ESP 415/XXX Series

LPZ $0_A \rightarrow 2$

COMMON MODE Equipotential Bonding

MAINS TEST TYPE 1 + 2

ENHANCED Low let-through voltage

STATUS INDICATION + VOLT-FREE CONTACT

Combined Type 1 and 2 tested protector (to BS EN 61643) for use on the main distribution board, particularly where a structural Lightning Protection System (LPS) is employed, for equipotential bonding. For use at boundaries up to LPZ 0_A to protect against flashover (typically the main distribution board location) through to LPZ 2 to protect electrical equipment from damage.

Features and benefits

- ✔ Enhanced protection (to BS EN 62305) offering low let-through voltage further minimizing the risk of flashover creating dangerous sparking or electric shock
- ✔ Repeated protection in lightning intense environments
- ✔ The varistor based design eliminates the high follow current (I_f) associated with spark gap based surge protection
- ✔ Compact, space saving design
- ✔ Indicator shows when the protector requires replacement
- ✔ Remote signal contact can indicate the protector's status through interfacing with a building management system

Application

- ✔ Use on three phase mains supplies and power distribution systems for protection against partial direct or indirect lightning strikes
- ✔ ESP 415/I/XXX versions for use with Class I or II LPS
- ✔ ESP 415/III/XXX versions for use with Class III or IV LPS; or exposed overhead three phase power lines where no LPS is fitted
- ✔ ESP 415/X/TNS versions also cover TN-C-S earthing systems

IMPORTANT

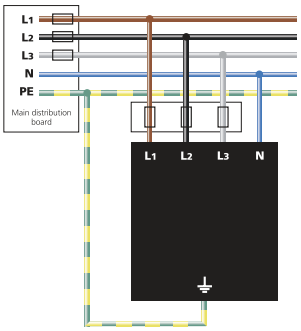
The primary purpose of lightning current or equipotential bonding mains Type 1 Surge Protective Devices (SPDs) is to prevent dangerous sparking caused by flashover to protect against the loss of human life. In order to protect electronic equipment and ensure the continual operation of systems, transient overvoltage mains Type 2 and 3 SPDs such as the ESP M1 Series or ESP D1 Series are further required, typically installed at downstream sub-distribution boards feeding sensitive equipment. BS EN/IEC 62305 refers to the correct application of mains Type 1, 2 and 3 SPDs as a coordinated set.

For further information, please refer to the Furse Guide to BS EN 62305 Protection against Lightning.

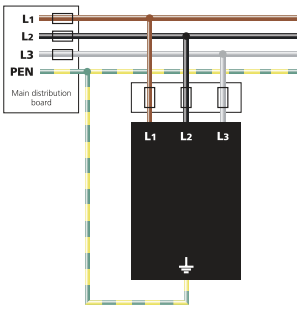
Installation

Protector to be installed in the main distribution board with connecting leads of minimal length. The protector should be fused and is suitable for attachment to a 35 mm top hat DIN rail.

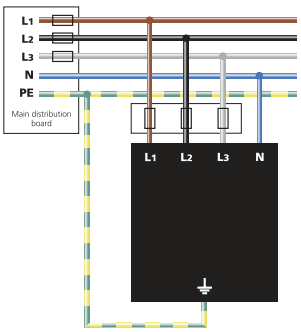
The diagrams below illustrate how to wire the appropriate ESP protector according to your chosen electrical system.



TN-S earthing system



TN-C earthing system



TT earthing system

Accessories

Weatherproof enclosures

WBX D4

Use with TN-S, TN-C versions and ESP 415/III/TT

WBX D8

Use with ESP 415/I/TT

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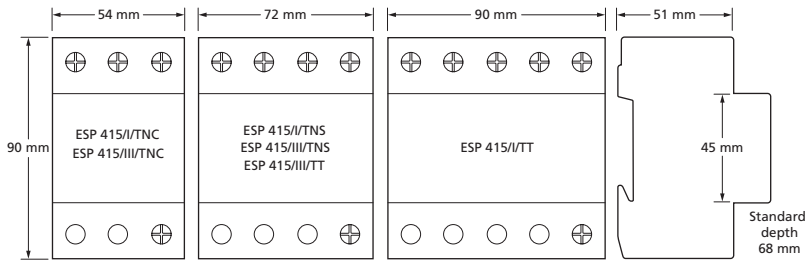
Technical specification

