

Type 'A' and 'B' Surge Protection Devices

Electrical specification	(PS) ESP 240 M1	(PS) ESP 415 M1
Nominal voltage - Phase-Neutral U_0 (RMS)	240V	240V
Maximum voltage - Phase-Neutral U_c (RMS)	280V	280V
Temporary Overvoltage TOV U_T^1	350V	350V
Short circuit withstand capability	25kA, 50Hz	
Working voltage (RMS)	200-280V	346-484V
Frequency range	47-63Hz	
Max. back-up fuse (see installation instructions)	125A	
Leakage current (to earth)	<250 μ A	
Indicator circuit current	<10mA	
Volt free contact ²	Screw terminal	
– current rating	1A	
– nominal voltage (RMS)	250V	

¹ Temporary Overvoltage rating is for a maximum duration of 5 seconds tested to BS EN/EN/IEC 61643.

² Minimum permissible load is 5V DC, 10mA to ensure reliable operation.

Transient specification Type 1 (BS EN/EN), Class I (IEC)	(PS) ESP 240 M1	(PS) ESP 415 M1
Nominal discharge current 8/20 μ s (per mode) I_n	20kA	
Let-through voltage U_p at I_n^1	900V	900V
Impulse discharge current 10/350 μ s I_{imp} (per mode) ²	4kA	
Let-through voltage U_p at I_{imp}^1	750V	750V
Impulse discharge current (per phase) I_{imp}^3	6.25kA	
Type 2 (BS EN/EN), Class II (IEC)		
Nominal discharge current 8/20 μ s (per mode) I_n	20kA	
Let-through voltage U_p at I_n^1	900V	900V
Maximum discharge current I_{max} (per mode) ²	40kA	
Maximum discharge current I_{max} (per phase)	80kA	
Type 3 (BS EN/EN), Class III (IEC)		
Let-through voltage U_p at U_{oc}^1 of 6kV 1.2/50 μ s and I_{sc} of 3kA 8/20 μ s (per mode) ⁴	600V	600V

¹ The maximum transient voltage let-through of the protector throughout the test ($\pm 5\%$), phase to neutral, phase to earth and neutral to earth.

² The electrical system, external to the unit, may constrain the actual current rating achieved in a particular installation.

³ Rating is considered as the current capability of the protector for equipotential bonding near the service entrance.

⁴ Combination wave test within BS 6651:1999 App. C, Cats C-Low & B-High, IEEE C62.41-2002 Location Cats C1 & B3, SS CP 33:1996 App. F, AS 1768-1991 App. B, Cat B, UL1449 mains wire-in.



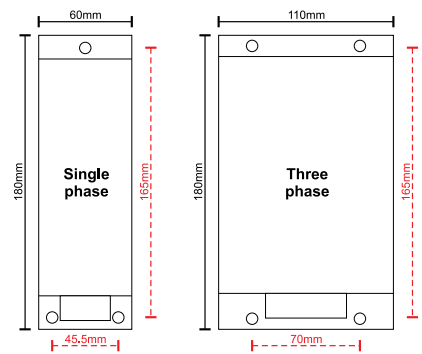
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Mechanical specification	(PS) ESP 240 M1	(PS) ESP 415 M1
Temperature range	-40 to +70°C	
Connection type	Screw terminal	
Conductor size (stranded)	16mm ²	
Earth connection	Screw terminal	
Volt free contact	Connect via screw terminal with conductor up to 2.5mm ² (stranded)	
Degree of protection (IEC 60529)	IP20	
Case material	Steel	
Weight – unit	0.6kg	1.0kg
– packaged	0.7kg	1.1kg

If you desire a protector with an extra high maximum surge current use the ESP M2 or M4 series. If your supply is fused at 16 amps, or less, the in-line protectors (ESP 240 (or 120-5A (or -16A) and their ready boxed derivatives) may be more suitable.

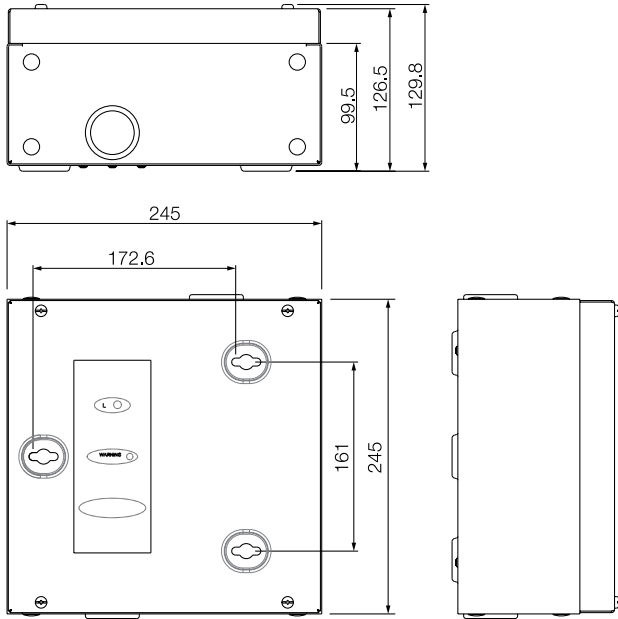
If you need to mount the display panel separately from the main protector unit, use the ESP M1R series.



