17th Edition Guide





Sentry Solutions



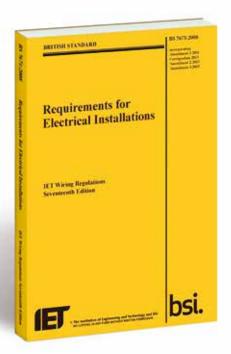


17TH EDITION OVERVIEW

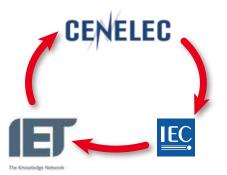
The IET introduced BS7671:2008, the 17th Edition of the Institute of Electrical Engineers Wiring Regulations, back in 2008. Seven years on they have now published Amendment 3 of this same regulation which was published in January 2015 and comes into effect 1st July 2015.

Currently the national safety standard for electrical installation work in the UK is British Standard 7671 – Requirements for Electrical Installations. The IET Wiring Regulations are a code of practice for ensuring safe electrical installations.

Although the IET Wiring Regulations have no statutory force in the UK, they are referred to as a means of demonstrating compliance with relevant legislation, such as the Electricity at Work Act (1989) and the Building Regulations.



Whilst every effort has been made to ensure the information in this brochure is correct, British Standards and the IET Wiring Regulations may be subject to change. This MK Electric brochure to 17th Edition - MK Sentry Solutions is not a substitute to the 'Requirements for Electrical Installations – IET Wiring Regulations Seventeenth Edition'.



The regulations have been updated to further harmonise with International and European standards. The process of European harmonisation had already begun with the previous amendments to the 16th Edition, most notably the changes in cable insulation colours. The 17th Edition maintains harmonisation with the International Standard (IEC 60364) and the related European Harmonisation Document (HD 384) from the European Committee for Electrotechnical Standardisation (CENELEC), which results in:

- Renumbering
- Restructuring
- New regulations
- Removal of some existing regulations

KEY DATES TO KNOW

- **1st January 2015:** BS7671:2008+A3 was published. Installations designed after this date may comply and be certified to these new standards or be designed and certified to BS7671:2008+A2 (for a maximum transitional period of 6 months)
- **1st July 2015:** BS7671:2008+A2 Installations designed after this date must comply fully with BS7671:2008+A3
- 1st January 2016: Regulation 421.1.201 comes into full effect (this doesn't preclude conformity beforehand)

An example of European Harmonisation was the changes to cable insulation colours in the amendments to the 16th Edition in 2004



The biggest change from the 16th to the 17th Edition is increased use of Residual Current Devices. Previously, RCDs have only been required to protect socket outlets for use outdoors, where disconnection times can not be achieved, and special locations. With the introduction of the 17th Edition, this changed.

The term 'Additional Protection' is used throughout the publication. The use of RCDs are recognised as a means of providing additional protection in the event of failure of the provision for Basic Protection*, as an additional means of Fault Protection*, and to protect against carelessness by users.

If an RCD is used to provide Additional Protection it must then meet the requirements of **regulation 415.1.1**. That is, the RCD must have a rated residual operating current not exceeding 30mA, and an operating time not exceeding 40ms at 5x the rated current.

The 17th Edition refers to various applications and installations which require Additional Protection by the means of the aforementioned RCD.



The first of which is found in **Regulation 411.3.3**, which has been modified in Amendment 3, where by Additional Protection is required for:

- i. Socket outlets with a rated current not exceeding 20A
- **ii.** Mobile equipment with a current rating not exceeding 32A for use outdoors

An exception to 'i' is permitted:

- **a.** Where, other than for an installation in a dwelling, a documented risk assessment determines that the RCD protection is not necessary, or
- **b.** For a specific labelled or otherwise suitably identified socket outlet provided for connection of a particular item of equipment

This regulation has been modified in Amendment 3 to provide less exceptional circumstances where RCD's may not be used. The document doesn't define the risk assessment, but the installer should consider each individual socket in all areas, and should include consideration and timings for regular assessments. Labelling could be interpreted as a socket outlet marked 'fridge', 'freezer'. 'I.T. Equipment' etc.

* This term is explained in the glossary at the end of this brochure.

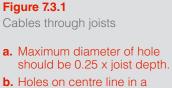
IMPACT AND INSTALLATION CONSIDERATIONS

by Honeywell

Further requirements for Additional Protection next appear in Chapter 522 – 'Selection and Erection of Wiring Systems' in Relation to External Influences.

Section 522.6.201 states that where a low voltage cable is installed under a floor or above ceiling it must be run in such a position that it is not liable to be damaged by contact with the floor or ceiling or the fixings thereof. In line with **522.6.204**, a cable passing through a joist or ceiling support must

- a. be at least 50 mm from the top or bottom, as appropriate, or
- $\boldsymbol{b}.$ have earthed armouring or an earthed metal sheath, or
- c. be enclosed in earthed steel conduit or trunking, or
- d. be provided with mechanical protection sufficient to prevent penetration of the cable by nails, screws and the like (NOTE : the requirement to prevent penetration is difficult to meet), or
- e. form part of a SELV or PELV circuit (chapter 414)



- zone between 0.25 and 0.4 x span.
- **c.** Maximum depth of notch should be 0.125 x joist depth.
- **d.** Notches on top in a zone between 0.07 and 0.25 x span.
- e. Holes in the same joist should be at least 3 diameters apart.

Maximum team of node/unitsudd fe 01155 x point deprim 023 x point deprim 025 x poi Where a cable is installed within a wall or partition, further consideration is given. **Section 522.6.202** provides guidance for the placement of cables and states they must either;

- a. be buried at least 50mm from the surface, or
- **b.** be installed in a zone either horizontally within 150mm of the top of the wall or partition or vertically within 150mm of the angle formed by two walls, or run horizontally or vertically to an accessory or consumer unit (see Figure 7.3.2). Where the wall is 100mm thick or less, the zoning arrangement is projected through the wall

Alternatively, within **section 522.6.204** further guidance is given on acceptable options for protection, whereby cables must:

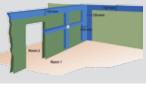
- c. have earthed armouring or an earthed metal sheath, or
- d. be enclosed in earthed steel conduit or trunking, or
- e. be provided with mechanical protection sufficient to prevent penetration of the cable by nails or screws (NOTE: the requirement to prevent penetration is difficult to meet), or
- f. form part of a SELV or PELV circuit (522.6.203)

In domestic and similar installations, cables not installed as per a, b, c or d but complying with e must be protected by a 30 mA RCD (414) In domestic and similar installations, cables installed in walls or partitions with a metal or part metal construction must be either **522.6.202** :

a. installed in accordance with b, c, d or f of above, or**b.** protected by a 30mA RCD

In accordance with **regulation** 522.6.203

Figure 7.3.2 Zones prescribed in regulation 522.6.101(v)





Section 701 concerns locations containing a bath or shower. It is now a requirement under **701.411.3.3** that additional protection shall be provided for all circuits of the location by the use of one or more RCDs, again, with an operating current not exceeding 30mA, reference **regulation 415.1.1**.

As well as items such as electric towel rails and electric showers, this regulation also applies to lighting.

Although all of the aforementioned areas require RCD protection, the requirements of **regulation 314.1**, Division of Installation, need to be taken into account, when designing and installing the circuit protective arrangements.

