ESP M2/M4 Series

LPZ $0_A \rightarrow 3$

FULL MODE Bonding + Equipment Protection

MAINS TEST TYPE 1 + 2 + 3

ENHANCED Low let-through voltage

ACTIVE VOLT-FREE CONTACT

3-WAY + N-E FAULT STATUS INDICATION

Combined Type 1, 2 and 3 tested protector (to BS EN 61643-11) 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_A to protect against flashover (typically the main distribution board location) through to LPZ 3 to protect sensitive electronic equipment.

Features and benefits

- ✔ Very low let-through voltage between all sets of conductors (phase to neutral, phase to earth and neutral to earth)
- ✔ Full mode design capable of handling high energy partial lightning currents as well as allowing continual operation of protected equipment
- ✔ Innovative multiple thermal disconnect technology, 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 (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
- ✔ Protector base provides ultra low inductance earth bond to metal panels
- ✔ Convenient holes for flat mounting

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 the display panel separately from the main protector unit, use the ESP XXX M2R or ESP XXX M4R.

Application

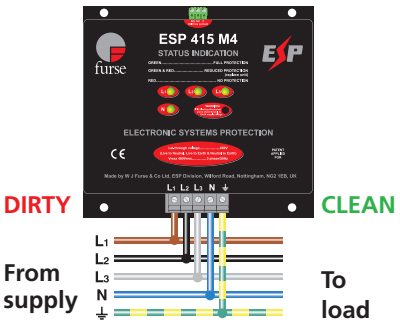
Use ESP M2 versions on main distribution panel for buildings with a Class III or IV structural LPS fitted or exposed 3 phase power lines where no LPS is fitted. Use ESP M4 versions on main distribution panel for buildings with a Class I or II LPS fitted.

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.

Live connecting leads should be fused accordingly

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.



Parallel connection to three phase star (4 wire and earth) supplies (fuses not shown for clarity)

Accessories

Weatherproof enclosures

WBX M2
For use with the ESP XXX M2

WBX M4
For use with the ESP XXX M4

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Electrical specification	IMPROVED ESP 415 M2	IMPROVED ESP 415 M4	NEW ESP 480 M2	NEW ESP 480 M4
Nominal voltage - Phase-Neutral *Uo* (RMS)	240V	240V	277V	277V
Maximum voltage - Phase-Neutral *Uc* (RMS)	280V	280V	350V	350V
Temporary Overvoltage TOV *Ut*[1]	415V	415V	480V	480V
Short circuit withstand capability	25kA, 50Hz			
Working voltage (RMS)	346-484V	346-484V	402-600V	402-600V
Frequency range	47-63Hz			
Max. back-up fuse (see installation instructions)	200A	315A	200A	315A
Leakage current (to earth)	<500µA	<1000µA	<500µA	<1000µA
Indicator circuit current	<20mA	<40mA	<20mA	<40mA
Volt free contact[2] **– current rating** **– nominal voltage** (RMS)	Screw terminal 1A 250V			

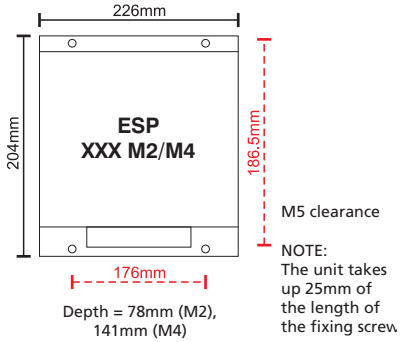
[1] Temporary Overvoltage rating is for a maximum duration of 5 seconds tested to BS EN/EN/IEC 61643.
[2] Minimum permissable load is 5V DC, 10mA to ensure reliable operation.

Transient specification ***Type 1 (BS EN/EN), Class I (IEC)***	ESP 415 M2	ESP 415 M4	ESP 480 M2	ESP 480 M4
Nominal discharge current 8/20µs (per mode) *In*	40kA	80kA	40kA	80kA
Let-through voltage *Up* at *In*[1]	<900V	<900V	<1kV	<1kV
Impulse discharge current 10/350µs *Iimp* (per mode)[2]	8kA	16kA	8kA	16kA
Let-through voltage *Up* at *Iimp*[1]	<750V	<750V	<850V	<850V
Impulse discharge current (per phase) *Iimp*[3]	12.5kA	25kA	12.5kA	25kA
Type 2 (BS EN/EN), Class II (IEC)				
Nominal discharge current 8/20µs (per mode) *In*	40kA	80kA	40kA	80kA
Let-through voltage *Up* at *In*[1]	<900V	<900V	<1kV	<1kV
Maximum discharge current *Imax* (per mode)[2]	80kA	160kA	80kA	160kA
Maximum discharge current *Imax* (per phase)	160kA	320kA	160kA	320kA
Type 3 (BS EN/EN), Class III (IEC)				
Let-through voltage at *Uoc* of 6kV 1.2/50µs and *Isc* of 3kA 8/20µs (per mode)[4]	<590V	<570V	<670V	<650V

[1] The maximum transient voltage let-through of the protector throughout the test (±5%), phase to neutral, phase to earth and neutral to earth.
[2] The electrical system, external to the unit, may constrain the actual current rating achieved in a particular installation.
[3] Rating is considered as the current capability of the protector for equipotential bonding near the service entrance.
[4] Combination wave test within BS 6651:1999 App. C, Cats C-Low & B-High, IEEE C62.41-2002 Location Cats C1 & B3, SS CP 33:1996 App. F, AS 1768-1991 App. B, Cat B, UL1449 mains wire-in.

Mechanical specification	ESP 415 M2	ESP 415 M4	ESP 480 M2	ESP 480 M4
Temperature range	–40 to +70°C			
Connection type	Screw terminal			
Conductor size (stranded)	25mm²	50mm²	25mm²	50mm²
Earth connection	Screw terminal			
Volt free contact	Connect via screw terminal with conductor up to 2.5mm² (stranded)			
Degree of protection (IEC 60529)	IP20			
Case material	Steel			
Weight – unit	2.35kg	3.9kg	2.35kg	3.9kg
– packaged	2.5kg	4.2kg	2.5kg	4.2kg

Dimensions



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