MPE
Quality, Reliability, Performance

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

Contact
T: +44 (0)151 632 9100
F: +44 (0)151 632 9112
E: sales@mpe.co.uk

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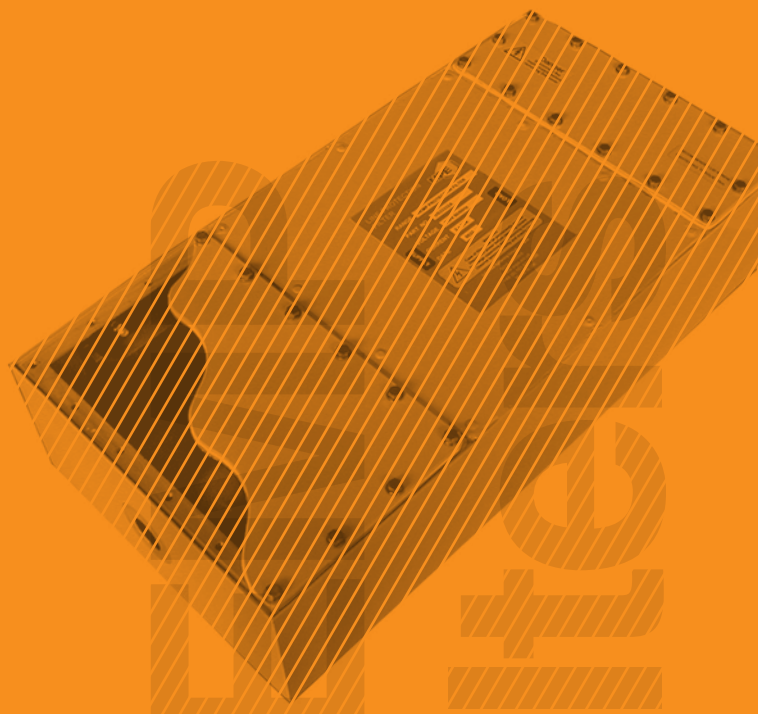
www.mpe.co.uk

Product Overview

High Performance HEMP Filters



High Performance HEMP Filters
10/14

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bsi. ISO 9001 Quality Management

FM 00699

MPE Limited is a world leading manufacturer of high performance EMC/EMP filters and capacitor solutions for supply to the defence, ICT, specialist automotive and other professional industries.

Our history, spanning over 8 decades, is a testament to our unrelenting commitment to

Quality, Reliability & Performance.

Our Mission

To be the number one choice for high performance EMC/EMP filter solutions.

Quality

Based in Liverpool, UK, MPE Limited is a world leading manufacturer of high performance EMC/EMP filters and capacitor products for supply to the automotive, defence, telecoms and other professional industries.

Our history, spanning over 8 decades, is a testament to our unrelenting commitment to Quality, Reliability & Performance.

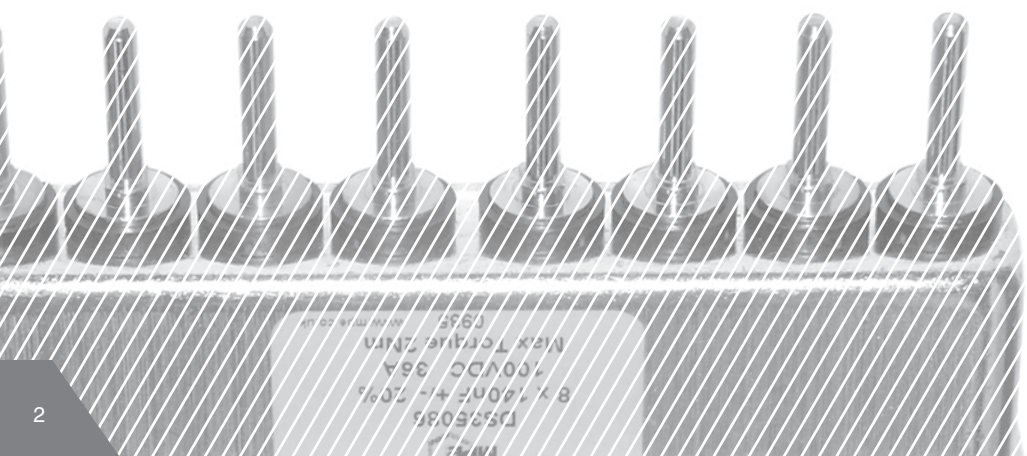
Reliability

MPE has gained a much envied reputation for delivering quality products, with the highest levels of reliability. These high reliability levels are ensured and maintained through a diligent approach to design and manufacture; the ability to perform all critical processes and manufacture all critical components in house; coupled with a programme of continuous investment in both people and infrastructures.