314.1 states that every installation shall be divided into circuits as necessary to:

- **a.** Avoid hazards and minimise inconvenience in the event of a fault
- **b.** Take account of danger that may arise from the failure of a single circuit such as a lighting circuit
- **c.** Reduce the possibility of unwanted tripping of RCDs due to excessive protective conductor currents produced by equipment in normal operation



This means a single RCD cannot be used to protect the whole installation, as in the event of a fault, power will be lost to all circuits potentially causing hazards, inconvenience and danger. Therefore multiple devices should be installed to protect the outgoing circuits and should also be split across the RCDs, alternatively the suitable installation of RCBOs could be used to protect individual circuits.

A split arrangement would be ground floor and first floor lighting circuits protected by separate RCDs. Another example would be that the circuit which supplies the bathroom lighting would be separately protected from that which supplies the electric shower. A fault developing on the electric shower circuit would then not affect the lighting circuit.

Regulation 421.1.201 - Protection against thermal effects - Consumer Units

The London Fire Brigade has been influential in key edits to Amendment 3 requirements that will directly improve personal safety and quell the risk of residential fires.

This was as a result of arcing on cables where tightening of terminals had not been sufficient, resulting in overheating of the terminals which eventually ignited the plastic enclosures.

Consequentially, Amendment 3 introduces a new regulation (421.1.201) relating to the enhancement of Fire Safety.

Curved Stylish Design Blends into the environment



NEW: Top Hinged Door

Prevents door being left

open after use leading to a possible fire risk



MK Design Service available for bespoke requests. Please see page 15 for more information.

Suits a variety of applications

ensures full compliance with 17th Edition Amendment 3

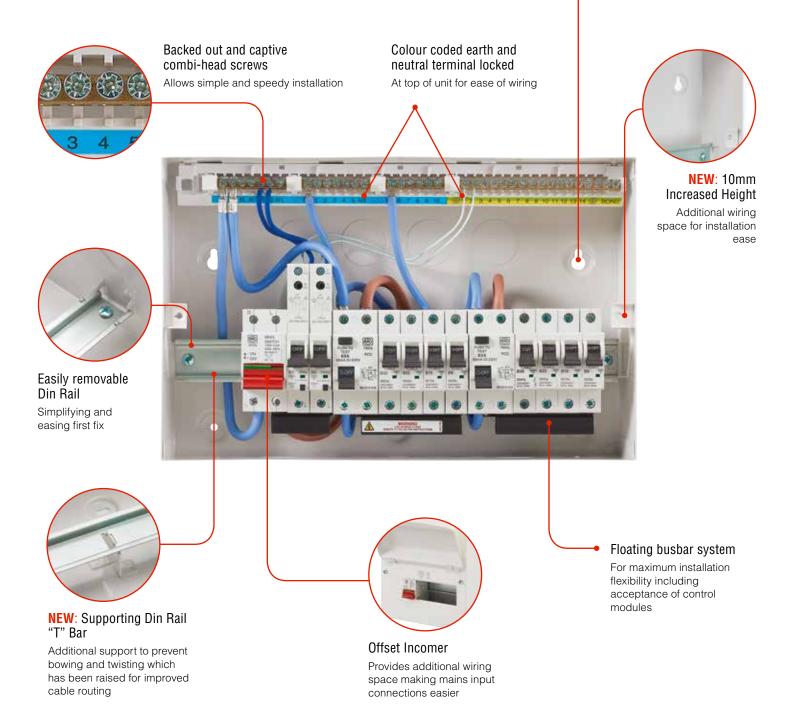
17TH EDITION

Regulation 421.1.201 states that:

Within domestic (household) premises, consumer units and similar switchgear assemblies shall comply with BS EN 61439 3 and shall have their enclosure manufactured from a non-combustible material, or enclosed in a cabinet or enclosure constructed of non-combustible material and complying with **regulation 132.12**.

Regulation 421.1.201 will not be mandatory until 1st January 2016.

In line with this new Regulation, MK has introduced a new portfolio of metal consumer units into their MK Sentry range which are manufactured from corrosion resistant Zintec Steel and have designed features to provide full compliance to Amendment 3 **regulation 421.1.201**, as detailed here.



Fixing holes

Tripod fixing to cope with uneven surfaces

PRODUCT SELECTOR (NEW METAL CONSUMER UNITS)

	4 WAY Consumer Units	8 WAY Consumer Units	12 WAY Consumer Units	16 WAY Consumer Units	21 WAY Consumer Units
ENCLOSURE ONLY	K5604sMET 4 way Consumer Unit Accepts 4 modules (1 Integral neutral bar)	K5608sMET 8 way Consumer Unit Accepts 8 modules (1 Integral neutral bar)	K5612sMET 12 way Consumer Unit Accepts 12 modules (2 Integral neutral bars fitted with link)	K5616sMET 16 way Consumer Unit Accepts 16 modules (3 Integral neutral bars fitted with link)	K5621sMET 21 way Consumer Unit Accepts 21 modules (3 Integral neutral bars fitted with link)
ENCLOSURE + SWITCH DISCONNECTOR	K5704sMET 4 way Consumer Unit 100A Switch disconnector Accepts a further 2 modules	K5708sMET 8 way Consumer Unit 100A Switch disconnector Accepts a further 6 modules	K5712sMET 12 way Consumer Unit 100A Switch disconnector Accepts a further 10 modules	K5716sMET 16 way Consumer Unit 100A Switch disconnector Accepts a further 14 modules	K5721sMET 21 way Consumer Unit 100A Switch disconnector Accepts a further 19 modules
SPLIT-LOAD Single RCD			K5682sMET 12 way Consumer Unit 100A Switch disconnector & 63A 30mA RCD Accepts a further 8 modules	K5689sMET 16 way Consumer Unit 100A Switch disconnector & 63A 30MA RCD Accepts a further 12 modules	K5684sMET 21 way Consumer Unit 100A Switch disconnector & 80A 30mA RCD Accepts a further 17 modules
ARRANGEMENTS			K5662sMET 12 way Consumer Unit 100A Switch disconnector & 80A 30mA RCD Accepts a further 8 modules	K56855sMET 16 way Consumer Unit 100A Switch disconnector & 80A 30mA RCD Accepts a further 12 modules	
				K5666sMET 16 way Consumer Unit 100A Switch disconnector & 2 x 63A 30mA RCD's Accepts a further 10 modules	K5683sMET 21 way Consumer Unit 100A Switch disconnector & 2 x 63A 30mA RCD's Accepts a further 15 modules
SPLIT-LOAD DUAL RCD ARRANGEMENTS				K56888SMET 16 way Consumer Unit 100A Switch disconnector & 2 x 80A 30mA RCD's Accepts a further 10 modules	K5687sMET 21 way Consumer Unit 100A Switch disconnector & 2 x 80A 30mA RCD's Accepts a further 15 modules
				K5686sMET 16 way Consumer Unit 100A Switch disconnector & 80A & 63A 30mA RCD's Accepts a further 10 modules	K5681sMET 21 way Consumer Unit 100A Switch disconnector & 80A & 63A 30mA RCD's Accepts a further 15 modules
	K6550sMET 4 way Consumer Unit 63A 30mA RCD 2 x MCB's (1 x 6A & 1 x 16A)	K6552sMET 8 way Consumer Unit 63A 30mA RCD 6 x MCB's (3 x 6A, 1 x 16A & 2 x 20A)	K7664sMET 12 way Consumer Unit 100A Switch disconnector 2 x 63A 30mA RCD's & 6 x MCB's (2 x 6A, 1 x 16A, 2 x 32A & 1 x 40A)	K7665sMET 16 way Consumer Unit 100A Switch disconnector 2 x 63A 30mA RCD's & 8 x MCB's (2 x 6A, 2 x 16A, 3 x 32A & 1 x 40A) Accepts a further 2 modules	K7678sMET 21 way Consumer Unit 100A Switch disconnector 2 x RCD's (1 x 63A & 1 x 80A 30mA RCD) & 12 x MCB's (3 x 6A, 2 x 16A, 2 X 20A, 4 x 32A & 1 x 40A) Accepts a further 3 modules
POPULATED Arrangements	K6551sMET 4 way Consumer Unit 63A 30mA RCD 1 x MCB's (50A)		K7663sMET 12 way Consumer Unit 100A Switch disconnector 1 x 63A 30mA RCD's, 6 x MCB's (2 x 6A, 2 x 16A & 2 x 32A) & 2 x RCBO's (1 x 6A & 1 x 40A)	K7666sMET 16 way Consumer Unit 100A Switch disconnector 2 x 63A 30mA RCD's & 10 x MCB's (3 x 6A, 2 x 16A, 4 x 32A & 1 x 40A)	
			K7673sMET 12 way Consumer Unit 100A Switch disconnector 6 x RCBO's (2 x 6A, 1 x 16A, 2 x 32A & 1 x 40A) Accepts a further 4 modules		

