

**INTRODUCTION**

This document explains how to install ready-boxed Furse ESP Surge Protective Devices (SPDs) for two and four wire twisted pair data communication/ signal/telephone lines:

**For two wire lines:**  
**ESP 06D/BX, ESP 15D/BX, ESP 30D/BX, ESP 50D/BX, ESP 110D/BX, ESP TN/BX**

**For four wire lines:**  
**ESP 06D/2BX, ESP 15D/2BX, ESP 30D/2BX, ESP 50D/2BX, ESP 110D/2BX, ESP TN/2BX**

Note: SPDs with /I part numbers (eg ESP TN/ BX/I) have IDC terminals (not screw terminals) and connections should be made using the correct tool.



**1. Safety note:**

Warning! Installation by person with electrotechnical expertise only.

Warnung! Installation nur durch elektrotechnische Fachkraft.

Avvertenza! Fare installare solo da un elettricista qualificato.

Avertissement! Installation uniquement par des personnes qualifiées en électricité.

Advertencia! La instalación deberá ser realizada únicamente por electricistas especializados.

**2. Before installation**

2.1 Check that the voltage drop caused by the resistance of the unit does not interfere with the normal operation of the system.

	Line Resistance
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	9.4 Ω
ESP TN/BX & ESP TN/2BX	4.4 Ω

	Normal Working Voltage	Maximum DC Working Voltage	Maximum AC Working Voltage
ESP 06D/BX & ESP 06D/2BX	6 V	7.79 V	5 V
ESP 15D/BX & ESP 15D/2BX	15 V	19 V	13 V
ESP 30D/BX & ESP 30D/2BX	30 V	37.1 V	26 V
ESP 50D/BX & ESP 50D/2BX	50 V	58 V	41 V
ESP 110D/BX & ESP 110D/2BX	110 V	132 V	93 V
ESP TN/BX & ESP TN/2BX	-	296 V	-



Figure 3. M5 mounting holes are located on the base, inside the protector but outside the seal, close to the cable glands.

**3. Installation**

**3.1 Series connection**

Furse ESP SPDs are connected in series with the data communication, signal or telephone line (see Figures 1 & 2).

**Note: Do NOT use power driven screwdrivers to make connections to the ESP SPD. Hand tighten only.**

**3.4 Line, clean, screen and earth connections**

For products with Insulation Displacement Connectors (IDC, suffix /I, see Figure 4) then use the appropriate IDC tool to push the wire firmly to make the connection (see Figure 5).

For standard screw terminal types, cable wires should be terminated with a boot lace ferrule. The screw terminals should be tightened between 0.3-0.5Nm (do not exceed 0.5Nm). Cable stripping length is 8 mm.

Figure 1: Series connection for two wire ESP 06D/BX, ESP 15D/BX, ESP 30D/BX, ESP 50D/BX, ESP 110D/BX & ESP TN/BX.

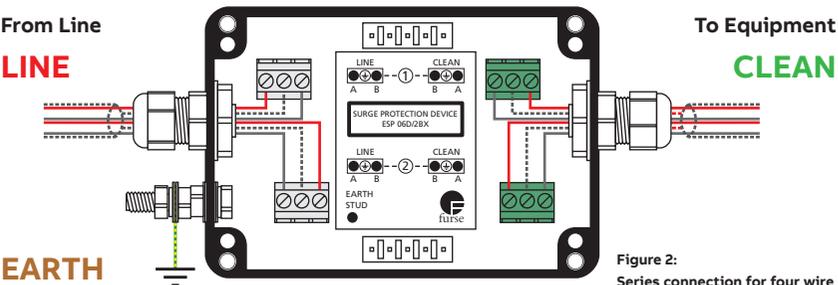
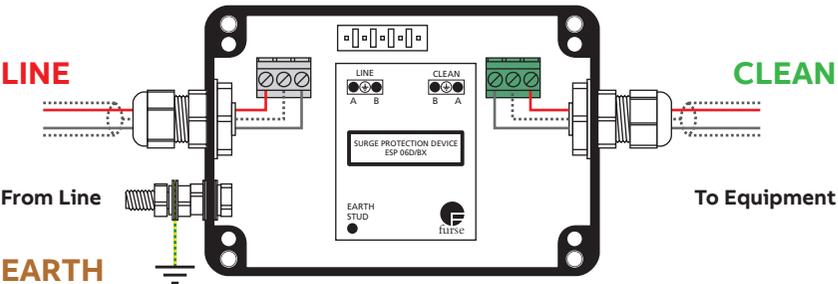


Figure 2: Series connection for four wire ESP 06D/2BX, ESP 15D/2BX, ESP 30D/2BX, ESP 50D/2BX, ESP 110D/2BX & ESP TN/2BX.

2.2 Be sure that the SPD's bandwidth will not restrict the system bandwidth.

	Bandwidth (-3 dB)
ESP 06D/BX & ESP 06D/2BX	800 kHz
ESP 15D/BX & ESP 15D/2BX	2.5 MHz
ESP 30D/BX & ESP 30D/2BX	4 MHz
ESP 50D/BX & ESP 50D/2BX	6 MHz
ESP 110D/BX & ESP 110D/2BX	9 MHz
ESP TN/BX & ESP TN/2BX	20 MHz

2.3 Ensure that the current passing through the SPD does not exceed 300 mA, DC or AC RMS.

2.4 Make sure that the system's maximum line voltage (DC or AC) will never exceed the maximum working voltage of the SPD.

Otherwise the SPD will clamp signal voltages as though they were transient overvoltages.

**3.2 SPD location**

SPDs are usually located either:  
 (a) near to where the data/signal/telephone line enters or leaves the building, or  
 (b) close to the equipment being protected (or actually within its control panel)

Either way, it is important that the SPD's connection to earth (or SPD earth bond) is kept short (see Section 3.6 - Earthing, overleaf).

**3.3 Fixing**

These SPDs can be screwed to a flat surface- M5 mounting holes are located on the base, inside the SPD but outside the seal, close to the cable glands (See Figure 3).

**The SPD must be mounted before it is wired up.**

Only screw the lid in place after the SPD is fully connected, to retain the SPD's IP rating.

Hand tighten screws, do not use power driven screwdrivers.



Figure 4. IDC connection option (suffix /I)

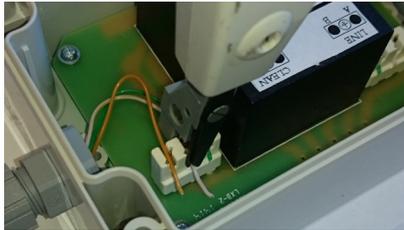


Figure 5. Terminating the IDC connection with appropriate tool (not provided).