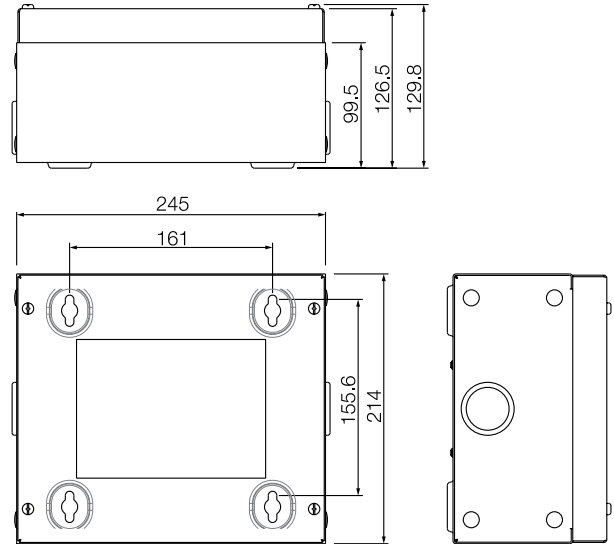
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Surge Protection Enclosure For SPN Type 'A' Distribution Boards (PSA240M1E)



Surge Protection Enclosure for TPN Distribution Board (PSB415M1E)



Catalogue No'S.

Description	Part No.
Enclosed surge protection kit - Type I & II	PSA240M1E
Description	Part No.
Enclosed surge protection kit - Type I & II*	PSB415M1E



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Transient Overvoltage Performance Test Certificate



Surge Protective Device (SPD):

Furse ESP 415 M1

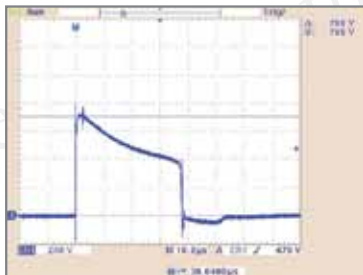
For installation in Havells distribution boards:

Type 'B' TPN: PSB41, PSB61, PSB61M, PSB81, PSB121, PSB121M, PSB181, PSB181M

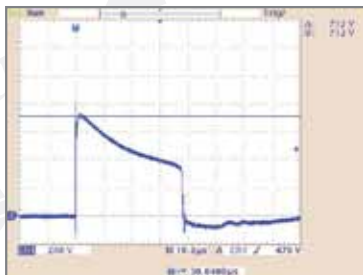
The Havells/Furse solution combines best-in-class mains power distribution with transient overvoltage protection ensuring controlled and verified SPD installation in line with IET Wiring Regulations 17th Edition, BS 7671:2008(+A1:2011), for optimal protection of installed equipment.

Installed performance test:

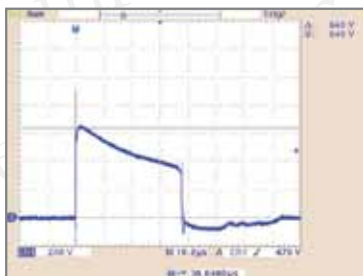
IEC 61643-11 Class III Combination waveform
6 kV (1.2/50 μ s voltage) 3 kA (8/20 μ s current)



Transient overvoltage performance L-N



Transient overvoltage performance L-PE



Transient overvoltage performance N-PE

Transient specification (at SPD terminals)

Voltage protection level U_p at U_{oc} of 6 kV 1.2/50 μ s and I_{sc} of 3 kA 8/20 μ s (per mode)	600 V ¹
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¹ The maximum transient overvoltage let-through the SPD throughout the test ($\pm 5\%$), phase to neutral, phase to earth and neutral to earth.

