200W, Rugged, Railway Quality DC/DC Converter
BAP 200R-F2 Series

- Field-proven rugged design
- For train and mobile applications
- Conduction/convection cooled (no fans)
- Full electronic protection
- Wide input range (EN50155)
- N+1 redundancy available

This rugged, railway quality DC/DC converter uses field proven topology to generate the required output power. It is a mature design with a track record in numerous applications. The unit is a simpler version of the field proven BAP 236R series with the same electrical performance but with fewer options available. Cooling is via base plate to a heat-sinking surface and by natural convection. Ruggedizing and conformal coating provide immunity to shock, vibration and humidity. An optional redundancy diode allows parallel connection to achieve higher output power or N+1 redundancy. Full electronic protection, low component count, large design headroom and the use of components with established reliability result in a high MTBF. The series meets the requirements of EN50155 for electronic equipment used on rolling stock. The unit is manufactured at our plant under strict quality control.

SPECIFICATIONS

Input Voltage
24Vdc (14.4 – 34V)
36Vdc (22 – 51V)
48Vdc (29 - 67V)
72Vdc (43 – 101V)
96Vdc (58 – 135V)
110Vdc (66 - 154V)
Other inputs upon request

Input Protection
Inrush current limiting
Reverse polarity protection
Varistor
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
Meets EN60950 and EN50155

Immunity
Meets criteria as requested in EN50155 and EN50121-3-2 according to:
EN61000-4-2 (ESD)
EN61000-4-3 (RF Immunity)
EN61000-4-4 (Fast Transient)
EN50155 (Surge)
EN61000-4-6 (Conducted immunity)
EN50155 (Voltage variation)

EMI
EN50121-3-2

Switching Frequency
55kHz ±3kHz

Output Voltage
Any DC output up to 130Vdc

Redundancy diode
Not included
Available as option

Line/Load Regulation
±1% 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 short circuit protection
Thermal shutdown with automatic reset in case of insufficient cooling

Output Overvoltage Protection
Double regulator loop
Second loop completely stable and independent of main regulator loop, and also with tranzorb

Efficiency
80% - 87% at full load, depending on output voltage

Operating Temperature
-25 °C to +55 °C cold-plate temperature range without derating.
Extended temperature range available

Temperature Drift
0.03% per °C over operating temperature range

Cooling
Conduction to customer heatsink or chassis and natural convection

Environmental Protection
Ruggedizing
Conformal coating

Shock/Vibration
IEC 61373 Cat 1 A&B

Humidity
5 – 95% non-condensing

MTBF
130,000 hours @ 45 °C
Demonstrated MTBF is significantly higher

Indicators
Output ON green LED visible through the cooling slot

Control Input
None

Alarm Outputs
Not included
Available as option

Package/Dimensions (W x H x L)
F2: 114 x 58 x 256 mm
(4.5" x 2.3" x 10.1") including mounting flanges and terminals
Mounting holes are clear.

Weight
1.2 kg (2.6 lb)

Connections
9-pole barrier type terminal block with 3/8" spacing

RoHS Compliance
Compliant

Warranty
Two years subject to application within good engineering practice

Terminal Block Pin-Out

			DC OUTPUT			DC INPUT		
NOT USED	NOT USED	NOT USED	–	+	NOT USED	GND ⏚	–	+
1	2	3	4	5	6	7	8	9

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