For the full range of MK Sentry Consumer Units refer to the main MK Catalogue.

Part 4 – A new addition to calculating Earth fault loop impedances

The maximum earth fault loop impedance values have been lowered to take into account a new 'C min' factor. C min has been included to take account of voltage variations depending on time and place, changing of transformer taps and other considerations. For a low voltage supply given in accordance with the Electricity, Safety, Quality, and Continuity Regulations 2002 as amended, Cmin is given the value 0.95

The introduction of Cmin leads to revisions in the figures contained in **tables 41.2, 41.3** and **41.4**. The new figures are contained in the tables below.



TABLE 41.2 – MAXIMUM EARTH FAULT LOOP IMPEDANCE (ZS) FOR FUSES, FOR 0.4 S DISCONNECTION TIME WITH U0 OF 230 V (SEE REGULATION 411.4.6)									
(A) GENERAL PURPOSE (GG) AND MOTOR CIRCUIT APPLICATION (GM) FUSES TO BS 88-2 - FUSE SYSTEMS E (BOLTED) AND G (CLIP -IN)									
Rating (amperes) 2 4 6 10 16 20 25 32									
Zs (ohms)	33.1	15.6	7.80	4.65	2.43	1.68	1.29	0.99	
(B) FUSES TO BS 88-3 FUSE SYSTEM C									
Rating (amperes)	5	16	20	32					
Zs (ohms)	9.93	2.30	1.93	0.91					
(C) FUSES TO BS 3036 (D) FUSES TO									
Rating (amperes)	Rating (amperes)5152030Rating (amperes)313								
Zs (ohms)	9.10	2.43	1.68	1.04		Zs (ohms)	15.6	2.30	

TABLE 41.3 – MAXIMUM EARTH FAULT LOOP IMPEDANCE (ZS) FOR CIRCUIT-BREAKERS WITH U0 OF 230 V, FOR OPERATION GIVING COMPLIANCE WITH THE 0.4 S DISCONNECTION TIME OF REGULATION 411.3.2.2 AND 5 S DISCONNECTION TIME OF REGULATION 411.3.2.3 (FOR RCBOS SEE ALSO REGULATION 411.4.9)														
(A) TYPE B CIRCUIT-BREAKERS TO BS EN 60898 AND THE OVERCURRENT CHARACTERISTICS OF RCBOS TO BS EN 61009-1														
Rating (amperes)	3	6	10	16	20	25	32	40	50	63	80	100	125	In
Zs (ohms)	14.57	7.28	4.37	2.73	2.19	1.75	1.37	1.09	0.87	0.69	0.55	0.44	0.35	230 x 0.95/(5 ln)
(B) TYPE C CIRCUIT-BREAKERS TO BS EN 60898 AND THE OVERCURRENT CHARACTERISTICS OF RCBOS TO BS EN 61009-1														
Rating (amperes)		6	10	16	20	25	32	40	50	63	80	100	125	In
Zs (ohms)		3.64	2.19	1.37	1.09	0.87	0.68	0.55	0.44	0.35	0.27	0.22	0.17	230 x 0.95/(10ln)
(C) TYPE D CIRCUIT-BREAKERS TO BS E	N 60898	AND THE	OVERCU	RRENT C	HARACTE	RISTICS	OF RCBO	OS TO BS	EN 6100	9-1				
Rating (amperes)		6	10	16	20	25	32	40	50	63	80	100	125	In
Zs (ohms) 0.4 sec		1.82	1.09	0.68	0.55	0.44	0.34	0.27	0.22	0.17	0.14	0.11	0.09	230 x 0.95/(20ln)
Zs (ohms) 5 secs		3.64	2.19	1.37	1.09	0.87	0.68	0.55	0.44	0.35	0.27	0.22	0.17	230 x 0.95/(10ln)

TABLE 41.4 – MAXIMUM EART	H FAULT LOOP IMPED	ANCE (ZS) FOR FU	SES, FOR 5 S DISC	ONNECTION TIME	WITH UO OF 230 \	/ (SEE REGULATIO	N 411.4.8)	
(A) GENERAL PURPOSE (GG) A	ND MOTOR CIRCUIT A	PPLICATION (GM)	FUSES TO BS 88-2	2 – FUSE SYSTEMS	E (BOLTED) AND	G (CLIP IN)		
Rating (amperes) 2 4 6 10 16 20 25 32								
Zs (ohms)	44	21	12	6.8	4.0	2.8	2.2	1.7
	40	50	63	80	100	125	160	200
	1.3	0.99	0.78	0.55	0.42	0.32	0.27	0.18
(B) FUSES TO BS 88-3 FUSE SYSTEM C								
Rating (amperes)	5	16	20	32	45	63	80	100
Zs (ohms)	14.6	3.9	3.2	1.6	1.0	0.68	0.51	0.38
(C) FUSES TO BS 3036								
Rating (amperes)	5	15	20	30	45	60	100	
Zs (ohms)	16.8	5.08	3.64	2.51	1.51	1.07	0.51	
(D) FUSES TO BS 1362								
Rating (amperes)	3	13						
Zs (ohms)	22.0	3.64						





SENTRY

RANGE INTRODUCTION

The Sentry range of Consumer Units from MK Electric has been stylishly designed to blend in with its environment. The curved lines and slim-line appearance mean it won't look out of place when installed in hallways, lounges or kitchens of new properties.

The expanded range includes a 21-module unit for larger installations and also a 4-module unit to cater for small one-off installations and extensions to existing ones.

The MK Electric Design Service offers a pre-assembly service for custom built boards with all devices fitted, busbars cut and fitted with devices, live and neutral cables terminated.

