200W, IP66-Rated, Rugged, Railway Quality DC-DC Converter
RWY 200-D1 Series (IP66)

- Packaged in waterproof IP66 enclosure
- EN50155 input ranges
- For train and mobile applications
- Internal module ruggedized and conformal coated
- Rugged, field-proven design
- Full electronic protection

The rugged, railway quality DC-DC converters employ field-proven design topology to generate the required output power. The units are packaged in waterproof, robust, die cast aluminum IP66 enclosures. The input and output are via sealed cable glands, circular connectors or custom connections. The internal boards are ruggedized and conformal coated for increased immunity to high levels of shock and vibration. Cooling is by internal conduction to the walls of the IP66 enclosure 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. Low component count, large design headroom, and the use of components with established reliability result in a high MTBF. The units meet the requirements of EN50155 for electronic equipment used on rolling stock. They are also suitable for transportation, mining, oil rigs, military and other harsh environments. The converter is manufactured at our plant under strict quality control. Customized versions are also available.

SPECIFICATIONS

Standard Input Voltages
24Vdc (17 – 34V)
36Vdc (22 – 51V)
48Vdc (28 – 67V)
72Vdc (43 – 101V)
96Vdc (58 – 135V)
110Vdc (66 – 154V)
Other inputs upon 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
Meets EN60950-1 and EN50155

Immunity
Meets criteria of EN50155 and EN50121-3-2 including
EN 61000-4-2 (ESD)
EN61000-4-3 (RF Immunity)
EN61000-4-4 (Fast Transients)
EN50155 (Surge)
EN61000-4-6 (Conducted Imm.)
EN50155 (Voltage Variations)

EMI
EN50121-3-2

Switching Frequency
80kHz ±5kHz

Output Voltage/Current
12V, 24V, 48V or 110Vdc or any other output voltage within this range
Output is floating, either terminal can be grounded

Redundancy Diode
None

Line/Load Regulation
± 1% combined from zero load to full load on each output

Dynamic Response
Max 5% voltage deviation for 10% to 50% load step, with better than 1msec recovery time

Output Ripple/Noise
Less than 1% peak-to-peak or 0.2% RMS of the output voltage (20MHz BW)

Output Overload Protection
Rectangular current limiting with short-circuit protection
Thermal shutdown with automatic recovery in case of insufficient cooling

Output Overvoltage Protection
Second regulator loop completely stable and independent of main regulator loop

Output Overvoltage Protection
Second regulator loop completely stable and independent of main regulator loop and transorb clamp

Efficiency
80 to 90% depending on input/output configuration

Operating Temperature Range
-25 to +55°C cold-plate temperature 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
Potting of the internal module is also available

Shock/Vibration
IEC 61373 Cat 1 A&B

Humidity
5–100% condensing

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

Indicators
None

Control Input
None

Alarm Output
None

Package/Dimensions (L x W x H)
D1: 220 x 120 x 80 mm
(8.7" x 4.7" x 3.1")
D1 with baseplate:
267 x 120 x 84 mm
(10.5" x 4.7" x 3.3")

Weight
Approx. 2.4 kg; 5.3 lb

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

RoHS Compliance
Fully compliant

Warranty
Two years subject to application within good engineering practice.

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