200W, Rugged, DC-DC Plug-in module for Railway and other Heavy Duty Applications
BAP 236R-EH Series

- Rugged, field-proven design
- For train and mobile applications
- Convection cooled
- Full electronic protection
- Wide input range (EN50155)
- N+1 redundancy
- 3U x 220mm Eurocard (Plug-in) module

This rugged, industrial quality plug-in converter utilizes field-proven technology to generate the required output power. It is a mature design with a track record in numerous applications. A built-in redundancy diode allows parallel connection to achieve higher output power or N+1 redundant operation, including hot-insertion. The series is rated for operation over a -25 to +70°C temperature range without derating, with natural convection cooling. Heat generating components are installed on an aluminum heatsink block, which is connected to the heatsink plate on the side of the module. This also provides exceptional mechanical ruggedness. The input and output are filtered for low noise. Full electronic protection, low component count, large design headroom, and the exclusive use of components with established reliability contribute to a high MTBF. The unit is manufactured at our plant under strict quality control. The unit meets the requirements of EN50155 for electronic equipment used on railway rolling stock. It is manufactured at our plant under strict quality control. Customized versions are also 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 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
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 ±3kHz

Output Voltage
Any DC output up to 130Vdc

Redundancy diode
Installed

Line/Load Regulation
Typically ±1% from no load to full load including output redundancy diode

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
Current limiting with short circuit protection. Self-resetting thermostat for thermal protection

Output Overvoltage Protection
Double regulator loop

Efficiency
80 - 90% depending on input/output configuration

Operating Temperature
-25 to +70°C with convection cooling.
Unimpeded airflow required.

Temperature Drift
0.03% per °C over operating temperature range

Cooling
Convection by natural air movement

Environmental Protection
Ruggedizing
Conformal coating

Shock/Vibration
IEC 61373 Cat 1 A&B

Humidity
5 – 95% non-condensing

MTBF
170,000 hours @ 45 °C
Demonstrated MTBF is significantly higher.

Indicators
Output ON green LED on the front panel

Control Input
Optional

Alarm Outputs
Optocoupler alarm output (C-E low-normal)

Package/Dimensions (H x W x D)
3U x 14HP x 220mm
Eurocard plug-in module

Weight
1.13 kg (2.5 lb)

Connections
H15 connector

RoHS Compliance
Compliant

Warranty
Two years subject to application within good engineering practice

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