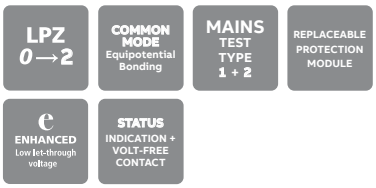
TECHNICAL DATA SHEET

Mains power protection

ESP 240T1 Surge Protection Series

Combined Type 1 and 2 tested Surge Protective Device SPD (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 to protect against flashover (typically the main distribution board location) through to LPZ 2 to protect electrical equipment from damage.



Features & benefits

- Enhanced protection (to IEC/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
- Pluggable module design (with anti-vibration locking clip) allows for simple replacement at end-of-life
- Compact, space saving design
- Indicator shows when the SPD protection modules requires replacement
- Remote signal contact can indicate the protector's status through interfacing with a building management system

Application

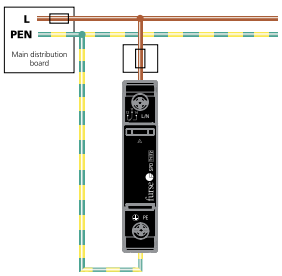
- Use on single phase mains supplies and power distribution systems for protection against partial direct or indirect lightning strikes
- ESP 240T1/25/XXX versions for use with Class I or II Lightning Protection Systems LPS where there are multiple metallic services to the building or on exposed overhead single phase power lines where no LPS is fitted
- ESP 240T1/12.5/XXX versions for use with Class III or IV LPS or where the LPS and service line information is unknown and so SPD impulse current I_{imp} cannot be calculated (minimum 12.5kA I_{imp} required)
- ESP 240T1/X/TNS versions also cover TN-C-S earthing systems

Installation

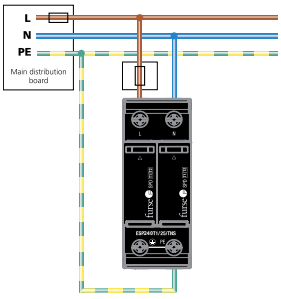
The SPD is to be installed in the main distribution board with connecting leads of minimal length. The protector should be fused and is suitable for attachment to a 35 mm top hat DIN rail. The diagrams below illustrate how to wire the appropriate ESP protector according to your chosen electrical system.

Weatherproof enclosure:
WBX D4
ABB order code: 7TCA085410R0032
SPD replacement modules:
ESP 240T1/25/M (25 kA L-N) 7TCA085460R0374
ESP 240T1/12.5/M (12.5 kA L-N) 7TCA085460R0373
ESP N-PE/T1/100/M (100 kA N-E) 7TCA085460R0375
ESP N-PE/T1/50/M (50 kA N-E) 7TCA085460R0376
Metallic enclosure:
MBX D4
ABB order code: 7TCA085400R0649

TN-C earthing system



TN-S/TT earthing system



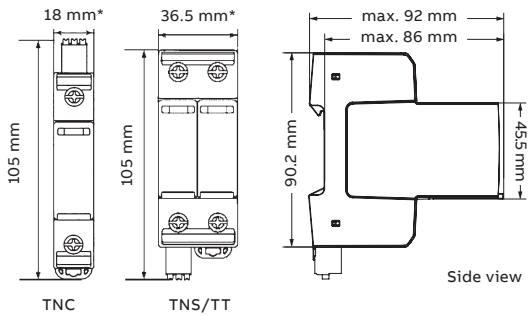
NOTE: Remote contact connections not shown, for clarity.

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 subdistribution boards feeding sensitive equipment. IEC/BS EN 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.

