

Consumer Units and Enclosures

Standards and approvals

All Sentry consumer units are designed to fully comply with the requirements of BS EN 60439-3.

Weatherproof enclosures are designed to fully comply with the requirements of EN 60670.



Technical specification

Electrical

Maximum current rating:

All Sentry consumer units have a maximum rating of 100A except K5504s, K5604s, which are rated at 63A

Terminal capacity: 16mm² earth and neutral

Rated frequency: 50Hz

Rated operational voltage:

Consumer unit: 220-250V

2 module enclosure: 220-250V

4 module enclosure: 220-415V

Rated insulation voltage:

Consumer unit: 300V

2 module enclosure: 300V

4 module enclosure: 660V

Short circuit withstand:

16kA rms (based on the use of a BS 1361 Type 2 fuse of rating not exceeding 100A)

Earthing system:

Suitable for use with TN-S, TN-C-S and TT systems

Split load

Split load units are supplied with a pre-fitted switch, RCD and suitable cables.

The following versions are offered:

	Main Incomer	RCD
K5682s	100A Switch	63A
K5662s	100A Switch	80A
K5632s	100A TD RCD	63A
K5666s	100A Switch	63A
K5686s	100A Switch	80A
K5636s	100A TD RCD	80A
K5681s	100A Switch	80A
K5631s	100A TD RCD	80A
K5626s	100A TD RCD	63A
K5582s	100A Switch	63A
K5566s	100A Switch	63A
K5586s	100A Switch	80A
K5581s	100A Switch	80A
K5531s	100A TD RCD	80A

Description

Sentry consumer units and enclosures are available in various surface metal, surface insulated and flush metal types, designed on a modular basis, with 2 to 21 module enclosures in the range, to accommodate the range of MK modular protection and control products. In addition 24, 32, 42 module surface metal and insulated dual rail consumer units can be assembled using a suitable stacking kit.

Surface insulated units provides an all insulated housing. Metal units provide a housing with facility for earthing the metal box.

The enclosures are provided with ample wiring space and cable entry points. The lids can be locked with a barrel lock & key (accessory K5593s).

Colours / finishes

All insulated and metal consumer units have a textured magnolia cover and lid. The surface metal consumer unit bases are in magnolia (powder coated paint). The flush bases are of galvanized steel. All 2 and 4 module and weatherproof enclosures are available in light grey.

Certain models are provided with a pre-assembled split load arrangement with switch and RCD. The range is complemented by a versatile selection of small, two and four module enclosures suitable for housing RCDs or other combinations of Sentry products. A 2 module enclosure K5592s is suitable for housing the one module RCBO.

All Sentry Consumer Units have neutral and earth terminal bars with 16mm² capacity for solid stranded copper cables.

For enquiries where large number of similarly designed consumer units i.e. specified. MK can provide complete pre-assembled factory built units, subject to certain conditions. For further information please contact the MK Technical Sales Services Department.

Features

- Attractive styling
- Modular design
- Suitable for most residential, commercial and light industrial applications
- Fully comply with British and European Harmonised Standards
- Available as an empty enclosure or pre-fitted with switch disconnecter and RCD
- Factory built options available



Technical specification

Electrical (weatherproof enclosures only)

Maximum current rating:

5702s	2 pole devices	up to 100A
5704s	4 pole devices	up to 63A

Note:

5702s – Can accept up to 4 module ways with removal of moulded blanks.

5704s – Can accept up to 8 module ways with removal of moulded blanks.

Terminal capacity:

5702s: 4 x 6mm² earth and neutral

5704s: 2 x 6mm² and 6 x 4mm² earth and neutral

Rated operational voltage: 220-415V

Rated insulation voltage: 660V

Technical specification

Physical

Ambient operating temperature:

-5°C to +40°C (not to exceed an average of more than +35°C in any 24 hour period)

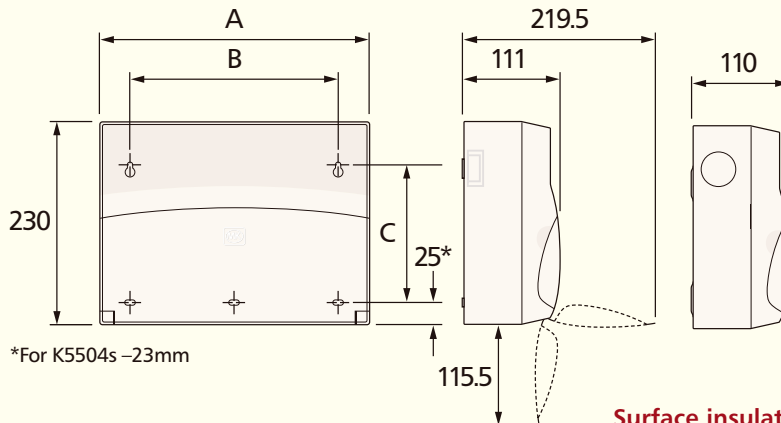
IP ratings: (see also 'Service Conditions', below)

Consumer unit	IP2XC
2 module enclosure 5502s:	IP3X
2 module enclosure 5702s:	IP65
2 module enclosure K5592s:	IP30
4 module enclosure 5504s:	IP3X
4 module enclosure 5604s:	IP3X
4 module enclosure 5704s:	IP65
Max. installation altitude:	2000m

Dimensions (mm)

Note: Knockout details on following page

Consumer unit



Surface insulated
K5604s to K5686s

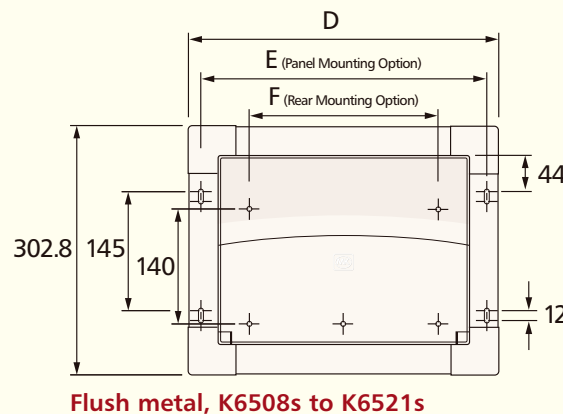
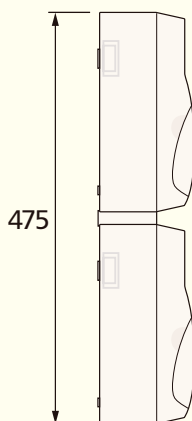
Unit	Modules	Dimensions		
		A	B	C
Surface Insulated	4	140	70	156
	8	234	164	156
	12	306	236	156
	16	378	308	156
Surface Metal	21	468	398	156
	4	140	75	149
	8	234	168	147
	12	306	240	147
	16	378	308	147
21	468	400	147	

Unit	Modules	Dimensions		
		E	F	D
Flush Metal	8	307	276	160
	12	379	348	230
	16	451	420	300
	21	541	510	390

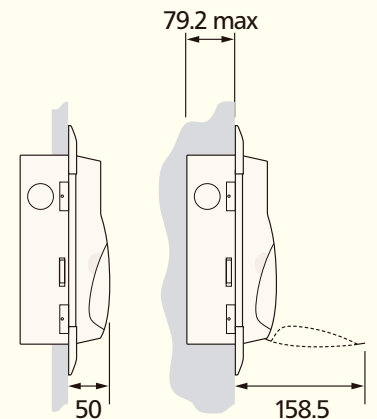
Stacked assemblies K5504s to K5586s

Dual Rail (Insulated or Metal) using stacking kits K6061s, K6062s and K6063s.