Performance

MPE prides itself on the high performance of all products produced. With almost 100 combined design years' experience and an 87 year manufacturing history, MPE can be sure that the materials, designs and processes it employs deliver both the highest levels of performance and the maximum cost effectiveness.

MPE are an established member of both the EMCIA and EEF organisations, hold numerous product and industry accreditations and are ISO9001 certified.



Description

The MPE HEMP filter range has been designed from first principle to be fully compliant with the requirements of MIL-STD-188-125 and Def Stan 59-188 whilst also ensuring that the minimum of size and weight envelope is achieved. This comprehensive range, encompasses standard and extended performance power filters along with control line and telephone line filters.

The MPE HEMP filter range has been manufactured and shipped in quantity for a number of years and are currently utilised within many applications around the world.

Standard Performance Filter Range

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.

Extended Performance Filter Range

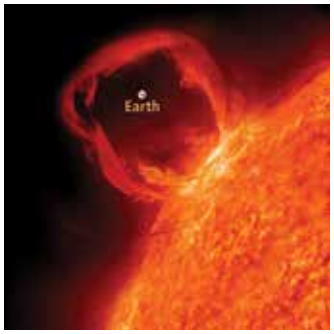
A range of extended performance HEMP filters meeting the pci requirements of Mil-Std-188-125-1 and -2 and Def Stan 59-188 parts 1 and 2 for E1 and E2 pulses but having increased insertion loss performance for applications where additional performance is needed beyond just HEMP requirement. All lines have individual input inductors to offer superior transient handling performance and also coupled inductors to offer superior continuous wave EMC performance in a small package. All lines feature high-energy varistor transient suppressors.

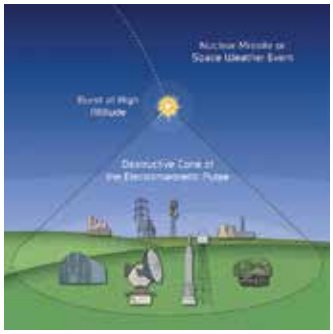
Control Line Filter Range

Ranges of multi-line HEMP protection filters for control lines suitable for use in various HEMP protected installations. All lines are individually filtered and feature inductive input to offer both good continuous wave EMC performance and superior transient handling performance. All lines feature high-energy varistor transient suppressors at the input end. Two AC ranges of filters are offered rated at 250VAC and 120VAC meeting the pci requirements of MIL-STD -188-125-1 & -2 for high voltage control lines working at >90V. A third range rated at 28VDC, meets the pci requirements of MIL-STD -188-125-1 & -2 for low voltage control lines working at <90V.

Telephone Line Filter Range

A range of HEMP protection filters for telephone lines for use on HEMP protected installations meeting E1 (short pulse) pci requirements of MIL-STD -188-125-1 & -2. All lines are individually filtered and feature inductive input to offer both good continuous wave EMC performance and superior transient handling performance. All lines feature high-energy varistor transient suppressors at the input end.





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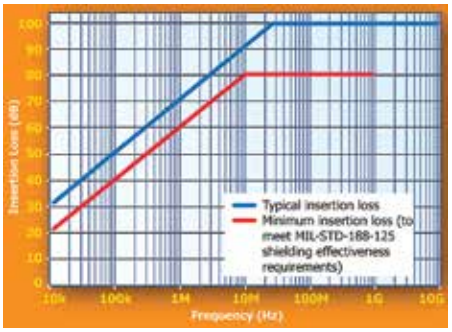
HEMP Protected Standard Performance Power Line Filter Range



Benefits

- Range spanning 6A to 1200A
- 2 or 4 individually filtered lines
- Self-healing capacitor technology utilised throughout
- Very low residual pulse current – high safety margin
- The highest levels of reliability
- Much smaller and lighter than most traditional solutions

