm 0.2V/1A
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 transzorb 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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