**Surge Protection for Domestic Installations & BS 7671:2018 Amendment 2**

Surge protection has become a buzz word in the electrical industry, it has steadily grown in popularity since the release of the 18th edition of the wiring regulations was released. However, what has always been a grey area, is the application of surge protection in domestic installations, hopefully this article will help!

**What is surge protection?**

A surge protection device is a device designed to divert excess voltage to earth, away from sensitive electrical equipment. Unlike MCBs & RCBOs, SPDs are designed in a way that they do not cut the power supply, instead protect electrical equipment without causing disruption to the installation.

**Why is surge protection relevant for the domestic sector?**

With the ever-increasing amount of sensitive technology we use in our homes, overvoltage protection is more necessary than ever. The equipment we now use daily contains components with extremely low withstand capabilities, unlike the larger components used in older technology. Surge protection provides protection for this sensitive equipment.


**I have seen a few types of surge arresters; how do I know which one I need?**

This is quite simple in a domestic installation as most homes will require type 2 devices, however, if the installation is fed via an overhead supply, the SPD should be a type 1 device, which is designed to protect against direct lightning strikes to the network.

**What else do I need to consider before selecting a surge device?**

The only other relevant factor in the selection of a device for a domestic installation, is the earthing system at the property. If the property has a TT earth, it is important that the SPD is designed specifically for use on TT systems, due to the internal configuration of the SPD.

**The regulations:**

The publication of amendment 2 of the 18th edition actually makes the regulations around the installation of surge protection in domestic installations much simpler. Firstly, the risk assessment has been removed, meaning that no calculations will have to be completed. Also, there are no caveats for domestic installations, so the regulations apply to all electrical installations.

*Regulation 443.4.1*

*Protection against transient overvoltages shall be provided where the consequence caused by overvoltage could:*

i. *Result in serious injury to, or loss of human life, or*
ii. *Result in failure of a safety service, as defined in part 2, or*
iii. *Result in significant financial loss or data loss*

*For all other cases SPDs shall be fitted to protect against transient overvoltages, unless the owner of the installation declines such protection and wishes to accept the risk of damage to both wiring and equipment as tolerable.*

The requirement to install SPDs where the consequences could result in the failure of a safety service as defined in part 2, is where the big change will occur for domestic installations.

BS 7671 defines safety services as:

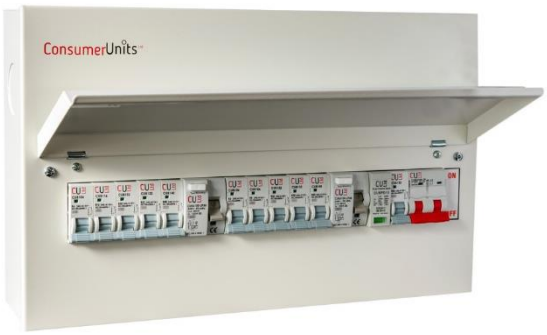
*"An electrical system for electrical equipment provided to protect or warn persons in the event of a hazard, or essential to their evacuation from a location"*

This will mean that any distribution board supplying electrical equipment that would fall in to the definition of a safety service, as described above, will require an SPD. Therefore, now that domestic installations are not exempt from these requirements, a smoke alarm that is supplied from a consumer unit, rather than a battery, must be protected by an SPD.

BS 5839-6:2019 required all rented properties to have grade D1 fire protection systems installed along with sheltered housing and new build owned properties. D1 systems are mains powered smoke detectors with a battery backup. The new requirements in section 443 of BS7671:2018 will mean that all of these installations will now require an SPD to be installed when there is an update or addition to the electrical system, such as the installation of a new consumer unit.

**How to install an SPD**

For a type 2 SPD the easiest installation method would be to install the SPD inside the consumer unit in a spare way. This will ensure that the cable lengths meet the requirements of being under 1 meter as described in section 534 of the wiring regulations.




Surge protection devices can be installed within any brand consumer unit as according the BS EN 61439 items, such as contactors which are protected from any short circuit issues by OCPDs, do not need to be tested by the manufacturer. SPDs are installed with parallel connections from an OCPD, such as an MCB, which will protect the SPD from any issues in the consumer unit. So therefore, providing the OCPD has been verified by the manufacturer, there is no reason that the SPD should not be installed inside of the consumer unit.

The installation of an SPD is simple, a live connection from an OCPD, a neutral connection to the neutral bar and an earth connection to the closest earth. This SPD will then provide protection to the entire consumer unit.

I hope this article has provided some guidance on the requirements from BS 7671:2018 amendment 2, if you have any further questions, or would like to participate in any of our free CPD sessions, please do not hesitate to get in touch.

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