This service is available across the entire range of Metal, Insulated, Flush and Skeleton units. For more information please see page 15.

SUPPORTS 17TH EDITION AMENDMENT 3 COMPLIANCE

Full range of products to support compliance with the 17th Edition Amendment 3 of the Wiring Regulations, including Full Metal non-combustible enclosures for Consumer Units.

SENTRY SKELETON BOARDS FOR SOCIAL HOUSING

For use in a Mantel or Clifton type enclosure, a complete offering of blank and pre-configured skeleton units for use in buildings with multi-occupancy dwellings.

MK ELECTRIC DESIGN SERVICE FOR PRE-ASSEMBLED CONSUMER UNITS

Save time and money by specifying project requirements through the MK Electric Design Service. Pre-assembled custom built boards, with all devices pre-fitted with busbars and cables are available to suit any installation. Available across the entire range of Full Metal, Insulated, Hybrid, Flush and Skeleton units.

FLUSH MOUNTING VERSIONS

Flush mounting available for even neater installations.

FLOATING BUSBAR SYSTEM

Gives maximum installation flexibility.

BROAD SELECTION OF PRE-ASSEMBLED SPLIT LOAD UNITS AVAILABLE

Suits a variety of applications and saves installation time.



New supporting din rail 'T' bar

Specific consumer unit configurations have been designed to provide flexible solutions in meeting the requirements of the 17th Edition with regards to RCD protection for circuits, cables and socket outlets.

The MK Sentry Consumer Units, available in insulated and metal versions, allow for protected and unprotected ways with the circuits being split across up to 3 RCDs, whilst a labelling sheet allows for full identification of all circuits.

Split load board with RCBOs

MK recommend the use of a split load board with RCBOs. An RCBO will provide individual over current and earth leakage protection for an outgoing circuit. In the event of fault conditions the supply will be disconnected only to the dedicated circuit.

Standard configurations augmented with RCBOs provide the optimum solution for additions and alterations. An MK RCBO is the same width as an MK MCB, providing a reto-fittable solution for additions and alterations to an existing installation.

FACTORY BUILT ASSEMBLY

Using standard MK Sentry components we can build and supply fully assembled units to an agreed design. For example have your Consumer Units supplied with all the devices fitted, busbars cut and fitted with neutral and live cables terminated^{*}.

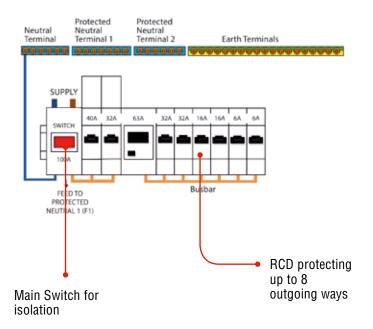
For more information call the MK Technical Services Team Tel: 01268 563720

*Minimum order quantity of 20 applies.

INDIVIDUAL PROTECTION FOR DESIGNATED CIRCUITS Example of use:

• 40A electric shower

- 6A first floor lighting
- 6A ground floor lighting





K7666sMET Populated Consumer Unit

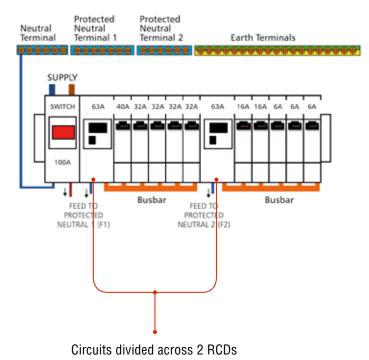
DIMENSIONS						
WIDTH	HEIGHT	DEPTH				
382mm	244mm	116mm				



A fully populated 16 way consumer unit with:

- 100A mains switch
- 2 x 63A 30mA RCDs
- 10 x MCBs (3 x6A, 2 x 16A, 4 x 32A + 1 x 40A)

Allowing 10 outgoing ways with up to 5 circuits per RCB.



New continual earthing

K7673sMET RCBO Populated Consumer Unit

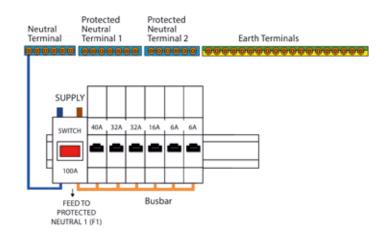
DIMENSIONS		
WIDTH	HEIGHT	DEPTH
310mm	244mm	116mm



A fully populated 12 way consumer unit with for RCBs protected circuits with:

- 100A mains switch
- 6 x RCBOs (2 x 6A, 1x 16A, 2 x 32A, or 1 x 40A)

Allowing 6 RCBO protected circuits with room for an additional 4 ways.



ALL 17TH EDITION CONSUMER UNITS HAVE THE FACILITY TO PROVIDE UNPROTECTED WAYS



As shown, within the MK Sentry range a number of split load configurations are available which meet the requirements of the 17th Edition.

The following overview shows the total number of ways available with each board, and the maximum number of circuits for each RCD.

For maximum flexibility, unpopulated boards can also be used in conjunction with MK RCDs, RCBOs, MCBs and Switch Disconnectors to provide 17th Edition solutions.



K7665sMET

K7663sMET

K5682sMET

17TH EDITION – MK SENTRY SPLIT LOAD CONSUMER UNIT CONFIGURATION										
METAL BOARD LIST NO.	INSULATED BOARD LIST NO.	DESCRIPTION	TOTAL WAYS	UNPROTECTED	RCD1	RCD2				
K5682sMET	K5682sMAG	100A Switch disconnector & 63A 30mA RCD	12	4	8					
K5689sMET	K5666sMAG	100A Switch disconnector & 63A 30mA RCD	16	3	6	5				
K5684sMET	K5681sMAG	100A Switch disconnector & 80A 30mA RCD	21	5	8	7				
K5662sMET	K5662sMAG	100A Switch disconnector & 80A 30mA RCD	12	4	8					
K5685sMET	K5686sMAG	100A Switch disconnector & 80A 30mA RCD	16	3	6	5				
K5666sMET	K5666SMAG17ED	100A Switch disconnector & 2 x 63A 30mA RCD's	16	3	6	5				
K5683sMET	K5683SMAG17ED	100A Switch disconnector & 2 x 63A 30mA RCD's	21	5	8	7				
K5688sMET	K5688sMAG17ED	100A Switch disconnector & 2 x 80A 30mA RCD's	16	3	6	5				
K5687sMET	K5687sMAG17ED	100A Switch disconnector & 2 x 80A 30mA RCD's	21	5	8	7				
K5681sMET	K5681SMAG17ED	100A Switch disconnector & 80A & 63A 30mA RCD's	21	5	8	7				
K5686sMET	K5686SMAG17ED	100A Switch disconnector & 80A & 63A 30mA RCD's	16	3	6	5				

The MK Electric Design Service

THE MK ELECTRIC DESIGN SERVICE IS PERFECT FOR WHEN ONLY A CUSTOMISED SOLUTION CAN MEET YOUR REQUIREMENTS, OR WHEN FULLY ASSEMBLED CONSUMER UNITS CAN BE PROVIDED FOR YOUR PROJECT TO SAVE YOU INSTALLATION TIME.

