

200W, Rugged, Railway Quality, Convection Cooled DC/DC Converter BAP 236R-F2TH Series

- Rugged, field-proven design
- For train and mobile applications
- Regulated and adjustable output
- Pure convection cooling by heat-sink fins
- Full electronic protection
- Wide input range (EN50155)
- N+1 redundancy available as option



This rugged, railway quality DC/DC converter uses field proven topology to generate up to 200W output power. It is a mature design with a track record in numerous applications. Cooling is via heat-sink fins on the top of the unit; installation on a heat-sinking surface is not required. The unit can also be installed on thermally non-conductive surfaces, such as plastic, or on curved, uneven surfaces. An optional built-in redundancy diode allows for paralleling and N+1 operation or back-up battery connected. Additional ruggedizing and conformal coating are available for applications that require higher immunity to shock, vibration and humidity. Full electronic protection, low component count, large design headroom, and the use of components with established reliability result in a high MTBF. The unit meets the requirements of EN50155 for electronic equipment used on rolling stock. It is manufactured at our plant under strict quality control. Customized versions are available.

SPECIFICATIONS

Input Voltage

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

Input Protection

Inrush current limiting
Varistor
Reverse polarity protection
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

Designed to meet EN60950-1 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 \pm 3kHz

Output Voltage

Any voltage in the 12V to 125V range
Output is floating; either terminal can be grounded
Other outputs on request

Redundancy diode

Not included
Available as option

Line/Load Regulation

\pm 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

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 (no hiccup)
Thermal shutdown in case of insufficient cooling (self -resetting)

Output Overvoltage Protection

Double regulator loop. Second loop completely stable and independent of main regulator loop

Efficiency

Typically 85% at full load depending on input/output combination

Operating Temperature

-25°C to + 55°C for full specification
Extended temperature ranges with derating

Temperature Drift

0.03% per °C over operating temperature range

Cooling

Convection by heat-sink fins on top of unit

Environmental Protection

Ruggedizing
Conformal coating

Shock/Vibration

IEC 61373 Cat 1 A&B

Humidity

5 – 95% non-condensing

MTBF

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

Indicators

Green 'Output ON' LED visible through cooling slots

Control Input

None

Alarm Output

None on standard version
Optional output fail, Form C contacts

Package/Dimensions (W x D x H)

F2TH: heat-sinks on top of F2 chassis: 114 x 114 x 261 mm (4.5" x 4.5" x 10.3") including terminal block and flanges.
Mounting holes are clear

Weight

1.6 kg (3.5 lb)

Connections

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

RoHS Compliance

Compliant

Warranty

Two years subject to application within good engineering practice

Terminal Block Pin-Out

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



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