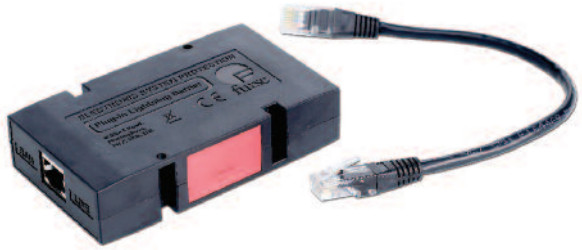
ESP Cat-5 Series



LPZ $0_B \rightarrow 3$

FULL MODE Bonding + Equipment Protection

SIGNAL/ TELECOM TEST CAT D + C + B

ENHANCED Low let-through voltage

LOW INLINE 1Ω RESISTANCE

CURRENT 300mA RATING

Combined Category D, C, B tested protector (to BS EN 61643-21) suitable to protect twisted pair Ethernet networks, including Power over Ethernet (PoE), with RJ45 connections. For use at boundaries up to LPZ 0_B to protect against flashover (typically the service entrance location) through to LPZ 3 to protect sensitive electronic equipment.

Features and benefits

- ✔ Suitable for systems signalling on up to eight wires of either shielded or unshielded twisted pair cable
- ✔ Very low let-through voltage (enhanced protection to BS EN 62305) between all lines – Full Mode protection
- ✔ Full mode design capable of handling partial lightning currents as well as allowing continual operation of protected equipment
- ✔ Repeated protection in lightning intense environments
- ✔ Unlike some competing devices, the ESP Cat-5 Series provides effective protection without impairing the system's normal operation
- ✔ Low capacitance circuitry prevents the start-up signal degradation associated with other types of network protector
- ✔ Low in-line resistance minimises unnecessary reductions in signal strength to maximise signalling distance
- ✔ Sturdy ABS housing with convenient holes for flat mounting, or vertically via TS35 'Top Hat' DIN rail
- ✔ Substantial earth connection to enable effective earthing
- ✔ Supplied with short (25cm) Cat-5e UTP cable to enable neat installation
- ✔ Cat-5/PoE includes resettable overcurrent protection

Application

Use these protectors on network cables that travel between buildings to prevent damage to equipment, e.g. computers, servers, repeaters and hubs. Suitable for computer networks up to Cat-5e cabling.

- ✔ To protect up to 100baseT and up to 1000baseT networks with Cat-5 cabling use ESP Cat-5 and ESP Cat-5/Gigabit respectively
- ✔ To protect up to 100baseT and up to 1000baseT networks with Cat-5e cabling use ESP Cat-5e and ESP Cat-5e/Gigabit respectively
- ✔ To protect up to 100baseT Power over Ethernet (PoE) networks use ESP Cat-5/PoE

For further application information, see separate Application Note AN004 (contact Furse for a copy).

To protect coaxial Ethernet networks, use the ESP ThinNet or ESP ThickNet. To protect datacomms systems based on twisted pairs, use the D, E or H Series. Local protection for networked equipment is also available.

Installation

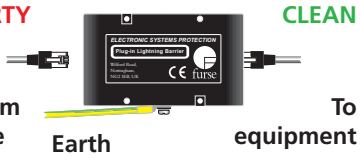
Connect in series with the network cable, either:

a) near to where it enters or leaves the building, or

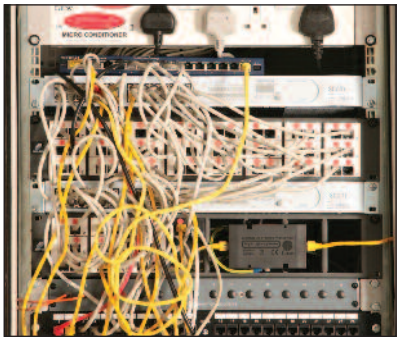
b) as it enters the network hub, or

c) close to the equipment being protected.

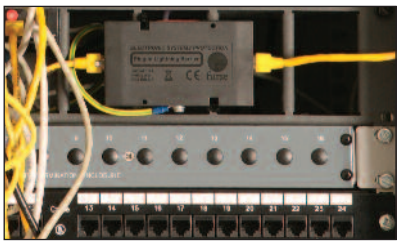
This should be close to the system's earth star point (to enable a good connection to earth).



Plug-in series connection



A Furse ESP Cat-5e/Gigabit (left and detail below) protecting a hub from transient overvoltages on a network connection with another building



Technical note

The interfaces used in 10, 100 and 1000baseT Ethernet and PoE networks incorporate an isolation transformer which gives these systems an inbuilt immunity to transients between line and earth of 1,500 volts or more.

