

## Are you prepared for the latest 'Surge' in Standards?

PD Devices are a specialist designer and manufacturer of Surge Protection Devices (SPD's) and Transient Voltage Surge Suppression (TVSS), and supply a wide range of products and custom-designed solutions to protect against damage from lightning and transient over-voltages. Our extensive range provides a co-ordinated system for total site protection, and is designed to provide comprehensive protection at a reasonable cost, beginning where power, data, and telecom lines enter a building, through to special devices for extremely sensitive or critical equipment. Protection products and components are designed and manufactured to meet the requirements of BS EN 62305-4:2006, BS EN 61643-11/12, and BS EN 61643-21/22.

Transients can create huge potential losses from corrupted data and software, equipment failure and structural damage caused by the secondary effects of lightning strikes, or the switching of electrical inductive or capacitive loads, for example transformer switching, and factory equipment such as Arc Welders, Lifts, Air Conditioning, Photocopiers and refrigeration equipment.

Most electronic systems and equipment connected to the AC mains supply, telecom and datalines, are at risk from the damaging effects of surges or transient over voltages, and £M's of electronic equipment is destroyed within buildings every year by lightning or other surge phenomena.



Lightning Protection Systems (LPS), are designed to safeguard lives and buildings, and it should be understood, that a Faraday cage does NOT prevent transient over voltages from damaging electronic equipment within the structure. The LPS needs to be supported with TVSS or SPD's, and the recognised importance of surge protection to lives, buildings and equipment, has resulted in the preparation of the extensive documentation described in the following pages.



**BS6651:1999 Annex C** - UK Standard Prior to August 2008 -The BSI “Code of Practice for Protection Against Lightning” provides general advice on the protection of electronic equipment, and was replaced in August 2008 by **BS EN 62305-1 to BS EN 62305-5:2006**, although as BS6651:1999 is so well established, it is probable that it will still be referred to as a reference source.

**BS EN 62305-4:2006** – ‘Protection against lightning - Electrical and electronic systems within structures’ addresses the need to provide a surge protection system, and has been complimented by the addition of BSI document **BIP2118** – “Protection Against Lightning - A UK guide to the practical application of BS EN 62305” For the selection, installation and testing requirements for telecommunication and signalling systems SPD’s, BS EN 62305-4 refers the reader to BS EN 61643-21 and BS EN 61643-22.

**BIP2118** - Protection Against Lightning - A UK guide to the practical application of BS EN 62305. The Risk Assessment to establish the requirement asks the following questions, where is the building geographically situated, Overhead or Underground power feed, is a Lightning Protection System (LPS) fitted. Are other services bonded to the “Equipotential Earth Bar” & what type of materials have been used [metallic pipes Gas, Water etc.].

With this information it is possible to determine what kA rating if any, is required for the Type 1, Test Class 1 10/350µs Protector, **however whatever the answer is to the above, an 8/20µs Surge Protector will still be required to protect the Sensitive Electronic Equipment.**

**BS7671:2008 - IEE Wiring Regulations 17th Edition - Section 443** Protection Against Overvoltages Of Atmospheric Origin or Due To Switching.

This section deals with protection of electrical installations against transient overvoltages of atmospheric origin transmitted by the supply distribution system and against switching overvoltages generated by the equipment within the installation.

According to BS7671:2008, the use of surge protection may be based on a risk assessment method, however if there is a risk or consequence to human life, public services, IT centres, commercial or industrial activity, e.g, hotels, banks etc. **SPD’s at the entrance of the installation are required**, and there is no need to perform the risk assessment, as this calculation always leads to the result that the protection is required. These levels directly correspond with those detailed in BS EN 61643-12.

## BS 7671:2008 Incorporating Amendment No 1: 2011 - Requirements for Electrical Installations: IET Wiring Regulations

BS 7671:2008 Incorporating Amendment No 1: 2011 - Requirements for Electrical Installations: IET Wiring Regulations, published in July 2011, replaces: BS 7671:2008. The newly revised BS 7671 will affect all new installations as of 1st January 2012.

BS 7671 (The IET Wiring Regulations) is the national standard to which all domestic and industrial wiring must conform. The newly amended BS 7671 includes a large number of changes from the original 2008 document and has 70% of new content.

Amendments to BS 7671:2008 now incorporated into '**BS 7671:2008 Incorporating Amendment No 1: 2011 - Requirements for Electrical Installations: IET Wiring Regulations**' include those to **Chapter 53**, which now contains a new Section 534 'Devices for protection against overvoltage', which deals with the installation of surge protective devices (SPD). The requirements of Section 534 are for the selection and erection of SPDs for electrical installations of buildings in order to limit transient overvoltages of atmospheric origin transmitted via the supply distribution system and against switching overvoltages. The requirements are also intended to protect against transient overvoltages caused by direct lightning strikes or lightning strikes in the vicinity of buildings protected by a lightning protection system (LPS). The requirements do not take into account surge protective components, which may be incorporated in the appliances connected to the installation.



**BS EN 61643-11/12** (Worldwide Standard) - Comprehensive globally accepted surge protection standards for the performance of surge protection devices.

According to BS EN61643-12, the use of surge protection may be based on a risk assessment method, however in situations where full analysis is too complex, simplified methods, based on IEC61662 (former version of IEC62305-2), may be used. The simplified method...is as follows, and there are basically two cases:

Where an installation is supplied by or includes an overhead line and there are more than 2,24 flashes per Km<sup>2</sup> a year, SPDs at the entrance of the installation shall be provided.

Where one of the above conditions (less than 2,24 flashes per km<sup>2</sup> a year or underground cables) is not fulfilled, there are different levels of consequences to consider. These risk or consequence have the same content as those detailed in the IEE Wiring Regulations 17th edition, and where risk is identified to human life, e.g. safety services, medical equipment in hospitals, public services, e.g. loss of public services, IT centres, museums, commercial or industry activity, e.g. hotels, banks, industries, commercial markets, or farms, then **SPDs at the entrance of the installation are required**. There is therefore no need to perform a risk assessment calculation for these levels of consequence, because this calculation always leads to the result that the protection is required.



**BS EN61643-21/22** - Surge protective devices connected to telecommunications and signalling networks performance requirements and testing methods.

The need for protective measures (e.g. protection with SPD's) for IT systems should be based on a risk assessment, considering the probability of overvoltage and overcurrent. ..This takes into account the consequences of the loss of service for the customer and network operator, the importance of the system (e.g. hospitals, traffic control), the electromagnetic environment at the particular site (probability of damage) and cost related to repair.



To find out more about our extensive range of Surge Protection Devices (SPD's) and Transient Voltage Surge Suppression (TVSS), please contact our sales team on **01364 649248** or visit **<http://www.pddevices.co.uk>**

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**<http://electrical.theiet.org/> and the BSI online shop: <http://shop.bsigroup.com>**

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