

Introduction

This document explains how to install ABB Slim Line OVR Surge Protection Devices (SPDs) for Twisted pair data communication/ signal/telephone lines:

OVR SL06 | OVR SL15 | OVR SL30 | OVR SL50 | OVR SL110 | OVR SL TN | OVR SL RS485

Low current DC power supplies:

OVR SL06L | OVR SL15L | OVR SL30L | OVR SL50L | OVR SL110L |

Twisted pair 4-20 mA loop systems:

OVR SL30L/4-20

and isolated screen versions (suffix /I).

3-Wire & RTD systems:

OVR SL06/3W | OVR SL15/3W | OVR SL30/3W | OVR SL50/3W | OVR SL110/3W | OVR SL RTD

ABB OVR Slim Line LED SPDs (OVR SL**L) are directly comparable to their standard Slim Line equivalent in performance plus incorporate an LED indicator for easy status checking.

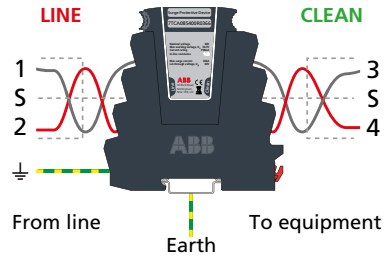


Figure 1a: Series connection of OVR SL** Series, OVR SL**L Series, OVR SL TN, OVR SL 4-20 mA and OVR SL RS485.

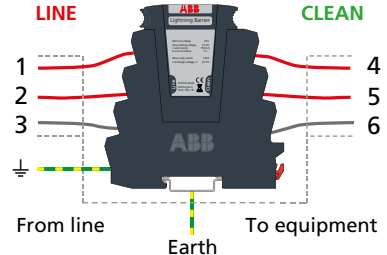


Figure 1b: Series connection of OVR SL RTD and OVR SL**/3W Series.



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 SL** Series (06 - 110)	1.0 Ω
OVR SL**L Series (06 - 110)	1.0 Ω
OVR SL**/3W Series (06 - 110)	1.0 Ω
OVR SL RTD	1.0 Ω
OVR SL TN	4.4 Ω
OVR SL30L/4-20	1.0 Ω
OVR SL RS485	1.0 Ω

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

	Bandwidth (-3 dB)
OVR SL** Series (06 - 110)	45 MHz
OVR SL**L Series (06 - 110)	45 MHz
OVR SL**/3W Series (06 - 110)	45 MHz
OVR SL RTD	1.5 MHz
OVR SL TN	20 MHz
OVR SL30L/4-20	45 MHz
OVR SL RS485	45 MHz

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

	Maximum Current
OVR SL** Series (06 - 110)	750 mA
OVR SL**L Series (06 - 110)	750 mA
OVR SL**/3W Series (06 - 110)	500 mA
OVR SL RTD	500 mA
OVR SL TN	750 mA
OVR SL30L/4-20	75 mA
OVR SL RS485	500 mA

Note: Minimum current for reliable LED operation is 3 mA. Whilst the SPD functions at lower current ratings, the LED will not illuminate.

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 SL06, OVR SL06L, OVR SL06/3W	6 V	7.79 V	5 V
OVR SL15, OVR SL15L, OVR SL15/3W	15 V	16.7 V	11 V
OVR SL30, OVR SL30L, OVR SL30/3W	30 V	36.7 V	25 V
OVR SL50, OVR SL50L, OVR SL50/3W	50 V	56.7 V	40 V
OVR SL110, OVR SL110L, OVR SL110/3W	110 V	132 V	93 V
OVR SL RTD	6 V	7.79 V	5 V
OVR SL TN	296 V	296 V	-
OVR SL30L/4-20	30 V	36.7 V	25 V
OVR SL RS485	15 V	16.7 V	11 V

3. Installation

3.1 Location

OVR 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)

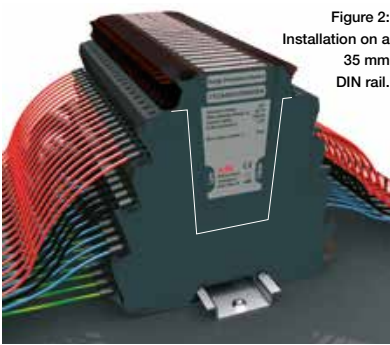


Figure 2: Installation on a 35 mm DIN rail.

