

## RIA12, 30W Rugged Railway Quality DC-DC Converter DCR 30R-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/2.5A  
24V  $\pm$ 0.2V/1.25A  
48V  $\pm$ 0.2V/0.6A  
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

#### 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.**

*OEM of industrial and railway AC/DC power supplies and battery chargers, DC/DC converters, DC-AC sine-wave inverters, phase & frequency converters, DC-output UPS systems and complete power systems in 19" and 23" racks since 1982. Custom & standard. ABSOPULSE is a BABT-approved facility*



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