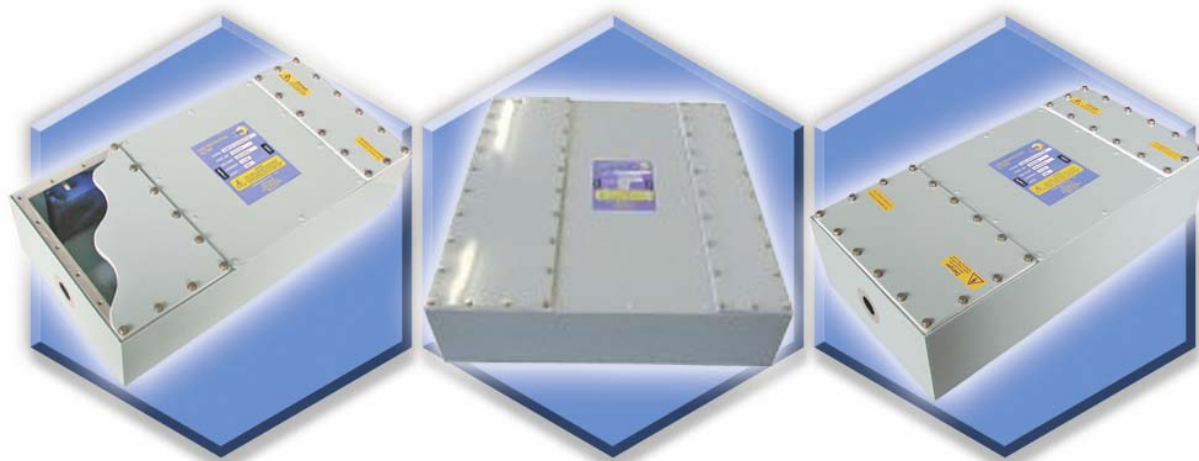


HEMP PROTECTION FILTERS FOR AC MAINS POWER LINES

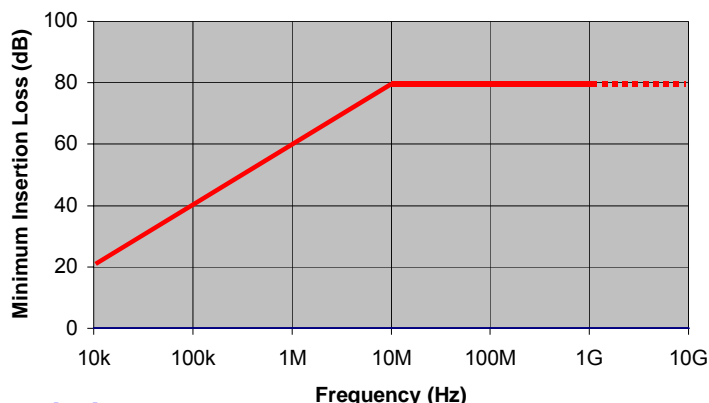


**MEETS ELECTRICAL POINT-OF-ENTRY
REQUIREMENTS OF MIL-STD-188-125-1 & -2
AND DEF STAN 59-188 PART 1 AND PART 2
FOR SHORT AND INTERMEDIATE PULSES**



MPE Limited
Hammond Road
Knowsley Industrial Park
Liverpool L33 7UL
UK

Standard Performance Range



Description

A range of 2 line and 4 line (single & three phase) Power Line HEMP filters meeting the pci requirements of Mil-Std-188-125-1 and -2 and Def Stan 59-188 parts 1 and 2 for E1 and E2 pulses. All lines are individually filtered and feature inductive input to offer both good continuous wave EMC performance and superior transient handling performance even on supplies with low source impedance. All lines are fitted with high-energy transient suppressors.

