

Requirements for Electrical Installations

BS 7671:2018 + A2:2022

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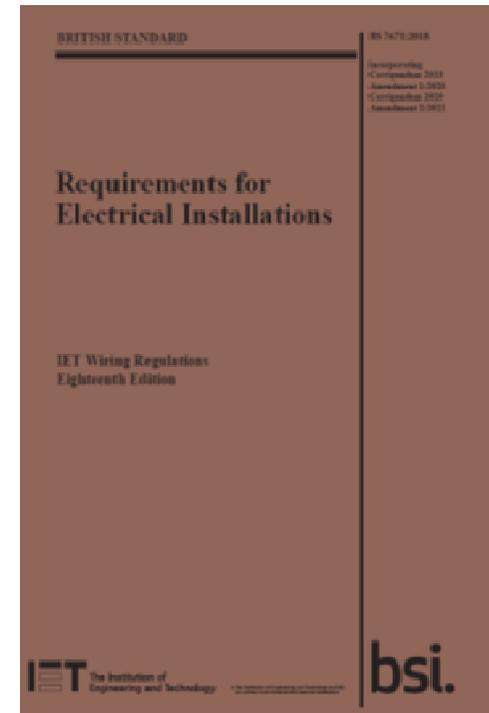
Requirements for Electrical Installations

BS 7671:2018 + A2:2022

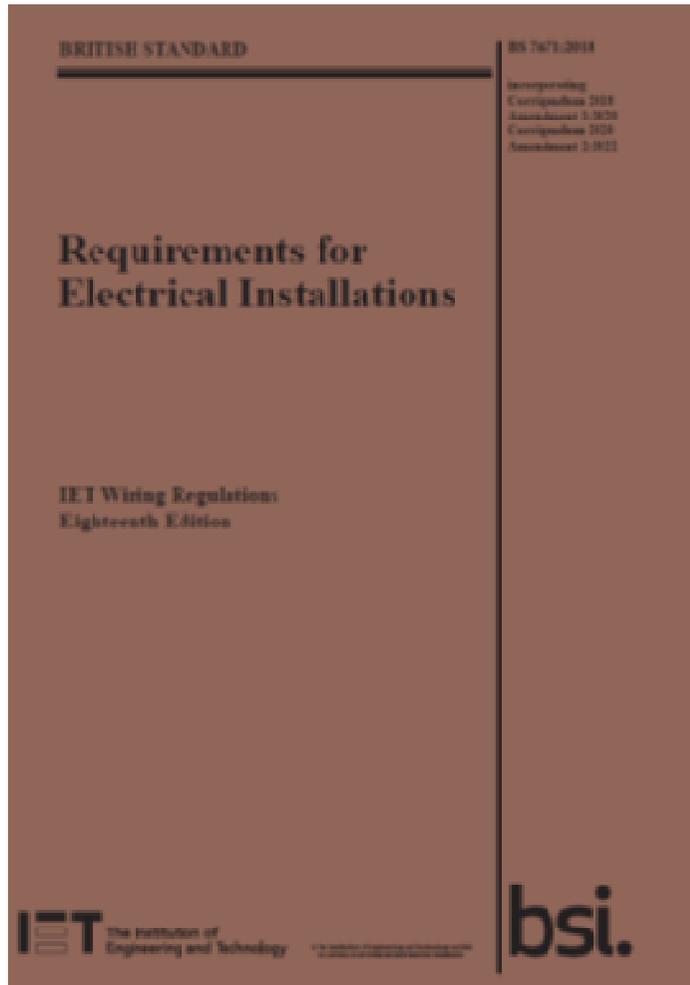
The IET Wiring Regulations

Amendment 2 to BS 7671:2018

The changes from the 18th Edition



BS 7671:2018 + A2:2022



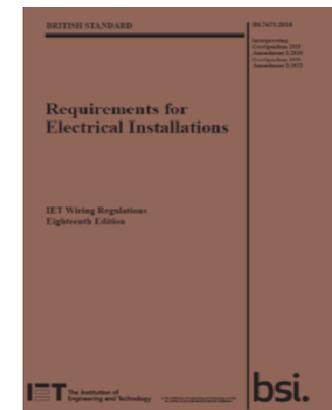
Publication date 28th March 2022

The intention is that this new amendment may be used immediately. The BS 7671:2018 + A1:2020 remains current for installations and will be withdrawn on the 27th September 2022.

