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

OVR 06Q, OVR 15Q, OVR 30Q, OVR 50Q, OVR 110Q, OVR TNQ, OVR RS485Q, OVR RTDQ

1. Safety note:

1.1 Install protectors very close to the power terminals should be suitably fused to the normal operation of the system.

1.2 Mount units within a panel or WBX distribution panel or directly alongside it.

1.3 The connecting leads to phase/live terminals should be tightened to an optimum positioning of both protector connections (see 3.4).

1.4 Ensure that the current passing through the SPD does not exceed:

<table>
<thead>
<tr>
<th>SPD</th>
<th>Nominal Working Voltage</th>
<th>Maximum DC Working Voltage</th>
<th>Maximum AC Working Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR 06Q</td>
<td>6 V</td>
<td>7.78 V</td>
<td>5 V</td>
</tr>
<tr>
<td>OVR 15Q</td>
<td>15 V</td>
<td>18.8 V</td>
<td>13 V</td>
</tr>
<tr>
<td>OVR 30Q</td>
<td>30 V</td>
<td>37.8 V</td>
<td>26 V</td>
</tr>
<tr>
<td>OVR 50Q</td>
<td>50 V</td>
<td>57.8 V</td>
<td>41 V</td>
</tr>
<tr>
<td>OVR 110Q</td>
<td>110 V</td>
<td>132 V</td>
<td>93 V</td>
</tr>
<tr>
<td>OVR TNQ</td>
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<td>-</td>
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</tr>
<tr>
<td>OVR RS485Q</td>
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<td>-</td>
<td>-</td>
</tr>
<tr>
<td>OVR RTDQ</td>
<td>6 V</td>
<td>7.78 V</td>
<td>5 V</td>
</tr>
</tbody>
</table>

1.5 Units installed at power distribution boards can be installed either:

- on the closest available outgoing way to the upstream supply fuse.
- close to the equipment being protected.

1.6 Provide a means of isolation for the incoming supply connection (see 3.4).

1.7 The connecting leads to phase/live terminals should be tightened to an optimum positioning of both protector connections (see 3.4).

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

1.9 Keep the connecting leads as short as possible.

1.10 Bind the connecting leads tightly together. Optimum positioning of both protector connections achieved with the equivalent M1R remote display variant which permits connection to earth (or SPD earth bond) is kept short (see Section 3.7 - Earthing).

1.11 Maximum torque for power terminals is 2.9Nm, wire stripping length 17mm.

1.12 Maximum torque for remote contact is 2.9Nm, wire stripping length 17mm.

1.13 Maximum voltage (DC or AC) will never exceed the SPD’s maximum working voltage. The output or clean side of the SPD ensures a transient free signal to the equipment being protected (see Figures 1 and 2).

1.14 The screw terminals should be tightened between 0.3-0.5 Nm (do not exceed 0.5 Nm). Cable stripping length is 8 mm.

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

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.

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

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

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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.

2.5 OVR Q Series SPDs have two mounting options.

(a) Flat mounting

Fixing holes through the SPD enable it to be screwed to flat surfaces (see Figure 3).

(b) DIN rail mounting

The SPD has a built-in DIN rail clip for mounting to ‘top hat’ or G DIN rails (see Figure 4).

2.6 Suitable enclosures are available from ABB, such as OVR WBX SLQ.

SPDs should always be installed in a dry environment.

3. Fixing methods

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

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

SPDs should be installed within a panel or enclosure.

3.4 SPDs are usually located either:

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

3.5 Line, clean, screen and earth connections

Cable wires should be terminated with a bootlace ferrule. The line end of the SPD should be connected to the dirty, incoming cable.

3.6 Keep clean cables away from dirty cables

Cables connected to the SPD’s clean end should never be routed next to dirty line cables or dirty SPD earth bonds (see Figure 6, overleaf).

If rows of SPDs are installed close to each other, dirty line cables & earth bonds must be kept at least 5 cm apart from clean cables (See Figure 7, 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 following guidelines refer to non-DIN rail earthing and the earthing of DIN rail base plates.

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.

If the line cannot be re-routed the SPD can, as a last resort, be connected to the electrical earth local to the equipment being protected (eg the earth bar of the local power distribution board) (see Figure 8).

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

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

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

The 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 M5 threaded hole in the unit (see Figure 3).

3.7 Earthing

Protectors for mains power supplies and SPDs for data/signal/ measurement/ 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.

The 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 M5 threaded hole in the unit (see Figure 3).

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

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

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

The best way to ensure a good earth connection when using a DIN rail is to mount the DIN rail in a metal cabinet.