

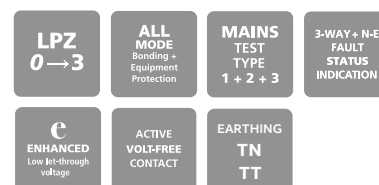
# Mains power protection

## ESP 415MT1/12.5 Series (Three phase)



\*NOTE: product label design may vary.

**Combined Type 1, 2 and 3 tested Surge Protective Device (SPD) (to BS EN 61643) for use on the main distribution board directly feeding electronic equipment such as computers, communication and control equipment, particularly where a structural Lightning Protection System (LPS) is employed. For use at boundaries up to LPZ 0 to protect against flashover (typically the main distribution board location) through to LPZ 3 to protect sensitive electronic equipment.**



### Features & benefits

- Very low let-through voltage (enhanced protection to IEC/BS EN 62305) between phase and neutral conductors, where sensitive equipment is connected
- All mode design capable of handling partial lightning currents as well as allowing continual operation of protected equipment
- Repeated protection in lightning intense environments
- Innovative multiple thermal disconnect technology for safe disconnection from faulty or abnormal supplies (without compromising protective performance)
- Three way visual indication of protection status and advanced pre-failure warning so you need never be unprotected

- Remote indication facility allows pre-failure warning to be linked to a building management system, buzzer or light
- Changeover active volt-free contact enables the protector to be used to warn of phase loss (i.e. power failure, blown fuses, etc)
- Unique flashing warning of potentially fatal neutral to earth supply faults (caused by incorrect earthing, wiring errors or unbalanced conditions)
- Robust steel housing
- SPD base provides ultra low inductance earth bond to metal panels
- Convenient holes for flat mounting

### Application

- ESP 415MT1/12.5 for use with Class I or II Lightning Protection Systems LPS where there are multiple metallic services to the building or on exposed overhead three phase power lines where no LPS is fitted
- ESP 415MT1/12.5 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)

### Installation

Install in parallel, within the power distribution board, either on the load side of the incoming isolator, or on the closest outgoing way to the incoming supply. Connect, with very short connecting leads, to phase(s), neutral and earth. Phase/live connecting leads should be fused with HRC fuses, a switchfuse, MCCB or type 'C' MCB.

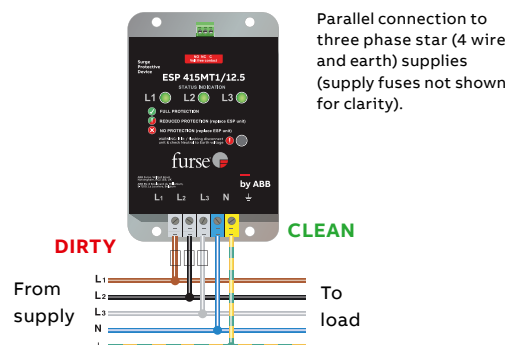
### Accessories

Weatherproof enclosure:

**WBX 4**

ABB Order code:

7TCA085410R0027



**NOTE:** For main distribution boards with multiple metallic services (gas, water, telecom/data lines) entering and for sub-distribution boards, the ESP M1 Series are more suited. If your supply is fused at 16 Amps, or less, the in-line protection (ESP 240 or 120-5A (or -16A) and ready-boxed derivatives) may be suitable. If you need to mount the display panel separately from the main protector unit, use the ESP XXX M2R or ESP XXX M4R.

Electrical specification	ESP 415MT1/12.5
ABB order code	7TCA085465R0003
Nominal voltage - Phase-Neutral $U_o$ (RMS)	240 V
Maximum voltage - Phase-Neutral $U_c$ (RMS)	280 V
Temporary Overvoltage TOV $U_T^{(1)}$	442 (120 mins) L-N: safe fail, 1200 V (200ms) N-E: withstand
Short circuit withstand capability $I_{SCCR}$	50 kA/50 Hz
Working voltage (RMS)	346-484 V
Frequency range	47-63 Hz
Max. back-up fuse (see installation instructions)	$\leq 200$ A
Leakage current (to earth)	$< 5$ $\mu$ A
Indicator circuit current	$< 5$ mA
Volt free contact: <sup>(2)</sup>	Screw terminal
– Current rating	1 A
– Nominal voltage (RMS)	250 V
Transient specification	ESP 415MT1/12.5
Type 1 (BS EN/EN), Class I (IEC)	
Nominal discharge current 8/20 $\mu$ s (per mode) $I_n$	20 kA
Impulse discharge current 10/350 $\mu$ s $I_{imp}$ (to earth) <sup>(5)</sup>	$\leq 1.2$ kV (L-N), $\leq 1.4$ kV (N-E)
Total discharge current 10/350 $\mu$ s $I_{total}$ (total to earth) <sup>(4,5)</sup>	50 kA
Let-through voltage $U_p$ at 1.2/50 $\mu$ s (N-E, TT system)	$< 1.2$ kV
Type 2 (BS EN/EN), Class II (IEC)	
Nominal discharge current 8/20 $\mu$ s (per mode) $I_n$	20 kA
Let-through voltage $U_p$ at $I_n$ <sup>(3)</sup>	$\leq 1.2$ kV (L-N), $\leq 1.4$ kV (N-E)
Maximum discharge current $I_{max}$ (L/N-E, L-N) <sup>(4)</sup>	40 kA (L-N), 100 kA (N-E)
Type 3 (BS EN/EN), Class III (IEC)	
Let-through voltage at $U_{oc}$ of 6 kV 1.2/50 $\mu$ s and $I_{sc}$ of 3 kA 8/20 $\mu$ s (per mode) <sup>(3,6)</sup>	$\leq 600$ V (L-N), $\leq 1.3$ kV (N-E)
Mechanical specification	ESP 415MT1/12.5
Temperature range <sup>(7)</sup>	-40 to +80 °C
Connection type	Screw terminal - maximum torque 2.65Nm
Conductor size (stranded)	25 mm <sup>2</sup>
Earth connection	Screw terminal - maximum torque 2.65Nm
Volt free contact	Connect via screw terminal with conductor up to 1.5 mm <sup>2</sup> (stranded) - maximum torque 0.25 Nm
Degree of protection (IEC 60529)	IP20
Case material	Steel
Weight	1 kg
Dimensions	See diagram below

<sup>(1)</sup> Temporary Overvoltage rating is for a duration of 5 seconds /120 minutes (L-N), and for 200 ms (N-E), tested to BS EN/IEC 61643.

<sup>(2)</sup> Minimum permissible load is 5 V DC, 10 mA to ensure reliable operation.

<sup>(3)</sup> The maximum transient voltage let-through voltage (voltage protection level  $U_p$ ) of the SPD throughout the test ( $\pm 10\%$ ), phase to neutral and neutral to earth.

<sup>(4)</sup> The electrical system, external to the SPD, may constrain the actual current rating achieved in a particular installation.

<sup>(5)</sup> Rating is considered as the current capability of the SPD for equipotential bonding near the service entrance.

<sup>(6)</sup> Combination wave test within IEC/BS EN 61643, IEEE C62.41-2002 Location Cats C1 & B3, SS 555:2010, AS/NZS 1768-2007, UL 1449 mains wire-in.

<sup>(7)</sup> Temperature range of SPD within a 20°C ambient temperature. An increase in ambient temperature will de-rate the SPD upper temperature limit accordingly.