See page 216 for details.



Flush metal, K6508s to K6521s

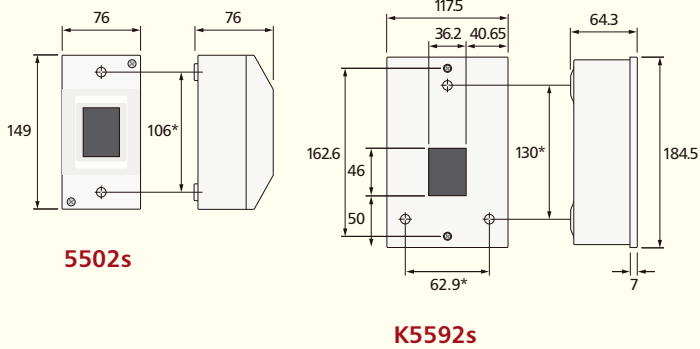
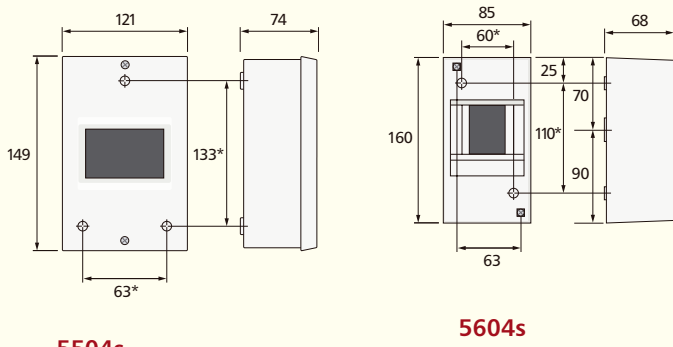


Flush-mount cavity dimensions, K6508s to K6521s			
	Height	Width	Depth*
8 module	236-246	242-252	69-79
12 module	236-246	314-324	69-79
16 module	236-246	386-396	69-79
21 module	236-246	476-486	69-79

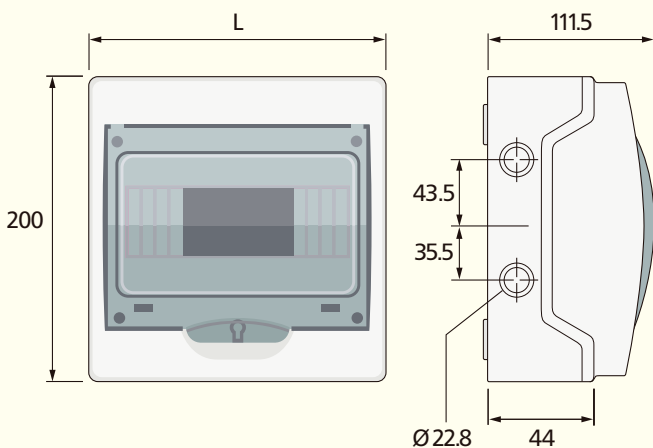
Flush metal K6508s to K6521s
Panel mounted

Flush metal K6508s to K6521s
Rear mounted

*Depth does not apply if panel-mounted

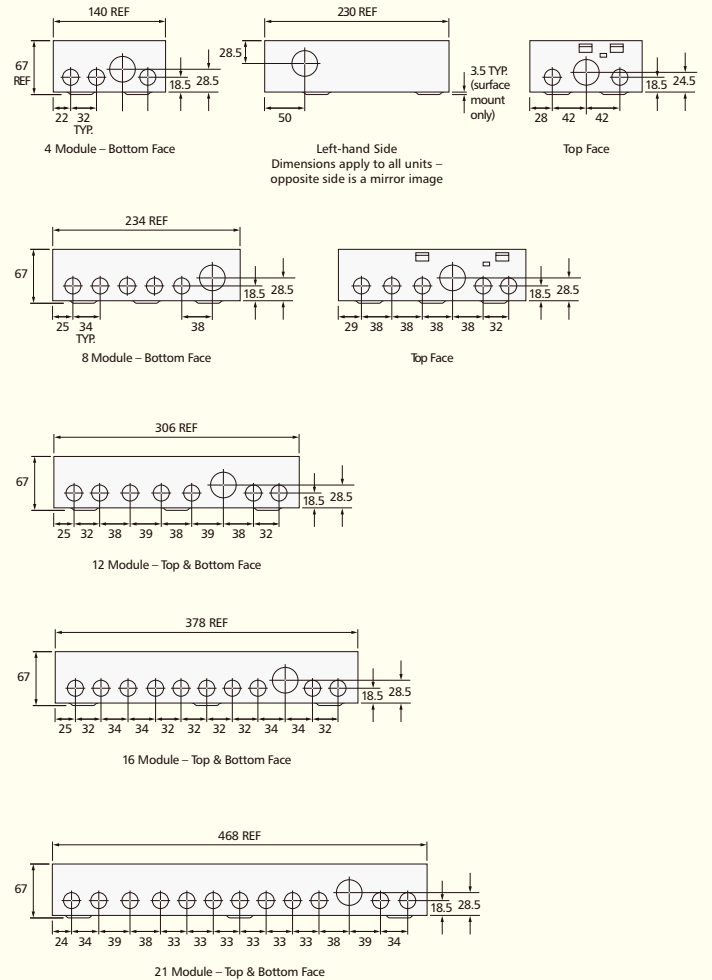
Dimensions (mm)
Two module enclosures

Four module enclosures


*Fixing centre for mounting

IP65 enclosures


5702s L = 123

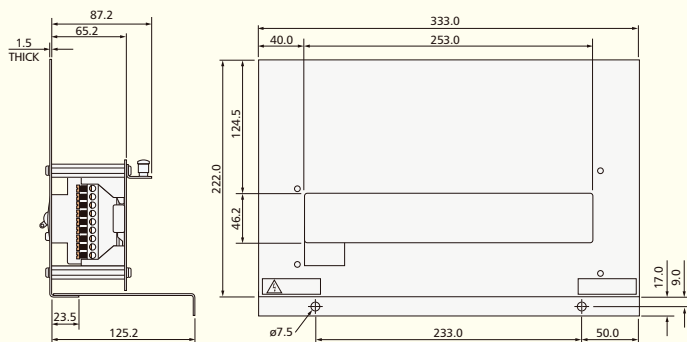
5704s L = 195

Dimensions (mm)
Knockout details for Surface and Flush-Mount Sentry Ranges


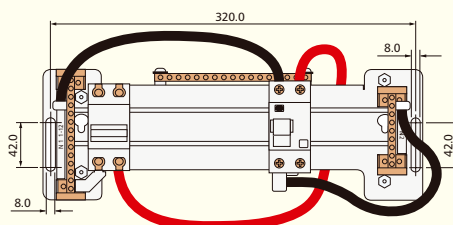
Unit	Top Face	Bottom Face	Sides
4 module	2 x 20mm 1 x 32mm	3 x 20mm 1 x 32mm	1 x 32mm per side
8 module	5 x 20mm 1 x 32mm	5 x 20mm 1 x 32mm	1 x 32mm per side
12 module	7 x 20mm 1 x 32mm	7 x 20mm 1 x 32mm	1 x 32mm per side
16 module	10 x 20mm 1 x 32mm	10 x 20mm 1 x 32mm	1 x 32mm per side
21 module	12 x 20mm 1 x 32mm	12 x 20mm 1 x 32mm	1 x 32mm per side

Dimensions (mm)

Skeleton units



Front



Front with plate removed

Installation

Consumer units

The Consumer units are provided with internal busbar shields or covers.

