ESP TN/JP, TN/RJ11 & ISDN/RJ45 Series

LPZ $0_B \rightarrow 3$

FULL MODE Bonding + Equipment Protection

SIGNAL/ TELECOM TEST CAT D + C + B

ENHANCED Low let-through voltage

LOW IN-LINE RESISTANCE 4.4 Ω

CURRENT RATING 300 mA

Combined Category D, C, B tested protector (to BS EN 61643) suitable to protect telephony equipment plugged into a BT telephone (BS 6312), Modem (RJ11) or ISDN (RJ45) socket. 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

- ✔ 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
- ✔ Supplied in a sturdy ABS housing ready for flat mounting, or vertically via TS35 'Top Hat' DIN rail
- ✔ Substantial earth connection to enable effective earthing
- ✔ ESP TN/JP, ESP TN/RJ11-2/6, ESP TN/RJ11-4/6 and ESP TN/RJ11-6/6 are suitable for telecommunication applications in accordance with Telcordia and ANSI Standards (see **Application Note AN005**)

Application

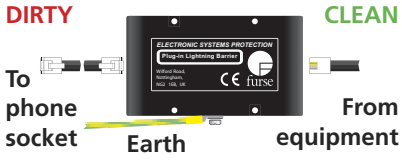
- ✔ For PSTN (e.g. POTS, dial-up, lease line, T1/E1, *DSL and Broadband) use ESP TN/JP or TN/RJ11
- ✔ ESP TN/JP and ESP TN/RJ11… are suitable for use on telephone lines with a maximum (or ringing) voltage of up to 296 Volts
- ✔ For telephone lines with a British style, jack plug and socket connection, use ESP TN/JP
- ✔ For telephone lines with RJ11 connections protect the middle 2 (of 6) conductors with ESP TN/RJ11-2/6, the middle 4 (of 6) with ESP TN/RJ11-4/6 or all 6 with ESP TN/RJ11-6/6
- ✔ For S/T interface ISDN lines, use ESP ISDN/RJ45-4/8 and ESP ISDN/RJ45-8/8
- ✔ For S/T interface ISDN lines with RJ45 connections protect the middle 4 (of 8) conductors (paired 3&6, 4&5) with ESP ISDN/RJ45-4/8, or all 8 (outside pairs 1&2, 7&8) with ESP ISDN/RJ45-8/8

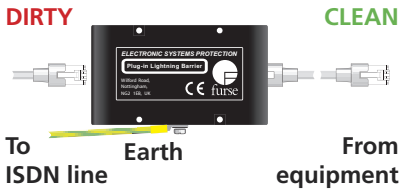
For further information on RJ45 ISDN applications, see separate **Application Note AN002** and for global telephony applications, see separate **Application Note AN005** (contact us for a copy).

Installation

Connect in series with the telephone or ISDN line. These units are usually installed close to the equipment being protected and within a short distance of a good electrical earth.

Plug-in series connection for ESP TN/JP (above) and ESP TN/RJ11-2/6, 4/6 & 6/6 (below) and ESP ISDN/RJ45-4/8 & 8/8 (bottom)





An ESP TN/RJ11-4/6 protecting an external fax line. Note the short earth connection made to the local ring main

Accessories

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

For non-ISDN wire-in applications the high performance ESP TN or ready-boxed derivative ESP TN/BX or ESP TN/2BX can be used. Protect PBX telephone exchanges and other equipment with LSA-PLUS connections.

