Martek Power
500W TFS Series
Datasheet

RIA 12 filter for railway applications

Enclosed version

Open frame version

Description

The TFS filter incorporates LPA's proven RIA 12 surge and transient suppression circuitry, as used in many of our DC-DC converters. The filter is intended for use with the converters in our range which do not already have this protection built-in, thus enabling a system to be compliant with both RIA 12 and EN 50155. Rated at 500W, the filter was originally designed for use in conjunction with our 500W PMR series, but is equally suitable for use with other converters at lower power levels. More than one converter can be fed from a single filter, provided the combined output power of all converters does not exceed the maximum rated power for the relevant model.

Special features include:

- Adds RIA 12 protection to one or more converters
- Open frame and enclosed versions are available
- For use with converters rated up to 500W output power
- From January 2016 design is also compliant with the RIA 12 'enhanced' standard (non published)

Input specifications

The following input voltage version is available:

110V (66.0 - 137.5V) DC (model no. TFS 500-A)

Parameter	Detail
Input Ripple	To RIA 13 and EN 50155
Input Protection	Reverse polarity protection. Surges and transients to RIA 12 & EN 50155
Inrush Current	N/A - refer to specification of connected converter(s)
Efficiency	99.7% typical
Hold-up time	N/A

Output specifications

Parameter	Detail
Maximum Output Power (assumes converter efficiency >88%)	TFS 500-A: 570W (for powering converters rated up to 500W)
Output Voltage	Tracks input voltage
Minimum Load	Zero
Output Protection	Protected against indirect transients to RIA 12
Isolation (tested at dc equivalent voltage)	Input to Output None Input / Output to case 1.5kV ac

RIA 12 Details (1991, Second Edition and enhanced version)

Waveform	Type	Source impedance	Duration	Voltage*	
				RIA 12	RIA 12+
A	Surge	0.2Ω	20ms	385V	425V
B	Surge	0.2Ω	1s	165V	176V
C	Direct transient	5Ω	100µs	800V	1050V
D	Direct transient	5Ω	50µs	1500V	2000V
E	Direct transient	100Ω	5µs	3000V	4000V
F	Direct transient	100Ω	1µs	4000V	5300V
G	Direct transient	100Ω	0.1µs	7000V	9300V

* Surge voltage levels specified are for 110V vehicle systems

Environmental details

Parameter	Detail
Operating Temperature	-40°C to +70°C (no derating)
Storage Temperature	-40°C to +85°C
Cooling	Convection
Relative Humidity	95% max
Shock & Vibration	EN 50155 (EN 61373)
Environmental Protection	IP20 (enclosed version)

Applicable norms

Parameter	Detail
EMC	EN 50155 (2007), EN 50121-3-2 (2006) RIA 12
Other	EN 50155 (2007)

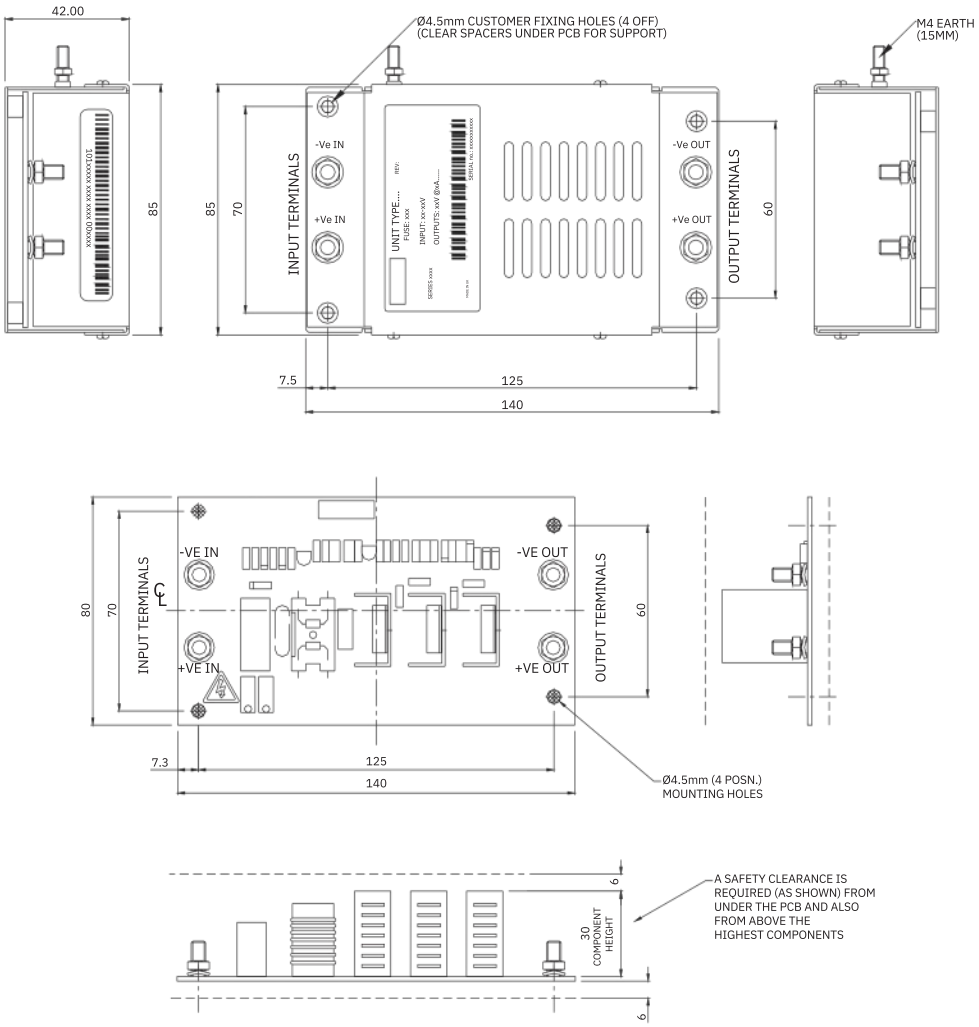
Mechanical characteristics

Parameter	Detail
Construction	Open-frame, conformal-coated PCB. Enclosure optional. An underside PCB insulator is also available for use with the open-frame version.
Dimensions, (L,W,H)	Open frame: 140x80x30 mm (height above PCB) Enclosed: 140x85x42 mm (excludes earth stud)
Weight	Open frame: 150g Enclosed: 415g
Connections	Input & output via M5 studs
Fixings	Four ø 4.5mm fixing holes

Options

Code	Detail
S	Enclosed version

Technical drawing



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