There has previously been confusion over the issue or withdrawal of new Regulation documents but the use of a specific document is a matter of contract.

BS 7671:2018 + A2:2022

- The Regulations apply to the design, erection and verification of electrical installations, also additions and alterations to existing installations.
- Existing installations that have been installed in accordance with earlier editions of the Regulations may not comply with this edition in every respect. This does not necessarily mean that they are unsafe for continued use or require upgrading.
- New item “Guidance on the language used within BS 7671”



BS 7671:2018 +A2:2022 - construction

International regulations

International Electrotechnical Commission
(IEC) TC 64 IEC 60364
Separate parts

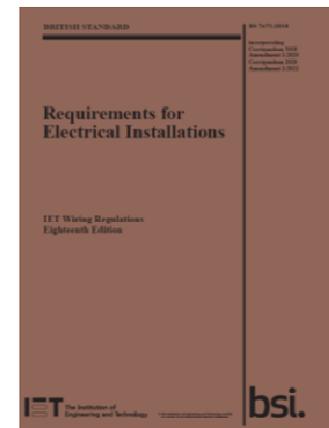


CENELEC (Europe)
TC 64 Harmonised documents (HDs)
Separate parts



Plus UK
"special"
material

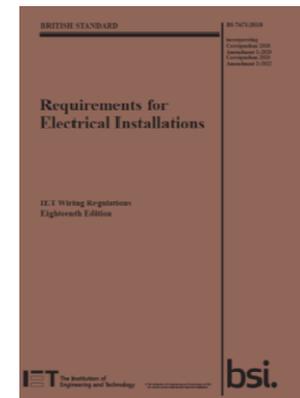
BSi/IET BS 7671
Technical intent of published HDs
Combined document



UK “Special” material

The 17th Edition introduced a new IEC decimal point numbering system for standards. In subsequent editions and amendments 100 and 200 numbers have been used, to indicate material not from the normal IEC standard sources.

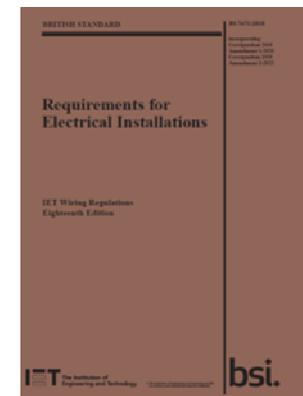
- The 100 numbers represent CENELEC Harmonization Document reference numbers for material not derived from IEC standards.
- The 200 numbers represent UK-only regulations. (Eg 522.6.202 for cables installed in a wall or partition at a depth of less than 50 mm.) (Not a HD requirement and does not conflict with the “technical intent” of the HD).



BS 7671:2018 + A2:2022 - layout

Parts 1 to 8 and 15 appendices (7 and 12 not used)

- Part 1 – Scope, object and fundamental requirements
- Part 2 – Definitions
- Part 3 – Assessment of general characteristics
- Part 4 – Protection for safety
- Part 5 – Selection and erection of equipment
- Part 6 – Inspection and testing
- Part 7 - Special installations or locations
- Part 8 – Functional requirements (NEW!)
- Appendices – 1 normative and 14 informative



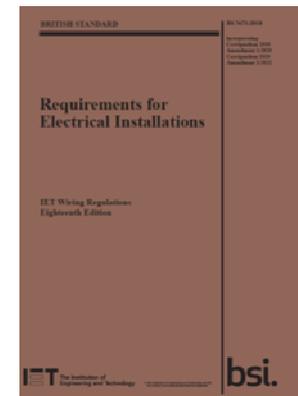
BS 7671:2018 + A2:2022

Parts 1, 2 and 3

No significant amendments currently to Parts 1 and 3 as the IEC document is currently being revised. Some minor changes in Part 1:

- Part 8 included
- ICT used and spelled out for clarity
- Inclusion of ICT cables in installations

Minor changes and additions to the definitions in Part 2 to accommodate new terms and definitions in the other parts of BS 7671.



