

INTRODUCTION

This document explains how to install ABB OVR Surge Protection Devices (SPDs) for twisted pair data communication/signal/telephone lines and RTD installations:

OVR 06D, OVR 15D, OVR 30D, OVR 50D, OVR 110D, OVR TN, OVR 06E, OVR 15E, OVR 30E, OVR 50E, OVR 110E, OVR 06H, OVR 15H, OVR 30H, OVR 50H, OVR 110H, OVR RS485, OVR RTD

	Bandwidth (-3 dB)
OVR 06D	800 kHz
OVR 15D	2.5 MHz
OVR 30D	4.0 MHz
OVR 50D	6.0 MHz
OVR 110D	9.0 MHz
OVR TN	20.0 MHz
OVR 06E, OVR 15E, OVR 30E, OVR 50E, OVR 110E, OVR RS485	45 MHz
OVR 06H	160 kHz
OVR 15H	140 kHz
OVR 30H	130 kHz
OVR 50H, OVR 110H	120 kHz
OVR RTD	800 kHz

2.3 Ensure that the current passing through the OVR SPD does not exceed:

	Maximum Current
OVR 06D, OVR 15D, OVR 30D, OVR 50D, OVR 110D, OVR TN & OVR RS485	300 mA DC or AC RMS
OVR 06E, OVR 15E, OVR 30E, OVR 50E & OVR 110E	1.25 A DC or AC RMS
OVR 06H, OVR 15H, OVR 30H, OVR 50H & OVR 110H	4 A DC or AC RMS
OVR RTD	200 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 OVR SPD.

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

	Normal Working Voltage	Maximum DC Working Voltage	Maximum AC Working Voltage
OVR 06D, OVR RTD	6 V	7.79 V	5 V
OVR 15D	15 V	19 V	13 V
OVR 30D	30 V	37.1 V	26 V
OVR 50D	50 V	58 V	41 V
OVR 110D	110 V	132 V	93 V
OVR TN	-	296 V	-
OVR 06E, OVR 06H	6 V	7.79 V	5 V
OVR 15E, OVR 15H, OVR RS485	15 V	16.7 V	11 V
OVR 30E, OVR 30H	30 V	36.7 V	25 V
OVR 50E, OVR 50H	50 V	56.7 V	40 V
OVR 110E, OVR 110H	110 V	132 V	93 V



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
OVR 06D, OVR 15D, OVR 30D, OVR 50D & OVR 110D	9.4 Ω
OVR TN	4.4 Ω
OVR 06E, OVR 15E, OVR 30E, OVR 50E, OVR 110E & OVR RS485	1.0 Ω
OVR 06H, OVR 15H, OVR 30H, OVR 50H & OVR 110H	< 0.05 Ω
OVR RTD	10.0 Ω

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

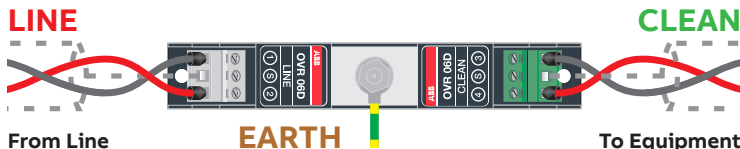


Figure 1a: Series connection (OVR D Series, OVR E Series, OVR H Series, OVR TN & OVR RS485).

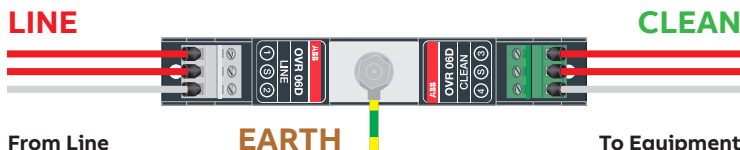


Figure 1b: Series connection (OVR RTD).

3. Installation

3.1 Series connection

ABB OVR SPDs are connected in series with the data communication, signal, measurement, or telephone line.

The dirty, or line side of the OVR SPD should be connected to the cable carrying the incoming transient overvoltages.

The output or clean side of the SPD ensures a transient free signal to the equipment being protected (see Figure 1).

