



ESP D1 Series

Enhanced Mains Power Protectors

Thomas & Betts

Versatile and innovative mains power

Electronic systems are central to virtually every aspect of our lives.

As a society, we are heavily reliant on the continuous and efficient running of electronic systems to achieve our objectives, and to meet our daily needs.

Yet these electronic systems are at risk, every day.

Potentially devastating electrical surges, also known as transient overvoltages, can wreak havoc on electronic systems; degrading components, damaging circuitry, disrupting essential services.

These transient overvoltages are caused by lightning, and not simply direct lightning but more commonly from indirect strikes up to a kilometre away. However, lightning is not the only threat. Transient overvoltages are also caused by electrical switching events, often created within a facility by large inductive loads such as air-conditioning units and lifts.



Most modern electronic systems are at risk.

Computers, data communication networks, building management systems, fire alarm systems etc. all face disruption, degradation or component burn-out resulting from transient overvoltages, presenting potentially dangerous health and safety risks.

Unexpected system crashes, data loss, downtime and lost productivity all contribute to the high cost of transient overvoltage damage. Moreover, degraded components and circuitry lead to short equipment lifetimes. Replacement is expensive, disposal more and more regulated.

Therefore, protecting electronic equipment is important, and will not only save you money but also help save the environment.

Protecting your electronic equipment starts at the very point power supplies enter the building, with a Furse ESP D1 mains power supply protector.



surge protection from Furse

Following in the footsteps of our market-leading M1 Series of mains power surge protectors, the new D1 Series now offers industry leading low let-through voltage combined with the convenience of mounting to a standard 35mm DIN rail.

With a choice of LED or innovative LCD display, and opportunity for remote mounting, D1 protectors establish a new benchmark for professional surge protection devices within the electrical marketplace.



■ **Combined Type 1, 2 and 3 tested protector (to BS EN 61643)**

For use on mains power distribution systems, to protect against partial and indirect lightning currents as well as switching surges.

■ **Industry leading low let-through voltage protection level**

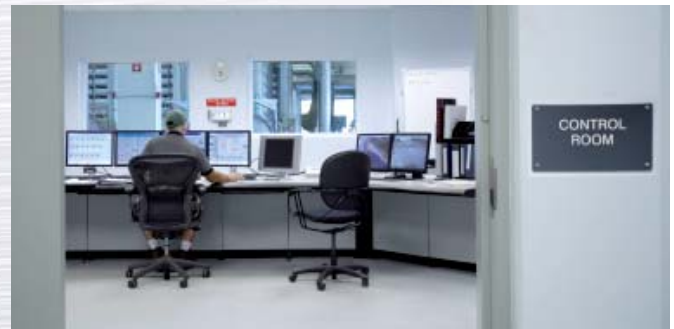
Protecting essential equipment by restricting transient overvoltages to a safe level.

■ **Flexible installation**

In addition to common parallel installation, the through terminal facility permits series connection on low current supplies to remove all risk of additive voltage.

■ **Full mode protection**

Protection between all sets of conductors (modes) closing all transient paths to equipment, the ESP D1 ensures continual operation of protected equipment.



■ **Enhanced protection to BS EN 62305**

Enhanced protection further minimises the risk of dangerous sparking (leading to flashover and electric shock hazards) as well as equipment damage, compared to standard protection.

■ **Repeat protection in lightning intense environments**

Protectors offer repeated protection against transient overvoltages with a 5 year warranty.

■ **Compact, space saving DIN housing**

Protector housing positions and mounts easily to standard 35mm Top Hat DIN thanks to innovative DIN foot with locking feature.

■ **Remote display for optimal protector mounting**

Remote displays enable convenient status checking, whilst the protector unit is mounted close to the supply for best practice short connecting lead lengths.

■ **Remote monitoring facility**

D1 protectors can easily be linked to building management systems, control room buzzers or lights for clear, remote pre-failure warning.

■ **Effective fault and pre-failure warning**

Advanced pre-failure warning to ensure your equipment never goes unprotected, with Phase loss and N-E supply fault warning included as standard.





Industry leading low let-through voltage and mains Type 1+2+3 protection within a single unit

Designed to deliver the most flexible mains power surge protection solution in today's marketplace, the ESP D1 protector offers both technical and economic advantages over standard Surge Protection Devices.

Tested to the latest EN/IEC standards, the ESP D1 protector combines industry leading low let-through voltage with mains Type 1+2+3 protection within a highly compact, maintenance-free unit.

The popular 230/400V single and three phase units limit 6000V transient overvoltages to just 600V (Class III test).

This level of protection is achieved between all conductors (full mode protection) ensuring all transient paths (common and differential modes) to equipment are protected.

ESP D1 series are also available for 120/208V and 277/480V single and three phase systems.

A choice of LED or LCD displays is available, with optional remote mounting, to provide easy, hassle-free status checking.