BS 7671:2018 + A2:2022 – Part 4

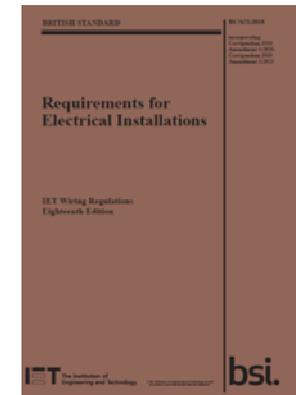
Chapter 41 Protection against electric shock Section 411



411.3.1.2 Text revised for clarity on main bonding where non-metallic pipes enter a building and then connected to metallic pipes within the building, the metallic pipes within the building do not normally require protective bonding as they are unlikely to be extraneous-conductive-parts.

411.3.3 Further requirement added for additional protection for socket-outlets with a rated current not exceeding 32 A in locations where they are liable to be used by persons of capability BA1, BA3 or children (BA2, BA3) (see Appendix 5)

Exception to RCD protection retained for specific socket-outlets in other locations where DOCUMENTED risk assessment shows RCD protection to be unnecessary (not allowed in dwellings).



BS 7671:2018 + A2:2022 – Part 4

Chapter 42 Fire safety amendments – Escape

From informative Appendix 5:

Code A Environment **B** Utilization **C** Construction of buildings

Code	External influences	Characteristics required for selection and erection of equipment
BD	Conditions of evacuation in an emergency	
BD1	Low density / easy exit	Normal Low density occupation, easy conditions of evacuation Buildings of normal or low height used for habitation
BD2	Low density / difficult exit	Low density occupation, difficult conditions of evacuation High-rise buildings
BD3	High density / easy exit	High density occupation, easy conditions of evacuation Locations open to the public (theatres, cinemas, departments stores, etc.)
BD4	High density / difficult exit	High density occupation, difficult conditions of evacuation High-rise buildings open to the public (hotels, hospitals, etc.)

BS 7671:2018 + A2:2022 – Part 4

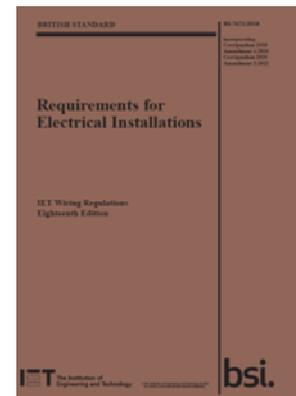
Chapter 42 – Fire safety amendments – Escape (cont)

All buildings in the UK are to comply with building regulations and legislation applicable to their location & use

Electrical installation designers and installers are generally not fire safety experts or fire engineers. It is not for the electrical designer to decide what constitutes a fire risk

To identify building types and specify escape requirements by IEC codes in BS 7671 is not helpful in UK

Reference to BD classifications has been removed

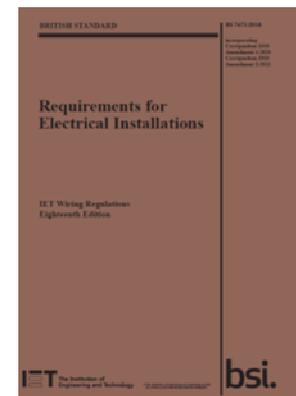


BS 7671:2018 + A2:2022 – Part 4

Chapter 42 – Fire safety amendments – Escape (cont)

Only necessary for BS 7671 to detail the building's electrical requirements for installation designers and installers. Fire safety design of a building and its electrical installation must be made by the whole building design team

Records of the fire safety design provided in a formal fire safety manual as required in Regulation 38 of the Building Regulations 2010

