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

<table>
<thead>
<tr>
<th>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 R5485, OVR RTO</th>
<th>Bandwidth (-3 dB)</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR 06D</td>
<td>800 kHz</td>
</tr>
<tr>
<td>OVR 15D</td>
<td>2.5 MHz</td>
</tr>
<tr>
<td>OVR 30D</td>
<td>4.0 MHz</td>
</tr>
<tr>
<td>OVR 50D</td>
<td>6.0 MHz</td>
</tr>
<tr>
<td>OVR 110D</td>
<td>9.0 MHz</td>
</tr>
<tr>
<td>OVR TN</td>
<td>20.0 MHz</td>
</tr>
<tr>
<td>OVR 06E, OVR 15E, OVR 30E, OVR 50E, OVR 110E, OVR R5485</td>
<td>45 MHz</td>
</tr>
</tbody>
</table>

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.

<table>
<thead>
<tr>
<th>Line Resistance</th>
<th>Normal Working Voltage</th>
<th>Maximum DC Working Voltage</th>
<th>Maximum AC Working Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR 06D, OVR 15D, OVR 30D, OVR 50D &amp; OVR 110D</td>
<td>6 V</td>
<td>7.79 V</td>
<td>5 V</td>
</tr>
<tr>
<td>OVR 15D</td>
<td>15 V</td>
<td>19 V</td>
<td>13 V</td>
</tr>
<tr>
<td>OVR 30D</td>
<td>30 V</td>
<td>37.1 V</td>
<td>26 V</td>
</tr>
<tr>
<td>OVR 50D</td>
<td>50 V</td>
<td>58 V</td>
<td>41 V</td>
</tr>
<tr>
<td>OVR 110D</td>
<td>110 V</td>
<td>132 V</td>
<td>93 V</td>
</tr>
<tr>
<td>OVR TN</td>
<td>-</td>
<td>296 V</td>
<td>-</td>
</tr>
<tr>
<td>OVR 06E, OVR 15E, OVR 30E, OVR 50E, OVR 110E &amp; OVR R5485</td>
<td>6 V</td>
<td>7.79 V</td>
<td>5 V</td>
</tr>
<tr>
<td>OVR 06H, OVR 15H, OVR 30H, OVR 50H &amp; OVR 110H</td>
<td>-</td>
<td>7.79 V</td>
<td>5 V</td>
</tr>
<tr>
<td>OVR R5485</td>
<td>-</td>
<td>7.79 V</td>
<td>5 V</td>
</tr>
</tbody>
</table>

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

1. Safety note:

Warning! Installation by person with electrotechnical expertise only.

Warning! Installation nur durch elektrotechnische Fachkraft.

Avertissement! Installation uniquement par des personnes qualifiées en électrotechnique.

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

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

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.

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<td>5 V</td>
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</tbody>
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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:

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

3.3 Enclose the SPD

ABB 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.

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.

4. CME kits

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.
3.5 Line, clean, screen and earth connections

Cable wires should be terminated with a bootlace 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).

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 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).

The OVR SPD base plate earth bond should be less than 1 metre long (otherwise the effectiveness of the OVR SPD will be reduced).

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