

500W, Rugged DC/DC Converter for Railway and other Heavy Duty Applications BAP 319R-F4 Series

- Rugged, field-proven design
- For train and mobile applications
- Conduction/convection cooled
- 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. Cooling is via baseplate to a heat-sinking surface and by natural convection. Ruggedizing and conformal coating provide additional immunity to shock, vibration and humidity. An optional redundancy diode allows parallel connection to achieve higher output power or N+1 redundancy. Other options include a Form C output fail alarm and remote shutdown. 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 also available.

SPECIFICATIONS

Input Voltage

36Vdc (22 – 51V)
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

Optional

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

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 cold-plate
temperature range for full
specification

Temperature Drift

0.03% per °C over operating
temperature range

Cooling

Conduction to customer heat-sink
or chassis and natural convection

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

Output ON green LED visible
through the cooling slot

Control Input

Optional

Alarm Outputs

Optional

Package/Dimensions (W x H x L)

F4: 130 x 64 x 353 mm
(5.1" x 2.5" x 13.9) including
terminal block and mounting
flanges
Mounting holes are clear

Weight

2.2 kg (4.9lb)

Connections

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

RoHS Compliance

Compliant

Warranty

Two years subject to application
within good engineering practice



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