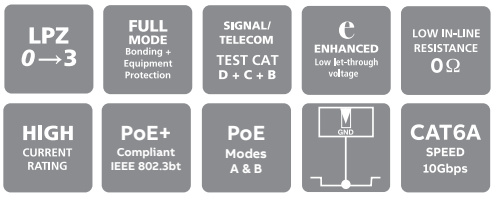
TECHNICAL DATA SHEET

Telecom & computer line protection

ESP Cat-6 Series

furse



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 minimises 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
- ESP Cat-6/PoE has additional components fitted to protect PoE power sourcing equipment (PSE) and powered devices (PD)

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 1000baseT/ 10GbaseT networks with Cat-6/Cat-6A cabling use ESP Cat-6
- 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:

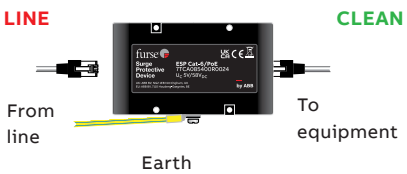
- Near to where it enters or leaves the building, or
- As it enters the network hub, or
- Close to the equipment being protected

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

Accessories

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

Plug-in series connection



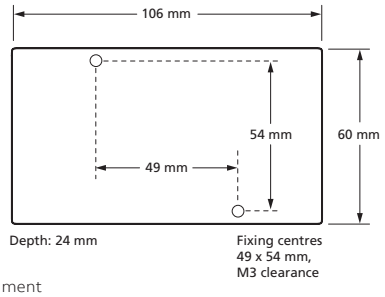
TECHNICAL NOTE:
The interfaces used in Ethernet networks incorporate an isolation transformer which gives these systems an inbuilt immunity to transients between line and earth of 1,500 Volts or more.

NOTE: Please use 'ESP Cat-5e' for a 100BASE-T system, and to protect datacomms systems based on twisted pairs, use the ESP D, E or H Series.

ESP Cat-6 Series - Technical specification

Electrical Specification		ESP Cat-6	ESP Cat-6/PoE
ABB order code		7TCA085400R0023	7TCA085400R0024
Maximum working voltage U_c[1]	– data	3.3 V	3.3 V
	– PoE[3]	–	58 V
Current rating		1.5 A	1.5 A[4]
In-line resistance[2]		~ 0 Ω	~ 0 Ω
Capacitance	– line to line	12 pF	12 pF
	– line to earth	6 pF	6 pF
Maximum data rate		10 Gbps	10 Gbps
Frequency		500 MHz	500 MHz
Networking standards:		10/100/1000/ 10GbaseT	10/100/1000/ 10GbaseT
		TIA Cat-6	TIA Cat-6
		IEEE 802.3i (10 BASE-T)	IEEE 802.3i (10 BASE-T)
		IEEE 802.3u (100 BASE-T)	IEEE 802.3u (100 BASE-T)
		IEEE 802.3ab (1000 BASE-T)	IEEE 802.3ab (1000 BASE-T)
		IEEE 802.3an (10G BASE-T)	IEEE 802.3an (10G BASE-T)
		–	IEEE 802.3at (PoE 30W)
		–	IEEE 802.3bt (PoE 100W)
Transient specification		**ESP Cat-6**	**ESP Cat-6/PoE**
Let-through voltage (all conductors)[5] U_p			
C3 test 5kV 1kV/µs, 30A 10/1000µs to BS EN/EN/IEC 61643-21	– line to line	10 V	10 V
C3 test 5kV 1kV/µs, 100A 10/1000µs to BS EN/ EN/IEC 61643-21	– line to line (PoE)	–	80 V
	– line to earth[6]	800 V	800 V
C2 test 4kV 1.2/50µs, 2kA 8/20µs to BS EN/EN/IEC 61643-21	– line to earth[6]	900 V	900 V
B2 test 1kV 10/700µs, 25A 5/320µs to BS EN/EN/IEC 61643-21	– line to line	9 V	9 V
	– line to line (PoE)	–	80 V
B2 test 4kV 10/700µs, 100A 5/320µs to BS EN/EN/IEC 61643-21	– line to earth[6]	600 V	600 V
Maximum surge current[7]			
D1 test 10/350 µs to BS EN/EN/IEC 61643-21	– line to line	1 kA	1 kA
8/20 µs to ITU-T K.45:2018, IEEE C62.41.2:2002	– line to line	150 A	150 A
	– all lines to earth[8]	10 kA	10 kA
Mechanical specification		**ESP Cat-6, ESP Cat-6/PoE**	
Temperature range		-40 to +80 °C	
Connection type		RJ45 sockets	
Cable (supplied)		0.5 m Cat-6 shielded patch lead[9]	
Earth connection		M4/DIN rail	
Case Material		FR Polymer UL-94 V-0	
Weight		0.15 kg	
Dimensions		See diagram below	

[1] Maximum working voltage (DC or AC peak) measured at 1 mA leakage.
[2] Although no components are fitted in-line, internal connectors and tracking will contribute a resistance <0.5 Ω per line.
[3] PoE protectors transmit power Mode A and Mode B power.
[4] Based on 100W of transmitted PSE power, to IEEE 802.3bt.
[5] The maximum transient voltage let-through of the protector throughout the test (±10%). 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] The installation and connectors may limit the capability of the protector.
[8] Each line pair to earth has a rating of 2.5kA 8/20.
[9] There are many types of shielded cable available, minimum specification will be F/UTP or better.



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