

# EUROPA

18th Edition  
Essential Solutions



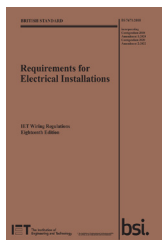
IET Wiring Regulations Pocket Guide  
18th Edition BS7671 : 2018 + A2 : 2022

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## IET Wiring Regulations

### 18th Edition BS7671 : 2018 **Amendment 2**

Issue Date March 28th 2022



Amendment 2 of the IET wiring regulations for electrical installations was issued on 28th March 2022 with the option for all A2 updates to be implemented with immediate effect.

BS7671:2018+A1:2020 remained in place until its withdrawal on the 27th September 2022.

The new changes introduce requirements for AFDDs, updated requirements for fire safety building designs and a new chapter on Prosumer's Low Voltage Electrical Installations.

#### **Key updates and changes:**

A new requirement for Arc Fault Detection Devices (AFDDs) in some AC final circuits for installations in certain higher risk residential buildings.

The requirement for the fire safety design of buildings to be documented where specific conditions of external influence exist, such as protected escape routes and locations with risk of fire.

A method for determining the requirement to provide overvoltage protection.

Changes to identification, labels and notices, for consumer units, affecting how safety information is provided to the user of the electrical installation.

A chapter on Prosumer's Low Voltage Electrical Installations, in a new part, Part 8. The regulations apply to the design, erection and verification of electrical installations, also additions and alterations to existing installations.

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## RCD Protection of Socket-Outlets

### Additional Requirements for Socket-Outlets 411.3.3

AC systems now require additional protection via an RCD with a rated residual operating current not exceeding 30mA.

As detailed in 411.3, this requirement applies to:

- 1) Socket outlets with a rated current not exceeding 32A in locations where they are liable to be used by persons of capability BA1, BA3 or children (BA2,BA3)
- 2) Socket-outlets with a rated current not exceeding 32A in other locations
- 3) Mobile equipment with a rated current not exceeding 32A for use outside

There is an exception to omit RCD protection where, other than for dwellings, a documented risk assessment determines that RCD protection is not necessary. The assessment must be completed by an electrically skilled person.

(Key : BA1: Ordinary persons | BA2: Children | BA3: Disabled persons)



## Different Residual Current Devices

RCD is a generic term for devices that are designed to provide protection against electrocution or electrical fires by disconnecting the electricity automatically when it senses a 'leakage' (residual current) from a circuit.

**RCCB** - Residual Current Operated Circuit-Breaker without Integral Overcurrent protection to BS EN 61008

Provides residual current protection but must be used with an overcurrent protective device such as a fuse or circuit breaker.

**RCBO** - Residual Current Operated Circuit-Breaker with Integral Overcurrent protection to BS EN 61009


Provides residual current protection as well as protection against overloads and/or short-circuits.

**CBR** - Circuit-Breaker incorporating Residual Current protection to BS EN 60947-2. A circuit-breaker providing overcurrent protection and incorporating residual current protection.


**SRCD** - Socket-Outlet incorporating a Residual Current Device to BS7288  
A socket-outlet for fixed installations incorporating an integral residual current protection.

**FCURCD** - Fused Connection Unit incorporating a Residual Current Device to BS7288. A fused connection unit for fixed installations incorporating an integral residual current protection.


Type AC



Type A



Type B



### RCD Symbols

Type A RCDs can be used for Type AC applications.

Type B RCDs can be used for Type AC, A & F applications.

## Regulation 421.1.7

Protection against fire caused by electrical equipment

### Arc Fault Detection Devices (AFDD)



A new regulation 421.17 has been introduced recommending the installation of arc fault detection devices (AFDD'S) to mitigate the risk of fire in AC final circuits of a fixed installation due to the effects of arc fault currents.

