



**MPE**  
Quality, Reliability, Performance

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## Product Overview

# High Performance Installation Filters



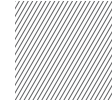
High Performance Installation Filters  
10/12

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Quality, Reliability, Performance



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 9 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 9 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 over 90 years' 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.





## High Performance Installation Filters

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MPE's range of high performance low pass power line filters has been specifically designed by MPE to offer the highest possible performance in a given package size, these filters are suitable for a wide variety of applications.

The MPE portfolio offers solutions to address both AC and DC; single and three phase; standard and extended insertion loss; low leakage and very high current requirements and includes current ratings from 5A to 2400A.

### Design

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All MPE multiple line filters utilise a modern filter design employing toroidal current compensating inductors or "coupled chokes". Multiple windings are used on the same inductor core to achieve flux cancellation and thus full insertion loss performance up to full rated current as the inductor does not saturate.

Empirical testing has proven that this advanced filter design gives identical insertion loss performance under no-load, half-load, and full-load current conditions over the full frequency range. The use of current compensating inductors permits the use of high permeability cores to give large inductance values.

This results in a much higher performance filter with lower leakage current and lower heat dissipation than for the older type of single line filter design still used by many manufacturers of power line filters. (Single line filters have been widely used in the past for many applications but they have a number of significant disadvantages including the loss in performance as load current increases.)

All of the MPE range of filters are of rugged construction, including both rivet and solder seal to provide maximum RF integrity.

### Standard Performance Range

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From screened rooms to industrial power equipment, uncontrolled radio interference presents a common hazard. This range of filters is designed specifically for use on single and three phase mains, and has all the advantages of using current compensating inductors.

### Extended Performance Range

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This range of filters has been designed to meet the very highest insertion loss requirement of 100dB from 10kHz to 18GHz and features an extended low frequency performance to provide considerable filter attenuation at frequencies as low as 1kHz. Available in current ratings from 6 amps to 400 amps in both single and three phase versions, these filters are ideally suited for TEMPEST, EMP, and similar applications where the very highest performance is required.

## Low Leakage Range

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This range of single and three phase filters features a special low leakage construction offering increased levels of safety as there is no direct capacitance from live lines to earth. Applications include secure communications systems, computer installations, and portable screened enclosures. These filters are designed for use on mains supplies with a dedicated neutral.

The extended performance variants of this range, feature full 100dB performance down to 10kHz, these proprietary low leakage filters were originally developed to meet stringent requirements within modern military communications systems. However, with the increasing importance of high performance at low frequency and greater emphasis on increased safety, their applicability is now widespread.

### Very High Current Range

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This range of filters has been developed for use on very high current three phase and neutral mains supplies. All filters employ MPE's proprietary low leakage filter design incorporating current compensating inductors to provide very low heat dissipation and hence running costs. No paralleling of filter lines are used to achieve these high currents and so there are no concerns regarding current sharing problems.

Two performance categories are offered both providing full insertion loss with or without load. These filters are ideal for use in EMP protection systems and in TEMPEST applications.

### Clean Power Range

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The MPE Clean Power range of EMI filters have been designed to provide the most cost effective solution where performance beyond 1GHz is not required. This range of filters attenuates interference in the form of conducted emissions. The filters are bidirectional and have been designed to reduce equipment generated EMI from emanating into the environment as well as protecting the integrity of the installation against hostile incident EMI. The terminal compartments of the filter are fully gasketed and EMI sealed and are designed to allow the filter to be mounted either internally or externally of the equipment boundary. High reliability and safety characteristics are inherent in the Clean Power range of EMI filters. The filters utilise MPE's proprietary self-healing metallised plastic film feedthrough capacitors.

### Control, Data and Telephone Ranges

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In addition to the filter ranges detailed above, MPE also offer full ranges to address Control, Data and Telephone filtering requirements. Full details for these products can be provided upon request by contacting the MPE sales team.



