TECHNICAL DATA SHEET

# Mains power protection

## ESP 415DT1/12.5 Series (Three phase)

furse


*NOTE: product label design may vary.

**Combined Type 1, 2 and 3 tested protector (to BS EN 61643) for use on three phase mains power distribution systems primarily to protect connected electronic equipment from transient overvoltages on the mains supply, e.g. computer, communications or control equipment. For use at boundaries up to LPZ 0 to protect against flashover (typically the main distribution board location, with multiple metallic services entering) through to LPZ 3 to protect sensitive electronic equipment.**

LPZ 0→3 | FULL MODE Bonding + Equipment Protection | MAINS TEST TYPE 1 + 2 + 3 | 3-WAY + N-E FAULT STATUS INDICATION | ENHANCED Low let-through voltage | ACTIVE VOLT-FREE CONTACT | EARTHING TN TT

### Features & benefits

- Very low let-through voltage (enhanced protection to IEC/BS EN 62305) between phase and neutral conductors, where sensitive equipment is connected
- Full 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

### Application

- ESP 415DT1/12.5 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 415DT1/12.5 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)
- 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.)
- Flashing warning of potentially fatal neutral to earth supply faults (due to incorrect earthing, wiring errors or unbalanced conditions)
- Through terminal facility allows series connection on low current supplies to eliminate high additive voltage associated with connecting leads on units installed in parallel
- Compact space saving DIN housing

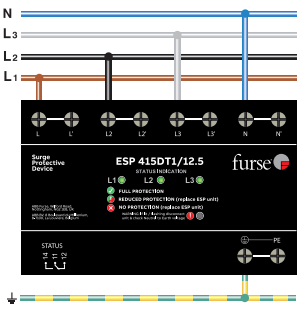
### Installation

Install in parallel, within the power distribution board or directly (via fuses) on to the supply feeding equipment. Can be installed in series for low current supplies - see installation instructions. At distribution boards, the protector can be installed 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 phases, neutral and earth.

### Accessories

Weatherproof enclosure:
**WBX D8**
ABB Order code:
7TCA085410R0033
Metallic enclosure:
**MBX D8**
ABB order code:
7TCA085400R0033

Parallel connection of ESP 415DT1/12.5 series to three phase star (4 wire and earth) supplies (fuses not shown for clarity).




**NOTE:** If you desire a protector with an extra high maximum surge current use the ESP M2 or ESP M4 series. If your supply is fused at 32 Amps, or less, the in-line protectors (and their ready-boxed derivatives) may be more suitable.

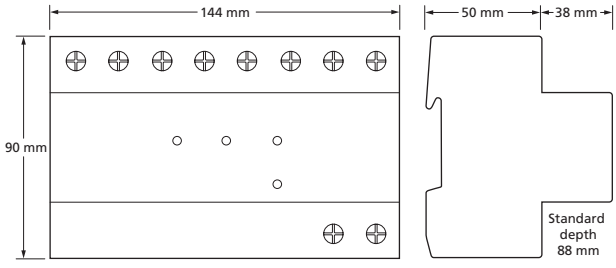
**ESP 415DT1/12.5 Series (Three phase) - Technical specification**

| Electrical specification | ESP 415DT1/12.5 |
|---|---|
| **ABB order code** | 7TCA085465R0002 |
| Nominal voltage - Phase-Neutral $U_o$ (RMS) | 240 V |
| Maximum voltage - Phase-Neutral $U_c$ (RMS) | 280 V |
| Temporary Overvoltage TOV $U_T$[1,2] | 337 / 442 V (L-N), 1200 V (N-E) |
| Short circuit withstand capability | 25 kA/50 Hz |
| Working voltage (RMS) | 346-484 V |
| Frequency range | 47-63 Hz |
| Max. back-up fuse (see installation instructions) | ≤ 200 A |
| Leakage current (to earth) | < 5 µA |
| Indicator circuit current | < 10 mA |
| Volt free contact:[3] | Screw terminal |
| – Current rating | 1 A |
| – Nominal voltage (RMS) | 250 V |

| Transient specification | ESP 415DT1/12.5 |
|---|---|
| **Type 1 (BS EN/EN), Class I (IEC)** | |
| Nominal discharge current 8/20 µs (per mode) $I_n$ | 20 kA |
| Let-through voltage $U_p$ at $I_n$ | ≤ 1.2 kV (L-N), ≤ 1.4 kV (N-E) |
| Impulse discharge current 10/350 µs $I_{imp}$ (to earth)[5] | 12.5 kA (L-N), 50 kA (N-E) |
| Total discharge current 10/350 µs $I_{total}$ (total to earth)[5,6] | 50 kA |
| Let-through voltage $U_p$ at 1.2/50 µs (N-E, TT system) | < 1.2 kV |
| **Type 2 (BS EN/EN), Class II (IEC)** | |
| Nominal discharge current 8/20 µs (per mode) $I_n$ | 20 kA |
| Let-through voltage $U_p$ at $I_n$ | ≤ 1.2 kV (L-N), ≤ 1.4 kV (N-E) |
| Maximum discharge current $I_{max}$ (L/N-E, L-N)[5] | 80 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 µs and $I_{sc}$ of 3 kA 8/20 µs (per mode)[4,7] | ≤ 600 V (L-N), ≤ 1.3 kV (N-E) |

| Mechanical specification | ESP 415DT1/12.5 |
|---|---|
| Temperature range | -40 to +80 °C |
| Connection type | Screw terminal - maximum torque 4.5Nm |
| Conductor size (stranded) | 25 mm² |
| Earth connection | Screw terminal - maximum torque 4.5Nm |
| Volt free contact | Connect via screw terminal with conductor up to 1.5 mm² (stranded) - maximum torque 0.25 Nm |
| Degree of protection (IEC 60529) | IP20 |
| Case material | FR Polymer UL-94 V-0 |
| Weight | 0.85 kg |
| Dimensions to DIN 43880 - HxDxW[8] | 90 mm x 88 mm x 144 mm (8TE) |

[1] Temporary Overvoltage rating is for a duration of 200 ms (N-E), tested to BS EN/IEC 61643.
[2] Temporary Overvoltage TOV rating is for durations of 5 seconds / 120 minutes (L-N), tested to BS EN/IEC 61643.
[3] Min. permissable load is 5 V DC, 10 mA to ensure reliable operation.
[4] The maximum transient voltage let-through of the protector throughout the test (±10%), phase to neutral and neutral to earth.
[5] The electrical system, external to the unit, may constrain the actual current rating achieved in a particular installation.
[6] Rating is considered as the current capability of the protector for equipotential bonding near the service entrance.
[7] 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
[8] The remote signal contact (removable) adds 10 mm to height.

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