The screw terminals should be tightened between 0.3-0.5 Nm (do not exceed 0.5 Nm). Cable stripping length is 6 mm.

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

3.2 SPD location

SPDs are usually located either:

- near to where the lines requiring protection enter or leave the building, or
- close to the equipment being protected (or actually within its control panel)

3.3 Enclose the SPD

OVR SPDs should be installed within a panel or enclosure.

The SPD should be ideally installed within an existing cabinet/cubicle or in an enclosure to the required IP rating. Suitable enclosures are available from ABB.

OVR SPDs should always be installed in a dry environment.

3.4 Fixing methods

ABB OVR SPDs can be mounted in a number of ways.

(a) Flat mounting

Fixing holes on the base and sides of the OVR SPD enable small quantities to be screwed to flat surfaces (see Figures 2 and 3).

(b) DIN rail mounting

The OVR SPD has a built-in DIN rail foot enabling it to be clipped on to 'top hat' DIN rails (see Figure 4).

(c) On a Combined Mounting and Earthing (CME) kit

Accessory OVR CME kits enable groups of OVR SPDs to be simultaneously mounted and earthed.



Figure 2: Base hole flat mounting.

Figure 3: Side hole flat mounting.



Figure 4: Installation on 'top hat' DIN rail.

Either way, it is important that the SPD's connection to earth (or SPD earth bond) is kept short (see Section 3.7 - Earthing).

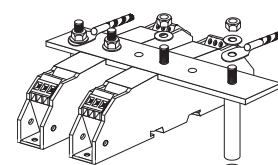


Figure 5: Installation on an OVR CME kit.

These utilise the OVR SPD's earth stud to connect it to the OVR CME kit's heavy duty copper earth bar (see Figure 5). The fixing centres for OVR CME kits are shown in Figure 6, overleaf.

Hand tighten screw fixings - do not use power driven screwdrivers.

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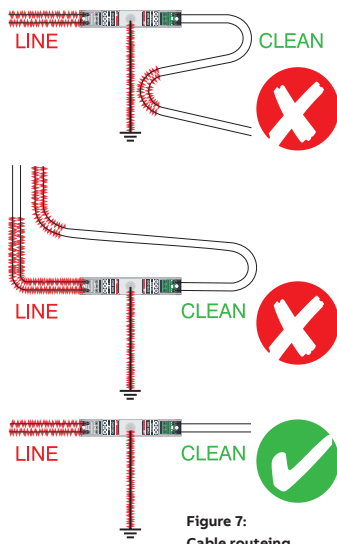


Figure 7:
Cable routing.

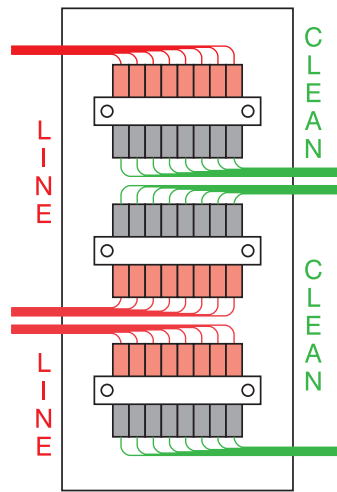


Figure 8:
Positioning of adjacent rows of OVR SPDs.

INSTALLATION INSTRUCTIONS for data-line Surge Protective Devices

OVR D & TN Series,
 OVR E Series, OVR H Series,
 OVR RTD, OVR RS485



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 Specifications subject to change without notice.

Note: When using the DIN rail foot mounting option in conjunction with a base plate (ie DIN rail not directly bonded onto cabinet chassis) ensure the earth bond to the base plate (or DIN rail itself) is kept clear of the clean cables.

3.7 Earthing

Protectors for mains power supplies and OVR SPDs for data/ signal/ telephone lines should be connected to the same earth point. The OVR SPD should therefore be bonded to the main electrical earth or earth star point.

The OVR SPD must be connected to earth, either:

- (a) through installation on a 'top hat' or G DIN rail (which in turn is connected to earth), or
- (b) by connecting a crimped earth cable to the SPD via the M6 threaded earth stud (see Figure 1, overleaf).