ESP 240T1 Surge Protection Series - Technical specification

Electrical specification	ESP 240T1/ 25/TNS	ESP 240T1/ 12.5/TNS	ESP 240T1/ 25/TNC	ESP 240T1/ 12.5/TNC	ESP 240T1/ 25/TT	ESP 240T1/ 12.5/TT
ABB order code	7TCA085400R0499	7TCA085460R0379	7TCA085400R0500	7TCA085460R0381	7TCA085460R0370	7TCA085460R0392
Nominal voltage - Phase-Neutral U_o (RMS)	240 V					
Maximum voltage - Phase-Neutral U_C (RMS)	275 V	300 V	275 V	300 V	275 V	300 V
Temporary Overvoltage TOV U_T[1] (5s/120m)	337 V / 442 V					
Short circuit withstand capability I_{SCCR}	50 kA_{RMS} / 50 Hz					
Frequency range	47-63 Hz					
Max. back-up fuse (see installation instructions)	≤ 315 A	≤ 250 A	≤ 315 A	≤ 250 A	≤ 315 A	≤ 250 A
Leakage current (to earth)	≤ 5 µA	< 2.5 mA	≤ 5 µA	< 2.5 mA	≤ 5 µA	< 2.5 mA
Follow current interrupt rating I_{fi}	50 kA_{RMS}	0	50 kA_{RMS}	0	50 kA_{RMS} (L-N) 100 A_{RMS} (N-E)	0 (L-N) 100 A_{RMS} (N-E)
Volt free contact:[2]	Push terminal					
– Current rating	1 A					
– Nominal voltage (RMS)	250 V					
Transient specification	**ESP 240T1/ 25/TNS**	**ESP 240T1/ 12.5/TNS**	**ESP 240T1/ 25/TNC**	**ESP 240T1/ 12.5/TNC**	**ESP 240T1/ 25/TT**	**ESP 240T1/ 12.5/TT**
Type 1 (BS EN/EN), Class I (IEC)						
Nominal discharge current 8/20 µs (per mode) I_n	25 kA	20 kA	25 kA	20 kA	25 kA (L-N) 100 kA (N-E)	20 kA (L-N) 50 kA (N-E)
Let-through voltage U_P at I_n[2]	≤ 1.5 kV	≤ 1.5 kV	≤ 1.5 kV	≤ 1.5 kV	≤ 1.5 kV	≤ 1.5 kV (L-N) ≤ 1.5 kV (N-E)
Impulse discharge current 10/350 µs I_{imp} (to earth)[3]	25 kA	12.5 kA	25 kA	12.5 kA	25 kA (L-N) 100 kA (N-E)	12.5 kA (L-N) 50 kA (N-E)
Total discharge current 10/350 µs I_{total} (total to earth)[4,5]	50 kA	25 kA	25 kA	12.5 kA	50 kA	25 kA
Let-through voltage U_P 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) I_n	25 kA	20 kA	25 kA	20 kA	25 kA (L-N) 100 kA (N-E)	20 kA (L-N) 50 kA (N-E)
Let-through voltage U_P at I_n[2]	≤ 1.5 kV	≤ 1.5 kV	≤ 1.5 kV	≤ 1.5 kV	≤ 1.5 kV	≤ 1.5 kV (L-N) ≤ 1.5 kV (N-E)
Maximum discharge current I_{max} (per mode)[3]	65 kA	50 kA	65 kA	50 kA	65 kA (L-N) 150 kA (N-E)	50 kA (L-N) 100 kA (N-E)
Mechanical specification	**ESP 240T1/ 25/TNS**	**ESP 240T1/ 12.5/TNS**	**ESP 240T1/ 25/TNC**	**ESP 240T1/ 12.5/TNC**	**ESP 240T1/ 25/TT**	**ESP 240T1/ 12.5/TT**
Temperature range	-40 to +80 °C					
Connection type	Screw terminal - maximum torque 4.5 Nm					
Conductor size (solid/stranded)[5]	35 mm^2					
Earth connection	Screw terminal - maximum torque 4.5 Nm					
Degree of protection (IEC 60529)	IP20					
Volt free contact	Push-fit connection with conductor up to 1.5 mm^2 (solid), rated AC 250 V, 1 A					
Case material	Thermoplastic UL-94 V-0					
Mounting	Indoor, 35 mm top hat DIN rail					
Weight	0.34 kg	0.34 kg	0.18 kg	0.18 kg	0.35 kg	0.35 kg
Dimensions to DIN 43880 - HxDxW[4]	90.2 mm x 92 mm x 36.5 mm* (2TE)	90.2 mm x 92 mm x 36.5 mm* (2TE)	90.2 mm x 92 mm x 18 mm* (1TE)	90.2 mm x 92 mm x 18 mm* (1TE)	90.2 mm x 92 mm x 36.5 mm* (2TE)	90.2 mm x 92 mm x 36.5 mm* (2TE)

[1] Temporary Overvoltage TOV rating is for durations of 5 seconds (withstand) and 120 minutes (safe fail) tested to BS EN/IEC 61643. TT versions have 1200V withstand for 200ms (N-E)
[2] The maximum transient voltage let-through of the protector throughout the test, phase to neutral 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 15 mm to height
[5] Conductor size (flexible) is 25 mm^2
* Maximum dimensions (this applies to all dimensions).



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