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

Product Range Overview: see website for full range

Part Number	Current Rating per Line @ 50°C (A) *	Number of Lines	Max Leakage Current per Line (A)	Max DC Volt Drop per Line (V)	Max Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
						Length	Width	Depth	
DS33331	16	2	1.5	0.2	10	420	200	120	10
DS33332	32	2	1.5	0.2	20	500	250	120	14
DS33333	63	2	1.5	0.3	40	620	320	170	30
DS33334	100	2	5	0.2	65	740	350	230	40
DS33335	200	2	5	0.1	80	860	450	250	70
DS33336	400	2	8	0.1	130	1600	480	250	120
DS33341	16	4	1.5	0.2	20	420	400	120	20
DS33342	32	4	1.5	0.2	40	500	500	120	30
DS33343	63	4	1.5	0.3	75	620	640	170	55
DS33344	100	4	5	0.2	125	740	700	230	80
DS33345	200	4	5	0.1	140	860	900	250	130
DS33346	400	4	8	0.1	250	1600	960	250	225

*Current derating between 50˚C and 85˚C θIθ= IR $\sqrt{(85-\theta)/35}$

800A and 1200A solutions are also available, please contact the MPE sales team for further details

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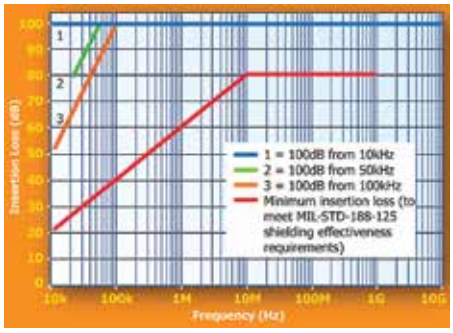
HEMP Protected Extended Performance Power Line Filter Range



Benefits

- Range spanning 6A to 400A
- Coupled inductor design to provide high insertion loss
- Single or 3 phase applications
- Self-healing capacitor technology utilised throughout
- Extremely low residual pulse current - extremely high safety margin
- The highest levels of reliability
- Much smaller and lighter than most traditional solutions

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	<1.0A	<1.5A	<1.5A	<2.0A	<2.0A

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

Product Range

Part Number	Current Rating per Line @ 50°C (A) *	Number of Lines	Insertion Loss Curve	Max Leakage Current per Line (A)	Max DC Volt Drop per Line (V)	Max Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
							Length	Width	Depth	
DS33631	16	2 (SPN)	1	1.5	0.55	24	600	200	120	15
DS33632	32	2 (SPN)	1	2.5	0.5	42	780	250	120	26
DS33633	63	2 (SPN)	1	2.5	0.65	90	880	320	170	40
DS33634	100	2 (SPN)	2	2.5	0.5	120	1000	350	230	55
DS33635	200	2 (SPN)	2	5	0.35	200	1220	450	250	110
DS33636	400	2(SPN)	3	6	0.2	280	1900	480	250	190
DS33641	16	4 (TPN)	2	2	0.6	35	600	400	120	30
DS33642	32	4 (TPN)	1	5	0.55	80	780	500	120	45
DS33643	63	4 (TPN)	2	5	0.6	140	880	640	170	75
DS33644	100	4 (TPN)	2	5	0.45	190	1000	700	230	100
DS33645	200	4 (TPN)	2	8	0.3	300	1220	900	250	170
DS33646	400	4 (TPN)	3	8	0.2	420	1900	960	250	300

*Current derating between 50˚C and 85˚C θIθ= IR $\sqrt{(85-\theta)/35}$

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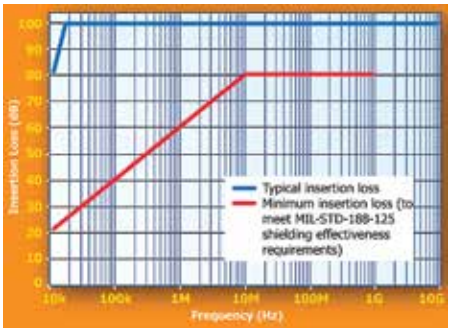
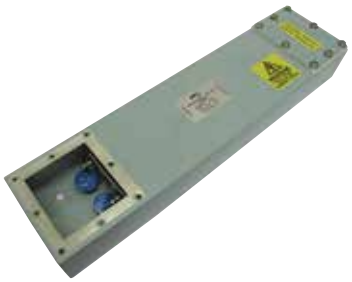
HEMP Protected Control Line Filter Range





