INTRODUCTION

This document explains how to install readyboxed 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 électrotechnique.

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 &	9.4 Ω
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 &	4.4 Ω
ESP TN/2BX	

	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	-

3. Installation

line (see Figures 1 & 2).

3.1 Series connection Furse ESP SPDs are connected in series with the data communication, signal or telephone

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



Figure 3.

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

3.4 Line, clean, screen and earth connections

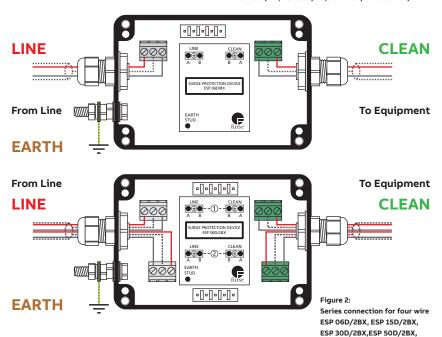
For products with Insulation Displacement Connectors (IDC, suffix /I, see Figure 4) then use the appropriate IDC tool to push the wire firmly to make the connection (see Figure 5).

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.

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 &	800 kHz
ESP 06D/2BX	
ESP 15D/BX &	2.5 MHz
ESP 15D/2BX	
ESP 30D/BX &	4 MHz
ESP 30D/2BX	
ESP 50D/BX &	6 MHz
ESP 50D/2BX	
ESP 110D/BX &	9 MHz
ESP 110D/2BX	
ESP TN/BX &	20 MHz
ESP TN/2BX	

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).

For other cable types wires should be terminated with a boot lace ferrule.

The SPD's grey line terminal should be connected to the dirty, incoming line - ie from where the transient overvoltage is expected. The SPD's green clean terminal should be connected to the line going to the protected equipment.

Cable screens can be earthed through connection to the terminals marked with the earth symbol: 🕀

The input/line and output/clean connections are paired:

Additionally, on four wire units the line and clean terminals are paired:

LINE ----- 1)----- CLEAN LINE -----(2)----- CLEAN

The SPD must be connected to earth by connecting a crimped earth cable to the SPD's earth stud. This can be seen in Figures 1 & 2, overleaf. See also Section 3.6 - Earthing.

3.5 Keep clean cables away from dirty cables Clean outgoing cables should never be routed next to dirty incoming cables or dirty SPD earth bonds (See Figure 6).

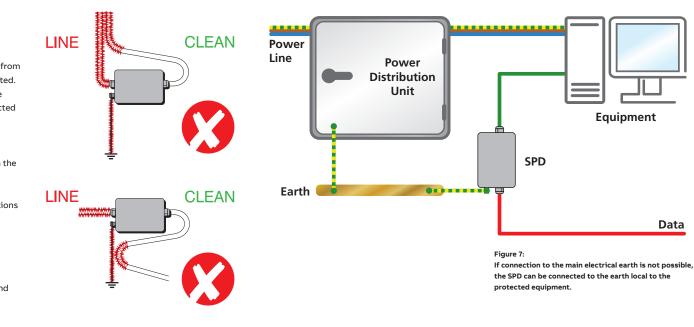
If rows of SPDs are installed close to each other, dirty line and clean cables must be kept at least 5 cm apart.

3.6 Earthing

Protectors for mains power supplies and SPDs for data/signal/telephone lines should be connected to the same earth point.

The SPD should therefore be bonded to the main electrical earth or earth star point.

10 mm² stranded green/yellow cable should be used for this bond.



Where even 4 metres of connecting lead is Notes not sufficient, the data/signal/telephone line should be re-routed to bring it within

In circumstances where the line cannot ideally be re-routed, the SPD can alternatively be connected to the electrical earth local to the equipment being protected (eg the earth bar of the local power distribution board) (see Figure 7).

Environment

4 metres of the SPD.

X Consider the protection of the environment! Used electrical and electronic equipment must NOT be disposed of with domestic waste. The device contains valuable raw materials which can be recycled. Therefore, contact ABB for disposal of this equipment.

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ESP D/BX and ESP D/SBX series

SAJIVAU Surge Protective tor ready-boxed

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Figure 6: Cable routeing.

LINE

This SPD earth bond should be less than 1 metre long (otherwise the effectiveness of the SPD will be reduced).

SPD earth bonds of 2.3 or 4 metres are allowed if:

(a) 2, 3 or 4 parallel earth bonds are used and these parallel earth bonds are kept at least 5 cm apart from each other, or

(b) both the main earth bar and the SPDs are located on a large metal sheet, the SPDs can be bonded to the metal sheet which in turn is bonded to the earth bar.