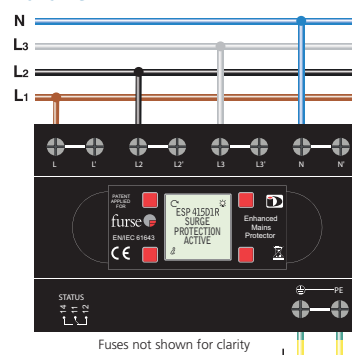
The display can be mounted in the most convenient position for viewing and use (e.g. externally on the front of a distribution panel) whilst the compact protector unit sits safely within the panel (mounted conveniently on a DIN rail) allowing short connecting leads to the incoming supply for optimal protection. This flexibility also saves installation time and cost.

Simple Parallel or Series installation

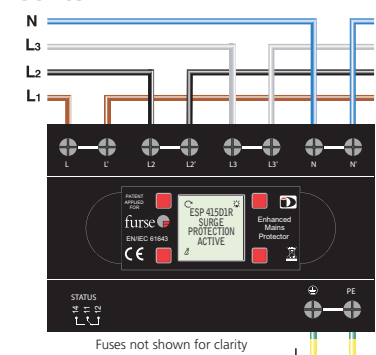
The new ESP D1 protector is designed to be installed in both parallel (shunt) or in series (in-line) with the power supply.

Parallel installation of protectors is very common as the supply current doesn't go through the unit. This means the compact ESP D1 series can be connected in parallel to 20A or 2000A supplies (suitably fused).

Parallel



Series



The connecting leads to the unit for parallel installations need to be kept very short in order to minimise additive inductive voltages (EN/IEC 61643). The ESP D1 series can be mounted in any orientation to achieve short connecting leads - the innovative LCD option allows the status display to be rotated to suit the unit's orientation. Additionally the remote display (D1R) option allows the unit to be installed with short connecting leads whilst the remote display is conveniently mounted for easy status monitoring.

The twin terminal design of the new ESP D1 protectors allows series installation for supplies up to 125A (suitably fused). Series installation eliminates the additive voltage associated with connecting leads on parallel installations.

Comprehensive installation instructions are supplied with each unit.



Intelligent display for clear, readable status of

Practical, scalable remote

The compact ESP D1 protector offers a number of mounting options for maximum convenience and ease of status checking:



1. The unit, with integral LCD display, is mounted on the DIN rail within the main distribution board (MDB).



2. The LCD display is positioned remotely on the MDB cover, with a connecting cable to the protector housing.



Intelligent display for clear, readable status checking

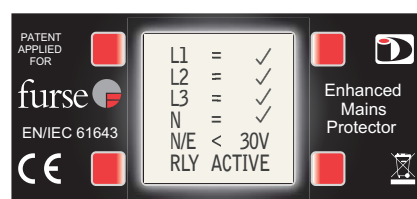


The protector is fully functional.

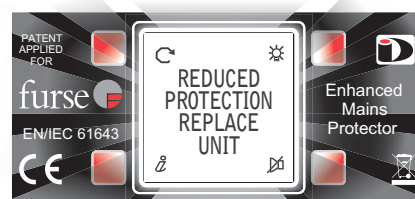
ESP D1/LCD Protectors include an innovative back-lit LCD display for clear, readable status checking.

- The backlight ensures status information remains highly visible and flashes (with audible buzzer) to attract attention in the event of a fault.
- The remote display feature enables both protector and display to be mounted in their optimum positions.

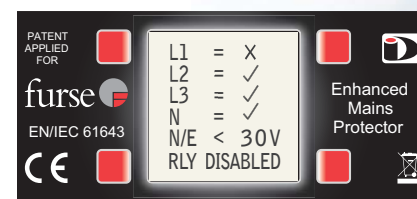
- Short connecting leads between protector and mains supply keep let-through via the leads to a minimum, whilst a remote display allows easiest possible access to protector information.
- Both horizontal and vertical display positioning is available, to make the most of space restrictions or to achieve the best possible fit to requirements.



Protector status shows all incoming lines are protected.



Flashing backlight and buzzer identify protector fault.



L1 has limited protection and the active relay (for remote indication) has changed state. Protector replacement should be scheduled.

The BS EN 62305 'Protection against Lightning' standard makes clear via Part 4 that electronic systems protection must be considered as an integral component to any Lightning Protection System.

The standard defines levels of protection within Lightning Protection Zones (LPZs), whereby greater protection is provided within higher rated zones. Sensitive equipment, such as servers and computers, should be sited within LPZs with greater levels of protection.

The majority of the surge energy from lightning occurs at the service entrance so here a heavy duty Surge Protection Device (SPD), such as the ESP D1, is recommended, typically in a building with multiple connected metallic services (power, telecoms, utility).

The ESP D1 protector maintains an extremely safe electronic environment downstream of the device.

Note: further coordinated SPDs may be required downstream to protect terminal equipment from potential transient overvoltage damage created within the structure by switching sources.

ESP D1 system

ESP D1 Protector at distribution panel ensures integrity of computer room (LPZ3) protecting electronic equipment from transient threat.

up to LPZ₀

ESP D1

Power

Surge current



checking. management and monitoring



3. The LCD display can be rotated 90° as required to achieve the most convenient positioning for viewing.

4. The unit is housed externally to the MDB, within an IP65 enclosure.

ESP D1 units connect to building management systems, buzzers or lights for remote indication of unit status, power loss and warning of potentially dangerous neutral to earth voltages.