Arc fault detection devices conforming to BS EN 62606 shall be provided for single-phase AC final circuits supplying socket-outlets with a rated current not exceeding 32A in:

- Higher Risk Residential Buildings (HRRB) those over 18m in height or in excess of six storeys, whichever criteria is met first
- Houses in Multiple Occupation (HMO)
- Purpose-built student accommodation
- Care homes

For all other premises, the regulation recommends AFDDs for single-phase AC final circuits supplying socket outlets not exceeding 32A.

### What is an Arc?

An arc occurs as an electrical current jumps the gap between two conductive elements.

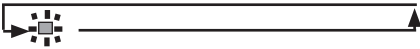
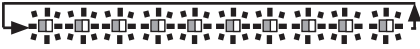
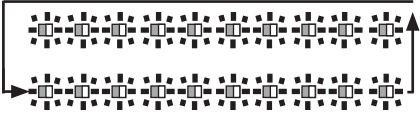

### What are the Potential Causes of Arc Faults?

Common causes: loose connections | bends or breaks in the cable | damage to cable insulation (e.g. rodent gnawing) | drilling damage | frequent or heavy handed overuse of cables and many more.



## How does an AFDD work?

An AFDD is a protective device that detects electrical arcing faults that MCBs, RCCBs and RCBOs cannot. The AFDD identifies any potential arcs on the circuit, shutting it down to prevent a potential fire. Microprocessor technology examines the waveform of the electricity in the circuit to pick up any anomalies that could pose a threat. Type A AFDD devices are suitable for use on both AC and pulsating DC circuits. The built in LED indicator helps to easily identify faults.

LED indication after tripping and re-closing	Description of fault cause
<p>Steady red light</p> 	RCBO overcurrent fault or Residual current fault
<p>1 blink / sec (total 10 sec)</p> 	Series arcing fault or Parallel arcing fault
<p>2 blinks / sec (total 10 sec)</p> 	Overvoltage fault ( $U > 275V_{ac}$ )
<p>5 blinks / sec (continuous blinking)</p> 	AFDD internal self-test fault

## Europa AFDDs with Integrated Type A RCBO

- BS EN 62606, BS EN 61009-1
- Rated Voltage  $U_e$  230V AC | Rated Frequency 50/60Hz |
- Rated Tripping Current  $I_{\Delta n}$  30mA
- Terminal Capacity (In) 16 mm<sup>2</sup> | Terminal Capacity (Out) 10 mm<sup>2</sup>



B Curve Part Number	C Curve Part Number	(Type A) Description
EUBAFD6B30	EUBAFD6C30	6kA 6A 30mA
EUBAFD10B30	EUBAFD10C30	6kA 10A 30mA
EUBAFD16B30	EUBAFD16C30	6kA 16A 30mA
EUBAFD20B30	EUBAFD20C30	6kA 20A 30mA
EUBAFD25B30	EUBAFD25C30	6kA 25A 30mA
EUBAFD32B30	EUBAFD32C30	6kA 32A 30mA
EUBAFD40B30	EUBAFD40C30	6kA 40A 30mA



## Fire Safety | Escape Routes: 422.1

The definition of what is deemed to be a protected escape route in the event of a fire has been introduced under section 422.1. A route enclosed with specified fire-resisting construction designated for escape to a place of safety in the event of an emergency.

Previously BS 7671 referred to escape routes in general, however only a protected escape route will be designed to last for a specified period of time. The new regulation stipulates that cables and electrical equipment must not be installed in a designated escape route unless they are part of:

- 1) An essential fire safety or related safety system
- 2) General lighting
- 3) Socket-outlets required for maintenance

## Surge Protection 443.4.1

Regulation 443.4.1 now requires protection against transient overvoltages (SPD) to be provided where the consequence caused by the overvoltage could result in:

- Serious injury to, or loss of, human life
- Failure of a safety service (may include smoke detectors in domestic premises)
- Significant financial or data loss

For all other cases, protection against transient overvoltages (SPD) shall be provided unless the owner of the installation declares it is not required. This could be due to their opinion that any loss or damage is negligible, accepting the risk of damage to equipment and any consequential losses. Essentially, all TPN boards and consumer units must be fitted with a SPD. Europa offer a range of TPN boards and consumer units with the SPD fitted, and numerous solutions to meet the requirements of this chapter.