Our dedicated team can help you to build the best configurations for your project, and then assemble the boards ready for installation. The service is available for all MK Consumer Units – Metal, Insulated, Hybrid, Flush and Skeleton. Using standard and non-standard Sentry components we can build and supply fully assembled units to an agreed design. For example, have your split load boards supplied with all the devices pre-fitted with busbars and cables to suit the installation This service is ideal for housing developers, or any project application*.

*Minimum order quantity of 20 of the same design

- Dedicated team on hand to build configuration to meet your needs
- Service is available for all MK Consumer Units and Skeleton Units
- Faster installation time on site
- Fast turnaround 1 working day response time to initial enquiry

To find out more visit **www.mkelectric.co.uk** and follow the links to the **Design Service.**

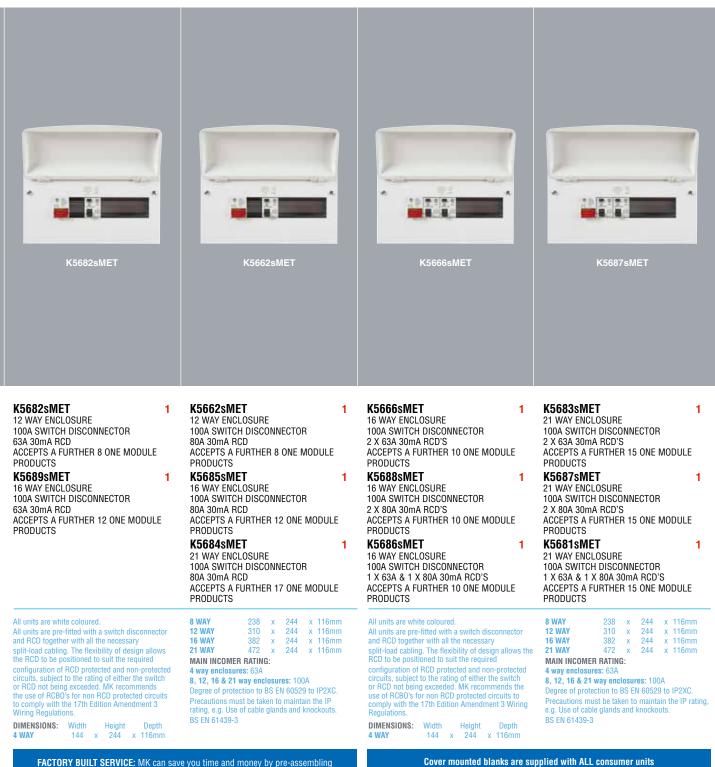
STEP 1	Call the MK Electric Technical Services Team on 01268 563720 or email mk.technical@honeywell.com
STEP 2	Discuss the details of your project and circuit protection requirements with a member of the MK Technical Services Team or complete the online enquiry and click send
STEP 3	Within one working day you will have a response to your initial enquiry
STEP 4	Confirm the configurations and quantities
STEP 5	Receive the quote for your order
STEP 6	Place your order with your wholesaler
STEP 7	Your order will be delivered to the wholesaler of your choice. All boards will be fully assembled and ready for installation



FACTORY BUILT SERVICE: MK can save you time and money by pre-assembling consumer units with your required Sentry components

SPLIT-LOAD SINGLE RCD ARRANGEMENTS METAL SURFACE

SPLIT-LOAD DUAL RCD ARRANGEMENTS METAL SURFACE



FACTORY BUILT SERVICE: MK can save you time and money by pre-assembling consumer units with your required Sentry components

(2 off x 1 for 4, 8 & 2 way enclosures and 2 off x 2 for 16 & 21 way enclosures)

Consumer Units

FULLY POPULATED ARRANGEMENTS METAL SURFACE



All units are white coloured. All units are pre-fitted with a switch disconnector and RCD together with all the necessary split-load cabling. The flexibility of design allows the RCD to be positioned to suit the required configuration of RCD protected and non-protected circuits, subject to the rating of either the switch or RCD not being exceeded.

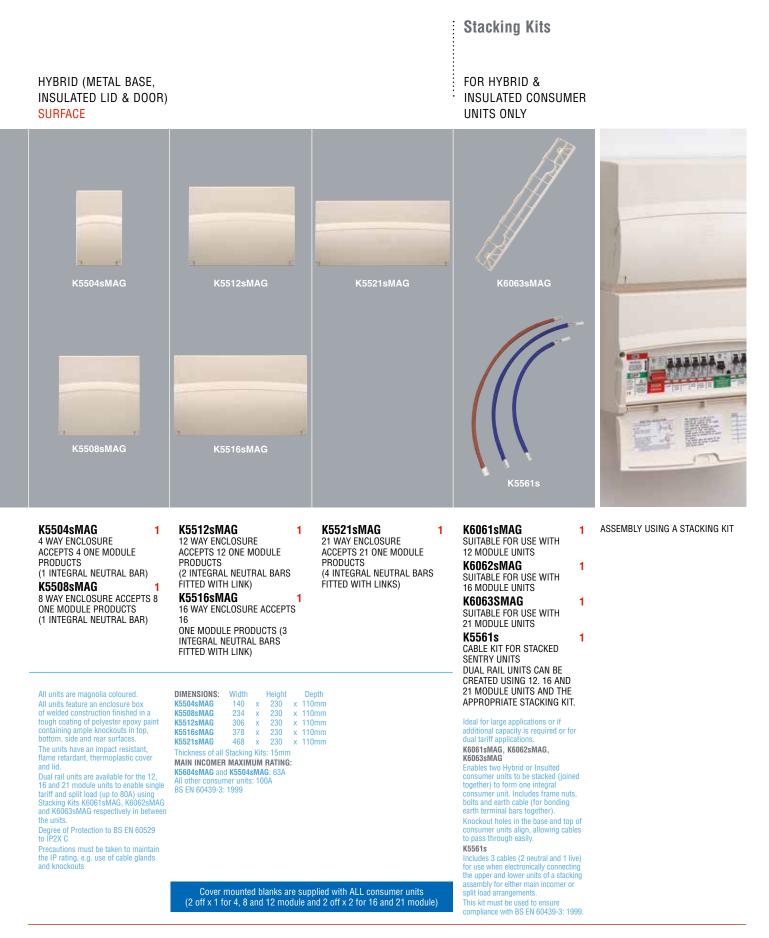
DIMENSIONS:	Width		Height		Depth
4 WAY	144	Х	244	Х	116mn
8 WAY	238	Х	244	х	116mn
12 WAY	310	Х	244	х	116mn
16 WAY	382	х	244	х	116mn
21 WAY	472	х	244	х	116mn