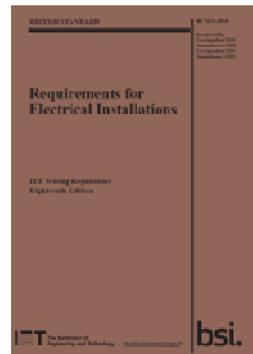
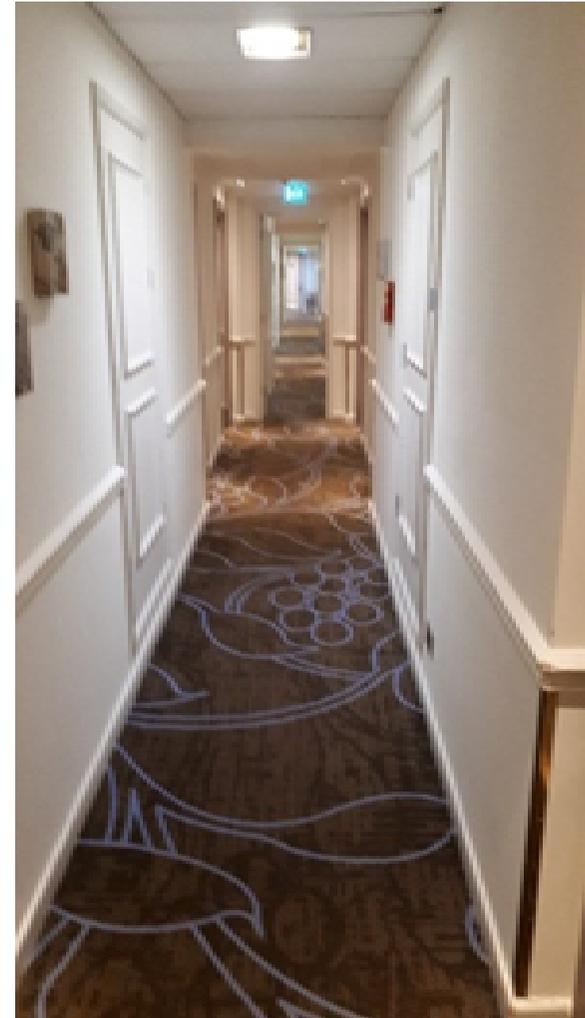


BS 7671:2018 + A2:2022 – Part 4

Chapter 42 – Fire safety amendments – Escape (cont)

Escape routes are understood, but in larger buildings the time for persons to escape may put those escaping in danger before they can exit the building

No specific requirements for fire protection in general local escape routes but limits on their length and the distance of travel.



BS 7671:2018 + A2:2022 – Part 4

Chapter 42 – Fire safety amendments – Escape (cont)

Now specific requirements for “Protected escape routes” in buildings introduced

Stairwells are usually drab unfinished concrete walls and stairs with steel handrails – they are a protected escape route with fire-resistant construction and services



BS 7671:2018 + A2:2022 – Part 4

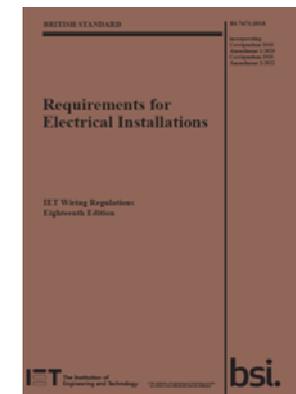
Chapter 42 Protection against thermal effects

421.1.7 AFDDs required to be provided in certain single phase AC final circuits. AFDDs are installed at the origin of the circuit.

- Higher Risk Residential Buildings (HRRB)
- Houses in Multiple Occupation (HMO)
- Purpose-built student accommodation
- Care homes.

For all other premises, the use of AFDDs for AC final circuits supplying socket-outlets not exceeding 32 A is recommended.

(It is anticipated that in many areas higher risk residential buildings will be defined in legislation which can be subject to change over time, as well as in risk management procedures adopted by fire and rescue services. Current legislation must be applied.)



BS 7671:2018 + A2:2022 – Part 4

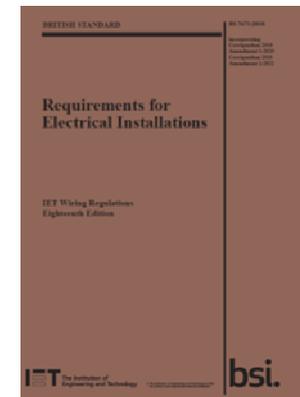
Chapter 43 – Protection against overcurrent No changes.

Chapter 44 - Section 443 Protection against transient overvoltages of atmospheric origin or due to switching

443.4.1 Protection against transient overvoltages due to lightning provided where:

- (a) serious injury/loss of human life
- (b) failure of a safety service, as defined in Part 2
- (c) significant financial or data loss.

For all other cases, protection against transient overvoltages shall be provided unless the owner of the installation declares it is not required due to any loss or damage being tolerable and they accept the risk of damage to equipment and any consequential loss.