Front covers have lockable lid (using barrel lock & key accessory K5593s), which masks the front cover retaining screw. Removal of the front cover for internal access requires the use of tools.

Cover mounted blanks are provided with each Sentry Consumer unit to fill unused ways.

4, 8 and 12 module – 1 off x 2

16 and 21 module – 2 off x 2

If additional unused ways are required, the DIN rail mounted blank 5544s or cover mounted blank K5544s must be used to complete the installation.

Skeleton Units

The Skeleton unit is a spine backplate assembly designed to fit the majority of Mantel / Clifton enclosures, as used in Local Authority housing.

The Skeleton unit is provided with an internal busbar shield.

Removal of the front cover for internal access requires the use of tools.

If any unused ways are required the DIN rail mounted blank 5544s must be used to complete the installation.

Two / four module enclosures

Front covers require tools to enable removal and gain internal access.

5604s has provision for tamper-proofing.

If there are any unused ways required the DIN rail mounted blank 5544s must be used to complete the installation. 5604s, 5702s, 5704s are provided with moulded blanks.

Note: Only the K5592s enclosure will accept the one module RCBOs.

Service conditions

Wiring of these products must comply with current IEE regulations.

Consumer units and two and four module enclosures are intended for indoor use in dry conditions and are not suitable for locations where high humidity and/or high temperatures may be experienced.

It is important that during installation of any Sentry enclosure, steps are taken to ensure that the IP rating is maintained, e.g. correct use of cable glands and knockouts / cutouts.

Testing

Site assembled consumer units using MK components comply fully with BS EN 60439-3 so do not require further site testing other than normal routine installation tests.

Split load and multi-incomer arrangements

Such assemblies must utilise the relevant Sentry kit in order to comply with BS EN 60439-3 and to avoid the need for additional testing.

Stacking kits

Accessory kits (stacking frame, fittings and earth cable) can be used to produce stacked dual rail units in the insulated and surface metal ranges for the 12, 16 and 21 module units.

K6061s – for 12 module units to create 24 module dual rail consumer unit.

K6062s – for 16 module units to create 32 module dual rail consumer unit.

K6063s – for 21 module units to create 42 module dual rail consumer unit.

Weatherproof enclosures

The weatherproof enclosures may be used for outdoor applications up to the level of the IP65 rating.

The cable entry position on the top and bottom of the enclosure is at the discretion of the installer and can be achieved with suitable tools. Knockouts/cutouts are provided for side entry.

Precautions must be taken to maintain the IP rating, e.g. correct use of cable glands and knockouts. The caps provided must be used to cover the mounting screws.

Note: IP65 rating only achieved with lid in the closed position. These enclosures will not accept the one module RCBOs.

Switch Disconnectors

Standards and approvals

Sentry switch disconnectors are designed to fully comply with the requirements of BS EN 60947-3.

They feature positive contact status indication in accordance with the 16th edition IEE Wiring Regulations 537-02-03 and 537-03-02. The Sentry switch disconnector may therefore be used as an isolating switch.



Technical specification

Electrical

Category of duty:	AC22A	
Load type capability:	Both resistive and inductive	
Operating voltage:	240V a.c.	
Operating frequency:	50Hz	

	5560s	5500s
Rated operational current I _e	63A	100A
Rated duty	Uninterrupted	Uninterrupted
Rated making capacity I	189A rms	3000 rms
Rated breaking capacity I _c	189A rms	3000 rms
Rated short time withstand current I _{cs} for 1 sec	2kA rms	2kA rms
Rated short circuit making capacity I _{cm}	3kA peak	3kA peak
Rated conditional short circuit current	6kA rms prospective	6kA rms prospective

Physical

Ambient operating temperature:
-5°C to +40°C

IP rating:
Front face IP3X, screw IP2X

Max installation altitude:
2000 metres

Rating specification

Switch disconnector	Rating
5500s	100A
5560s	63A

Description

The Sentry range offers a choice of switch disconnector rated at either 100A or 63A.

The operating dolly is capable of being locked in either the ON or OFF position. When locked in the ON position it will no longer operate as an isolator. Positive indication of the opening of the contacts is only given when the green stripe can be seen on the dolly.

The terminals are of a tunnel design and offer a generous cable capacity of 50mm² for solid stranded conductors and 35mm² for flexible conductors, on both current ratings.

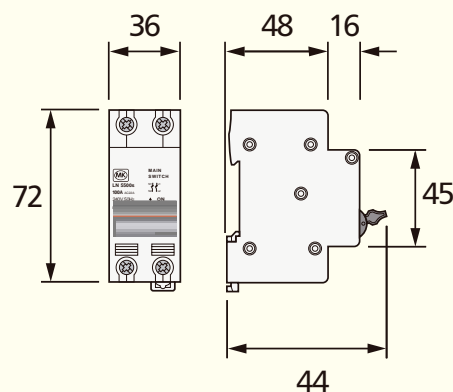
Category of duty

The Sentry switch disconnector is capable of switching both resistive and inductive loads and has a category of duty of AC22A.

Features

- Meet BS EN and IEE Wiring Regulation requirements
- Choice of current ratings
- Tunnel design terminals for ease of wiring
- Generous cable capacity
- Lockable operating dolly
- Make first, break last on neutral

Dimensions (mm)



Installation

The Sentry switch disconnector is designed to accept both cable-in/cable-out and direct-to-busbar connections.

The terminal screws are touch-proof to IP2X, captive and feature combination heads.

Miniature Circuit Breakers (MCBs)

Standards and approvals

Sentry MCBs are designed to fully comply with the relevant requirements of BS EN 60898: 1991.

The MCBs feature positive contact status indication in accordance with 16th edition IEE Wiring regulations (537-02-03 and 537-03-02).

Technical specification

Electrical

Voltage rating:
230V/400V a.c.

Operating frequency:
50Hz

Rated short circuit capacity I_{cn}:
6000A

Service short circuit capacity I_{cs}:
6000A

When backed up by a BS 1361, 100A fuse, then the breaking capacity of the MCB is increased to 16,000A.

Energy limiting class: **3**

Physical

Ambient operating temperature:
-5°C to +40°C

Calibration temperature:
+30°C

IP rating:
Front face IP4X, screw IP2X

Terminal capacity:
35mm²

Tightening torque:
3Nm

Max. installation altitude:
2000 metres



Description

Sentry MCBs are of the thermo-magnetic, current limiting type and are available with either Type B or Type C operating characteristics.

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.

Positive contact status indication

When the green indicator is visible, then a contact gap of 4mm has been achieved. Sentry MCBs may therefore be used as single pole isolating switches where appropriate.

Terminals

The Sentry MCB features tunnel terminals of 35mm² capacity on all ratings. The terminal screws are touch proof to IP2X, captive and feature combination heads.

