50W, Rugged, Compact, Railway Quality DC/DC Converter
MIM 50R-FM Series

- Field-proven rugged design
- For train and mobile applications
- Conduction/convection cooled
- Full electronic protection
- Wide input ranges (EN50155)
- Cost optimized
- Small size

The MIM 50R Series rugged, railway quality DC/DC converter uses field-proven technology to generate the required output power. It is a mature design with a track record in numerous applications. The standard version operates at full specification over a -25°C to +70°C cold plate temperature range. Cooling is via baseplate to a heatsinking surface and by natural convection. Ruggedizing and conformal coating provide added immunity to shock, vibration and humidity. 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 railway rolling stock. It is manufactured at our plant under strict quality control.

SPECIFICATIONS

Input Voltage (nominal, range)
24Vdc (14.4 – 34V)
48Vdc (29 – 67V)
72Vdc (43 – 101V)
96Vdc (58 – 135V)
110Vdc (66 – 154V)
Other inputs available on request

Input Protection
Inrush current limiting
Surge protection
Reverse polarity protection
Internal safety fuse
Lower voltage than the specified minimum input will not damage the 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 of EN 50155 and EN 50121-3-2 including:
EN 61000-4-2 (ESD)
EN 61000-4-3 (RF Immunity)
EN 61000-4-4 (Fast Transients)
EN 50155 (Surge)
EN 61000-4-6 (Conducted Imm.)
EN 50155 (Voltage Variations)

EMI
EN50121-3-2

Switching Frequency
135kHz ±5kHz

Output Voltage/Current
12Vdc/4A or 24Vdc/2A
Output is floating, either terminal can be grounded
Other outputs available on request

Redundancy Diode
None

Line/Load Regulation
+/- 1% combined 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% peak to peak or 0.2% RMS of the output voltage (20MHz BW)

Output Overload Protection
Rectangular current limiting with hiccup-type short-circuit protection

Output Overvoltage Protection
Transzorb across the output

Efficiency
Min. 80% at full load

Operating Temperature Range
-25°C to +70°C cold plate temperature for full specification

Temperature Drift
0.03% per °C over operating temperature range

Cooling
Conduction via base plate and natural convection

Environmental Protection
Full ruggedizing
Heavy 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
None

Control Input
None

Alarm Output
None

Package/Dimensions (W x H x L)
FM: 66 x 38 x 163 mm
(2.6" x 1.5" x 6.4") including terminal block and flanges
Mounting holes are clear

Weight
400g (0.9 lb)

Connections
5-pole terminal block
(3/8" spacing)

RoHS Compliance
Fully compliant

Warranty
Two years subject to application within good engineering practice

The specifications on this data sheet are generic and are subject to change. Enhancements to these specifications can be provided upon request.

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

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Made in Canada