DATASHEET

Telecom & computer line protection

ESP Cat-5 & Cat-6 Series

LPZ 0→3 | FULL MODE Bonding + Equipment Protection | SIGNAL/ TELECOM TEST CAT D + C + B | ENHANCED Low let-through voltage | LOW IN-LINE RESISTANCE 1.5 Ω

HIGH CURRENT RATING | PoE+ Compliant IEEE 802.3at | PoE Modes A & B | GND

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

Features & 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 IEC/BS EN 62305) between all lines - 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 ethernet SPDs provide 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 minimizes unnecessary reductions in signal strength to maximize 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
- Will protect all PoE powering modes A and B.

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-6A cabling.

- To protect up to 100baseT networks with Cat-5/Cat-5e cabling use ESP Cat-5e
- To protect up to 1000baseT/ 10GbaseT networks with Cat-6/Cat-6A cabling use ESP Cat-6
- To protect up to 100baseT Power over Ethernet (PoE) networks with Cat-5/Cat-5e use ESP Cat-5e/PoE
- To protect up to 1000baseT/ 10GbaseT Power over Ethernet (PoE) networks with Cat-6/Cat-6A cabling use ESP Cat-6/PoE

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

Installation

Connect in series with the network cable, either:

- Near to where it enters or leaves the building, or
- As it enters the network hub, or
- Close to the equipment being protected

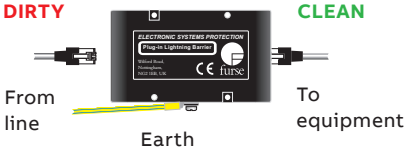
This should be close to the system's earth star point (to enable a good connection to earth).

Accessories

ESP CAT5e/UTP-1
ABB Order code:
7TCA085400R0026
1 metre cable with unshielded RJ45 connections

ESP CAT6/STP-2
ABB Order code:
7TCA085400R0231
2 metre screened cable with shielded RJ45 connections(10)

Plug-in series connection



TECHNICAL NOTE: The interfaces used in Ethernet networks incorporate an isolation transformer which gives these systems an inbuilt immunity to transients between line and earth of 1,500 Volts or more.

NOTE: To protect datacomms systems based on twisted pairs, use the ESP D, E or H Series. Local protection for networked equipment is also available.

ESP Cat-5 & Cat-6 Series - Technical specification

Electrical Specification		**ESP Cat-5e**	**ESP Cat-5e/PoE**	**ESP Cat-6**	**ESP Cat-6/PoE**
ABB order code		7TCA085400R0017	7TCA085400R0021	7TCA085400R0023	7TCA085400R0024
Maximum working voltage *Uc*[1]	– data[2]	5 V			
	– power[3]	–	58 V	–	58 V
Current rating		300 mA	600 mA[4]	300 mA	600 mA[4]
In-line resistance (per line ±25%)	– data[2]	1.5 Ω			
	– power	–	1.5 Ω	–	–
Maximum data rate		100 Mbps	100 Mbps	1000 Mbps	1000 Mbps
Networking standards:		10/100baseT	10/100baseT	10/100/1000/ 10GbaseT	10/100/1000/ 10GbaseT
		TIA Cat-5e	TIA Cat-5/PoE	TIA Cat-6	TIA Cat-6
		IEEE 802.3i	IEEE 802.3i	IEEE 802.3i	IEEE 802.3i
		IEEE 802.3u	IEEE 802.3u	IEEE 802.3u	IEEE 802.3u
		–	IEEE 802.3af	IEEE 802.3ab	IEEE 802.3ab
		–	IEEE 802.3at	IEEE 802.3an	IEEE 802.3an
		–	–	–	IEEE 802.3af
		–	–	–	IEEE 802.3at

Transient specification		**ESP Cat-5e**	**ESP Cat-5e/PoE**	**ESP Cat-6**	**ESP Cat-6/PoE**
Let-through voltage (all conductors)[5] *Up*					
C2 test 4 kV 1.2/50 µs,	– line to line	120 V	120 V/116 V[8]	120 V	120 V/116 V[8]
2 kA 8/20 µs to BS EN/EN/IEC 61643-21	– line to earth[6]	700 V			
C1 test 1 kV, 1.2/50 µs,	– line to line	74 V	74 V/95 V[8]	74 V	74 V/95 V[8]
0.5 kA 8/20 µs to BS EN/EN/IEC 61643-21	– line to earth[6]	600 V			
B2 test 4 kV 10/700 µs to BS EN/EN/IEC 61643-21	– line to line	21 V	21 V/87 V[8]	21 V	21 V/87 V[8]
	– line to earth[6]	550 V			
5 kV, 10/700 µs(7)	– line to line	25 V	25 V/90 V[8]	25 V	25 V/90 V[8]
	– line to earth[6]	600 V			
Maximum surge current[9]					
D1 test 10/350 µs to BS EN/EN/IEC 61643-21		1 kA			
8/20 µs to ITU-T K.45:2003, IEEE C62.41.2:2002		10 kA			

Mechanical specification	**ESP Cat-5e, ESP Cat-5e/PoE**	**ESP Cat-6, ESP Cat-6/PoE**
Temperature range	-40 to +80°C	
Connection type	RJ45 sockets	
Cable (supplied)	0.25 m Cat-5e unshielded patch lead	0.5 m Cat-6 shielded patch lead[10]
Earth connection	M4/DIN rail	
Case Material	FR Polymer UL-94 V-0	
Weight: – Unit	0.15 kg	
– Packaged	0.2 kg	
Dimensions	See diagram below	

[1] Maximum working voltage (DC or AC peak) measured at 1 mA leakage

[2] Data pairs 1/2 and 3/6 are protected as standard. Pairs 4/5 and 7/8 are also protected on Cat-6 barriers

[3] PoE protectors transmit power Mode A and Mode B power

[4] Based on 30W of transmitted PSE power, to IEEE 802.3at.

[5] The maximum transient voltage let-through of the protector throughout the test (±10%), line to line & line to earth. Response time <10 ns (on all protected pairs)

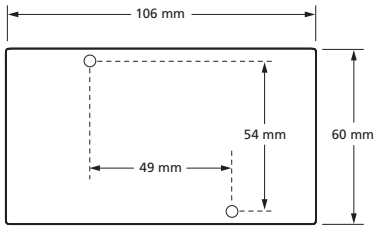
[6] The interfaces used in network systems incorporate an isolation transformer that inherently provides an inbuilt immunity to transients between line and earth of 1,500 Volts or more

[7] Test to IEC 61000-4-5:2014, ITU-T (formerly CCITT) K.20, K.21 and K.45,Telcordia GR-1089-CORE, Issue 6:2011, ANSI TIA/EIA/IS-968-A:2005 (formerly FCC Part 68).

[8] The first number is for the data pair, with the second number for the power pair

[9] The installation and connectors may limit the capability of the protector

[10] There are many types of shielded cable available, minimum specification will be F/UTP or better.



Depth: 24 mm

Fixing centres 49 x 54 mm, M3 clearance

09/18 9AKK10103A0244