Practical, scalable, remote management and monitoring

It's essential that a Surge Protection Device (SPD) provides continuous protection against lightning surges and transient overvoltages.

The unexpected failure of an SPD would place electronic systems at serious risk.

Therefore, maintaining and monitoring your SPDs is a highly important task.

For small scale installations, regular manual checks can be made, however, for larger scale implementations or installations with remote operations, such as telecoms towers or wind farms, a more in-depth control and management process is required.

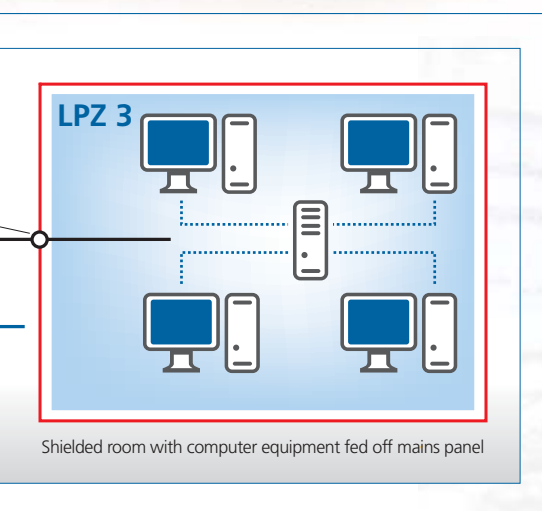
The Fursey ESP D1 protector provides the most practical, scalable solution for all such scenarios.

ESP D1 incorporates both local and remote advanced pre-failure warning to ensure your electronic systems are never left unprotected.

In addition to the protector's own status, the ESP D1 warns of power loss and potentially dangerous neutral to earth voltages.

Advanced pre-failure, phase loss and high neutral to earth voltage warning is displayed locally via the back-lit LCD screen, or via LED.

For remote failure warning, the ESP D1 can be linked directly or via telecom modem to a building management system, buzzer or light via the Active Volt-free Contact within the unit.



Product information

ESP D1 offers a choice of protectors with LED or LCD displays.

ESP D1 mains protectors with LED display

Part no.	Description
ESP 120 D1	Mains protector, 1 phase, V_{RMS} 90-150V
ESP 240 D1	Mains protector, 1 phase, V_{RMS} 200-280V
ESP 277 D1	Mains protector, 1 phase, V_{RMS} 232-350V
ESP 208 D1	Mains protector, 3 phase, V_{RMS} 156-260V
ESP 415 D1	Mains protector, 3 phase, V_{RMS} 346-484V
ESP 480 D1	Mains protector, 3 phase, V_{RMS} 402-600V

ESP D1 mains protectors with LCD display

Part no.	Description
ESP 208 D1/LCD	Mains protector, 3 phase, V_{RMS} 156-260V
ESP 415 D1/LCD	Mains protector, 3 phase, V_{RMS} 346-484V
ESP 480 D1/LCD	Mains protector, 3 phase, V_{RMS} 402-600V

D1/LCD versions can have the LCD screen installed remotely with the optional cable assemblies (see Accessories below)

ESP D1 mains protectors with remote LED display

Part no.	Description
ESP 208 D1R	Mains protector, 3 phase, V_{RMS} 156-260V
ESP 415 D1R	Mains protector, 3 phase, V_{RMS} 346-484V
ESP 480 D1R	Mains protector, 3 phase, V_{RMS} 402-600V

ESP D1 mains protectors with remote LCD display

Part no.	Description
ESP 208 D1R/LCD	Mains protector, 3 phase, V_{RMS} 156-260V
ESP 415 D1R/LCD	Mains protector, 3 phase, V_{RMS} 346-484V
ESP 480 D1R/LCD	Mains protector, 3 phase, V_{RMS} 402-600V

Accessories

Part no.	Description
ESP RDU D1R	Replacement LED display for D1R protectors
ESP RDU D1R/LCD	Replacement LCD display for D1R/LCD protectors
ESP RLA HD-1	1 metre cable assembly for remote display unit
ESP RLA HD-4	4 metre cable assembly for remote display unit
WBX D4	Weatherproof enclosure for single phase protectors
WBX D8	Weatherproof enclosure for three phase protectors



Furse, first for support

Furse only offer enhanced SPDs (to BS EN 62305) with industry leading low let-through voltage, as they are the best choice to achieve cost-effective, maintenance-free repeated protection in addition to preventing costly system downtime.

Low let-through voltage protection in all common and differential modes means fewer units are required to provide protection,

which saves on unit and installation costs, as well as installation time. SPDs that offer lower voltage protection levels further reduce the risks of injury to living beings, physical damage as well as failure and malfunction of internal systems.

Furse offer a comprehensive range of SPDs to cover a multitude of applications. For more information, please contact your local Furse representative.



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