

Surge Protection and Solar PV Installations

The number of solar PV installations is on the rise, with consumers wanting to reduce energy prices and the industry moving towards more of a prosumer approach to energy use. One of the aspects of PV system design, that is often overlooked, is surge protection.

BS7671:2018 regulation 712.443.101 states that where protection against transient overvoltage is required by section 443, such protection shall also be applied to the DC side of the PV installation. So, if the solar installation is on the roof of a building where the regulations in section 443 require SPD's to be installed, SPDs would now also need to be installed on the DC side of the installation to protect the inverter.

Another consideration is that the inverter will only ever include a Type 2 surge protection device, so if the building has an external lightning protection system, then the installation will always require the use of external Type 1 SPDs to conform to BS EN 62305.

From experience, there are not many installations that correctly conform to these separation distances, so as a general rule, if the building has an LPS a Type 1 SPD should be installed on the DC side of the installation. For all other PV systems, a Type 2 SPD will provide adequate protection.

Selection of a PV SPD is quite simple. From the above, you should know what type of SPD you need. The only other information needed is the operating capacity of the inverter, which is usually 600V or 1000V. There are some specialist systems which are different, and there are devices available for those too, but for simplicity we will stick with the 600V & 1000V options. That gives four options of devices.

Now we have the correct device selected, we can move on to installation. As with our AC SPDs, our DC SPDs are installed in parallel with the string, usually a DC isolator would be used. DC SPDs should be installed one per string to provide protection, although in some situations, it may be possible to protect multiple strings with one SPD, depending on the installation design.



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