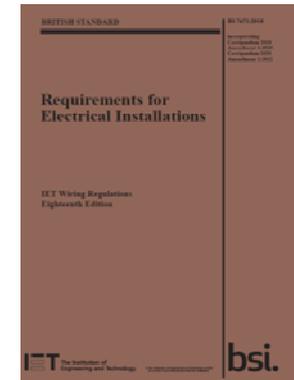
BS 7671:2018 + A2:2022 – Part 4

Section 443 Protection against transient overvoltages of atmospheric origin or due to switching (continued)

443.4.2 Protection against transient overvoltages caused by switching

Protection against overvoltages shall be considered in the case of equipment likely to produce switching overvoltages or disturbances exceeding the applicable rated impulse voltage of equipment according to Table 443.2

443.5 Risk assessment method DELETED from BS 7671 (Calculated Risk Level (CRL) to determine if protection against transient overvoltages of atmospheric origin is required)

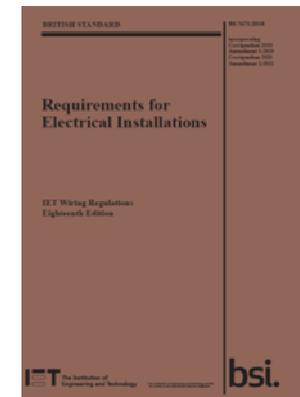


BS 7671:2018 + A2:2022 – Part 4

Still no Chapter 45 – Undervoltage

Chapter 46 Devices for isolation and switching No changes

(This deals with non-automatic local and remote isolation and switching measures for the prevention or removal of dangers associated with electrical installations or electrically powered equipment.)



BS 7671:2018 + A2:2022 – Part 5

Chapter 51 Common rules

Amendments to some DC circuit conductor identification colours and Functional earthing conductor now pink rather than cream

Changes to labelling and label styles – new Appendix 11

Instruction notice now not required by Regulation 514.12.1 for domestic where EIC issued in accordance with Appendix 6

IMPORTANT

This installation should be periodically inspected and tested and a report on its condition obtained, as prescribed in BS 7671 Requirements for Electrical Installations.

Date of last inspection

Recommended date of next inspection

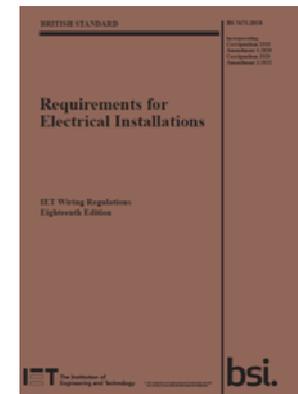
Key:



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White or yellow (background)



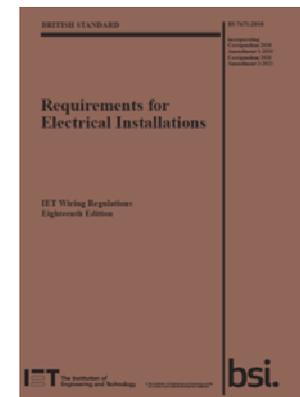
BS 7671:2018 + A2:2022 – Part 5

Chapter 53 Protection, isolation, switching, control and monitoring

RCD Type AC shall only be used to serve fixed equipment, where it is known that the load current contains no DC components.

(Examples of fixed equipment with a load current containing no DC components can include but not be limited to electric heating appliances and/or simple filament lighting, neither containing electronic components)

Amendments also to Table 537.4 for clarity



BS 7671:2018 + A2:2022 – Part 6

Part 6 Inspection and testing

643.3 Insulation resistance testing

500 V DC test of conductors connected to the earthing arrangement during construction

At completion following connection of the equipment, where connected equipment is likely to influence the measurement or result of the test, or be damaged a test at **250 V DC** shall be applied between live conductors and the protective conductor connected to the earthing arrangement



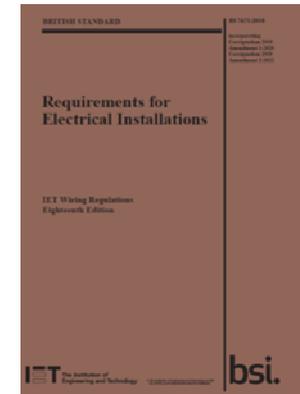
BS 7671:2018 + A2:2022 – Part 6 cont

RCD testing

The effectiveness of automatic disconnection of supply by RCDs is verified using suitable test equipment to confirm that the relevant requirements of Chapter 41 are met, taking into account the operating characteristic of the device.

