



The lower cost ESP 415 M1 has a maximum surge current of 30kA (120kA unit total) and is suitable for use on most three phase (346-484V) supplies. Protectors for single phase and other voltage supplies are also available (ESP 240 M1, ESP 120 M1, ESP 208 M1 etc). If your supply is fused at 16 amps, or less, the in-line protectors (ESP 120(or 240)-5A(or -16A) & ready-boxed derivatives) may be suitable.

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.

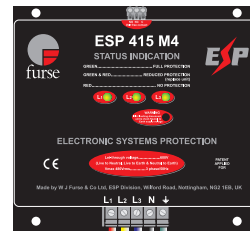
- ◆ For customers who demand a protector rated for a maximum surge current greatly in excess of the probable worst case (BS 6651, IEEE C62.41).
- ◆ Suitable for three phase (346-484V) supplies, whatever their supply current.
- ◆ For a maximum surge current rating of 60kA (unit total 240kA), use ESP 415 M2.
- ◆ For a maximum surge current rating of 120kA (unit total 480kA), use ESP 415 M4.

Application

Use these units at the main low voltage distribution board for extra high surge current protection. Typically protect computer, communication and control equipment.

Features and benefits

- ✓ Extra high maximum surge current of 60kA (240kA unit total) for ESP 415 M2 and 120kA (480kA unit total) for ESP 415 M4.
- ✓ Very low let-through voltage between all sets of conductors (phase to neutral, phase to earth and neutral to earth).
- ✓ Repeated protection in lightning intense environments, with 20 years predicted lifetime.
- ✓ Innovative *Sovtrip™* multiple thermal disconnect technology, anticipates standards authorities future demands for safe disconnection from faulty or abnormal supplies (without compromising protective performance).
- ✓ Three way visual indication of protection status.
- ✓ 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 (ie 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.
- ✓ Protector base provides ultra low inductance earth bond to metal panels.
- ✓ Convenient holes for flat mounting.
- ✓ Compact size for installation in the power distribution board.
- ✓ Maintenance free.



Parallel connection to three phase star (4 wire and earth) supplies.

DIRTY

CLEAN

From supply

To load



Connect, with very short connecting leads, to phase(s), neutral and earth. Phase/live connecting leads should be fused with high rupture capacity (HRC) fuses, a switchfuse, MCCB or type 'C' MCB.



Live connecting leads should be fused on supplies exceeding 200A (ESP 415 M2) and 315A (ESP 415 M4).

Suitable accessories

Where the protector cannot be incorporated within the panel use the WBX M2 enclosure for the ESP 415 M2 or the WBX M4 for the ESP 415 M4.

Electrical specification

	ESP 415 M2	ESP 415 M4
Nominal voltage (RMS)	415V	415V
Working voltage (RMS)	346-484V	346-484V
Frequency range	40-60Hz	40-60Hz
Current rating (supply)		
- direct connection to supply	≤200A	≤315A
- connect via series fuses to supply	>200A	>315A
		} See installation instructions
Leakage current (to earth)	<500μA	<1,000μA
Indicator circuit current	<20mA	<40mA
Volt free contact*	Screw terminal	Screw terminal
- current rating	1A	1A
- nominal voltage (RMS)	250V	250V

* Minimum permissible load is 5V DC, 10mA to ensure reliable contact operation.

Transient specification

	ESP 415 M2	ESP 415 M4
Let-through voltage (all conductors)¹		
6kV 1.2/50μs open circuit voltage, 3kA 8/20μs short circuit current to: <i>BS 6651:1999 Appendix C, Categories C-Low and B-High</i> <i>IEEE C62.41-1991² Location Categories C1 and B3</i> <i>SS CP 33:1996 Appendix F</i> <i>AS 1768-1991 Appendix B, Category B</i> <i>UL1449 mains wire-in</i>	590V	570V
4kV 1.2/50μs open circuit voltage, 2kA 8/20μs short circuit current to: <i>IEC 1000-4-5:1995</i>	560V	540V
2kV 1.2/50μs open circuit voltage, 1kA 8/20μs short circuit current	510V	480V
5kA 8/20μs to <i>NFC 61-740</i>	670V	650V
2.5kA 8/20μs to <i>BS EN 60099-1:1994</i>	580V	560V
6kV 0.5μs 100kHz ring wave, 500A to: <i>IEEE C62.41-1991² Location Category B3</i> <i>AS 1768-1991 Appendix B, Category B</i>	490V	460V
Maximum surge current³		
- between any two conductors	60kA	120kA
- total unit to earth	240kA	480kA

¹ The maximum transient voltage let-through the protector throughout the test (±5%), phase to neutral, phase to earth and neutral to earth.

² Formerly IEEE 587 and ANSI C62.41.

³ Tested with 8/20μs waveshape to BS 6651:1999 Appendix C. Note: The electrical system, external to the unit, may constrain the actual current rating achieved in a particular installation.

Mechanical specification

	ESP 415 M2	ESP 415 M4
Temperature range	-40°C to +70°C	-40°C to +70°C
Connection type	Screw terminal	Screw terminal
Conductor size (stranded)	25mm ²	50mm ²
Earth connection	Screw terminal	Screw terminal
Volt free contact	Connect via screw terminal with conductor up to 2.5mm ² (stranded)	
Weight		
- unit	2.35kg	3.9kg
- packaged	2.5kg	4.2kg
Dimensions		