## Surge Protection Device Type 2 for TT / TN

Part Number	Description
AUSP-40J/1+1	SPD Single Module Type 2 TT/TN

- BS EN 61643-11
- System Voltage 230V
- Max. Continuous Operation AC Voltage 275V (L-N) | 255V (N-PE)
- Nominal Discharge Current  $I_n$  20kA
- Maximum Discharge Current  $I_{max}$  40kA
- Voltage Protection Level UP 1.5kV (L-N) | 1.2kV
- Status Indicator Green (Normal State) | Red (Failure State)
- Mounting 35mm DIN Rail
- Terminal Capacity 2.5mm<sup>2</sup> (L/N) | 4mm<sup>2</sup> (PE)
- Degree of Protection IP20
- Alarm contact included (Volt free 1 NO / 1NC)

Sentinel Consumer Units with Pre-fitted Type 2 Surge Protection and 100A Main Switch, fully populated versions also available.



Surge Protection Devices: Single Phase | Retro Fit

## Identification and labelling: 514

Increasingly, consumer units are being installed in areas of clear visibility and access for the homeowner or user.

Under **Amendment 2** the requirements for warning and / or instruction labelling in domestic and similar installations has been significantly reduced. These labels are no longer required, replaced instead with a handover pack.

Labels will still be required for non-dwelling installations, and to identify an alternate power supply.

Every Sentinel Consumer Unit supplied by Europa comes with the option to create a free CertOn HUB account.

CertOn, is a paperless document management system, bringing all important property related documents into one easy-to-access portal using a mobile device without the need to carry and store paperwork.

Simply scan the QR code with the CertOn app to view the property and upload documentation and provide assurance to all concerned.

It is the duty of those responsible to put in place and maintain a Golden Thread of reliable, up to date, transparent and easily accessible information. With CertOn, you can do this and manage buildings safely.





## Solar Photovoltaic (PV) Systems

**Section 712** has been extensively re-written and expanded with more detail.

There is an increase in demand for photovoltaic systems and supporting products required for their installation and maintenance.

## Electric Vehicles

### Section 722

Section 722 relating to electric vehicle charging installations features minor changes.

This is however a huge growth area.

Please contact Europa for details of our Photovoltaic and Electric Vehicle charging solutions.



## All New: Part 8

### Prosumer's Low Voltage Electrical Installations

This is an entirely new chapter relating to prosumer's low voltage electrical installations.

By definition a prosumer is an individual who both produces and consumes, in this case, electrical energy.

The Prosumers Electrical Installation (P.E.I.) is defined as a low-voltage electrical installation.

The chapter outlines requirements for the design and implementation of low voltage electrical installations including consideration of local production and storage of energy.