Retrofit kit 5567s

The Sentry MCB/RCBO retrofit kit is designed for use when installing MCBs/RCBOs into old Sentry Consumer Units with fork style busbar (non 's' suffix or 'K' prefix). The kit contains a busbar extension terminal (5562s), a 100A rated cable and a 25mm² capacity spade connector terminal with clamp screw. It may be used to fit up to 3 Sentry MCBs/RCBOs. If more need to be installed, then use the 5511s busbar with kit.

Modes of operation

The mechanism of the Sentry MCB has been carefully designed and engineered using thermal and magnetic elements to detect overcurrents due to both overload and fault currents. The MCB will operate and interrupt the supply to prevent damage to the installation.

The thermal component is a carefully calibrated, thermally operated bi-metal element.

Larger overloads and fault current situations are dealt with using the magnetic tripping mode of the MCB. This acts very quickly, overriding the thermal operation.

BS EN 60898 requires the tripping to occur within 100 milliseconds and the design of the Sentry MCB allows fault currents of up to 6000A (M6) to be safely interrupted well within this time scale.

Miniature Circuit Breakers (MCBs)

Rating specification

Type B Single pole	Rating
5903s	3A
5906s	6A
5910s	10A
5916s	16A
5920s	20A
5932s	32A
5940s	40A
5945s	45A
5950s	50A
Type C Single pole	Rating
8703s	3A
8706s	6A
8710s	10A
8716s	16A
8720s	20A
8732s	32A
8740s	40A
8750s	50A
Retrofit kit 5567s	

Description (continued)

Operating characteristics

TYPE B

The magnetic operating limits are between 3 and 5 times the current rating of the MCB. Under these conditions the mechanism of a 10A MCB will operate between 30A and 50A in an overcurrent situation.

TYPE C

In the case of Type C MCBs, the magnetic operating limits are between 5 and 10 times the current rating of the MCB. Under these conditions the mechanism of a 10A MCB will operate between 50A and 100A in an overcurrent situation.

Type C devices are capable of supplying the majority of inductive and capacitive loads such as motors, transformers and tungsten or fluorescent lighting.

Time/Current and Energy let through characteristics of Sentry MCBs are shown graphically on the Time current characteristics chart (See separate document).

TYPE D

The Type D MCB is suitable for applications involving equipment generating very high inrush currents, e.g. x-ray equipment, transmitters and computer power supplies. The magnetic operating limits are between 10 and 20 times the current rating of the MCB. **(For Modular Combi use only)**

Features

- Meet BS EN and IEE Wiring Regulation requirements
- 'Trip-free' mechanism
- Positive contact status indicator
- Tunnel type, touch-proof, captive terminals
- Generous terminal capacity
- Can be used as single pole isolating switch

Installation

Selection of the most suitable MCB should take into account the following considerations:

1. Operating voltage and frequencies

It is possible to use the Sentry MCB on other voltages than 230/400V a.c. 50Hz, but it should be noted that this takes the MCB outside the scope of BS EN 60898.

2. Type of load

RESISTIVE

No derating is required in the case of resistive loads.

INDUCTIVE

In the case of inductive loads from direct-on-line motors, the surge on energisation can produce up to 5 times full load current, which may be present for several seconds. It is therefore recommended that Type C MCBs are used for such circuits.

When using assisted start motors, the usually quoted figures are 2.5 times the full load current, for periods generally longer than those for direct-on-line starters. It is thus important to establish the degree of inrush current in order to select a suitable MCB. In all instances, reference should be made to both the motor manufacturer's curves and MK's circuit breaker curves in order to select the compatible miniature circuit breaker.

CAPACITIVE

Surges on energisation, for example with discharge lighting, may well reach 25 times the rated current of the device, but only for very short duration. Type B devices will often be adequate, but for more specialised circuits, a Type C may be required. The lighting fitting manufacturer's recommendations should be observed.

Miniature Circuit Breakers (MCBs)

3. Fault breaking capacity

All Sentry MCBs have a short circuit breaking capacity of 6,000A (M6).

For applications where the prospective fault current is in excess of this, a BS 1361, 100A (maximum) fuse should be used upstream of the MCB to provide a system breaking capacity of 16,000A (in accordance with BS EN 60439-3).

4. Discrimination

A Sentry MCB consumer unit will normally be supplied via an HRC fuse. The HRC in such instances will be the major device and remain unaffected by any fault current which causes the MCB to operate.

The level of fault current up to which this can be assured is determined by comparing the I^2t characteristics of the two devices. Discrimination will theoretically occur up to the level at which the value of the total operating I^2t of the MCB is below the minimum pre-arcing I^2t of the fuse, although in practice, discrimination will be achieved at higher levels than this.

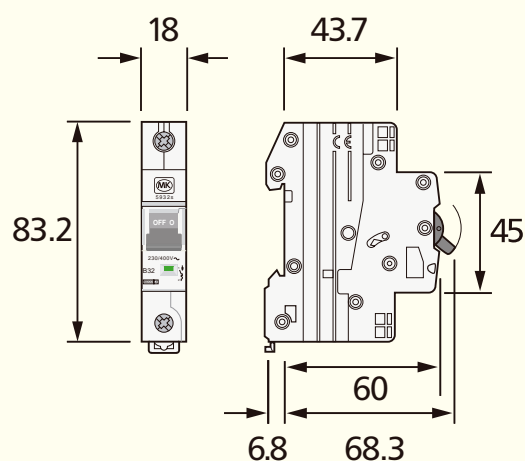
5. Cable protection

The current carrying capacity of the cable should always exceed the current rating of the MCB to prevent damage.

However, should this not be the case, a further calculation may show that the MCB can still interrupt the current in a sufficiently short time to prevent overheating of the cable insulation. Although this will prevent mechanical damage to the cables, further overload protection should be provided by a separate device, e.g. a motor overload relay.

In case of doubt please contact the MK Technical Sales and Service Department.

Dimensions (mm)