The best way to ensure a good earth connection when using a DIN rail is to mount the DIN rail in a metal cabinet. The entire length of the DIN rail should be in contact with the metal of the cabinet (if the cabinet is painted this should be removed where the rail is to be mounted to give a good electrical connection).

The DIN rail should then be bonded to the cabinet at its mounting points and the chassis of the cabinet bonded to the main electrical earth or earth star point. Alternatively if a non-metal housing is used the DIN rail should be bonded to a metal base plate. The base plate should then be bonded to the earth star point.

The guidelines below refer to non-DIN rail earthing and the earthing of DIN rail base plates.

The OVR SPD or base plate earth bond should be less than 1 metre long (otherwise the effectiveness of the OVR SPD will be reduced). 10 mm² stranded green/yellow cable should be used for this bond.

OVR SPD or base plate earth bonds of 2, 3 or 4 metres are allowed if:

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

Where even 4 metres of connecting lead is not sufficient, the incoming line should be re-routed to bring it within 4 metres of the earth.

In circumstances where the line cannot ideally be re-routed, the OVR 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 9).

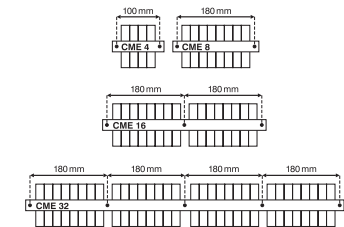


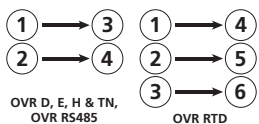
Figure 6:
Fixing centres for OVR CME kits.

3.5 Line, clean, screen and earth connections

Cable wires should be terminated with a boot lace ferrule. The line end of the OVR SPD should be connected to the dirty, incoming line - ie from where the transient overvoltage is expected.

The clean end of the OVR SPD should be connected to the line going to the protected equipment. This can be seen in Figure 1, overleaf.

Cable screens are earthed via the terminals marked Ⓢ, except the OVR RTD which is earthed via the earth stud. The input/line and output/clean terminals are paired:



3.6 Keep clean cables away from dirty cables

Cables connected to the OVR SPD's clean end should never be routed next to dirty line cables or dirty SPD earth bonds (see Figure 7).

If rows of OVR SPDs are installed close to each other, dirty line cables and earth bonds must be kept at least 5 cm apart from clean cables (see Figure 8).

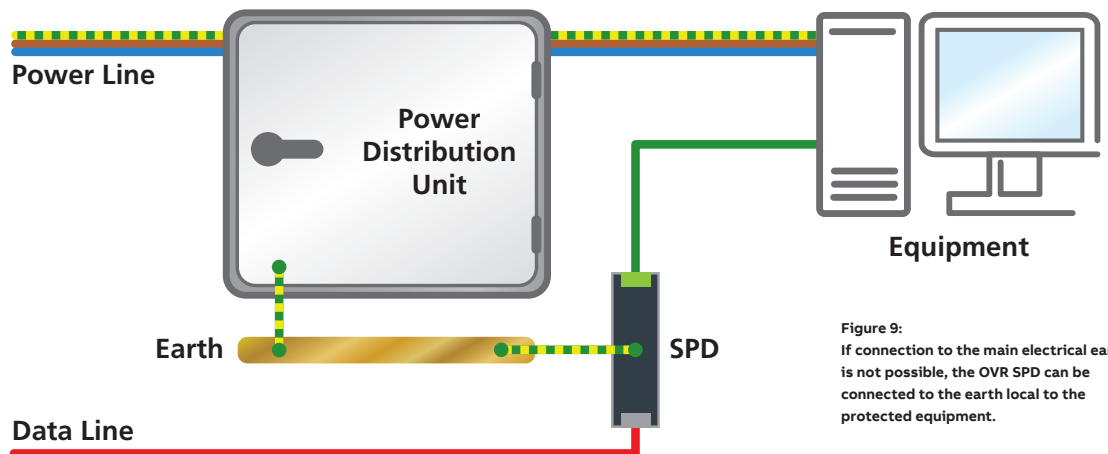


Figure 9:
If connection to the main electrical earth is not possible, the OVR SPD can be connected to the earth local to the protected equipment.

Environment

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.