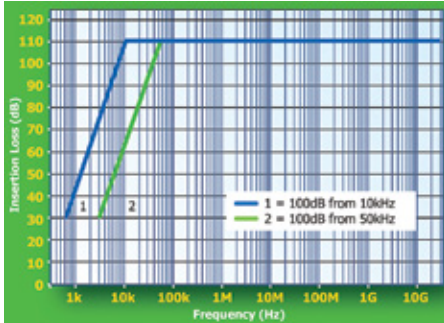
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## Standard Performance Power Line Filter Range



## Benefits

- Range spanning 1A to 400A
- Excellent insertion loss performance
- Significantly lower leakage current than traditional designs
- Single phase & three phase options available
- Self-healing capacitor technology utilised throughout
- The highest levels of reliability

## General Specification

Rated Voltage	Single Phase Filters	250V AC 50/60Hz ( also suitable for 2 line DC supplies up to 600V DC provided that load current returns through the filter)
	Three Phase Filters	250/440V AC 50/60Hz
Rated Current		As tabulated
Insertion Loss		See graph and table
		Performance curve 1 meets 100db at 10kHz
		Performance curve 2 meets 100db at 50kHz
Maximum Temperature Rise on Full Load		25°C
Operating Temperature Range on Full Load		-45°C to + 50°C
Discharge time to below 34V		30s maximum

Product Range Overview: see website for full range up to 400A

Current Rating (A)	MPE Part Number	Performance Curve	Volt Drop (mV)	Max Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
					Length	Width	Depth	
<b>Standard Single Phase (+N)</b>								
5	DS23547	1	500	7	310	175	90	8
10	DS23330	1	500	11	310	175	90	8
15	DS23752	1	500	14	310	175	90	8
30	DS23332	1	500	22	550	205	95	16
60	DS23334	1	500	50	550	205	105	20
<b>Standard Single Phase (+N)</b>								
30	DS23333	1	500	45	550	410	95	22
60	DS23335	2	500	70	550	410	110	32
100	DS23337	2	500	70	660	410	135	45

## Transient Suppression

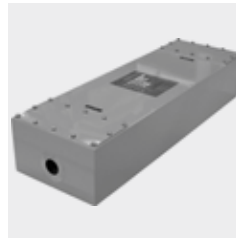
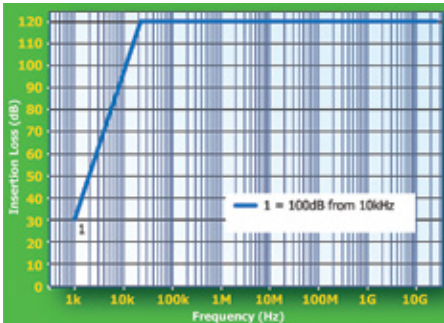
All types can be supplied with integral transient suppression fitted between each input terminal and earth.

Varistor rating 275V AC 140 Joules (10/1000µs)

Other varistor ratings can also be supplied.

The above represents only a very small selection of the MPE product range. Many other variations are available and details of the full range can be found within the product section of the MPE website [www.mpe.co.uk](http://www.mpe.co.uk)

## Extended Performance Power Line Filter Range



## Benefits

- Range spanning 1A to 400A
- Very highest insertion loss performance (100dB from 10kHz to 18GHz)
- Significantly lower leakage current than traditional designs
- Single phase & three phase options available
- Self-healing capacitor technology utilised throughout
- The highest levels of reliability

## General Specification

Single Phase Filters	250V AC 50/60Hz ( also suitable for 2 line DC supplies up to 600V DC provided that load current returns through the filter)
Three Phase Filters	250/440V AC 50/60Hz
Rated Current	As tabulated
Insertion Loss	See graph
	100dB from 10kHz to 18GHz
Maximum Temperature Rise on Full Load	25°C
Operating Temperature Range on Full Load	-45°C to + 50°C
Discharge time to below 34V	30s maximum

Product Range Overview: see website for full range up to 400A

Current Rating (A)	MPE Part Number	Volt Drop (mV)	Max Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
				Length	Width	Depth	
<b>Extended Single Phase (+N)</b>							
6	DS25940	500	8	310	175	90	8
10	DS25941	500	11	310	175	90	8
16	DS25942	500	15	550	205	95	16
32	DS25943	500	25	550	205	95	18
63	DS25944	500	52	640	205	120	22
<b>Extended Single Phase (+N)</b>							
32	DS25949	500	48	550	410	95	24
63	DS25950	500	70	660	410	135	45
100	DS25951	500	170	660	575	150	70

## Transient Suppression

All types can be supplied with integral transient suppression fitted between each input terminal and earth.

