

DATA LINE FILTERS



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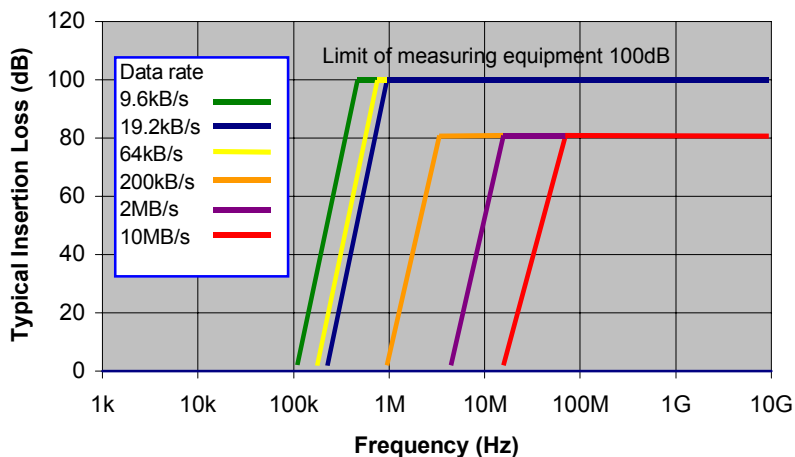
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MPE Limited
Hammond Road
Knowsley Industrial Park
Liverpool L33 7UL

Description

A range of high performance communications filters designed for carrying digital data circuits into shielded rooms and communications cabins, and also used as in-line filters for Information Security applications. All filters are available with transient protection to offer additional protection of circuits against the effects of secondary EMP, lightning, and other conducted transients.



Features

- Use on digital data lines
- High performance filter circuits
- Available with transient suppression
- EMP protected versions also available with multi stage transient suppression
- Choice of packaging and mounting styles
- Circuits supplied as high symmetry matched pairs
- Pass band ripple < 2dB
- Filters incorporate MPE self-healing feedthrough capacitors for high reliability
- Temperature range -40°C to +55°C
- Custom designs available with different data rates and impedances to suit different data protocols

Electrical Specification

Data Rate up to	Insertion Loss (50Ω) *	Pass Band up to	Max Voltage Rating	Max Current Rating	Series Resistance (Ω)	Shunt Capacitance (nF)	Series Inductance (mH)	Filter Impedance	Possible Data Application
9.6kB/s	100dB 450kHz-10GHz	100kHz	100V ac/dc	100mA	1.2	24	2.1	300Ω L-E 600Ω L-L	
19.2kB/s	100dB 1MHz-10GHz	200kHz	100V ac/dc	100mA	6	1.4	9	2.5kΩ L-E 5kΩ L-L	RS232
64kB/s	100dB 750kHz-10GHz	150kHz	100V ac/dc	100mA	1	16	1.4	300Ω L-E 600Ω L-L	ISDN RS423
200kB/s	80dB 4MHz-10GHz	1MHz	100V ac/dc	100mA	<1	2.4	0.21	300Ω L-E 600Ω L-L	RS423
2MB/s	80dB 20MHz-10GHz	5MHz	100V ac/dc	100mA	<1	2.8	0.007	50Ω L-E 100Ω L-L	RS422
10MB/s	80dB 80MHz-10GHz	20MHz	100V ac/dc	100mA	<1	0.7	0.002	50Ω L-E 100Ω L-L	RS422

* NB Rectangular cases are recommended where high performance is needed beyond 1GHz

For transient suppressed versions, add suffix V to part number and filter will be fitted with surge arrestors from each input terminal to case. These will be varistors or gas gaps depending on filter data rate.

Product Range

DATA LINE FILTERS 9.6kB/s				
Part Number	No of Lines	No of Pairs	Case Style	Weight (kg)
DF31400	2	1	1	0.35
DF31401	2	1	2	1
DF31402	4	2	3	2
DF31403	8	4	4	4
DF31404	32	16	5	17
DF31405	40	20	6	21

DATA LINE FILTERS 19.2kB/s				
Part Number	No of Lines	No of Pairs	Case Style	Weight (kg)
DF31406	2	1	1	0.35
DF31407	2	1	2	1
DF31408	4	2	3	2
DF31409	8	4	4	4
DF31410	32	16	5	17
DF31411	40	20	6	21

DATA LINE FILTERS 64kB/s				
Part Number	No of Lines	No of Pairs	Case Style	Weight (kg)
DF31412	2	1	1	0.35
DF31413	2	1	2	1
DF31414	4	2	3	2
DF31415	8	4	4	4

DATA LINE FILTERS 200kB/s				
Part Number	No of Lines	No of Pairs	Case Style	Weight (kg)
DF31416	2	1	2	1
DF31417	4	2	3	2
DF31418	8	4	4	4

DATA LINE FILTERS 2MB/s				
Part Number	No of Lines	No of Pairs	Case Style	Weight (kg)
DF31419	2	1	2	1
DF31420	4	2	3	2
DF31421	8	4	4	4

DATA LINE FILTERS 10MB/s				
Part Number	No of Lines	No of Pairs	Case Style	Weight (kg)
DF31422	2	1	2	1
DF31423	4	2	3	2
DF31424	8	4	4	4