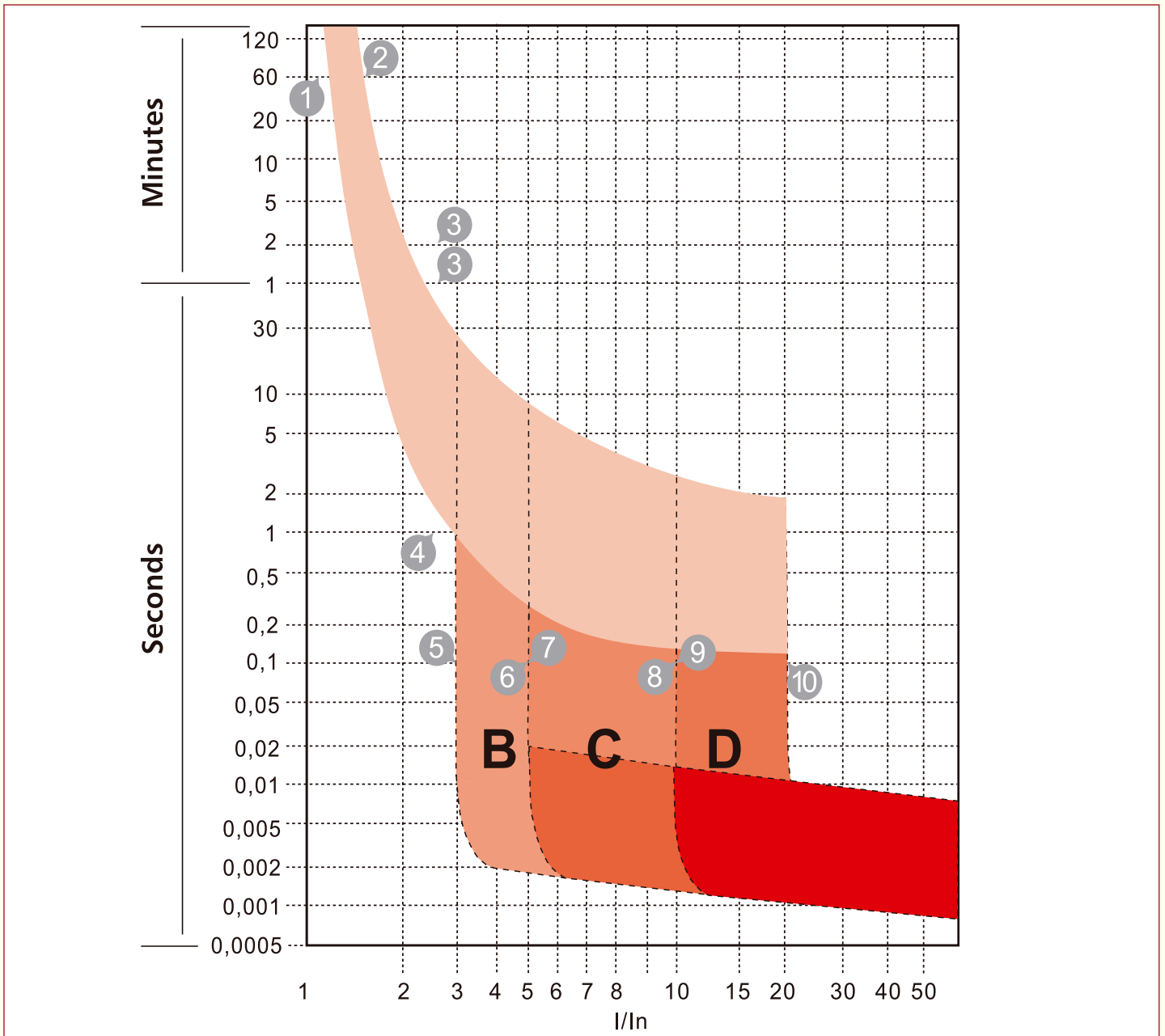


Miniature Circuit Breaker Time Current Characteristics

Sentry miniature circuit breaker

Type: B and C to BS EN 60898 Ref. calib. temp 30°C

(Type D shown for reference only)



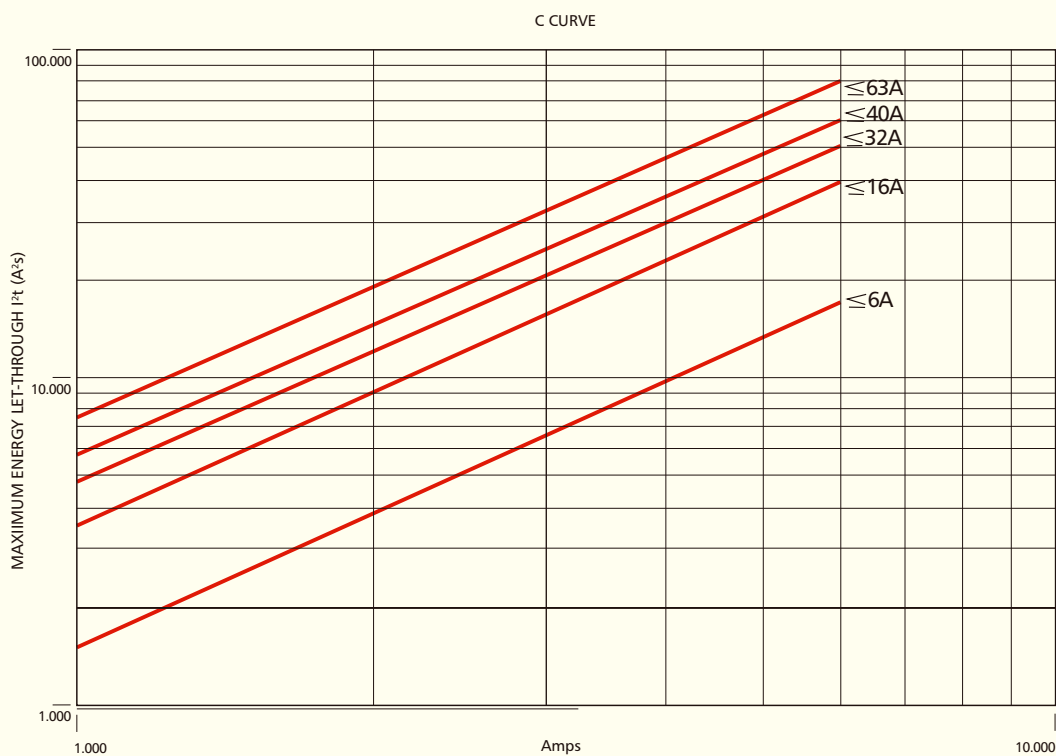
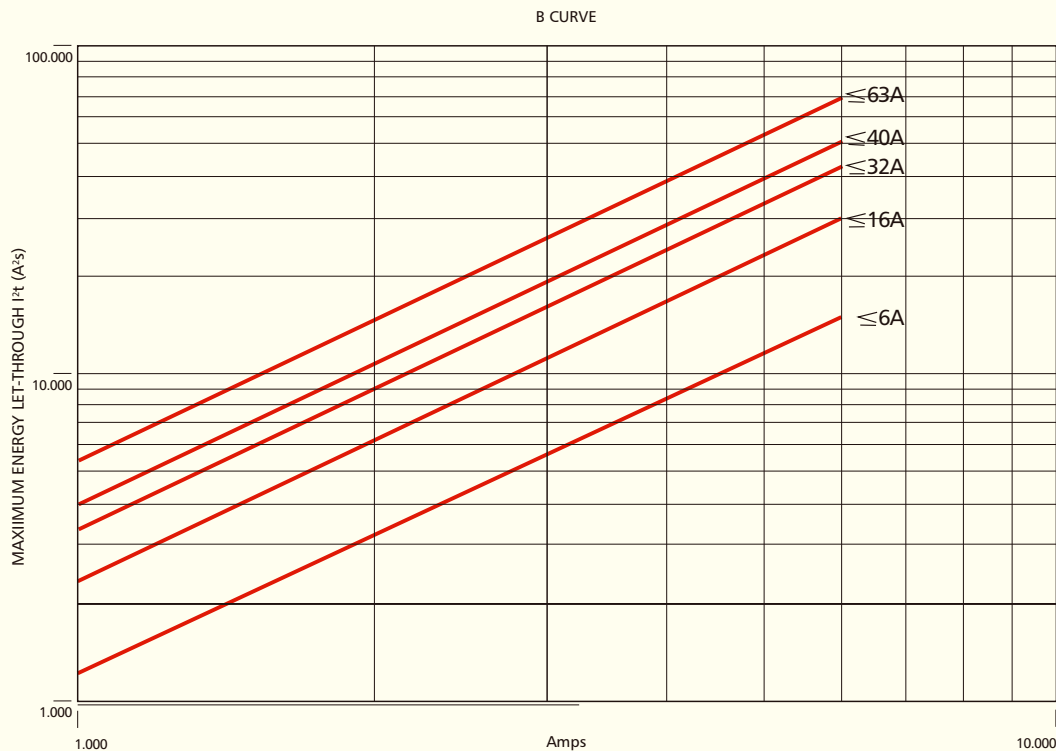
Reference values for time current operating characteristics, BS EN 60898

