TECHNICAL DATA SHEET

# Mains power protection
## ESP CD40 Series


*NOTE: product label design may vary.

**Compact combined Type 2 and 3 tested (to IEC/BS EN 61643) Surge Protective Device (SPD) for use on single and 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 1 through to LPZ 3 to protect sensitive electronic equipment.**


### Features & benefits

- Very low let-through voltage (enhanced protection to IEC/BS EN 62305) between all sets of conductors (phase to neutral, phase to earth, neutral to earth - Full Mode protection)
- All mode design for continual operation of protected equipment
- Repeated protection in lightning intense environments
- SPD includes hybrid combination of MOVs and GDTs
- 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
- Changeover active volt-free contact enables the SPD to be used to warn of phase loss (i.e. power failure, blown fuses etc.)
- Flashing warning of supply faults leading to increased neutral to earth voltage (supply faults due to incorrect earthing, wiring errors or unbalanced conditions) - prevents potentially unsafe installations
- Compact space saving DIN housing with DIN release and locking feature for easy positioning onto DIN rail
- Large, robust terminals for straightforward connection of conductors
- Innovative design delivers zero leakage current to earth, so is suitable for TT and TN earthing systems

### Installation

Install in parallel, within the power distribution board or directly (via fuses) on to the supply feeding equipment.

At distribution boards, the SPD 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 phase, neutral and earth (see installation instructions).

### Accessories

Weatherproof enclosure:
**WBX D4**
ABB Order code: 7TCA085410R0032

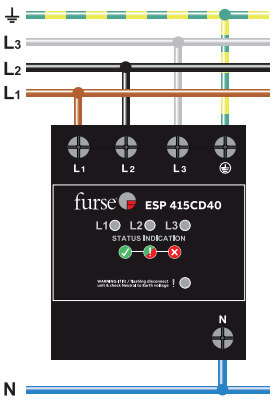
Metallic enclosure:
**MBX D4**
Order code: 7TCA085400R0649

### Application

Install on single and three phase supplies at final distribution board level to protect electronic equipment against transient overvoltages.

Parallel connection of ESP 240CD40 to single phase supplies (fuses not shown for clarity).


Parallel connection of ESP 415CD40 to three phase supplies (fuses not shown for clarity).

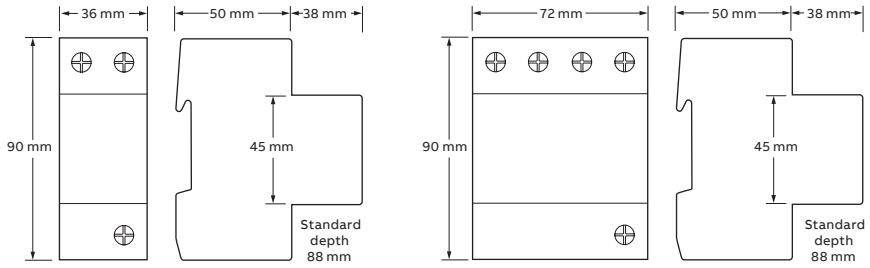


| Electrical specification | ESP 240CD40 | ESP 415CD40 |
|---|---|---|
| **ABB order code** | 7TCA085460R0378 | 7TCA085460R0303 |
| Nominal voltage - Phase-Neutral $U_o$ (RMS) | 240 V | 240 V |
| Maximum voltage - Phase-Neutral $U_c$ (RMS) | 280 V | 280 V |
| Temporary Overvoltage TOV $U_T$[1] (5s/120m/200ms) | 337 V / 442 V / 1200 V | 337 V / 442 V / 1200 V |
| Short circuit withstand capability | 25 kA/50 Hz | 25 kA/50 Hz |
| Working voltage (RMS) | 200-280 V | 346-484 V |
| Frequency range | 47-63 Hz | 47-63 Hz |
| Max. back-up fuse (see installation instructions) | 125 A, parallel connection via series fuses to supply - see installation guide | 125 A, parallel connection via series fuses to supply - see installation guide |
| Leakage current (to earth) | Zero | Zero |
| Indicator circuit current | < 10 mA (per phase, to neutral) | < 10 mA (per phase, to neutral) |
| Volt free contact:[2] | Screw terminal | Screw terminal |
| – Current rating | 1 A | 1 A |
| – Nominal voltage (RMS) | 250 V | 250 V |

| Transient specification | ESP 240CD40 | ESP 415CD40 |
|---|---|---|
| **Type 2 (BS EN/EN), Class II (IEC)** | | |
| Nominal discharge current 8/20 µs (per mode) $I_n$[3] | 20 kA | 20 kA |
| Let-through voltage $U_p$ at $I_n$ | < 1.1 kV | < 1.2 kV / <1.5 kV (L-N, N-E) |
| Impulse sparkover voltage | – | <1.2 kV (N-E) |
| Maximum discharge current (per mode) $I_{max}$[3] | 40 kA (P-N, P-E) | 40 kA (P-N, P-E) |
| **Type 3 (BS EN/EN), Class II (IEC)** | | |
| Nominal voltage - Phase-Neutral $U_{oc}$[5] | 6 kV | 6 kV |
| Let-through voltage $U_p$ at $U_{oc}$[4] | 600 V | 600 V / 1200 V (L-N, N-E) |

| Mechanical specification | ESP 240CD40 | ESP 415CD40 |
|---|---|---|
| Temperature range[6] | -40 to +80 °C | -40 to +80 °C |
| Connection type | Screw terminal | Screw terminal |
| Conductor size (stranded) | 35 mm² | 35 mm² |
| Earth connection | Screw terminal - maximum torque 4.5 Nm | Screw terminal - maximum torque 4.5 Nm |
| Degree of protection (IEC 60529) | IP20 | IP20 |
| Volt free contact | Connect via screw terminal with conductor up to 1.5 mm² (stranded) - maximum torque 0.25 Nm | Connect via screw terminal with conductor up to 1.5 mm² (stranded) - maximum torque 0.25 Nm |
| Case material | FR Polymer UL-94 V-0 | FR Polymer UL-94 V-0 |
| Weight | 0.25 kg | 0.4 kg |
| Dimensions to DIN 43880 - HxDxW[7] | 90 mm x 88 mm x 36 mm (2TE) | 90 mm x 88 mm x 72 mm (4TE) |

[1] Temporary Overvoltage (in the absence of surges) to UL 1449 table 37.1 and BS EN/IEC 61643-1, rated for 5 seconds and 120 minutes phase to neutral/ earth, 1200V TOV withstand for 200ms (N-E).
[2] Minimum permissible load is 5 V DC, 10 mA to ensure reliable operation.
[3] Tested with 8/20 µs waveshape to BS EN/IEC 61643-1 Class II test. The electrical system, external to the unit, may constrain the actual current rating achieved in a particular installation.
[4] The maximum transient let-through voltage throughout the test (±10%).
[5] 6 kV 1.2/50 µs open circuit voltage, 3 kA 8/20 µs short circuit current test to BS EN/IEC 61643-11 Class III test, and UL 1449, IEEE C62.41:2002 (Parts 1&2).
[6] Temperature range of SPD within a 20°C ambient temperature. An increase in ambient temperature will de-rate the SPD upper temperature limit accordingly.
[7] The remote signal contact (removable) adds 10 mm to height.




—
ABB Limited
Furse
Wilford Road
Nottingham
NG2 1EB UK
Tel: +44 (0) 115 964 3700

**www.furse.com**



9AKK106713A1685 / 07.2024