



DC/DC converter for railway applications



Description

The 15W MBR series consists of low power encapsulated converters which incorporate full surge and transient protection to RIA12 and EN50155. They are available in single, dual, and triple output versions, with nominal inputs from 24V up to 110V. Normally supplied with pins for PCB mounting, they are also available with flying leads for bulkhead mounting.

Special features include:

- Fully protected to rail norms
- Rugged encapsulated construction
- Up to three outputs

Input specifications

The following input voltages versions are available as standard:

110V	(66.0 - 137.5V)	dc	(Suffix A)
72V	(43.2 - 90.0V)	dc	(Suffix D)
52V	(31.2 - 65.0V)	dc	(Suffix C)
36V	(21.0 - 50.4V)	dc	(Suffix F)
24V	(16.8 - 33.6V)	dc	(Suffix B)

Parameter	Detail
Input Ripple	To RIA 13 and EN50155
Input Protection	Reverse polarity protection. Surges and transients to RIA 12 & EN50155
Inrush Current	Limited to typically 5 x nominal current (after 0.1ms)
Efficiency	75% typical
Hold-up time	10ms to EN50155 Class S2

Output specifications

Parameter	Detail
Maximum Output Power	Up to 15W
Output Versions	Single, Dual and Triple
Output Voltage	Can be specified from 5V to 48V
Setting Tolerance	±1.0% at 50% load, 15°C to 25°C
Minimum Load	Typically zero for all outputs, although in some cases a minimum load of up to 5% on U1 for full performance.
Line Regulation	±0.2%
Load Regulation	±0.5%
Temperature Coefficient	<0.02% / °C
Output Ripple	<1% Pk-Pk of Output Voltage

Output specifications (Continued)

Parameter	Detail	
Output Noise	<50mV Pk-Pk superimposed (up to 20MHz)	
Response Time	1.0ms to within 2% (for a 20% - 90% load change)	
Output Protection	All outputs protected against indirect transients to RIA 12	
Current Limit	Operates at approximately 120% of full power. Auto recovery.	
Isolation (tested at dc equivalent voltage)	Input to Output	1.0kV ac
	Output to Output	500V ac

Environmental details

Parameter	Detail
Operating Temperature	-25°C to +65°C (no derating)
Storage Temperature	-40°C to +85°C
Cooling	Convection
Relative Humidity	99% max.
Shock & Vibration	EN 50155 (EN 61373)
Environmental Protection	IP65

Applicable norms

Parameter	Detail
EMC	RIA 12, EN50155 (2007), EN50121-3-2 (2006)
Other	EN50155 (2007), EN45545-2 (2013)

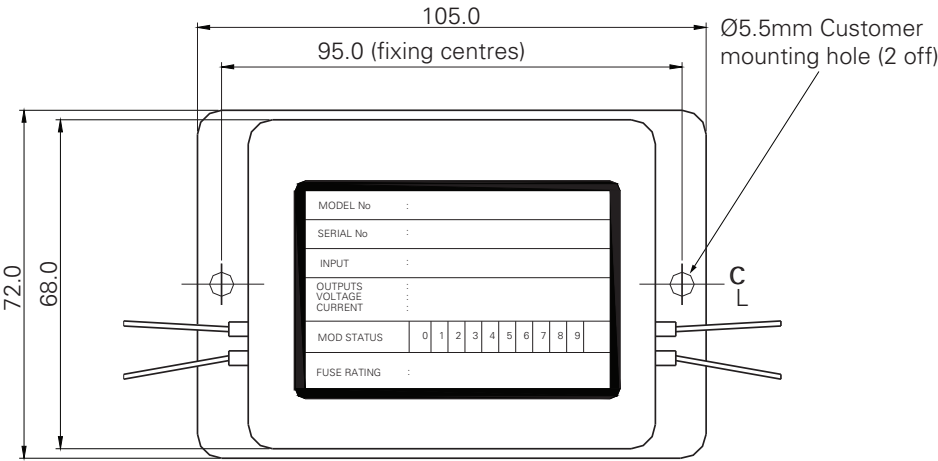
Mechanical characteristics

Parameter	Detail
Construction	Encapsulated Module
Dimensions	Length = 84 mm (mounting flange increases length to 105 mm)
	Width = 72 mm
	Height = 32 mm
Weight	300g
Connections	Solder pins for PCB mounting as standard Option for input / output cables (halogen free cable)
Fixings	Two Ø 5mm clear holes mounting flange

Options for MBR series

Option	Detail	Code
Connections	Input / output cables 350mm	Q7
Connections	Input / output cables 600mm	Q8
Connections	Input cables 1000mm Output cables 300mm	Q12
DIN rail mounting plate	Drawing 900-931	D

Technical drawing



Notes:
All dimensions in mm.
Case: Moulded in ABS
Flame retardant to UL94 V-0
All leadouts are 0.6mm² (19/0.2mm) halogen free cable (Martek Power p/n 361072)
Length from outside of the potted box is 350mm ±10mm unterminated.
Cable marker code (as per label):
A: -Ve IN
B: +Ve IN
C: -Ve OUT
D: +Ve OUT