1	Steady Current Value $I_{nt} = 1,13 I_n : t > 1h$
2	Steady Current Value $I_{nt} = 1,45 I_n : t < 1h$
3	$2,55 I_n : t < 1m (I_n \leq 32A)$ $t < 2m (I_n > 32A)$
4	$2,55 I_n : t > 1s$

5	Curve B
	$3 I_n : 0,1 < t < 45s (I_n \leq 32A)$ $0,1 < t < 90s (I_n > 32A)$
6	$5 I_n : t < 0,1s$
7	Curve C
	$5 I_n : 0,1 < t < 15s (I_n \leq 32A)$ $0,1 < t < 30s (I_n > 32A)$
8	$10 I_n : t < 0,1s$

9	Curve D
	$10 I_n : 0,1 < t < 4s (I_n \leq 32A)$ $0,1 < t < 8s (I_n > 32A)$
10	$20 I_n : t < 0,1s$

I²t curves



Residual Current Breakers with Overcurrent Protection (RCBOs)

Standards and approvals

All Sentry RCBOs are designed to fully comply with the relevant requirements of BS EN 61009-1, BS IEC 61009-2-2, BS 61543 for EMC.

The RCBOs feature positive contact status indication in accordance with 16th edition IEE Wiring Regulations (537-02-03 and 537-03-02).



Technical specification

Electrical

Operating voltage:
230V a.c.

Operating frequency:
50Hz

Rated Short circuit capacity I_{cn} :
6,000A

Service short circuit capacity I_{cs} :
6,000A

When backed up by a BS 1361, 100A fuse, then the breaking capacity of the RCBO is increased to 16,000A.

Type A (a.c. as well as pulsating d.c.)

Physical

Ambient operating temperature:
-25°C to +40°C

IP rating:
Front face IP4X, screw IP2X

Terminal capacity:
Line in 25mm²
Line and neutral out 16mm²

Tightening torque:
Load line and neutral 1.5Nm
Supply 2.5Nm

Max. installation altitude:
2000 metres

Description

The Sentry range features solid neutral type single pole RCBOs in one module format.

The one module Sentry RCBOs are a combination of a Type B MCB and a Residual Current Device. 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. (When groups of circuits are protected by an RCD, all circuits would be interrupted under fault conditions, which may cause unnecessary inconvenience).

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

The Sentry RCBO features tunnel terminals of generous capacity, with 25mm² for live supply and 10mm² for live and neutral load terminals. The neutral supply (blue) and earth supply (white/cream) are provided via flying leads.

Mode of operation

As the RCBO is a combination of an MCB and RCD, reference should be made to the relevant technical information regarding these devices.

Features

- Single module
- Meet BS EN and IEE Wiring Regulation requirements
- Allows both overcurrent and earth fault protection and detection
- Available in a range of current ratings
- Tunnel type terminals
- Generous terminal capacity
- Positive contact status indication

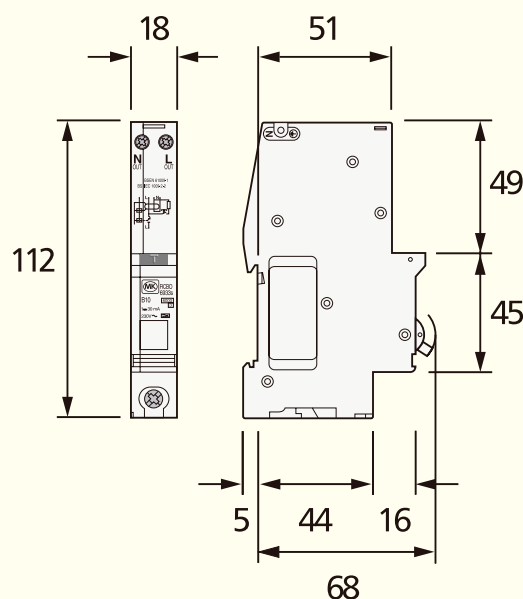
Residual Current Breakers with Overcurrent Protection (RCBOs)

Rating specification

Rating RCBO	Tripping Current	List No.
6A, 230V	30mA	6932s
10A, 230V	30mA	6933s
16A, 230V	30mA	6934s
20A, 230V	30mA	6935s
32A, 230V	30mA	6936s
40A, 230V	30mA	6937s
45A, 230V	30mA	6938s
50A, 230V	30mA	6939s*

* Available early 2004

Dimensions (mm)



Installation

The Sentry RCBOs may be installed anywhere along the length of the busbar and will occupy one outgoing way.

Selection of the most suitable RCBO should take into account the following considerations:

1. Operating voltage and frequencies

2. Fault breaking capacity

For applications where the prospective fault current is in excess of this, a BS 1361, 100A (maximum) fuse should be used upstream of the RCBO to provide a system breaking capacity of 16,000A.

3. Cable protection

The current carrying capacity of the cable should always exceed the current rating of the RCBO, to prevent damage. However, should this not be the case, a further calculation may show that the RCBO can still interrupt the current in a sufficiently short time to prevent overheating of the cable insulation. Although this will prevent mechanical damage to the cables, further overload protection should be provided by a separate device, e.g. a motor overload relay.

In case of doubt please contact the Technical Sales and Service Department.

Residual Current Devices (RCDs)

Standards and approvals

All Sentry RCDs are designed to fully comply with the requirements of BS EN 61008: 1995, IEC 1008:1990

They all feature positive contact status indication in accordance with 16th edition IEE Wiring Regulations (537-02-03 and 537-03-02).

Technical specification

Electrical

Rated making and breaking capacity /m:

16 - 40A = 500A

63 - 80A = 800A

100A = 1000A

Rated short-circuit current /Inc:

16 - 80A = 10,000A (100A fuse)

100A = 6,000A (125A fuse)

Rated residual short-circuit current /IΔm:

16 - 80A = 10,000A

100A = 6,000A

Rated voltages:

2 pole devices, 110V and 230V

4 pole devices, 230V to 440V

Operating voltages:

2 pole devices, 110V - 100V to 250V

230V - 100V to 250V

4 pole devices, 185V - 440V

Tripping Time:

1 x IΔn ≤ 300ms

5 x IΔn ≤ 40ms

Time delay version

1 x IΔn - 350-500ms

Physical

Ambient operating temperature:

-25°C to +40°C

IP rating:

Front face after installation of enclosure IP40

Terminal capacity:

Solid standard - 1 x 1.5 - 50mm²

Flexible with female - 1 x 1.5 - 35mm²

Tightening torque:

3Nm

Max. installation altitude:

2000 metres



Description

The Sentry range of RCDs offers 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 16 to 100A is available in a variety of tripping sensitivities.

When in the OFF position a contact gap of 4mm is present, enabling Sentry RCDs to be used as isolating switches where appropriate.

Positive indication of the opening of the contacts is only given when contact status indicator shows green.

The operating dolly may be locked in either the ON or OFF position without affecting the ability of the trip mechanism to operate, i.e. the RCD is 'trip-free'. It is not possible to hold the contacts closed when a fault condition exists.

All 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.