Varistor rating 275V AC 140 Joules (10/1000µs)

Other varistor ratings can also be supplied.

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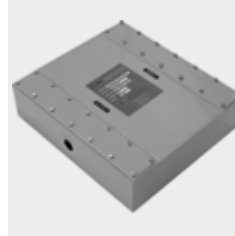
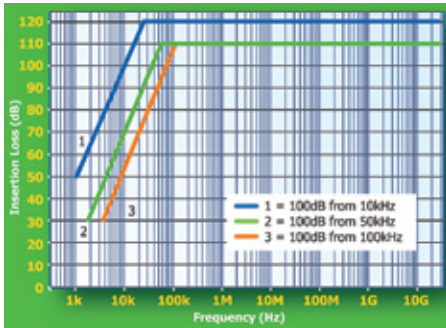
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## Low Leakage Power Line Filter Range



## Benefits

- Range spanning 1A to 400A
- Ultra low leakage current
- Optimum performance at low frequency
- Single phase & three phase options available
- Self-healing capacitor technology utilised throughout
- The highest levels of reliability

## General Specification

Rated Voltage	Single Phase Filters	250V AC 50/60Hz ( also suitable for 2 line DC supplies up to 600V DC provided that load current returns through the filter)
	Three Phase Filters	250/440V AC 50/60Hz
Rated Current		As tabulated
Insertion Loss	Standard performance low leakage	See graph and table
		Performance curve 2 meets 100db at 50kHz
		Performance curve 3 meets 100db at 100kHz
	Extended performance low leakage	100dB from 10kHz to 10GHz
Maximum Temperature Rise on Full Load		25°C
Operating Temperature Range on Full Load		-45°C to + 50°C
Discharge time to below 34V		30s maximum standard performance low leakage
		60s maximum extended performance low leakage

## Transient Suppression

All types can be supplied with integral transient suppression fitted between each input terminal and earth.

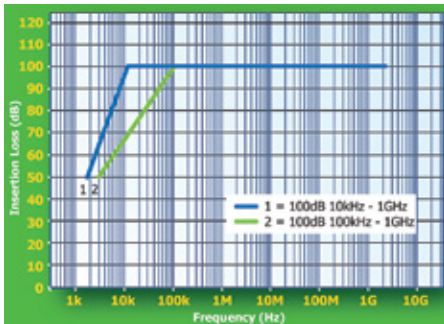
Varistor rating 275V AC 140 Joules (10/1000µs)  
Other varistor ratings can also be supplied.

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## Product Range Overview: see website for full range up to 400A

Current Rating (A)	MPE Part Number	Performance Curve	Leakage Current (mA)	Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
					Length	Width	Depth	
<b>Low Leakage Standard Single Phase (+N)</b>								
5	DS23550	2	15	7	425	175	90	12
10	DS23551	2	15	11	425	175	90	12
15	DS26231	2	15	14	425	175	90	12
<b>Low Leakage Standard Three Phase (+N)</b>								
5	DS23620	3	30	10	425	350	90	18
10	DS23555	3	30	15	425	350	90	18
30	DS23556	3	45	42	590	410	95	24
<b>Low Leakage Extended Single Phase (+N)</b>								
5	DS23548	1	20	15	725	175	90	15
10	DS23549	1	20	27	725	175	90	15
15	DS26232	1	20	36	725	175	95	15
<b>Low Leakage Extended Three Phase (+N)</b>								
5	DS23852	1	50	16	725	350	95	30
10	DS23853	1	50	40	725	350	95	30
30	DS23854	1	120	120	820	700	120	85