Features

- 250Vac with 6A – 400A current ratings
- 2 or 4 individually filtered lines
- Utilise MPE self-healing feedthrough capacitors
- Smaller & lighter than traditional solutions
- Lower heat dissipation than traditional solutions
- High energy transient suppressors for high reliability
- UL94-V0 insulating materials used
- Complies with IEC 950 requirements
- Very low residual pulse current – high safety margin

Ratings and Characteristics

Rated Voltage	All filters	250Vac 50/60 Hz or 300V dc each line to case
	4 line (3 phase) filters	250/440Vac 50/60Hz
Test Voltage		2250Vdc each line to case (Prior to fitting transient suppressors)
Insulation Resistance		>100MΩ (Prior to fitting discharge resistors)
Discharge Resistors		Fitted internally from each line to case
Discharge Time to below 34V		<30s
Maximum Temperature Rise on Full Load		25°C
Full Load Operating Temperature Range		-40°C to +50°C
Leakage Current at 250Vac 50Hz		<1.5A for 6A - 63A Filters, <5A for 100A - 200A Filters <8A for 400A filters
Peak Surge Current		70kA (8/20μs)

Insertion Loss Performance

Minimum insertion loss in 50Ω system with / without load						
Frequency	10kHz	100kHz	1MHz	10MHz	100MHz	1GHz
Insertion loss	20dB	40dB	60dB	80dB	80dB	80dB

Transient Suppression Performance

MIL STD 188-125-1 acceptance test, short pulse current injection, wave shape 20/500ns					
Input pulse amplitude	250A	500A	1000A	1800A	2500A
MIL-STD-188-125 residual requirement	<10A	<10A	<10A	<10A	<10A
Typical filter residual let-through	<1.5A	<2A	<3A	<3.5A	<4.5A

MIL STD 188-125-1 acceptance test, intermediate pulse current injection, wave shape 1.5/3000μs	
Input pulse amplitude	250A
MIL-STD-188-125 requirement	No filter damage or performance degradation
Typical filter response	No filter damage or performance degradation

HEMP PROTECTION FILTERS – STANDARD RANGE



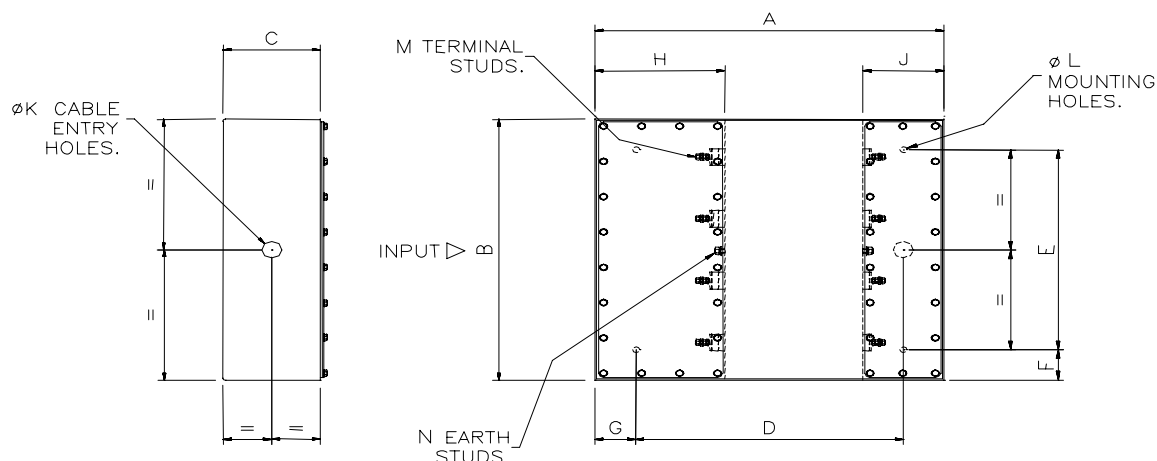
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Product Range

Part Number	Current Rating per Line @ 50°C (A) *	Number of Lines	DC Volt Drop per Line max (V)	Maximum Heat Dissipation (W)	Major Dimensions (mm)			Weight Approx (kg)
					Length A	Width B	Depth C	
DS33330	6	2	0.1	5	420	200	120	10
DS33331	16	2	0.2	10	420	200	120	10
DS33332	32	2	0.2	20	500	250	120	14
DS33333	63	2	0.3	40	620	320	170	30
DS33334	100	2	0.2	65	740	350	230	40
DS33335	200	2	0.1	80	860	450	250	70
DS33336	400	2	0.1	130	1600	480	250	120
DS33340	6	4	0.1	10	420	400	120	20
DS33341	16	4	0.2	20	420	400	120	20
DS33342	32	4	0.2	40	500	500	120	30
DS33343	63	4	0.3	75	620	640	170	55
DS33344	100	4	0.2	125	740	700	230	80
DS33345	200	4	0.1	140	860	900	250	130
DS33346	400	4	0.1	250	1600	960	250	225

