



- ◆ ESP TN/JP and ESP TN/RJ11... are suitable for use on telephone lines with a maximum (or ringing) voltage of up to 190 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.
- ◆ ESP ISDN/RJ... protectors are suitable for use on ISDN S/T interfaces.
- ◆ 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.

Application

Use these to protect equipment plugged into a telephone or ISDN socket. For further information on RJ45 ISDN applications, see separate Application Note AN002 (contact Furse for a copy).

Features and benefits

- ✓ Controls transient overvoltages to a low level to ensure maximum protection.
- ✓ Provides repeated protection in lightning intense environments.
- ✓ ESP TN/JP and ESP TN/RJ11-6/6 give protection between all six conductors, so whichever wires your system communicates through you can be sure your equipment is fully protected.
- ✓ ESP ISDN/RJ45-8/8 gives protection between all 8 conductors, fully protecting attached equipment no matter which wires the system uses.



Protector (here an ESP TN/RJ11-6/6) installed on the telephone line connected to a PC's internal modem.

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. To protect PBX telephone exchanges and other equipment with LSA-PLUS connections, the KT Series are suitable.



The installation above clearly shows a protector installed with a short earth connection to the same earth as the equipment it's protecting.

- ✓ Correctly applied, ESP TN/RJ11-2/6, ESP TN/RJ11-4/6 and ESP ISDN/RJ45-4/8 protect all signalling conductors.
- ✓ Supplied ready for flat mounting.
- ✓ Sturdy ABS housing.
- ✓ Substantial earth stud to enable effective earthing.
- ✓ UK OfTel Approval NS/G/1235/W/100025.



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).



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.

Suitable accessories

If the standard cable length of 0.25 metres supplied with the ESP ISDN/RJ45-4/8 and ESP ISDN/RJ45-8/8 is not sufficient, a 1 metre cable with RJ45 connections is available (ESP CAT5/UTP-1).

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
Max working voltage¹						
- line to line	190V	190V	190V	190V	5V	5V/58V ²
- line to earth	190V	190V	190V	190V	58V	58V
Current rating (signal)	300mA	300mA	300mA	300mA	300mA	300mA
In-line resistance (per line ±10%)	4.4Ω	4.4Ω	4.4Ω	4.4Ω	4.4Ω	4.4Ω
Bandwidth (-3dB 50Ω system)	>50MHz	>50MHz	>50MHz	>50MHz	>50MHz	>50MHz

1 Maximum working voltage (DC or AC peak) measured at <95μA leakage for ESP TN/JP and ESP TN/RJ11... products and 5μA for ESP ISDN/RJ45... products. Post transient recovery voltage for ESP TN/JP and ESP TN/RJ11... products >80V.

2 Maximum working voltage is 5V for pairs 3/6 & 4/5, and 58V for pairs 1/2 & 7/8.

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)¹						
5kV, 10/700μs test to: <i>BS 6651:1999 App C, Cat C-High</i> <i>ITU (formerly CCITT) IX K17</i>						
- line to line	200V	200V	200V	200V	27V	27V/80V ²
- line to earth	200V	200V	200V	200V	80V	80V
Maximum surge current²	10kA	10kA	10kA	10kA	10kA	10kA

1 The maximum transient voltage let-through the protector throughout the test (±10%), line to line & line to earth. Response time <10ns.

2 Let-through voltage is 27V for pairs 3/4 & 5/6, and 80V for pairs 1/2 & 7/8.

3 Tested with 8/20μs waveshape to ITU (formerly CCITT), BS 6651:1999 App C. The connectors may limit the capability of the protector.

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	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°C	-25°C to +70°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	M6 stud	M6 stud	M6 stud	M6 stud	M6 stud	M6 stud
Weight						
- unit	0.15kg	0.15kg	0.15kg	0.15kg	0.15kg	0.15kg
- packaged	0.2kg	0.2kg	0.2kg	0.2kg	0.2kg	0.2kg
Dimensions	<p>ESP TN/JP cable length = 1 metre</p> <p>ESP ISDN/RJ45-4/8, -8/8 cable length = 0.25 metre</p> <p>ESP TN/RJ11-2/6, -4/6, -6/6 cable length = 1 metre</p> <p>132mm</p> <p>62mm</p> <p>Depth=31mm</p> <p>30mm</p> <p>121mm M3 clearance</p>					