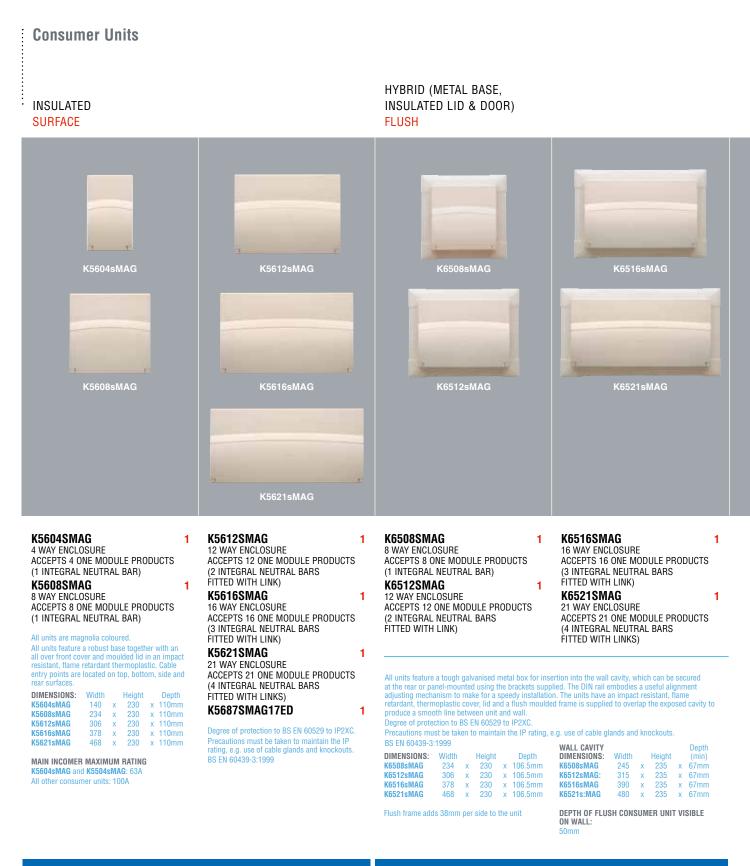
protected circuits to comply with the 17th Edition

4 way enclosures: 63A 8, 12, 16 & 21 way enclosures: 100A Degree of protection to BS EN 60529 t

Degree of protection to BS EN 60529 to IP2XC. Precautions must be taken to maintain the IP rating, e.g. Use of cable glands and knockouts. BS EN 61439-3

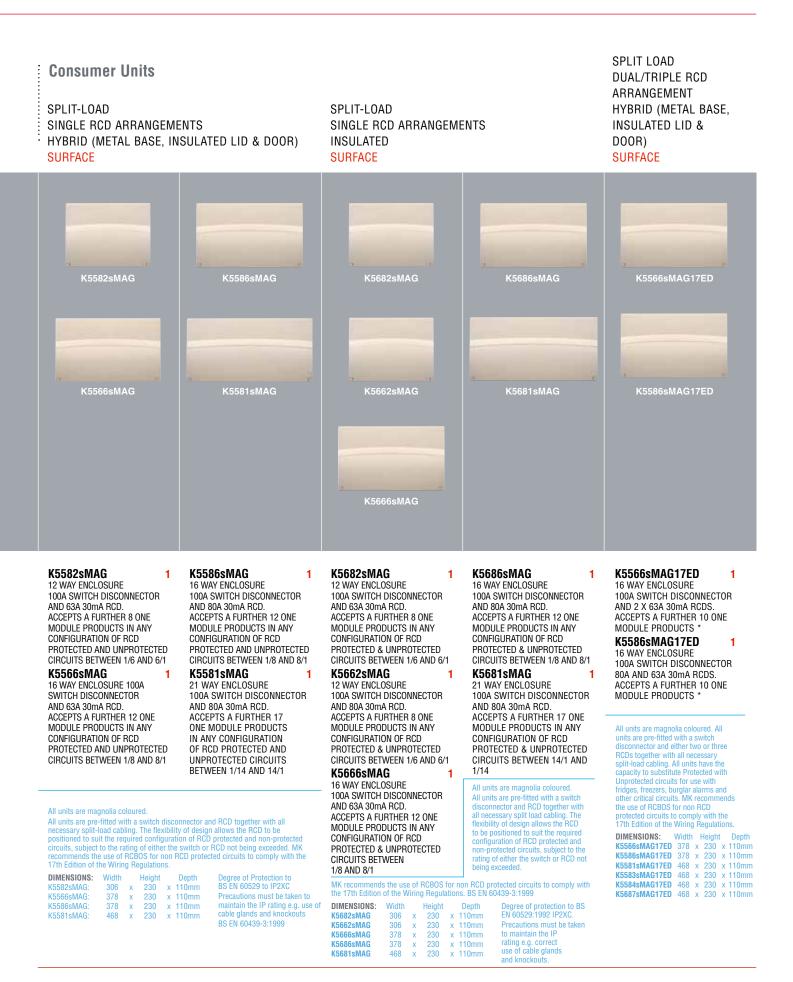
FACTORY BUILT SERVICE: MK can save you time and money by pre-assembling consumer units with your required Sentry components





FACTORY BUILT SERVICE: MK can save you time and money by pre-assembling consumer units with your required Sentry components

$\label{eq:covermounted} Cover mounted blanks are supplied with ALL consumer units (2 off x 1 for 4, 8 and 12 module and 2 off x 2 for 16 and 21 module)$



WITH SPLIT LOAD DUAL/TRIPLE RCD ARRANGEMENT INSULATED SURFACE

K5581sMAG17ED	K5666sMAG17ED	K5688sMAG17ED	K5681sMAG17ED	K5684sMAG17ED
K5584sMAG17ED				
K5581sMAG17ED121 WAY ENCLOSURE100A SWITCH DISCONNECTOR,80A AND 63A 30MA RCDS.ACCEPTS A FURTHER 15 ONEMODULE PRODUCTS *K5583sMAG17ED121 WAY ENCLOSURE100A SWITCH DISCONNECTORAND 2 X 63A 30MA RCDS.ACCEPTS A FURTHER 15 ONEMODULE PRODUCTS *K5584sMAG17ED1	K5666sMAG17ED116 WAY ENCLOSURE100A SWITCH DISCONNECTOR100A SWITCH DISCONNECTORAND 2 X 63A 30MA RCDS.ACCEPTS A FURTHER 10 ONEMODULE PRODUCTS *K5686sMAG17ED116 WAY ENCLOSURE100A SWITCH DISCONNECTOR80A AND 63A 30MA RCDS.ACCEPTS A FURTHER 10 ONEMODULE PRODUCTS *	K5688sMAG17ED116 WAY ENCLOSURE100A SWITCH DISCONNECTOR100A SWITCH DISCONNECTORAND 2 X 80A 30MA RCDS.ACCEPTS A FURTHER 10 ONEMODULE PRODUCTS *K5687sMAG17ED21 WAY ENCLOSURE100A SWITCH DISCONNECTORAND 2 X 80A 30MA RCDS.ACCEPTS A FURTHER 15 ONEMODULE PRODUCTS*	K5681sMAG17ED 1 21 WAY ENCLOSURE 100A SWITCH DISCONNECTOR, 80A AND 63A 30mA RCDS. ACCEPTS A FURTHER 15 ONE MODULE PRODUCTS*	K5683sMAG17ED121 WAY ENCLOSURE100A SWITCH DISCONNECTOR100A SWITCH DISCONNECTORAND 2 X 63A 30MA RCDS.ACCEPTS A FURTHER 15 ONEMODULE PRODUCTS*K5684sMAG17ED21 WAY ENCLOSURE100A SWITCH DISCONNECTOR,2 63A AND ONE 40A 30MARCDS. ACCEPTS A FURTHER 13ONE MODULE PRODUCTS*
21 WAY ENCLOSURE 100A SWITCH DISCONNECTOR, 2 X 63A AND ONE 40A 30MA RCDS. ACCEPTS A FURTHER 13 ONE MODULE PRODUCTS * Degree of Protection to BS EN 60529 to IP2XC Precautions must be taken to maintain the IP rating e.g. use of cable glands and knockouts BS EN 60439-3:1999	have the capacity to substitute Protected' fridges, freezers, burglar alarms and othe use of RCB0S for non RCD protected circ Wiring Regulations. DIMENSIONS: Width Height K5666sMAG17ED 378 x 230 K5688sMAG17ED 378 x 230 K5681sMAG17ED 468 x 230 K5683sMAG17ED 468 x 230 K5683sMAG17ED 468 x 230	th all necessary split-load cabling. All units with Unprotected circuits for use with	K5686sMAG17ED 378 x 230 K5688sMAG17ED 378 x 230 K5681sMAG17ED 468 x 230 K5687sMAG17ED 468 x 230 K5683sMAG17ED 468 x 230 K5683sMAG17ED 468 x 230	

Cover mounted blanks are supplied with ALL consumer units (2 off x 1 for 4, 8 and 12 module and 2 off x 2 for 16 and 21 module)

FACTORY BUILT SERVICE: MK can save you time and money by pre-assembling consumer units with your required Sentry components



the IP rating, eg. correct use of cable glands and knockouts.