* Current derating between 50°C and 85°C $I_{\theta} = I_R \sqrt{(85 - \theta)/35}$

Dimensions and Mechanical Details



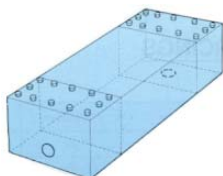
Material: Electroplated steel
Finish: Paint (base paint free)

Part Number	Dimensions (mm)												
	A	B	C	D	E	F	G	H	J	K	L	M	N
DS33330	420	200	120	340	110	45	40	140	80	20	9	M5	M6
DS33331	420	200	120	340	110	45	40	140	80	20	9	M5	M6
DS33332	500	250	120	410	140	55	45	160	100	25	9	M8	M10
DS33333	620	320	170	530	210	55	45	160	100	32	11	M8	M10
DS33334	740	350	230	630	240	55	55	160	120	32	11	M8	M10
DS33335	860	450	250	710	300	75	75	200	150	51	17	M12	M16
DS33336**	1600	480	250	1140†	340	70	230	300	300	76	17	M20	M20
DS33340	420	400	120	340	310	45	40	140	80	20	9	M5	M6
DS33341	420	400	120	340	310	45	40	140	80	20	9	M5	M6
DS33342	500	500	120	410	390	55	45	160	100	25	9	M8	M10
DS33343	620	640	170	530	530	55	45	160	100	32	11	M8	M10
DS33344	740	700	230	630	590	55	55	160	120	32	11	M8	M10
DS33345	860	900	250	710	750	75	75	200	150	51	17	M12	M16
DS33346**	1600	960	250	1140†	600	180	230	300	300	76	17	M20	M20

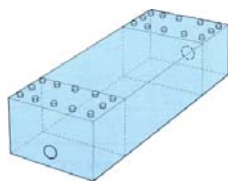
** 400A filters additionally have lifting lugs protruding 65mm beyond each end of the filter and 8mm beyond each side to aid mounting.
Lug hole size 22mm. Please request drawings P828602 or P828362 for full dimensions of 2 line and 4 line 400A filters respectively.

† Fixing centres only - See drawing P828602 or P828362 for position of cable entry hole.

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)

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

The mounting surface should be clean and unpainted to ensure a low impedance earth bond and good RF seal.

Fixing screws and gland tubes can be supplied as an optional extra.

Recommended tightening torque figures:

M5 lid fixings:	1N-m
M5 terminals:	2N-m
M6 terminals:	2.5N-m
M8 terminals:	5N-m
M10 terminals:	8N-m
M12 terminals:	11N-m
M16 terminals:	20N-m
M20 terminals:	32N-m

Safety

Relevant safety standards have been adhered to in the design and manufacture of these products. However, all capacitors will store charge after power has been removed and must be treated with respect as a shock can be lethal if the voltage and charge are high enough.

Even though discharge resistors are fitted to this range of filters, terminals should always be shorted to earth prior to touching to ensure the capacitors are fully discharged.

The user should ensure he is familiar with restrictions on capacitance value, earth leakage current, test voltage, and safety labelling requirements, which may be applicable to his particular installation.

These filters must be solidly and permanently earthed, both for safe operation and to achieve optimum EMC and pulse performance.

Custom Designs

MPE offers a rapid design service for custom designs where special packaging, mounting, terminations, or multiple lines are required. Over 50% of the filters manufactured by MPE are custom designs and this can offer a very cost effective installation solution. Please ask to see examples of previously offered solutions.

Filter Selection Guide

Step 1 Choose current and number of lines required

Step 2 Select part number and cable entry suffix