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

3.2 Enclose the SPD

OVR SPDs should be installed within a panel or enclosure.

The OVR SPD should ideally be installed within an existing cabinet/cubicle or in an enclosure to the required IP rating.

3.3 Series connection

OVR SPDs are connected in-line (series) with the data communication, signal, measurement, or telephone line (see Figures 1a & 1b).

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.

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

3.4 Fixing methods

ABB OVR SPDs should be mounted on a 35 mm DIN rail to EN 50022.

The OVR SPD's DIN rail release clip features a latchback mechanism to hold the clip off the rail for easy removal and adjustment whilst on the DIN rail.

This release clip should be engaged using a terminal screwdriver or by hand by pulling the clip out and upwards in the housing (see Figures 3a & 3b).

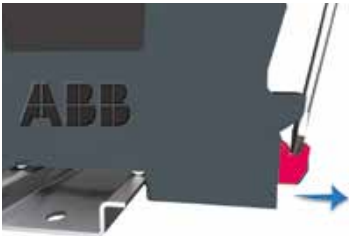


Figure 3a: Slide out the DIN rail release clip.

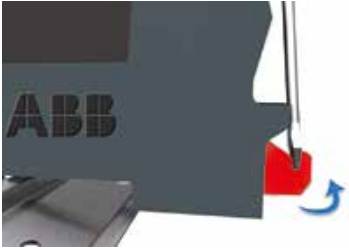


Figure 3b: Pull up and release to engage the latchback mechanism.

Suitable enclosures are available from ABB.

OVR SPDs should always be installed in a dry environment.

3.5 Connections to line, clean, screen and earth terminals

The clean end of the OVR SPD should be connected to the cabling going to the protected equipment (see Figures 1a & 1b). Cable screens are connected to earth (DIN rail & earth terminal) via the terminals marked S, except the OVR SL**/3W Series & OVR SL RTD where the screen could be connected to the earth terminal marked \perp . The screw terminals should be tightened between 0.5-0.8 Nm torque (do not exceed 0.8 Nm).

Hand tighten connections only, do not use power driven screwdrivers.

The screw terminals will accommodate conductor of up to 4 mm². We recommend that these are terminated with a boot lace ferrule.

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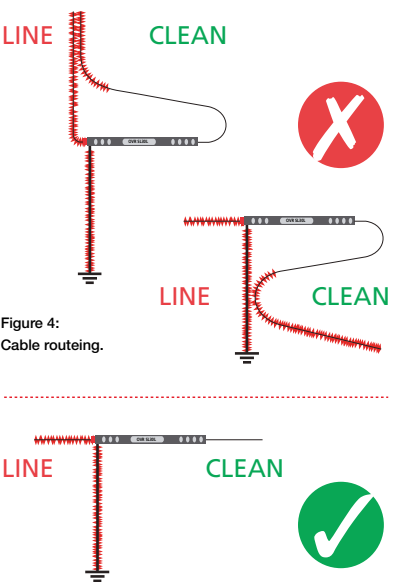


Figure 4:
Cable routing.

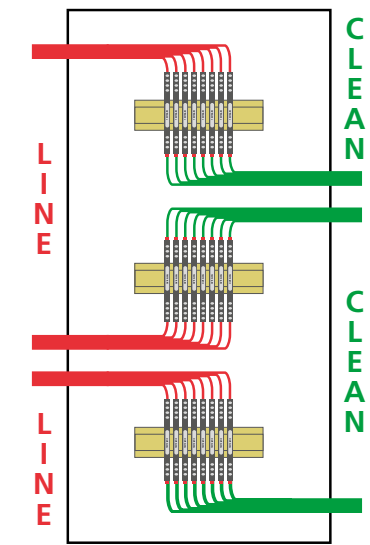


Figure 5: Positioning of adjacent rows of SPDs.