BS EN 60439-3:1999

Enclosures IP65 WEATHERPROOF ENCLOSURE	Switch Disconnectors Double Pole TWO MODULE	MCBS Single Pole Type B ONE MODULE	
<image/> <image/> <image/> <image/> <image/> <image/> <image/> <image/> <image/>	Image: state	Image: space s	Image: space s
<pre>5702s 1 PGT PGT PGT PGT PGT PGT PGT PGT PGT PGT</pre>	5500s5100A 230V5560s563A 230V5Suitable for installation in Sentry Consumer Units and two or four module enclosures. Accepts direct to busato or cable-in / cable-out connection.Difference6Cate or switching of resistive and inductive toats.Cate or switching of resistive and inductive toats.DifferenceMemory of the differenceWith 17th Edition IEE Wring Regulations (57.2.2.2 and 537.3.2.2)DIFENSIONS: MENSIONS: SE N 60947-3:1999	5903s103A 230V5906s5906s106A 230V105910s1010A 230V5916s5916s1016A 230VSuitable for installation in Sentry Consumer Units and two or four module enclosures. Positive contact status indication in accordance with 17th Edition IEE Wiring Regulations 	5920s1020A 230V5925s1025A 230V5932s1032A 230V5940s1040A 230V5940s1045A 230V5950s1050A 230VSoft 230VSutable for installation in Sentry Consumer Unitsand two or four module enclosures.Positive contact status indication in accordancewith 17th Edition IEE Wring Regulations(37.2.2.2 and 537.3.2.2)IMENSIONS:St 18 x 74mCALE CAPACITY:3mm?SHORT-CIRCUIT BREAKING CAPACITY:GKABS EN 60898:2003

MCB Single Pole Type C One module		RCBOs With Solid Neutral Single Pole TYPE B ONE MODULE	
Image: state s	Image: state s	7932s 7933s 7932s 7933s 7932s 7933s 7935 7933s 7936s 7937s	7934s 7935s 7938s 7939s
8703s 10 3A 230V 8706s 10 6A 230V 10 6A 230V 8710s 10 10 10A 230V 8716s 10 16A 230V 8716s 10 16A 230V 8716s 10 16A 230V 10 16A 230V Suitable for installation in Sentry Consumer Units and two or four module enclosures. Positive contact status indication in accordance with 17th Edition IEE Wring Regulations (537.2.2.2 and 537.3.2.2) DIMENSIONS: 83 x 18 x 74mm CABLE CAPACITY: 35mm² ShORT-CIRCUIT BREAKING CAPACITY: 6KA BS EN 60898:2003	8720s 10 20A 230V 8725s 10 25A 230V 8732s 10 32A 230V 8732s 10 32A 230V 8740s 10 40A 230V 8750s 10 50A 230V 8750s 10 50A 230V 8763s 10 50A 230V 8763s 10 50A 230V 8763s 10 50A 230V 8763s 10 50A 230V 90 90 Suitable for installation in Sentry Consumer Units and two or four module enclosures. Positive contact status indication in accordance with 17th Edition IEE Wiring Regulations (537.2.2.2 and 537.3.2.2) 90 DIMENSIONS: 83 x 18 x 74mm 648 x 74mm CABLE CAPACITY: 35mm ² 90 SHORT-CIRCUIT BREAKING CAPACITY: 6K4 BS EN 60898:2003 80 80	7932s 1 6A 230V 30MA TRIPPING CURRENT 7933s 70A 230V 30MA TRIPPING CURRENT 7934s 7934s 1 16A 230V 30MA TRIPPING CURRENT 7934s 7930MA 1 16A 230V 30MA TRIPPING CURRENT 7934s Suitable for installation in Sentry Consumer Units. Positive contact status indication in accordance with 17th Edition IEE Wiring Regulations (537.2.2.2 and 537.3.2.2) DIMENSIONS: 119 x 18 x 73mm CABLE CAPACITY: Live 25mm ² , SHORT CIRCUIT BREAKING CAPACITY: 6KA BS EN 61009-1 BS IEC61009-2-2	7935s 1 20A 230V 30MA TRIPPING CURRENT 7936s 1 32A 230V 30MA TRIPPING CURRENT 7937s 1 40A 230V 30MA TRIPPING CURRENT 7938s 1 45A 230V 30MA TRIPPING CURRENT 7939s 1 50A 230V 30MA TRIPPING CURRENT 7939s 1 50A 230V 30MA TRIPPING CURRENT

RCBOs With Solid Neutral Single Pole	Residential 6kA RCD Double Pole Type AC		
TYPE C ONE MODULE	16 AMP TWO MODULE	32 AMP TWO MODULE	40 AMP TWO MODULE
Image: selection of the	Tanta	Risals	Tatos
8932s 1 6A 230V 30MA TRIDPING CURDENT	7816s 1 16A 230V 30MA TRIPPING CURRENT	7832s 1 32A 230V 30MA TRIPPING CURRENT	7840s 1 40A 230V 30MA TRIPPING CURRENT

30MA TRIPPING CURRENT 8933s 10A 230V 30MA TRIPPING CURRENT 8934s 16A 230V 30MA TRIPPING CURRENT 8935s 20A 230V 30MA TRIPPING CURRENT 8936s 32A 230V 30MA TRIPPING CURRENT

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MK Sentry MCBs

MK Sentry MCBs (Miniature Circuit Breakers) are of the thermo-magnetic, current limiting type and are available with either Type B or Type C operating characteristics. For the purpose of this brochure we have only listed the Type B devices, the full range can be found in the MK Catalogue.

The operating dolly may be locked in either the ON or OFF position without affecting the ability of the trip mechanism to operate. The contacts themselves are manufactured from carefully chosen materials, selected specifically for their low electrical resistance and low propensity to weld under fault conditions. When the green indicator is visible, a contact gap of 4mm has been achieved, therefore Sentry MCBs may be used as a single pole isolating switch where appropriate. The Sentry MCB has a mid-trip fault indicator. If there is a short circuit or current overload, the dolly moves to the mid-position to indicate a fault.

