INTRODUCTION
This document explains how to install plug-in ABB OVR Surge Protection Devices (SPDs) for computer networks with RJ45 connections:

OVR Cat-5e
for 10/100baseT systems that signal on up to 4 wires of either unshielded or shielded twisted pair cable.

OVR Cat-5e/PoE
for 10/100baseT systems that also transmit power to IEEE 802.3at, using Mode A (combined ‘phantom’ power/data) and/or Mode B (power on spare pairs).

OVR Cat-6
for 10/100/1000/10GbaseT systems that signal on up to 8 wires of either unshielded or shielded twisted pair cable.

OVR Cat-6/PoE
for 10/100/1000/10GbaseT systems that also transmit power to IEEE 802.3at, using Mode A and/or Mode B.

1. Safety note:
Warning! Installation by person with electrotechnical expertise only.

Warning! 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 Make sure that the RJ45 sockets on the OVR SPD are physically compatible with the network cabling.

2.2 Check that the maximum signalling voltage of the network will never exceed the OVR SPD’s maximum working (or signalling) voltage:

<table>
<thead>
<tr>
<th>Maximum Working (or Signalling) Voltage</th>
<th>Data</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR Cat-5e, OVR Cat-6</td>
<td>5 V</td>
<td>-</td>
</tr>
<tr>
<td>OVR Cat-5e/PoE, OVR Cat-6/PoE</td>
<td>5 V</td>
<td>58 V</td>
</tr>
</tbody>
</table>

2.3 Ensure that the network’s signalling or data rate does not exceed:

<table>
<thead>
<tr>
<th>Maximum data rate</th>
<th>100 Mbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR Cat-5e, OVR Cat-5e/PoE</td>
<td></td>
</tr>
<tr>
<td>OVR Cat-6, OVR Cat-6/PoE</td>
<td>10 Gbps*</td>
</tr>
</tbody>
</table>

2.4 Keep clean cables away from line (dirty) cables
The clean cable (connecting the OVR SPD’s clean socket to the protected equipment) should never be routed next to the dirty line or the dirty earth cable.

3. Installation
3.1 Connection
ABB OVR Cat-5 & Cat-6 SPDs are connected in series with the network cable (see Figure 1).

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 OVR SPD ensures a transient free signal to the equipment being protected.

3.2 SPD location
Install the OVR SPD in a convenient place, either:
(a) near to where the network cable enters or leaves the building,
(b) as the ‘dirty’ line network cable enters the network hub, or
(c) close to the equipment being protected.

The OVR SPD’s location may be dictated by the need to keep its connection to earth short (see Section 3.5 - Earthing).

3.3 Mounting
Fixing holes on the side of the OVR SPD enable it to be screwed to any flat surface, or the TS35 DIN Rail attachment can be used to mount and earth via DIN rail.

Before doing so, ensure that it is close to a good earthing point (see Section 3.5 - Earthing).

3.4 Earthing
OVR SPDs for mains power supplies and OVR SPDs for data/signal/measurement/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 TS35 ‘top hat’ DIN rail (which in turn is connected to earth), or
(b) by connecting a crimped earth cable to the OVR SPD via the M4 threaded hole in the unit (see Figure 1).

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

The OVR SPD is longer than required, neatly coil and bind the surplus out of the way, keeping this away from clean cables.

If the network cables either in or out of the OVR SPD are longer than required, neatly coil and bind the surplus out of the way, keeping this away from clean cables.

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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 3).

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.

Figure 3:
Connection to the equipment earth star point.