ESP D/BX Series

LPZ $0_A \rightarrow 3$

FULL MODE Bonding + Equipment Protection

SIGNAL/ TELECOM TEST CAT D + C + B

ENHANCED Low let-through voltage

BX IP66

LOW INLINE 9.4Ω RESISTANCE

CURRENT 300mA RATING

Combined Category D, C, B tested protector (to BS EN 61643-21) based on the ESP D Series and ESP TN but ready boxed to IP66 for use in damp or dirty environments. Suitable for most twisted pair signalling applications. Available for working voltages of up to 6, 15, 30, 50 and 110 volts. ESP TN suitable for Broadband, POTS, dial-up, T1/E1, lease line and *DSL telephone applications. For use at boundaries up to LPZ 0_A 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
- ✔ Low in-line resistance minimises unnecessary reductions in signal strength
- ✔ Ready-boxed to IP66 and supplied ready for flat mounting
- ✔ Available with screw terminals or with IDC terminals (by adding /I suffix to part number)
- ✔ Colour coded terminals for quick and easy installation check – grey for the dirty (line) end and green for clean
- ✔ Screen terminal enables easy connection of cable screen to earth
- ✔ Substantial earth stud to enable effective earthing
- ✔ ESP TN/BX and ESP TN/2BX are suitable for telecommunication applications in accordance with Telcordia and ANSI Standards (see Application Note AN005)
- ✔ Supplied as standard with screw terminals – for IDC terminals order part code plus /I (e.g. ESP TN/BX/I)
- ✔ ESP TN/BX has Network Rail Approval PA05/02877. NRS PADS reference 087/037286

For installation in the equipment panel, protectors which are not boxed may be more suitable. If your system requires a protector with a very low resistance, higher current or higher bandwidth use the E or H Series. Unboxed protectors for 3-wire RTD systems are available – as are plug-in protectors for telephone lines.

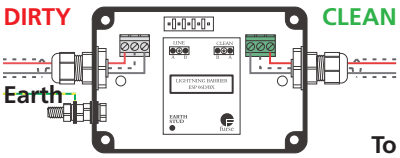
Application

Use these ready-boxed protectors on twisted pair lines in dirty or damp environments.

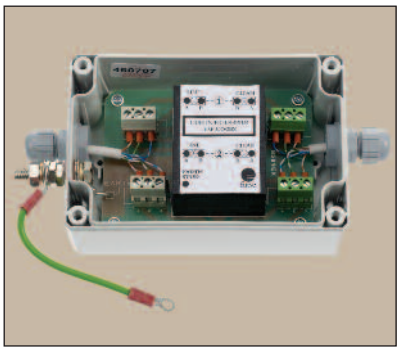
For two wire lines, use /BX versions. For four wire lines, use /2BX versions.

Installation

Connect in series with the data communication, signal or telephone line either near where it enters/leaves the building or close to the equipment being protected. Either way, it must be very close to the systems earth star point.



Install in series (in-line)



ESP 30D/2BX with lid removed to show internal connections. Note the colour coded, grey and green, terminals

Security alarm panel with ESP TN/BX (bottom) providing protection from transient overvoltages on the dial-up telephone line. Note how the ESP TN/BX is earthed via a bond to the ESP 240-16A/BX (top) installed on the mains power supply to the panel

TSC-0808

Electrical specification

	ESP 06D/BX ESP 06D/2BX	ESP 15D/BX ESP 15D/2BX	ESP 30D/BX ESP 30D/2BX	ESP 50D/BX ESP 50D/2BX	ESP 110D/BX ESP 110D/2BX	ESP TN/BX ESP TN/2BX
Nominal voltage[1]	6V	15V	30V	50V	110V	-
Maximum working voltage *Uc*[2]	7.79V	19V	37.1V	58V	132V	296V
Current rating (signal)	300mA					
In-line resistance (per line ±10%)	9.4Ω	9.4Ω	9.4Ω	9.4Ω	9.4Ω	4.4Ω
Bandwidth (-3dB 50Ω system)	800kHz	2.5MHz	4MHz	6MHz	9MHz	20MHz

[1] Nominal voltage (DC or AC peak) measured at <5µA (ESP 15D/BX, ESP 15D/2BX, ESP 30D/BX, ESP 30D/2BX, ESP 50D/BX, ESP 50D/2BX, ESP 110D/BX, ESP 110D/2BX) and <200µA (ESP 06D/BX & ESP 06D/2BX).
[2] Maximum working voltage (DC or AC peak) measured at <1mA leakage (ESP 15D/BX, ESP 15D/2BX, ESP 30D/BX, ESP 30D/2BX, ESP 50D/BX, ESP 50D/2BX, ESP 110D/BX, ESP 110D/2BX), <10mA (ESP 06D/BX, ESP 06D/2BX) and <10µA (ESP TN/BX, ESP TN/2BX).

Transient specification

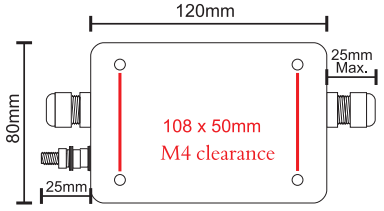
	ESP 06D/BX ESP 06D/2BX	ESP 15D/BX ESP 15D/2BX	ESP 30D/BX ESP 30D/2BX	ESP 50D/BX ESP 50D/2BX	ESP 110D/BX ESP 110D/2BX	ESP TN/BX ESP TN/2BX
Let-through voltage (all conductors)[1] *Up*						
C2 test 4kV 1.2/50µs, 2kA 8/20µs to BS EN/EN/IEC 61643-21	12.0V	25.0V	44.0V	78.0V	155V	395V
C1 test 1kV, 1.2/50µs, 0.5kA 8/20µs to BS EN/EN/IEC 61643-21	11.5V	24.5V	43.5V	76.0V	150V	390V
B2 test 4kV 10/700µs to BS EN/EN/IEC 61643-21	10.0V	23.0V	42.5V	73.0V	145V	298V
5kV, 10/700µs[2]	10.5V	23.8V	43.4V	74.9V	150V	300V
Maximum surge current D1 test 10/350µs to BS EN/EN/IEC 61643-21						
– per signal wire	2.5kA					
– per pair	5kA					
8/20µs to ITU (formerly CCITT), BS 6651:1999 Appendix C						
– per signal wire	10kA					
– per pair	20kA					

[1] The maximum transient voltage let-through the protector throughout the test (±10%), line to line & line to earth, both polarities. Response time <10ns.
[2] Test to BS 6651:1999 Appendix C, Cat C-High, IEC 61000-4-5:1995, 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).

Mechanical specification

	ESP 06D/BX ESP 06D/2BX	ESP 15D/BX ESP 15D/2BX	ESP 30D/BX ESP 30D/2BX	ESP 50D/BX ESP 50D/2BX	ESP 110D/BX ESP 110D/2BX	ESP TN/BX ESP TN/2BX
Temperature range	–25 to +70°C					
Connection type	Screw terminal – for IDC terminal use part number with /I					
Conductor size (stranded)	1.5mm²					
Earth connection	M6 stud					
Cable glands	Accommodate 2.3 – 6.7mm diameter cable (PG7)					
Degree of protection (IEC 60529)	IP66					
Case material	PVC					
Weight – unit	0.3kg					
– packaged	0.35kg					

Dimensions



Depth = 56mm

TSC-0808