Regardless of RCD Type, effectiveness is deemed to have been verified where an RCD disconnects within the time stated below with an alternating current test at rated residual operating current ($I_{\Delta n}$):

- For general non-delay type, 300 ms maximum
- For delay 'S' type RCD, between 130 ms minimum and 500 ms maximum.



BS 7671:2018 + A2:2022 – Part 7 items

Not all Special Locations Sections amendments are noted

Sections 701, 702 and 703

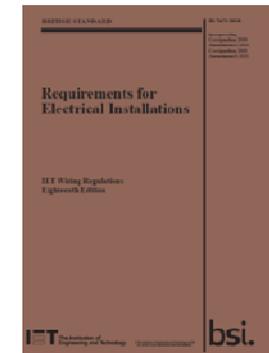
Protective measure: Extra-low voltage provided by SELV or PELV

Where SELV or PELV is used in zones 0, 1 and/or 2, (and 3 in 703) a source described in Regulation 414.3 (iv) shall not be used.

Sections 710 and 712 – specialist requirements necessary

Section 714 Reg 714.411.3.4 - Additional protection by RCD required on lighting that is accessible to the public

Section 722 Reg 722.411.4.1 (i) – Proposed use of a three-phase supply has been deleted. Extra guidance material in Annex A722



BS 7671:2018 + A2:2022 – Part 8

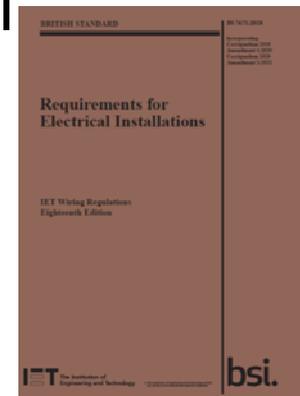
New Part of BS 7671, **Part 8 Functional requirements**

Chapter 82 Prosumers LV Electrical Installations

(A prosumer is a body that generates and consumes its own electrical energy e.g. a PV installation without an alternative DNO supply)

A very general section at this time but will increase in application and technical requirements over time.

The content of Appendix 17 “Energy Efficiency” will be developed to become **Chapter 81** of Part 8 for the next amendment of BS 7671



BS 7671:2018 + A2:2022 - Appendices

No significant changes in Appendices 1 and 2 but they have been revised to bring up to date

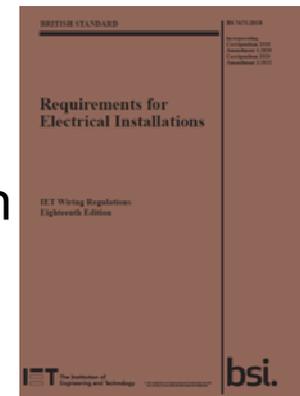
RCD table deleted from Appendix 3 as not covering all RCD types

Minor tidying in Appendix 4 and Table 52.2 moved from Chapter 52

Appendix 7 deleted

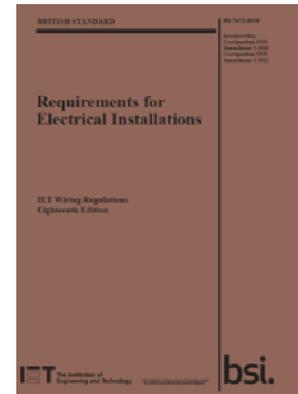
Appendix 11 new details on signs and labelling

Appendix 13 information on escape routes and fire protection



BS 7671:2018 + A2:2022 – Appendix 6

- Schedule of Inspections for guidance only, no longer a separate part of the Electrical Installation Certificate
- Electrical Installation Certificate text tidied for clarity and to accommodate a reduced Schedule of Inspections as a part of the Certificate
- Minor Electrical Installation Works Certificate tidied for clarity and revised insulation resistance testing data
- No changes to Electrical Installation Condition Report
- Some modifications to EICR Inspection Schedule
- Modifications to Schedules of Circuit Details and Test Results to accommodate details required
- Some revisions of guidance notes throughout



Thank you for listening and

Any questions?

