1. Key points of installation

Never work on ESP protectors, earthing or earthing systems during a storm. Always handle cables by their insulation to ensure the effectiveness of ESP protectors. Incorrect installation will impair the performance of the ESP unit.

Regulations and Building Regulations must be followed, and always carry out a complete installation conducted by a qualified competent person. ESP protector installation should be made by people with electrotechnical expertise only.

Safety note:

ESP M1/M1R mains protectors are designed for installation in parallel. They can be mounted inside a panel or next to the incoming supply, with the incoming supply to be protected, either within the power distribution board or directly alongside it.

1.1 Units are installed in parallel.
1.2 Mount units within a panel or WBX distribution panel or directly alongside it.
1.3 Maximum torque for remote contact is 0.25Nm, wire stripping length 7mm.
1.4 Connect to phase(s), neutral and earth.
1.5 Units installed at power distribution boards can be installed either:
   - on the load side of the incoming supply - on the closest available outgoing way to the equipment it is protecting.
   - upstream supply fuse.
1.6 Provide a means of isolation for the ESP unit.
1.7 The connecting leads to phase/live terminals should be suitably fused - on the closest available outgoing way.
1.8 Connecting leads should be 10 mm², discarding any flaws in the conductors.
1.9 Keep the connecting leads as short as possible and ideally less than 25 cm over their entire length.
1.10 Bind the connecting leads tightly and display.
1.11 Maximum torque for power terminals is 2.9Nm, wire stripping length 17mm.
1.12 Maximum torque for remote contact is 2.5Nm, wire stripping length 11mm.

2. Before installation

2.1 Ensure that the SPD’s bandwidth will not restrict the system bandwidth.

<table>
<thead>
<tr>
<th>Bandwidth (-3 dB 75 Ω)</th>
<th>SPDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR CATV/F 5-860 MHz</td>
<td></td>
</tr>
<tr>
<td>OVR MATV/F 5-3224 MHz</td>
<td></td>
</tr>
<tr>
<td>OVR SMATV/F 860-3224 MHz</td>
<td></td>
</tr>
<tr>
<td>OVR TV/EURO 5-860 MHz</td>
<td></td>
</tr>
<tr>
<td>OVR TV/F 5-860 MHz</td>
<td></td>
</tr>
</tbody>
</table>

2.2 Make sure the insertion loss over the specified bandwidth will not effect the system.

<table>
<thead>
<tr>
<th>Insertion Loss 5-880 MHz</th>
<th>SPDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR CATV/F</td>
<td>&lt; 0.5 dB</td>
</tr>
<tr>
<td>OVR MATV/F, OVR TV/EURO, OVR TV/F</td>
<td>&lt; 0.3 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insertion Loss 860-2150 MHz</th>
<th>SPDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR MATV/F, OVR SMATV/F</td>
<td>&lt; 1.5 dB</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Insertion Loss 2150-3224 MHz</th>
<th>SPDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR MATV/F, OVR SMATV/F</td>
<td>&lt; 2.2 dB</td>
</tr>
</tbody>
</table>

2.3 Make sure that the system’s maximum line voltage (DC or AC peak) will never exceed the SPD’s maximum working voltage. Otherwise the SPD will clamp signal voltages as though they were transient overvoltages.

<table>
<thead>
<tr>
<th>Max. Working Voltage</th>
<th>SPDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR CATV/F 140 V</td>
<td></td>
</tr>
<tr>
<td>OVR MATV/F 18.9 V</td>
<td></td>
</tr>
<tr>
<td>OVR SMATV/F 6.4 V</td>
<td></td>
</tr>
<tr>
<td>OVR TV/EURO 5-860 MHz</td>
<td></td>
</tr>
<tr>
<td>OVR TV/F 5-860 MHz</td>
<td></td>
</tr>
</tbody>
</table>

2.4 Ensure that the current (DC or AC RMS) passing through the SPD does not exceed:

<table>
<thead>
<tr>
<th>Max. Operating Current</th>
<th>SPDs</th>
</tr>
</thead>
<tbody>
<tr>
<td>OVR CATV/F 4 A</td>
<td></td>
</tr>
<tr>
<td>OVR MATV/F 800 mA</td>
<td></td>
</tr>
<tr>
<td>OVR SMATV/F 300 mA</td>
<td></td>
</tr>
<tr>
<td>OVR TV/EURO, OVR TV/F</td>
<td></td>
</tr>
</tbody>
</table>

3. Installation

3.1 Series connection

Furse TV SPDs are connected in series with the coaxial cable video line.

SPD location may be determined by the need to keep its connection to earth (or SPD earth bond) short (see Section 3.8 - Connect to earth).

3.3 Enclose the SPD

Furse TV SPDs should be installed inside a building (usually a basement or garage), or service entrance. If outdoor installation is required, contact Furse for suitable enclosures.

SPDs should always be installed in a dry environment.

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**Figure 1:** Series connection.

**Figure 2:** Fixing dimensions.

**Figure 3:** OVR CATV/F mounted in a garage near where the cable enters the building.
Within the building the earth star point will be the earth bar of the local power distribution board, from where the equipment is supplied (see Figure 5).

If the SPD is housed in a metal cabinet or cubicle, this should also be bonded to the earth star point.

The SPD to earth bond should be as short as possible and certainly less than 1 m long (otherwise the effectiveness of the SPD will be reduced).

SPD earth bonds of 2, 3 or 4 m 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, or
- if both the main earth bar and the SPD are located on a large metal sheet, the SPD can be bonded to the metal sheet which is bonded in turn to the earth bar.

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

The SPD is fitted with female F-type connectors (or EURO-TV for OVR TV/EURO) and can easily be connected to the cable.

Connect the line end of the SPD to the dirty, incoming cable.

Connect the clean end to the cable to the protected equipment (see Figure 1).

Note: Hand tighten only.

### 3.4 Fixing methods
Fixing holes in the base of the SPD enable it to be screwed to flat surfaces (see Figure 2 for fixing dimensions). Figure 3 shows an OVR CATV/F installed.

### 3.5 Screen connection
OVR TV Series SPDs are supplied ready for use on systems with an earthed screen.

### 3.6 Clean and line connections
To install the SPD, divide and terminate the coaxial cable.

### 3.7 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 4).

Within the building the earth star point will be the earth bar of the local power distribution board, from where the equipment is supplied (see Figure 5).

If the SPD is housed in a metal cabinet or cubicle, this should also be bonded to the earth star point.

The SPD to earth bond should be as short as possible and certainly less than 1 m long (otherwise the effectiveness of the SPD will be reduced).

### Contact us

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