## Very High Current Range



## Benefits

- Range spanning 800A to 2400A
- Extremely low heat dissipation
- Single phase & three phase options available
- Self-healing capacitor technology utilised throughout
- The highest levels of reliability

## General Specification

Rated Voltage	250V AC 50/60Hz	
Rated Current	As tabulated	
Insertion Loss	Standard performance	100dB 100kHz - 1GHz (See curve 2)
	Extended performance	100dB 10kHz - 18GHz (See curve 1)
Maximum Temperature Range on Full Load	25°C	
Operating Temperature Range on Full Load	-25°C to +50°C	
Discharge Time to Below 34V	30s maximum	
Maximum Continuous Earth Leakage Current (per Neutral-Earth Volt at 50Hz)	250mA	
Maximum Overload Current Rating	1.25 times rated current for 15 minutes	
Maximum Short Circuit Fault Current Rating	20,000A for 1 second	

## Product Range Overview: see website for full range

Current Rating (A)	MPE Part Number	DC Resistance (mΩ)	Volt Drop (mV)	Max Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
					Length	Width	Depth	
<b>Standard Performance Three Phase (+N)</b>								
800	DS23973	0.13	100	250	1554	864	285	250
1200	DS26310	0.07	76	350	1600	1000	300	300
2400	DS26330	0.03	60	500	2600	1200	450	450
<b>Extended Performance Three Phase (+N)</b>								
800	DS26307	0.2	150	375	2400	864	285	350
1200	DS26314	0.1	115	550	2500	1000	300	450
2400	DS26334	0.04	90	750	4100	1200	450	650

## Transient Suppression

All types can be supplied with integral transient suppression fitted between each input terminal and earth.

Varistor rating 275V AC 360 Joules

Other varistor ratings can also be supplied.

The above represents only a very small selection of the MPE product range. Many other variations are available and details of the full range can be found within the product section of the MPE website [www.mpe.co.uk](http://www.mpe.co.uk)



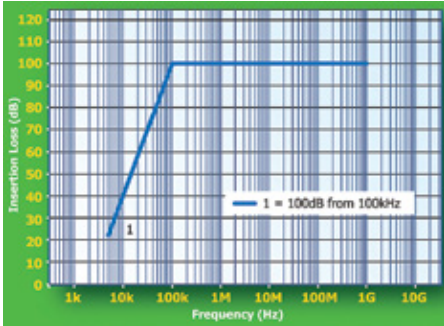
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## Clean Power Filter Range



## Benefits

- Cost effective solutions for performance requirements up to 1GHz
- Full frequency performance up to 1GHz
- Chassis or bulkhead mounting for ease of installation
- Self-healing capacitor technology utilised throughout
- The highest levels of reliability

## General Specification

Rated Voltage	Single Phase Filters	250V AC 50/60Hz ( also suitable for 2 line DC supplies up to 600V DC provided that load current returns through the filter)
	Three Phase Filters	250/440V AC 50/60Hz
Rated Current	As tabulated	
Insertion Loss	See graph	
	100dB from 100kHz - 1GHz	
Maximum Temperature Rise on Full Load	Performance curve 2 meets 100db at 50kHz	
Operating Temperature Range on Full Load	25°C	
Discharge time to below 34V	-45°C to + 50°C	
	30s maximum	

Product Range Overview: see website for full range

Current Rating (A)	MPE Part Number	Volt Drop (mV)	Maximum Heat Dissipation (W)	Major Dimensions (mm)			Weight (kg)
				Length	Width	Depth	
<b>Single Phase (+N)</b>							
16	DS41016	300	10	250	110	55	3
32	DS41032	200	15	350	120	65	5
63	DS41063	100	20	400	140	80	8
<b>Three Phase (+N)</b>							
16	DS43016	200	15	250	180	55	4
32	DS43032	150	20	350	200	65	8
63	DS43063	80	25	400	230	80	12

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