

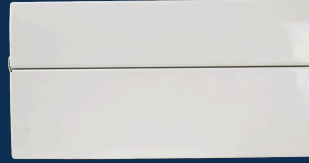


Requirements for overvoltage protection BS 7671:2018

# 18th Edition IET Wiring Regulations



## 18th Edition Decision Tree clause number 443.4



### Scenario 1

**Surge Protection must be provided**

Surge protection must be provided where overvoltage could:

- Cause serious injury/loss of life
- Cause interruption of public services
- Cause damage to cultural heritage
- Cause interruption to commercial/ industrial activity
- Affect a large number of co-located individuals

### Scenario 2

**All other cases**

A risk assessment must be performed to determine if surge protection is needed

If no risk assessment is carried out **surge protection must be provided**

If a risk assessment is carried out:

A. Risk assessment valuation more than 1000, **no need for surge protection**

B. Risk level evaluation less than 1000, **surge protection must be fitted**

### Scenario 3

**With the exception of single dwelling (domestic) units**

Surge Protection may be required in single dwelling (domestic) units:

- Designer/installer establishes what the customer requires.
- They look at the perceived value of the installation and equipment within the dwelling

Installed value does not warrant surge protection - **no need to fit**

Installed value warrants surge protection

**Mandatory to fit protection devices against transient voltages**

See Section 534 of BS 7671 to establish the selection of SPD's for protection against transient overvoltages where required by section 443.

# Surge Protection

## 18th Edition Explained



The **18th Edition** IET Wiring Regulations BS7671 were published in July 2018 and came into effect on 1st January 2019. These detail several new requirements for electrical installations.



The Regulations apply to the design, erection and verification of electrical installations and also to additions and alterations to existing installations. It is important to note that some installations may have been installed to the standards of the previous Regulations, and therefore may not comply with the new regulations edition, but may not need to be upgraded.

The three key changes affecting electrical contractors are as follows:

**Chapter 42: Protection Against Thermal Effects - Section 421.1.7 Arc Fault Detection devices**

**Chapter 44: Protection Against Transient Overvoltages of Atmospheric Origin or Due to Switching - Section 443.4 Overvoltage Control**

**Chapter 53: Protection, Isolation, Switching Control And Monitoring – 531.3.3 Types of RCD 531.3.2 Unwanted Tripping**

### Clause 531.3.3 – Types of RCD

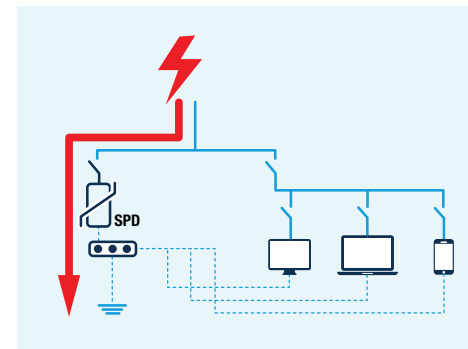
Different types of RCD exist, depending on their behaviour in the presence of DC components/frequencies. An appropriate RCD should be selected from the following:

- Type AC** – Sinusoidal alternative currents - general use
- Type A** – As above and pulsating DC residual current
- Type F** – As above and protection where single phase VSD could be used
- Type B** – Three phase rectifier & PV systems and also complies with the requirements of types F, A and AC.

It is worth paying attention to note 3 of Clause 531.3.3 as it states: For general purposes Type AC RCD's may be used.

**Type A RCD's are not a regulation requirement in BS7671. Please refer to Section 7 of the Wiring Regulations on specialist locations.**

# The basics of Surge Protection Devices



Operating Diagram

## What you need to know...

### Principle of Surge Protection Operation

SPD's are designed to limit transient overvoltage due to lightning or switching. They divert the associated surge currents to earth, so as to limit these overvoltages to a level that is unlikely to damage the electrical installation or equipment.

### A Surge Protection Device (SPD's)

A component of the electrical installation protection system. This device is connected to the power supply in parallel with the loads (circuits) that it is intended to protect. It can also be used at all levels of the power supply network. This is the most commonly used and most practical type of over voltage protection.



## Benefits of using a surge protection device (SPD)

- Prevents loss of human life
- Prevents damage from (LEMP) Lightning electromagnetic pulse
- Prevents fire
- Protects sensitive electronic equipment (TV's, Computers etc)
- Protects the internal/external wiring infrastructure of the building
- Prevents unnecessary disruption

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