Electrical specification	ESP 415/I/TNS	ESP 415/III/TNS	ESP 415/I/TNC	ESP 415/III/TNC	ESP 415/I/TT	ESP 415/III/TT
Nominal voltage - Phase-Neutral *Uo* (RMS)	240 V					
Maximum voltage - Phase-Neutral *Uc* (RMS/DC)	320 V/420 V					
Temporary Overvoltage TOV *UT*[1]	350 V					
Short circuit withstand capability	25 kA/50 Hz					
Frequency range	47-63 Hz					
Max. back-up fuse (see installation instructions)	250 A					
Leakage current (to earth)	< 2.5 mA	< 2.5 mA	< 2.5 mA	< 2.5 mA	-	-
Volt free contact **- current rating** **- nominal voltage** (RMS)	Screw terminal 0.5 A 250 V					

Transient specification	ESP 415/I/TNS	ESP 415/III/TNS	ESP 415/I/TNC	ESP 415/III/TNC	ESP 415/I/TT	ESP 415/III/TT
Type 1 (BS EN/EN), Class I (IEC)						
Nominal discharge current 8/20 µs (per mode) *In*	25 kA	20 kA	25 kA	20 kA	25 kA/100 kA (N-E)	20 kA/50 kA (N-E)
Let-through voltage *Up* at *In*[2]	< 1.4 kV	< 1.5 kV	< 1.4 kV	< 1.5 kV	< 1.4 kV	< 1.5 kV
Impulse discharge current 10/350 µs *Iimp* (per mode)[3]	25 kA	12.5 kA	25 kA	12.5 kA	25 kA/100 kA (N-E)	12.5 kA/50 kA (N-E)
Let-through voltage *Up* at *Iimp*[2]	< 1.3 kV	< 1.2 kV	< 1.3 kV	< 1.2 kV	< 1.3 kV	< 1.2 kV
Let-through voltage *Up* at 1.2/50 µs (N-E, TT system)	-	-	-	-	< 1.2 kV	< 1.2 kV
Type 2 (BS EN/EN), Class II (IEC)						
Nominal discharge current 8/20 µs (per mode) *In*	25 kA	20 kA	25 kA	20 kA	25 kA/100 kA (N-E)	20 kA/50kA (N-E)
Let-through voltage *Up* at *In*[2]	< 1.4 kV	< 1.5 kV	< 1.4 kV	< 1.5 kV	< 1.4 kV	< 1.5 kV
Maximum discharge current *Imax* (per mode)[3]	100 kA	50 kA	100 kA	50 kA	100 kA/160 kA (N-E)	50 kA/100 kA (N-E)

Mechanical specification	ESP 415/I/TNS	ESP 415/III/TNS	ESP 415/I/TNC	ESP 415/III/TNC	ESP 415/I/TT	ESP 415/III/TT
Temperature range	-40 to +80 °C					
Connection type	Screw terminal					
Conductor size (stranded)	25 mm²					
Earth connection	Screw terminal					
Volt free contact	Connect via screw terminal with conductor up to 1.5 mm² (stranded)					
Degree of protection (IEC 60529)	IP20					
Case material	Thermoplastic, UL 94 V-0					
Mounting	Indoor, 35 mm top hat DIN rail					
Weight - unit	0.84 kg	0.59 kg	0.64 kg	0.44 kg	0.9 kg	0.67 kg
- packaged	0.94 kg	0.69 kg	0.74 kg	0.54 kg	1.0 kg	0.77 kg
Dimensions to DIN 43880 - HxDxW[4]	90 mm x 68 mm x 72 mm (4TE)	90 mm x 68 mm x 72 mm (4TE)	90 mm x 68 mm x 54 mm (3TE)	90 mm x 68 mm x 54 mm (3TE)	90 mm x 68 mm x 90 mm (5TE)	90 mm x 68 mm x 72 mm (4TE)

[1] Temporary Overvoltage rating is for a maximum duration of 5 seconds tested to BS EN/EN/IEC 61643.
[2] The maximum transient voltage let-through of the protector throughout the test, phase to earth and neutral to earth.
[3] The electrical system, external to the unit, may constrain the actual current rating achieved in a particular installation.
[4] The remote signal contact (removable) adds 10 mm to height.



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