Features

- Meet BS EN and IEE Wiring Regulation requirements
- Extensive range to suit all specifications
- Protect against unwanted tripping
- Positive contact status indication
- Suitable for most residential, commercial and light industrial applications
- Offer a high degree of protection against electrocution in accidental shock hazard situations
- Two module, double pole units available up to 100A
- Indication of earth fault, via central dolly position

Residual Current Devices (RCDs)

Rating specification

Double pole, 2 module

Rating	Tripping current	List No.
16A, 110V	10mA	6016s
16A, 110V	30mA	6416s
16A, 230V	10mA	6316s
16A, 230V	30mA	5716s
32A, 110V	30mA	6032s
32A, 230V	30mA	6730s
40A, 230V	30mA	5740s
63A, 230V	30mA	5760s
63A, 230V	100mA	6160s
63A, 230V	300mA	5860s
80A, 230V	30mA	5780s
80A, 110V	30mA	6080s
80A, 230V	300mA	5880s
80A, 230V	100mA	6180s
100A, 230V	30mA	7700s
100A, 230V	100mA	6600s
100A, 230V	300mA	7800s

Double pole, pulsating d.c., fault current sensitive, 2 module

16A, 230V	10mA	6216s
16A, 230V	30mA	6716s
32A, 230V	30mA	6630s
40A, 230V	30mA	5640s
63A, 230V	30mA	5660s

Time delayed, 2 module

80A, 230V	100mA	6980s
100A, 230V	100mA	6400s

Four pole, 4 module

25A, 230/400V	30mA	6425s
40A, 230/400V	30mA	6440s
40A, 230/400V	100mA	6240s
63A, 230/400V	30mA	6463s
63A, 230/400V	100mA	6363s
63A, 230/400V	300mA	6263s

Four pole, pulsating d.c., fault current sensitive, 4 module

40A, 230/400V	30mA	6640s
---------------	------	-------

Installation

Sentry RCDs must never be used as the sole method of direct contact protection, but are invaluable in providing supplementary protection in high risk environments where damage may occur.

Application

The choice of the most suitable RCD for a particular application should take into account the following considerations:

1. Sensitivity

10mA RCDs offer a high degree of protection against electrocution in an accidental shock hazard situation. They are of particular value in a high risk area where resistances external to the body are likely to restrict the earth fault current flowing through the body to less than 30mA and where 110V supply is being used.

30mA RCDs offer a high degree of protection in an accidental shock hazard situation and are by far the most popular sensitivity used in the United Kingdom. In a shock situation, the current flowing through the human body at 240V 50Hz could be between 80 and 240mA, depending on the resistance of the body in question. To ensure that there are no harmful physiological effects in such a situation, it is necessary for the RCD to operate within 300ms at 30mA and 40ms at 150mA. As the Sentry RCD typically operates well below these times, it clearly more than satisfies this requirement.

100mA RCDs may, in some circumstances, provide protection against electrocution in an accidental shock hazard situation. However, it is important to note that there is a likelihood that the earth fault current may be below the sensitivity of the RCD. This becomes increasingly likely if additional resistances to that of the human body are in the current path.

300mA RCDs provide protection against the risk of fire only. They do not provide protection against electrocution in an accidental shock hazard situation. A typical application would be lighting circuits where it is deemed that the risk of electric shock is small.

It is important to note that a current of less than 500mA flowing in a high resistance path is sufficient to bring metallic parts to incandescence and, potentially, initiate a fire.

2. Requirements of the IEE Wiring Regulations BS 7671

RCDs may be used to provide additional protection against both Indirect and Direct Contact.

RCDs with residual tripping current in excess of 30mA should not be used to provide personal shock protection.

Indirect Contact

Defined as the "contact of persons or livestock with exposed conductive parts made live by a fault and which may result in electric shock".

Effective earthing in conjunction with automatic disconnection should always be employed to protect against the effects of indirect contact. The provision of a low resistance path back to the supply from the fault should ensure that the overcurrent device operates before damage occurs. This is the earth fault loop impedance.

In circumstances where the earth fault loop impedance in the circuit is too high to ensure operation of the overcurrent device, then the IEE Wiring Regulations allow the installation of an RCD. To comply with the Regulations, the earth loop impedance of the circuit (in ohms), multiplied by the rated tripping current of the RCD (in amperes) must not produce a value greater than 50. With this in mind, the maximum values of earth loop impedance permissible when installing an MK Sentry RCD are as follows:

$$Z_s (\text{max}) = \frac{50}{I_{\Delta n}} = \frac{50}{0.03} = 1666 \text{ ohms}$$

Rated Tripping Current of RCD	Maximum Permissible Earth Fault Loop Impedance
10mA	5000 ohms
30mA	1666 ohms
100mA	500 ohms
300mA	166 ohms

(Regulations 413-02-15 and 16 apply). RCDs are further specified for protection against indirect contact on TT systems. (Regulations 413-02-19 and 20 apply.)

Residual Current Devices (RCDs)

Application (continued)

Direct Contact

Defined as "contact of persons or livestock with live parts which may result in electric shock".

The Regulations recognise four main means of providing protection against direct contact which include enclosures and the use of extra low voltage systems.

However, the use of RCDs is specified by the Regulations in the following instances:

- A socket outlet rated at 32A or less which may reasonably be expected to supply portable equipment for use outdoors shall be protected by an RCD having the characteristics specified in Regulation 412-06-02. (Regulation 471-16-01 applies.)
- Where socket outlets are used to supply caravans on caravan sites, then they must be protected by an RCD having the characteristics specified in Regulation 412-06-02.

Regulation 412-06-02 stipulates among other things that where supplementary protection is provided by residual current devices, their rated residual operating current must not exceed 30mA and that they must trip within 40ms at 5 times rated operating current.

Although RCDs must never be used as the sole method of direct contact protection, they are invaluable in providing supplementary protection in high risk environments where damage may occur. Typical applications include situations where equipment may be used outside or fed by trailing sockets, equipment accessible to children or equipment used in wet areas. For these reasons RCDs are commonly found in schools, hospitals and residential installations.

3. Types of fault current

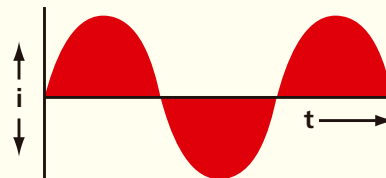
In an installation different types of fault current can occur. MK offer RCDs to suit these conditions.

Sentry Type AC RCDs are suitable for situations where there are residual sinusoidal alternating currents, whether applied suddenly or rising slowly. This is the most commonly used type of RCD in the UK.

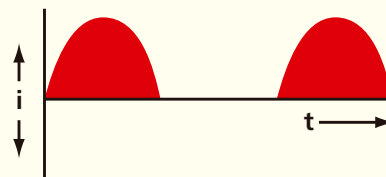
Sentry Type A RCDs (i.e. pulsating d.c. fault current sensitive) are suitable for situations where there are residual sinusoidal alternating currents, whether suddenly applied or slowly rising. These situations can occur with the use of semiconductor devices in modern electrical and electronic equipment, such as computers, printers, plotters, televisions, video cassette recorders and hi-fi equipment, is growing.

Such devices may result in the normal sinusoidal a.c. waveform generated by the mains electrical supply being 'modified'. for example, the waveform may be rectified or, as in asymmetric phase control devices, the waveform may be chopped. The resulting waveforms are said to contain a pulsating d.c. component as illustrated below.