For isolated screen versions

For situations where the cable screen needs to be isolated from the local earth to avoid earth loops (e.g. fire alarm panels) the isolated screen version should be used (this has /I suffix in the part code e.g. OVR SL30/I). With the isolated screen version there is no continuity between the screen and earth connections in the absence of a transient overvoltage.

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 4). 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 5).

Note: When using the DIN rail foot to provide the earth to the OVR SPD in conjunction with a base plate (i.e. 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 lines.

3.7 Earthing

OVR 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. This connection should be made, either:

- Through installation on a 35 mm DIN rail (which in turn is connected to earth)
- By connecting an earth cable to the OVR SPD via the unit's earth terminal marked \perp (see Figures 1a & 1b)

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

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

SPD or base plate 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

Where even 4 m of connecting lead is not sufficient, the incoming line should be re-routed to bring it within 4 m 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 (see Figure 6).

3.8 Status indication (LED versions only)

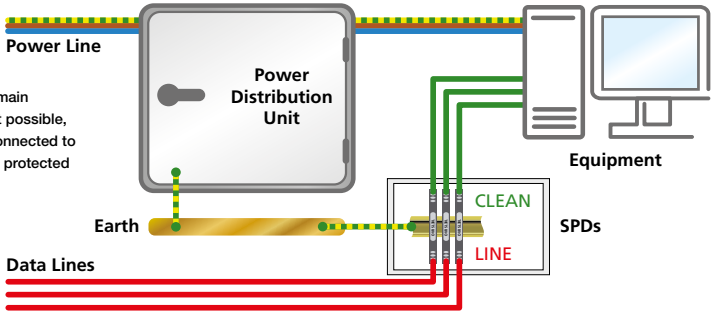
ABB OVR Slim Line LED SPDs give a continuous visual display of their status, via a top-mounted green LED*, as follows:

Green LED = Full protection, power on. Illuminated

No light from LED = NO PROTECTION/FAULT
Check power supply, fuses and connections. Replace module if fault remains.

* LED units designed for use on low current DC power supplies operate only on currents > 3 mA.

Figure 6:
If connection to the main electrical earth is not possible, OVR SPDs can be connected to the earth local to the protected equipment.



3.9 Maintenance/Spares

In the unlikely event of a failure, replacement modules are available, contact ABB sales on **+44 (0)115 964 3700**.

If a replacement module is required please quote part number with a suffix /M (e.g. a replacement module for an OVR SL30 SPD would be OVR SL30/M).

OVR SPDs contain no user serviceable parts and must be replaced with equivalent genuine ABB modules.

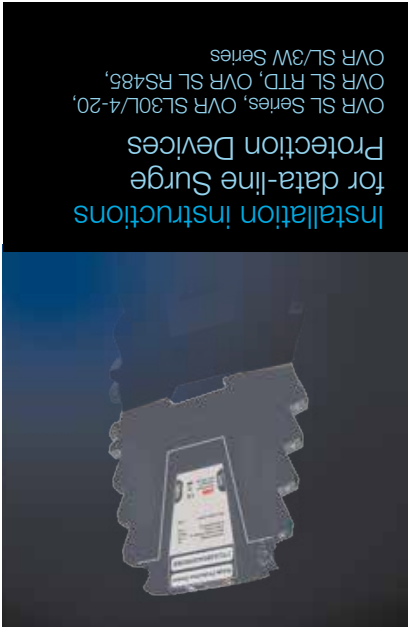
The modules can easily be removed by pressing in the release button and pulling the module away from the base.

The module is keyed to prevent it being inserted the wrong way around.

3.10 Insulation/Flash testing

When the surge protection module is fitted, OVR SL Series SPDs will not meet the 500 V insulation requirements to earth.

The OVR SPD module should therefore be disconnected before insulation testing.



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