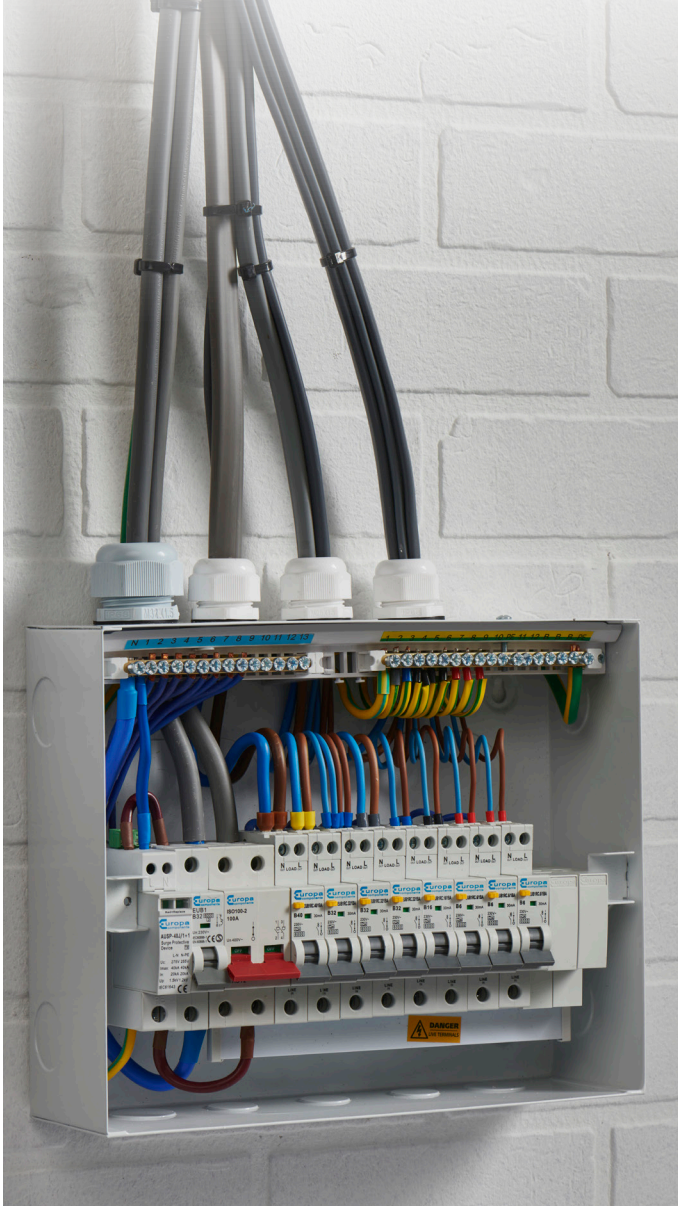
For example:

- Local power supply, photovoltaic panels or wind turbines
- Local storage units, batteries

With more efficient systems developing incorporating smart technology this is another area where growth and innovation will continue to flourish.



## Overview of 18th Edition Solutions Available from Europa



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### Main Switch Boards | c/w 100A Main Switch Incomer + 2 Blanks

- Board BS EN 61439-3
- Main Switch BS EN 60947-3
- IP20
- Incoming Isolator capacity: 35mm<sup>2</sup>



### RCCB Boards | c/w 80A 2 Pole Type A RCCB

- Board BS EN 61439-3
- RCCBs BS EN 61008-1
- IP20
- RCCB Terminal Capacity 25mm<sup>2</sup>



### Dual RCCB Boards | c/w 100A Main Switch Incomer + 2 80A RCCBs Type A + 2 Blanks

- Board BS EN 61439-3
- Main Switch BS EN 60947-3
- Terminal Capacity: 35mm<sup>2</sup>
- RCCBs BS EN 61008-1
- Terminal Capacity 25mm<sup>2</sup>
- IP20



### Compact Garage Unit

- MCBs BS EN 60898-1
- Terminal Capacity 25mm<sup>2</sup>
- RCCBs BS EN 61008-1
- Terminal Capacity 25mm<sup>2</sup>
- Type A RCCB
- IP20



## Double Stacked Dual RCCB Boards | c/w 100A Main Switch Incomer + 2 80A RCCBs Type A + 2 Blanks

- Board BS EN 61439-3
- Main Switch BS EN 60947-3  
Terminal Capacity: 35mm<sup>2</sup>
- RCCBs BS EN 61008-1  
Terminal Capacity 25mm<sup>2</sup>
- IP20



## Dual RCCB with MCCB Fully Loaded Boards



- Board BS EN 61439-3
- MCBs BS EN 60898-1 | Terminal Capacity 25mm<sup>2</sup>
- Main Switch BS EN 60947-3 | Terminal Capacity: 35mm<sup>2</sup>
- RCCBs BS EN 61008-1 | Terminal Capacity 25mm<sup>2</sup>
- IP20