MK SENTRY MCBS				
LIST NO.	DESCRIPTION	CURRENT RATING		
5903s	MCB Single Pole Type B	3A		
5906s	MCB Single Pole Type B	6A		
5910s	MCB Single Pole Type B	10A		
5916s	MCB Single Pole Type B	16A		
5920s	MCB Single Pole Type B	20A		
5925s	MCB Single Pole Type B	25A		
5932s	MCB Single Pole Type B	32A		
5940s	MCB Single Pole Type B	40A		
5945s	MCB Single Pole Type B	45A		
5950s	MCB Single Pole Type B	50A		

For the full range of MK Sentry MCBs refer to the main MK Catalogue.

MK SENTRY CONSUMER UNIT TO BS EN 61439-3 220-250V 50Hz a.c. InA 100A

SENTRY MCBS, RCBOS & RCDS



Example configuration



MK Sentry RCBOs

MK Sentry RCBOs (Residual Current Breakers with Overcurrent Protection) are of the solid neutral type, single pole, in one module format. The RCBOs are a combination of a Type B MCB and a 30mA RCD. This enables both overcurrent protection and earth fault current protection to be provided by a single unit.

This combination allows earth fault protection to be restricted to a single circuit, thus ensuring that only the circuit with the fault is interrupted.

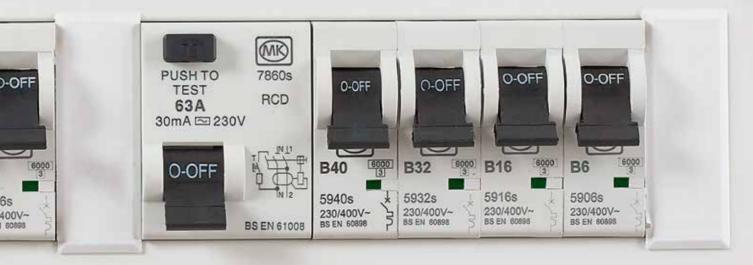
The operating dolly on all MK Sentry RCBOs may be locked in either the ON or OFF position without affecting the ability of the trip mechanism to operate.

MK SENTRY RCBOS			
LIST NO.	DESCRIPTION	CURRENT RATING	TRIPPING CURRENT
7932s	RCBO With Solid Neutral Type B	6A	30mA
7933s	RCBO With Solid Neutral Type B	10A	30mA
7934s	RCBO With Solid Neutral Type B	16A	30mA
7935s	RCBO With Solid Neutral Type B	20A	30mA
7936s	RCBO With Solid Neutral Type B	32A	30mA
7937s	RCBO With Solid Neutral Type B	40A	30mA
7938s	RCBO With Solid Neutral Type B	45A	30mA
7939s	RCBO With Solid Neutral Type B	50A	30mA

For the full range of MK Sentry RCBOs refer to the main MK Catalogue.









MK Sentry RCDs

The MK Sentry range of RCDs (Residual Current Devices) offer a comprehensive selection of devices designed to meet most residential, commercial and light industrial requirements. The range includes two and four pole, a.c., d.c. fault current sensitive and time delayed models, and a selection of current ratings from 16A to 100A, in a variety of tripping sensitivities. For the purpose of this brochure we have only listed the 30mA 230V devices, the full range can be found in the MK Catalogue.

When in the OFF position a contact gap of 4mm is present, enabling Sentry RCDs to be used as isolating switches where appropriate. When the green indicator is visible, a contact gap of 4mm has been achieved. The operating dolly may be locked in either the ON or the OFF position without affecting the ability of the trip mechanism to operate, ie the RCD is 'trip-free'. It is not possible to hold the contacts closed when a fault condition exists.

All MK Sentry RCDs incorporate a filtering device to provide protection against transient surges in the supply to the unit, thus reducing the occurrence of unwanted tripping.

MK SENTRY RCDS WITH 30MA TRIPPING CURRENT					
LIST NO.	DESCRIPTION	CURRENT RATING	TRIPPING CURRENT		
7816s	RCD Double Pole 230V Two Module Type AC	16A	30mA		
7832s	RCD Double Pole 230V Two Module Type AC	32A	30mA		
7840s	RCD Double Pole 230V Two Module Type AC	40A	30mA		
7860s	RCD Double Pole 230V Two Module Type AC	63A	30mA		
7880s	RCD Double Pole 230V Two Module Type AC	80A	30mA		
6716s	RCD Pulsating D.c. Fault Current Sensitive Double Pole 230V Two Module Type A	16A	30mA		
6630s	RCD Pulsating D.c. Fault Current Sensitive Double Pole 230V Two Module Type A	32A	30mA		
5640s	RCD Pulsating D.c. Fault Current Sensitive Double Pole 230V Two Module Type A	40A	30mA		
5660s	RCD Pulsating D.c. Fault Current Sensitive Double Pole 230V Two Module Type A	63A	30mA		

For the full range of MK Sentry RCDs refer to the main MK Catalogue.

GLOSSARY OF TERMS

To interpret the new regulations, it is necessary to understand the terminology used. Electrical Contractors should familiarise themselves with the following terms.

A complete glossary is published at the end of the 17th Edition document, here we have highlighted those which are particularly relevant to the content of this brochure.

SKILLED PERSON (ELECTRICALLY)

Person who possesses, as appropriate to the nature of the electrical work to be undertaken, adequate education, training and practical skills, and who is able to perceive risks and avoid hazards which electricity can create.

INSTRUCTED PERSON (ELECTRICALLY)

Person adequately advised or supervised by a skilled person (as defined) to enable that person to perceive risks and to avoid hazards which electricity can create.

Note: The term "(electrically)" is assumed to be present where the terms 'instructed person' is used throughout BS7671.

Regulation 16 of the Electricity at Work Regulations 1989 requires persons to be competent to prevent danger and injury. The HSE publication HSR 25 provides guidance on this.

BASIC PROTECTION

Protection against electric shock under fault-free conditions. Note: For low voltage installations, systems and equipment, basic protection generally corresponds to protection against direct contact, that is 'contact of persons or livestock with live parts'.

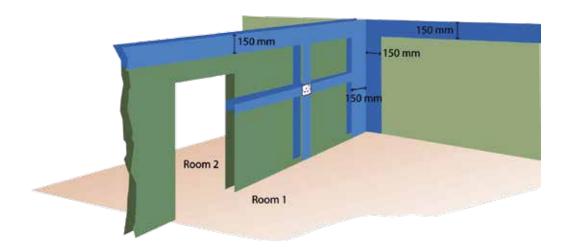


FAULT PROTECTION

Protection against electric shock under single-fault conditions. Note: For low voltage installations, systems and equipment, fault protection generally corresponds to protection against indirect contact, mainly with regard to failure of basic insulation. Indirect contact is 'contact of persons or livestock with exposed-conductive-parts which have become live under fault conditions'.

SAFE ZONE

Regulation 522.6.6 refers to a cable installed in a wall or partition at a depth of less than 50mm from the surface. Method (v) refers to the Safe Zone which is the area within 150mm from the top of the wall or partition, or within 150mm of an angle formed by two adjoining walls or partitions. Where the cable is connected to a point, accessory or switchgear on any surface of the wall or partition, the cable may be installed in a zone either horizontally or vertically, to the point, accessory or switchgear. Where the location of the accessory, point or switchgear can be determined from the reverse side, a zone formed on one side of a wall if 100mm thickness or less, or partition of 100mm thickness or less, extends to the reverse side.



NOTES

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