300W, IP66-Rated, Rugged, Railway Quality DC-DC Converter with built in RIA12 Protection
BAR 65R-D3 Series (IP66)

- Packaged in waterproof IP66 enclosure
- RIA12 withstand capacity
- EN50155 input ranges
- For train and mobile applications
- Cooling by conduction and natural convection
- Internal boards ruggedized and conformal coated
- Rugged, field-proven design
- Full electronic protection
- N+1 redundancy available

The rugged, railway quality DC-DC converters utilize field proven topology to generate the required output power. The units meet the requirements of EN50155 for electronic equipment used on railway rolling stock. With input voltage surge withstand capability of $3.5V_N$ for 20msec, it meets the requirements of RIA12. The converters are enclosed in robust, waterproof, die cast aluminum IP66 packages. The input and output are via sealed cable glands, circular connectors or custom connections. The internal boards are ruggedized and conformal coated for immunity to high levels of shock and vibration. Cooling is by internal conduction to the walls of the IP66 enclosure and by baseplate to an external chassis or cabinet wall, with additional convection via the outside surface. If installed on a heat-sinking surface, cooling is further enhanced and the converters achieve higher output power. An optional built-in redundancy diode allows for parallel and N+1 operation. Other options include a Form C output fail alarm and remote shutdown. Full electronic protection, low component count, large design headroom, and the use of components with established reliability contribute to high MTBF. The unit is manufactured at our plant under strict quality control.

SPECIFICATIONS

Input Voltage
24Vdc (14.4 – 34V) or
36Vdc (22 – 51V) or
48Vdc (29 - 67V) or
72Vdc (43 – 101V) or
96Vdc (58 – 135V) or
110Vdc (66 - 154V)
For other input voltages, please consult factory

Input Protection
Inrush current limiting
Varistor
Reverse polarity protection
Internal safety fuse
Limiter circuit for RIA 12 surges
Low input voltages of less than the specified minimum will not damage the unit

Isolation
2200VDC input to chassis
3000VDC input to output
1500VDC output to chassis

Standards
Designed to meet EN60950-1 and related standards

Immunity
Meets EN50155, EN50121-3-2 and RIA12 according to:
EN61000-4-2 (ESD)
EN61000-4-3 (RF Immunity)
EN61000-4-4 (Fast Transients)
EN50155 (Surge)
EN61000-4-6 (Conducted Immunity)
EN50155 (Voltage Variations)
Built-in surge protection: $3.5V_N$ 20ms (meets RIA 12).

EMI
EN50121-3-2

Output Voltage
12Vdc, 24Vdc, 48Vdc or 110Vdc
300W continuous output power
Output is floating; either terminal can be grounded
Other outputs on request

Redundancy Diode
None
Installed on request

Line/Load Regulation
±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
Less than 1% of output voltage peak to peak or 0.2% RMS of the output voltage (20MHz BW)

Output 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 completely stable and independent of main loop

Efficiency
Input/output voltage dependent.
Typically 85% at full load

Operating Temperature Range
-25°C to 55°C for full specification
Extended temperature ranges available on request

Temperature Drift
0.03% per °C over operating temperature range

Cooling
Conduction to customer heat-sink or chassis and by additional natural convection via the surface of the IP66 enclosure

Environmental Protection
IP66 enclosure
Internal module: Ruggedized and conformal coated

Shock/Vibration
IEC 61373 Cat 1 A&B

Humidity
5-100% condensing

MTBF
150,000 at 45°C
Demonstrated MTBF is significantly higher

Indicators
None

Control Input
None
Optional

Alarm Output
Not installed
Optional output Fail Alarm

Package/Dimensions (W x H x D)
D3 IP66 Overall dimensions incl. baseplate:
160 x 93 x 406 mm
6.3” x 3.65 x 16”
D3 IP66: Dimensions of enclosure body (excluding connectors):
160 x 93 x 360 mm
(6.3 x 3.6 x 14")

Weight
Approx. 4.6 kg (10 lb)

Connections
Internal barrier-type terminal block accessible via sealed cable glands.
Optional connectors instead of cable glands

RoHS Compliance
Compliant

Warranty
Two years subject to application within good engineering practice

ABSOPULSE power supplies are designed and built to customer requirements. The specifications on this data sheet are generic guidelines only and are subject to change.

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

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Made in Canada