



- ◆ 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).

## Plug-in protectors for telephone & ISDN lines

### 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
<b>Max working voltage<sup>1</sup></b>						
- line to line	190V	190V	190V	190V	5V	5V/58V <sup>2</sup>
- line to earth	190V	190V	190V	190V	58V	58V
<b>Current rating (signal)</b>	300mA	300mA	300mA	300mA	300mA	300mA
<b>In-line resistance</b> (per line ±10%)	4.4Ω	4.4Ω	4.4Ω	4.4Ω	4.4Ω	4.4Ω
<b>Bandwidth</b> (-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
<b>Let-through voltage</b> <b>(all conductors)<sup>1</sup></b>						
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 <sup>2</sup>
- line to earth	200V	200V	200V	200V	80V	80V
<b>Maximum surge current<sup>2</sup></b>	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
<b>Temperature range</b>	-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
<b>Connection type</b>	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
<b>Earth connection</b>	M6 stud	M6 stud	M6 stud	M6 stud	M6 stud	M6 stud
<b>Weight</b>						
- 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
<b>Dimensions</b>	<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>					