

Combined Type 1 and 2 tested protector (to BS EN 61643) for use on the main distribution board within wind turbines, 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
- ✓ 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 690 V three phase mains power supplies and power distribution boards for protection against partial direct and indirect lightning strikes. The services (typically 3 phase 400 V mains, UPS, data, signal and telecom lines) to the cabinet within the wind turbine nacelle will require additional protection.

- ✓ For a 3 phase TN-S supply, install 4 ESP WT units together with ESP CE10 or ESP CE13 connecting and earthing bar (see installation)
- ✓ For a 3 phase TN-C supply, install 3 ESP WT units together with ESP CE7 or ESP CE9 connecting and earthing bar (see installation)

IMPORTANT

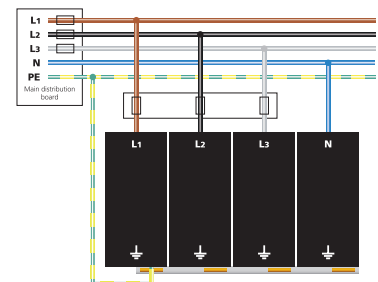
The primary purpose of lightning current or equipotential bonding mains Type 1 Surge Protective Devices (SPDs) is to prevent dangerous sparking caused by flashover to protect against the loss of human life. In order to protect electronic equipment and ensure the continual operation of systems, transient 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.

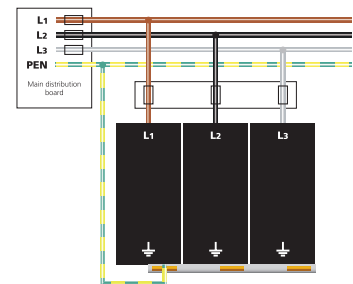
Installation

Protector should 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 (ESP WT x 4) with ESP CE10 or ESP CE13 earthing bars



TN-C earthing system (ESP WT x 3) with ESP CE7 or ESP CE9 earthing bars

Accessories

Connecting and earthing bars

ESP CE7

Use with 3 of ESP 690/12.5/WT for TN-C supplies

ESP CE9

Use with 3 of ESP 690/25/WT for TN-C supplies

ESP CE10

Use with 4 of ESP 690/12.5/WT for TN-S supplies

ESP CE13

Use with 4 of ESP 690/25/WT for TN-S supplies

For suitable enclosures for the ESP WT series, please contact us.

Technical specification

Electrical specification	NEW	
	ESP 690/25/WT	ESP 690/12.5/WT
Nominal voltage - Phase-Neutral U_0 (RMS)	690 V	
Maximum voltage - Phase-Neutral U_c (RMS/DC)	750 V/1000 V	
Short circuit withstand capability	25 kA/50 Hz	
Max. back-up fuse (see installation instructions)	250 A	
Leakage current (to earth)	< 3.5 mA	< 2.5 mA
Volt free contact - current rating - nominal voltage (RMS)	Screw terminal 0.5 A 250 V	

Transient specification	NEW	
	ESP 690/25/WT	ESP 690/12.5/WT
Type 1 (BS EN/EN), Class I (IEC)		
Nominal discharge current 8/20 μ s (per mode) / I_n	40 kA	20 kA
Let-through voltage U_p at I_n^1	< 2.5 kV	< 2.5 kV
Impulse discharge current 10/350 μ s / i_{imp} (per mode) ²	25 kA	12.5 kA
Let-through voltage U_p at i_{imp}^1	< 2.0 kV	< 2.0 kV
Type 2 (BS EN/EN), Class II (IEC)		
Nominal discharge current 8/20 μ s (per mode) / I_n	40 kA	20 kA
Let-through voltage U_p at I_n^1	< 2.5 kV	< 2.5 kV
Maximum discharge current / i_{max} (per mode) ²	80 kA	40 kA

Mechanical specification	NEW	
	ESP 690/25/WT	ESP 690/12.5/WT
Temperature range	-40 to +80 °C	
Connection type	Screw terminal	
Conductor size (stranded)	25 mm ²	
Earth connection	Screw terminal	
Volt free contact	Connect via screw terminal with conductor up to 1.5 mm ² (stranded)	
Degree of protection (IEC 60529)	IP20	
Case material	Thermoplastic, UL94 V-0	
Mounting	Indoor, 35 mm top hat DIN rail	
Weight - unit - packaged	0.5 kg 0.6 kg	0.33 kg 0.43 kg

Dimensions to DIN 43880 - HxDxW³
 - per module
 - for 3ph TN-C supplies
 - for 3ph TN-S supplies

90 mm x 68 mm x 72 mm (4TE)	90 mm x 68 mm x 54 mm (3TE)
90 mm x 68 mm x 216 mm (total: 3 x ESP690/25/WT)	90 mm x 68 mm x 162 mm (total: 3 x ESP690/12.5/WT)
90 mm x 68 mm x 288 mm (total: 4 x ESP 690/25/WT)	90 mm x 68 mm x 216 mm (total: 4 x ESP 690/12.5/WT)

¹ The maximum transient voltage let-through of the protector throughout the test, per mode.
² The electrical system, external to the unit, may constrain the actual current rating achieved in a particular installation.
³ The remote signal contact (removable) adds 10 mm to height.