## Empty Consumer Units | Bespoke Build Options



Retro fit lockable Lid



## SPD Options Available





## 125A 3 Phase Distribution Boards

- Distribution Board BS EN 61439-3
- MCBs BS EN 60898-1
- RCCBs BS EN 61008-1
- RCBOs BS EN 61009-1
- Main Switch BS EN 60947-3
- IP20 rated incomer & neutral bar connections
- 125A 4 pole main switch / isolator fitted as standard
- Robust epoxy coated steel enclosure (RAL7035)
- Accommodates either 6kA or 10kA Europa MCBs & RCBOs (not to be mixed)
- Incoming isolator capacity: 50mm<sup>2</sup>



## 125A 3 Phase Distribution Boards with Surge Protection

Type 1/2 SPD Part Number 83120139  
Earthing System TT/TN (3P+N)

- Un [VAC] 415
- Iimp (10/350) [kA] 12.5 (L-N) 50 (N-PE)
- I<sub>max</sub> (8/20) [kA] 50 | I<sub>n</sub> (8/20) [kA] 20
- Up@I<sub>n</sub> (8/20) [KV] ≤ 1.30 (L-N) ≤ 1.5 (N-PE)
- Cartridge Part No. (L) 83120002 | Cartridge Part No. (N) 83120006



Type 2 SPD Part Number 83020147  
Earthing System TT/TN (3P+N)

- Un [VAC] 415
- I<sub>max</sub> (8/20) [kA] 40 | I<sub>n</sub> (8/20) [kA] 20
- Up@I<sub>n</sub> (8/20) [KV] ≤ 1.30 (L-N) ≤ 1.5 (N-PE)
- Cartridge Part No. (L) 83020002 | Cartridge Part No. (N) 83020000



## 250A 3 Phase Distribution Boards



- BS EN 61439-3
- Type B Board
- Rated Current ( $I_n$ ) 200A (8-way only), 250A
- Rated Condition Short Circuit Current ( $I_{cc}$ ) 25kA
- Rated Operational Voltage ( $U_e$ ) AC 400V
- Rated Insulation Voltage ( $U_i$ ) 690V
- Rated impulse withstand Voltage ( $U_{imp}$ ) 8kV
- Rated Frequency ( $f$ ) 50Hz
- Number of Poles 3 Phase + N + PE
- Humidity Not exceeding 50% at 40°C and 90% at 20°C
- Rated Pollution Degree 3
- Rated Mechanical Impact Protection Degree IK10
- Rated Protection Degree IP30
- Rated Diversity Factor for Outgoing Devices ( $n$ )\* 0.6 (8-Way)  
0.5 (12 to 24-Way) as per Table 101 of BS EN 61439-3

## Technical Support and Bespoke Builds



# Advice available at very stage from product selection to installation...

Our enthusiastic and capable technical team provides an invaluable resource for the correct selection, installation and operation of our diverse range of products.

A dedicated technical Email address enables you to send through supporting information such as images and specification sheets with your enquiry.

As part of our commitment to customer support we also offer a range of product training solutions, for further details, please email [technical@europa-plc.com](mailto:technical@europa-plc.com).

Our in-house team of expert product technicians are dedicated to delivering a speedy response to unique bespoke requirements and special product builds projects. From individual to large quantity consignments the team can also provide advice for urgent on-site requirements and additional product & technical support.

Continuous development of our technical & production expertise ensures we can easily provide a diverse selection of bespoke products. Built to your specific requirements or with our flexible approach, we can design total commissioned solutions to suit any requests.

There is also the option to adapt many of our current in-stock products to provide a speedy and unique service for any urgent situation. The Bespoke Build Service provides the perfect solution for all of your application requirements. Our Technical Team will help & advise you through every stage of the process to ensure you find the perfect solution for your application.

## Useful Contact Information



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## Notes

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