Accessories

ESP CAT5e/UTP-1
1 metre cable with RJ45 connections

TSC-0808

Electrical specification

	ESP Cat-5	ESP Cat-5e	ESP Cat-5/Gigabit	ESP Cat-5e/Gigabit	ESP Cat-5/PoE
Maximum working voltage *Uc*[1]					
– data[2]	5V	5V	5V	5V	5V
– power[3]	–	–	–	–	58V
Current rating	300mA	300mA	300mA	300mA	350mA
In-line resistance (per line ±10%)					
– data[2]	1Ω	1Ω	1Ω	1Ω	4.4Ω
– power[3]	–	–	–	–	4.4Ω
Maximum data rate	100Mbps	100Mbps	1000Mbps	1000Mbps	100Mbps
Networking standards	10/100baseT TIA Cat-5 IEEE 802.3i IEEE 802.3u	10/100baseT TIA Cat-5e IEEE 802.3i IEEE 802.3u	10/100/1000baseT TIA Cat-5 IEEE 802.3i IEEE 802.3u IEEE 802.3ab	10/100/1000baseT TIA Cat-5e IEEE 802.3i IEEE 802.3u IEEE 802.3ab	10/100baseT TIA Cat-5/PoE IEEE 802.3i IEEE 802.3u IEEE802.3af

[1] Maximum working voltage (DC or AC peak) measured at 1mA leakage.
[2] Data pairs 1/2 and 3/6 are protected as standard. Pairs 4/5 and 7/8 are also protected on the ESP Cat-5/Gigabit and ESP Cat-5e/Gigabit barriers.
[3] Power pairs 4/5 and 7/8.

Transient specification

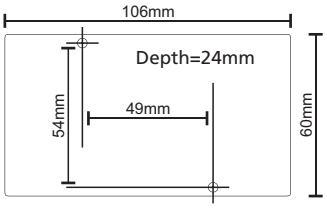
	ESP Cat-5	ESP Cat-5e	ESP Cat-5/Gigabit	ESP Cat-5e/Gigabit	ESP Cat-5/PoE
Let-through voltage (all conductors)[1] *Up*					
C2 test 4kV 1.2/50µs, 2kA 8/20µs to BS EN/EN/IEC 61643-21					
– line to line	120V	120V	120V	120V	120V/88V[5]
– line to earth[2]	700V	700V	700V	700V	700V
C1 test 1kV, 1.2/50µs, 0.5kA 8/20µs to BS EN/EN/IEC 61643-21					
– line to line	74V	74V	74V	74V	74V/63V[5]
– line to earth[2]	600V	600V	600V	600V	600V
B2 test 4kV 10/700µs to BS EN/EN/IEC 61643-21					
– line to line	21V	21V	21V	21V	21V/65V[5]
– line to earth[2]	550V	550V	550V	550V	550V
5kV, 10/700µs					
– line to line	25V	25V	25V	25V	25V/80V[5]
– line to earth[3]	600V	600V	600V	600V	600V
Maximum surge current[4]					
D1 test 10/350µs to BS EN/EN/IEC 61643-21	1kA				
8/20µs to ITU (formerly CCITT), BS 6651:1999 Appendix C	10kA				

[1] The maximum transient voltage let-through the protector throughout the test (±10%), line to line & line to earth, both polarities. Response time <10ns.
[2] The interfaces used in Cat-5/5e systems incorporate an isolation transformer that inherently provides an inbuilt immunity to transients between line and earth of 1,500 volts or more.
[3] Test to BS 6651:1999 Appendix C, Cat C-High, IEC 61000-4-5:1995, ITU-T (formerly CCITT) K.20, K.21 and K.45,Telcordia GR-1089-CORE, Issue 2:2002, ANSI TIA/EIA/IS-968-A:2002 (formerly FCC Part 68).
[4] The installation and connections external to the protector may limit the capability of the protector.
[5] The first number is for the data pair, with the second number for the power pair.

Mechanical specification

	ESP Cat-5, ESP Cat-5e, ESP Cat-5/Gigabit, ESP Cat-5e/Gigabit, ESP Cat-5/PoE
Temperature range	–25°C to +70°C
Connection type	RJ45 sockets, 25cm patch lead included
Cable	0.25m plug-plug Cat-5e UTP patch lead
Earth connection	M4/DIN rail
Case material	ABS UL94 V-0
Weight – unit	0.15kg
– packaged	0.2kg

Dimensions



Fixing centres 49mm x 54mm
M3 clearance

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