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Furse, Wilford Road, Nottingham, NG2 1EB • Tel: +44 (0)115 964 3700 • Email: enquiry@furse.com • Web: www.furse.com

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Technical specification

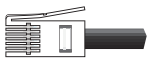
Electrical specification	ESP TN/JP	ESP TN/ RJ11-2/6	ESP TN/ RJ11-4/6	ESP TN/ RJ11-6/6	ESP ISDN/ RJ45-4/8	ESP ISDN/ RJ45-8/8
Nominal voltage	296 V	296 V	296 V	296 V	5 V	5 V/58 V[2]
Maximum working voltage *Uc* [1]	296 V	296 V	296 V	296 V	58 V	58 V
Current rating (signal)	300 mA					
In-line resistance (per line ±10%)	4.4 Ω					
Bandwidth (-3 dB 50 Ω system)	20 MHz	20 MHz	20 MHz	20 MHz	19 MHz	19 MHz

Transient specification		ESP TN/JP	ESP TN/ RJ11-2/6	ESP TN/ RJ11-4/6	ESP TN/ RJ11-6/6	ESP ISDN/ RJ45-4/8	ESP ISDN/ RJ45-8/8
Let-through voltage (all conductors)[3] *Up*							
C2 test 4 kV 1.2/50 µs, 2 kA 8/20 µs to BS EN/EN/IEC 61643-21	- line to line - line to earth	395 V 395 V	395 V 395 V	395 V 395 V	395 V 395 V	28 V 88 V	28 V/88 V[5] 88 V
C1 test 1 kV, 1.2/50 µs, 0.5 kA 8/20 µs to BS EN/EN/IEC 61643-21	- line to line - line to earth	390 V 390 V	390 V 390 V	390 V 390 V	390 V 390 V	23 V 63 V	23 V/63 V[5] 63 V
B2 test 4 kV 10/700 µs to BS EN/EN/IEC 61643-21	- line to line - line to earth	298 V 298 V	298 V 298 V	298 V 298 V	298 V 298 V	26 V 65 V	26 V/65 V[5] 65 V
5 kV, 10/700 µs[4]	- line to line - line to earth	300 V 300 V	300 V 300 V	300 V 300 V	300 V 300 V	27 V 80 V	27 V/80 V[5] 80 V
Maximum surge current[6]							
D1 test 10/350 µs to BS EN/EN/IEC 61643-21	1 kA						
ITU-T K.45:2003, IEEE C62.41.2:2002	10 kA						

Mechanical specification	ESP TN/JP	ESP TN/ RJ11-2/6	ESP TN/ RJ11-4/6	ESP TN/ RJ11-6/6	ESP ISDN/ RJ45-4/8	ESP ISDN/ RJ45-8/8
Temperature range	-40 to +80 °C					
Connection type	Standard BT jack plug and socket (to BS 6312)	RJ11 plug and socket	RJ11 plug and socket	RJ11 plug and socket	RJ45 plug and socket	RJ45 plug and socket
Earth connection	M4/DIN rail					
Case material	ABS UL94 V-0					
Weight - unit - packaged	0.15 kg 0.2 kg					
Dimensions						

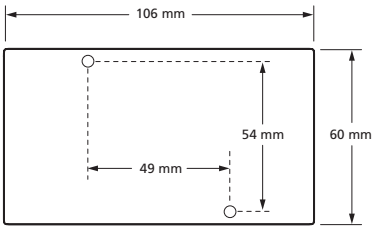
[1] Maximum working voltage (DC or AC peak) measured at < 10 µA leakage for ESP TN/JP and ESP TN/RJ11 products and 5 µA for ESP ISDN/RJ45 products.
[2] Maximum working voltage is 5 V for pairs 3/6 & 4/5, and 58 V for pairs 1/2 & 7/8.
[3] The maximum transient voltage let-through of the protector throughout the test (±10%), line to line & line to earth, both polarities. Response time < 10 ns.
[4] Test to IEC 61000-4-5:2006, 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).
[5] The first let-through voltage value is for pairs 3/4 & 5/6, and the second value is for pairs 1/2 & 7/8.
[6] The installation and connectors external to the protector may limit the capability of the protector.

ESP TN/JP
cable length: 1 m



ESP ISDN/RJ45-4/8, 8/8
cable length: 0.5 m

ESP TN/RJ11-2/6, 4/6, 6/6
cable length: 1 m



Depth: 24 mm
Fixing centres 49 x 54 mm, M3 clearance

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