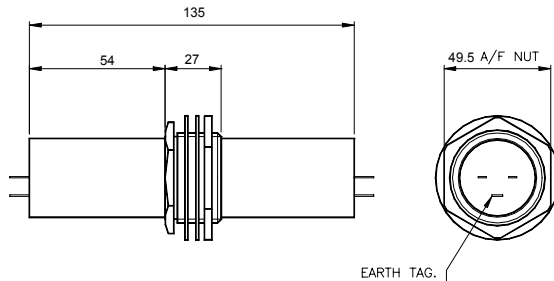
Notes: Lines are supplied as matched pairs, hence 1 data circuit is normally 1 pair or 2 lines

Compatibility

The user should be aware that all filters will present capacitance, inductance and resistance to the data line and will provide a limited pass band to the data signals in order for the filter to function correctly. Not all data circuit equipment is equally tolerant of these parameters so the user must confirm that the data line equipment to be used with the filter will be tolerant of the filter circuit at the data rates to be used. It is not possible to offer a filter which is universally acceptable as this would restrict the available performance of the filter excessively, but it has been established in practice that most data equipment has been found to work satisfactorily with the filter circuits offered at the quote data rates. Additional care should be taken when signals are passed through more than one filter or where transmission distances are long.

Mechanical Details / Dimensions

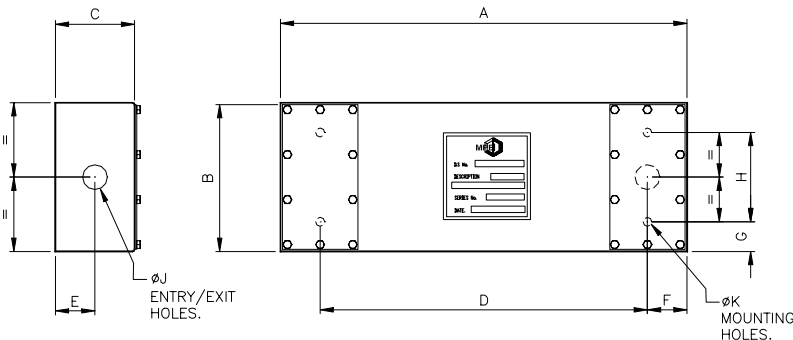
Case Style 1



Mechanical details – case style 1

Case material	electroplated brass/steel
Finish	paint
Terminals	push on / solder tags
Earth terminal	solder tag

Case Styles 2, 3, 4, 5, 6



Mechanical details – case styles 2-6

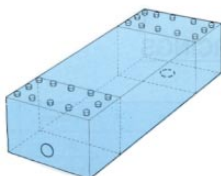
Case material	electroplated steel
Finish	paint (except base)
Terminals	4.8mm spade tags
Cable entry options	see below
Fixing kit	optional
Varistor mounting (where fitted)	on input terminals
Earth terminal	M3/M4/M6 screw within terminal compartments

Dimensions – case styles 2 - 6

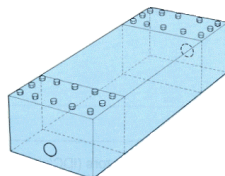
Case Style	No of Lines	Dimensions (mm)									
		A	B	C	D	E	F	G	H	J	K
2	2	250	60	35	210*	17	20	13*	34*	20	6
3	4	250	120	35	210	17	20	20	80	20	6
4	8	250	240	35	210	17	20	20	200	20	6
5	32	547	200	143	460	30	40	40	120	25.4	7
6	40	547	250	143	460	30	43.5	50	150	25.4	7

*For case style 2 with cable entry "C", cable hole is used for mounting instead of screw holes on exit end

Cable Entry Options



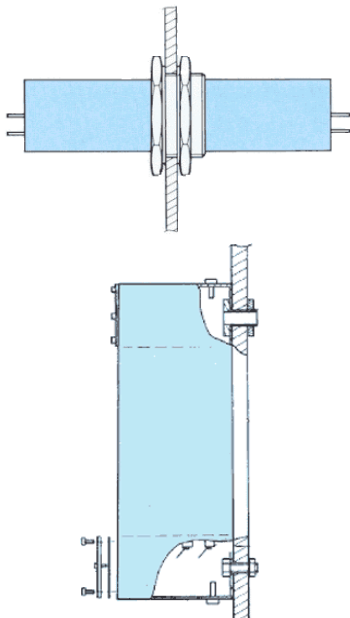
Part No DS XXXXX / C
End entry base exit
(standard cable entry configuration)



Part No DS XXXXX / A
End entry end exit
(alternative cable entry)

On rectangular filters, two different cable entry options are available as shown. Standard configuration is suffix C for shielded room mounting, i.e. end entry, base exit. For end entry and end exit, substitute suffix C with suffix A in the part number.

Installation Details



Typical Installation of Tubular Filters

Mounting surface should be clean and unpainted to ensure a good earth bond and RF seal
 Terminals should be enclosed by the user
 Mounting hole size 39mm
 Max tightening torque 32N-m

Typical Installation of Rectangular Filters

Mounting surface should be clean and unpainted to ensure a good earth bond and RF seal
 Fixing screws and gland tubes can be supplied as an option

Recommended torque figures:

M4/M5 lid fixings:	1N-m
M3 earth terminals:	0.5N-m
M4 earth terminals:	1.2N-m
M6 earth & mounting:	2.5N-m

Safety

After installation of the filter, any exposed terminals should be enclosed by the user to prevent any danger of electric shock, and to provide screening of incoming and outgoing lines.
 Ensure filter capacitors are discharged before touching terminals.
 Filters must be solidly and permanently earthed.

Filter Selection and Ordering Guide