Benefits

- Ranges for high & low voltage control lines (250VAC, 120VAC, & 28VDC)
- 2, 4 & 8 Individually filtered lines
- Very low residual pulse current – high safety margin
- Self-healing capacitor technology utilised throughout
- The highest levels of reliability

Transient Suppression Performance

MIL STD 188-125-1 acceptance test, E1 short pulse current injection, wave shape 20/500ns

Input pulse amplitude	250A	500A	1000A	1800A	2500A
AC RANGES					
MIL-STD-188-125 residual requirement (120VAC Range & 250VAC Range)	<1A	<1A	<1A	<1A	<1A
Typical filter residual let-through (120VAC Range)	<0.1A	<0.12A	<0.15A	<0.2A	<0.25A
Typical filter residual let-through (250VAC Range)	<0.15A	<0.2A	<0.1A	<0.15A	<0.15A
DC RANGE					
MIL-STD-188-125 residual requirement (28V Range)	<100mA	<100mA	<100mA	<100mA	<100mA
Typical filter residual let-through (28V Range)	<25mA	<25mA	<25mA	<25mA	<30mA

Product Range (28VDC Range)

Part Number	Current Rating per Line @ 50°C (A)	Number of Lines	DC Volt Drop per Line (V)	Full Load Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
					Length	Width	Depth	
DS33590	1	2	2.7	2.7	360	90	45	2.5
DS33591	1	4	2.7	2.7	360	175	45	5
DS33592	1	8	2.7	2.7	360	340	45	10

Product Range (120VAC Range)

Part Number	Current Rating per Line @ 50ºC (A)	Number of Lines	DC Volt Drop per Line (V)	Full Load Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
					Length	Width	Depth	
DS33690	1	2	2.7	2.7	360	90	45	2.5
DS33691	1	4	2.7	2.7	360	175	45	5
DS33692	1	8	2.7	2.7	360	340	45	10

Product Range (250VAC Range)

Part Number	Current Rating per Line @ 50°C (A)	Number of Lines	DC Volt Drop per Line (V)	Full Load Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
					Length	Width	Depth	
DS33670	1	2	2.7	2.7	360	90	45	2.5
DS33671	1	4	2.7	2.7	360	175	45	5
DS33672	1	8	2.7	2.7	360	340	45	10

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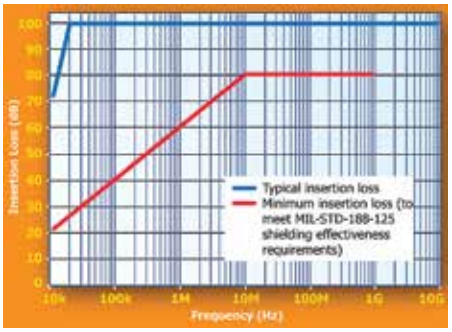
HEMP Protected Telephone Line Filter Range



Benefits

- Use on 300Ω/600Ω analogue telephone circuits
- Very low residual pulse current – high safety margin
- High symmetry matched pairs
- Self-healing capacitor technology utilised throughout
- The highest levels of reliability

Transient Suppression Performance

MIL STD 188-125-1 acceptance test, E1 short pulse current injection, wave shape 20/500ns					
Input pulse amplitude	250A	500A	1000A	1800A	2500A
MIL-STD-188-125 residual requirement	<0.1A	<0.1A	<0.1A	<0.1A	<0.1A
Typical filter residual let-through (measured)	<0.06A	<0.06A	<0.06A	<0.06A	<0.06A

Standard version meets E1 pulse requirements. Where long lines are connected, and E2 is also required, please ask about optional E2 version which additionally meets the following requirement.

MIL STD 188-125-1 acceptance test, E2 intermediate pulse current injection, wave shape 1.5/3000ms	
Input pulse amplitude	250A
MIL-STD-188-125 residual requirement	No filter damage or performance degradation

Product Range

Part Number	Number of lines	Major Dimensions (mm)			Weight (kg)
		Length	Width	Depth	
DS33570	2	300	90	45	2
DS33571	4	300	175	45	4
DS33572	8	300	340	45	8

* Note: Lines are supplied as matched pairs, hence 1 telephone circuit = 1 matched pair = 2 lines

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