Transient specification (installed performance - SPD to Type 'B' TPN board)

Target voltage protection level U_p : (2 x peak operating voltage, 230 V AC system)	715 V
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L-N: Voltage protection level U_p at U_{oc} of 6 kV 1.2/50 μ s and I_{sc} of 3 kA 8/20 μ s (per mode)	708 V ²
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L-PE: Voltage protection level U_p at U_{oc} of 6 kV 1.2/50 μ s and I_{sc} of 3 kA 8/20 μ s (per mode)	712 V ²
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N-PE: Voltage protection level U_p at U_{oc} of 6 kV 1.2/50 μ s and I_{sc} of 3 kA 8/20 μ s (per mode)	640 V ²
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All testing performed in accordance with IEC 61643-11 Class III test 6 kV (1.2 μ s voltage) 3 kA (8/20 μ s current) for verifying SPD transient overvoltage protective performance at terminal equipment level.

² Typical values, subject to manufacturing component tolerances. Essential detail relates to voltage protection level $U_p < 715$ V for effective protection below impulse immunity/susceptibility of equipment.

This document certifies that the Furse ESP 415 M1 SPD has been installed on the Havells Type 'B' TPN distribution board in accordance with best practice principles to IET Wiring Regulations 17th Edition, BS 7671:2008(+A1:2011) and tested to achieve the voltage protection levels (U_p) shown above.

Signed:

Keith Herrington
R&D Manager, Furse ESP

Date: 12th July 2012



Transient Overvoltage Performance Test Certificate



Surge Protective Device (SPD):

Furse ESP 240 M1

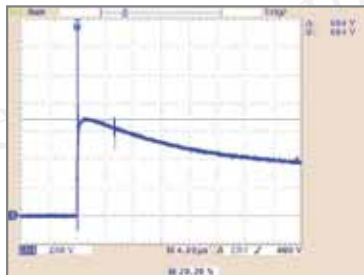
For installation in Havells distribution boards:

Type 'A' SPN: PSA4, PSA7, PSA10, PSA13, PSA16

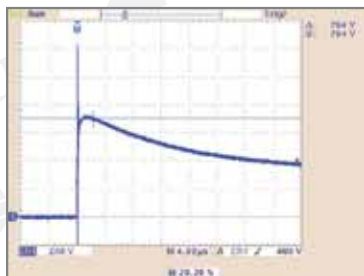
The Havells/Furse solution combines best-in-class mains power distribution with transient overvoltage protection ensuring controlled and verified SPD installation in line with IET Wiring Regulations 17th Edition, BS 7671:2008(+A1:2011), for optimal protection of installed equipment.

Installed performance test:

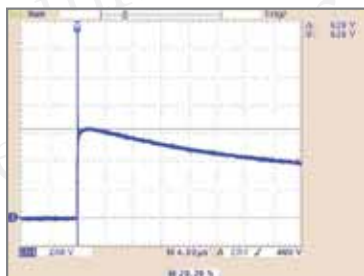
IEC 61643-11 Class III Combination waveform
6 kV (1.2/50 μ s voltage) 3 kA (8/20 μ s current)



Transient overvoltage performance L-N



Transient overvoltage performance L-PE



Transient overvoltage performance N-PE

Transient specification (at SPD terminals)

Voltage protection level U_p at U_{oc} of 6 kV 1.2/50 μ s and I_{sc} of 3 kA 8/20 μ s (per mode)	600 V ¹
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¹ The maximum transient overvoltage let-through the SPD throughout the test ($\pm 5\%$), phase to neutral, phase to earth and neutral to earth.

Transient specification (installed performance - SPD to Type 'A' SPN board)

Target voltage protection level U_p : (2 x peak operating voltage, 230 V AC system)	715 V
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L-N: Voltage protection level U_p at U_{oc} of 6 kV 1.2/50 μ s and I_{sc} of 3 kA 8/20 μ s (per mode)	684 V ²
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L-PE: Voltage protection level U_p at U_{oc} of 6 kV 1.2/50 μ s and I_{sc} of 3 kA 8/20 μ s (per mode)	704 V ²
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N-PE: Voltage protection level U_p at U_{oc} of 6 kV 1.2/50 μ s and I_{sc} of 3 kA 8/20 μ s (per mode)	628 V ²
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All testing performed in accordance with IEC 61643-11 Class III test 6 kV (1.2 μ s voltage) 3 kA (8/20 μ s current) for verifying SPD transient overvoltage protective performance at terminal equipment level.

² Typical values, subject to manufacturing component tolerances. Essential detail relates to voltage protection level $U_p < 715$ V for effective protection below impulse immunity/susceptibility of equipment.

This document certifies that the Furse ESP 240 M1 SPD has been installed on the Havells Type 'A' SPN distribution board in accordance with best practice principles to IET Wiring Regulations 17th Edition, BS 7671:2008(+A1:2011) and tested to achieve the voltage protection levels (U_p) shown above.

Signed:

Keith Herrington
R&D Manager, Furse ESP

Date: 12th July 2012