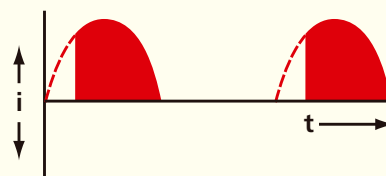
Normal a.c. waveform



Pulsating d.c. waveform
Half wave rectified



Pulsating d.c. waveform
Typical asymmetrical
phase control



Residual Current Devices (RCDs)

Application (continued)

Pulsating d.c. fault current sensitive RCDs


Should a waveform containing a pulsating d.c. component develop an earth fault, then it is possible that it may not be detected by an "a.c. only" sensitive RCD. For this reason, the Sentry range contains RCDs designed to be sensitive to pulsating d.c. fault currents thus maintaining the intended degree of protection.


Type B RCDs are suitable for situations where there are residual sinusoidal alternating currents, residual pulsating direct currents and smooth d.c. and a.c. residual current of various frequencies, which would not trip Type AC or A RCDs.

These situations can occur in 50Hz a.c. installations with electronic equipment, e.g. frequency converters, UPS installations, power supply unit or high-frequency power converters.


The following symbols are used on the front plate of the device to indicate the type of RCD.

 – type AC RCD.

 – type A RCD.

 – type B RCD.

4. Temperature

All Sentry RCDs are suitable for use in the temperature range -25°C to $+40^{\circ}\text{C}$. This is indicated on the RCD by the symbol .

5. Time Delayed RCDs Type S (or selective)


When two or more Sentry RCDs are installed in series with one another, measures must be taken to ensure that they discriminate properly. In event of an earth fault, only the RCD immediately upstream from the fault should operate.

RCDs do not discriminate on rated tripping current alone, i.e. a 100mA rated RCD situated upstream from a 30mA rated RCD, will not offer inherent discrimination.

In order to ensure that discrimination is achieved, a Sentry Time Delayed RCD should be used. The in-built time delay period ensures that the downstream RCD opens the circuit before the upstream RCD starts to operate.

The maximum tripping time of a Sentry Time Delayed RCD is 500ms. Typical applications are:

- i) as main incomers on TT systems where all sockets are already protected by a 30mA instantaneous RCD, but where unwanted tripping may become a problem.
- ii) as the main in-comer of split load consumer unit arrangement where all circuits are protected by a 10 or 30mA instantaneous RCD or otherwise comply with the direct and indirect contact protection requirements of the Wiring Regulations.

The Sentry Time Delay RCDs are clearly identified with the internationally agreed representative symbol .

6. 3 phase, 3 wire systems

Sentry 4 pole RCDs may be used to provide earth fault protection on 3 phase, 3 wire systems, as the current balance mechanism does not require a neutral to be connected in order to operate effectively.

Residual Current Devices (RCDs)

Operation

The RCD provides an indication of an earth fault and contact status as detailed below.

The operating dolly provides the following indication:

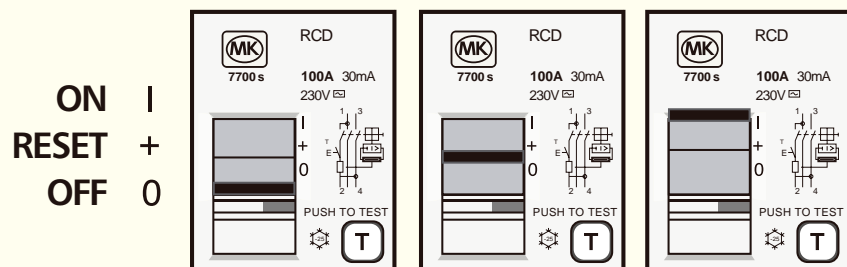
- I** = Switched ON
- +** = Switched OFF due to Earth Fault or test button operation
- 0** = Switched OFF

The contact status is shown through the window.

Red = contact closed

Green = contact open (RCD is switched off)

In the event of an Earth Fault in the installation or the operation of the test button, the dolly will move to the central position (+) and the contact status indicator shows green. To re-connect the supply the dolly must be reset by moving to the off position before switching on.



Testing

If an RCD is installed for additional protection against indirect contact, it is a requirement of the IEE Regulations that the effectiveness of the RCD be verified. This must be achieved by a test simulating an appropriate fault condition and be independent of any test facility incorporated in the RCD. The test currents to be applied are as follows:

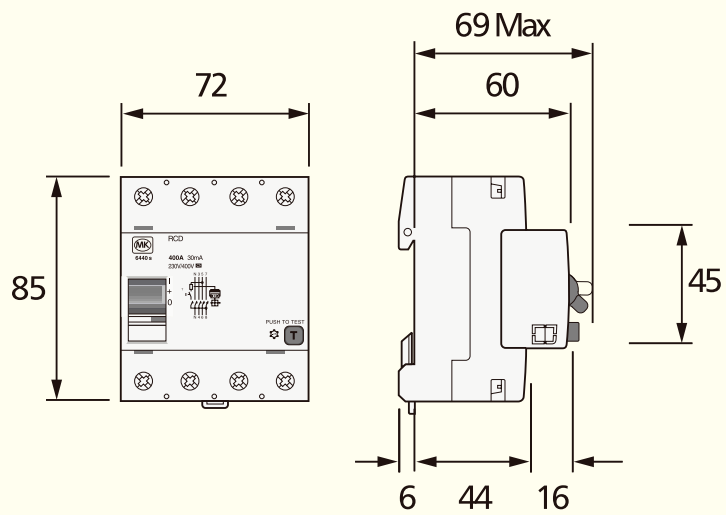
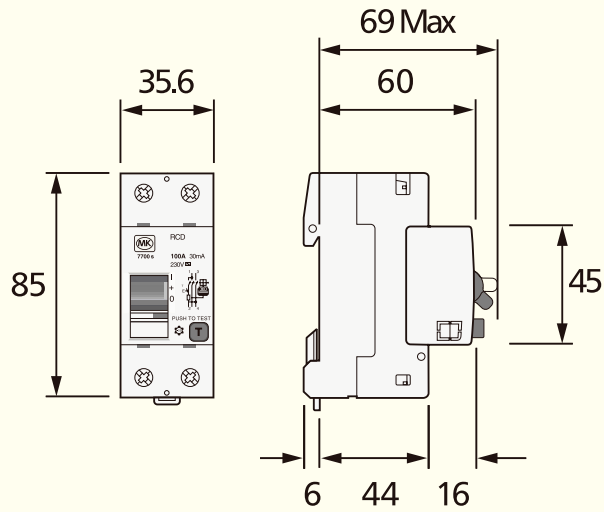
Test current	Condition
$0.5 \times I_{\Delta n}$	RCD must not trip
$1.0 \times I_{\Delta n}$	RCD must trip within 300mS
$5.0 \times I_{\Delta n}$	RCD must trip within 40mS

Where $I_{\Delta n}$ is the RCD's rated tripping current in accordance with wiring regulations and product standard BS EN 61008.

For time delay RCD $1.0 \times I_{\Delta n}$ RCD must trip between 350-500mS.

Residual Current Devices (RCDs)

Dimensions (mm)



Contactors

Standards and approvals

All Sentry contactors in the range are designed to fully comply with BS EN 61095

Rating specification

Type	Width	List No.
20A, double pole	1 module	6220s
20A, double pole, with manual override	1 module	6720s
20A, four pole	2 module	6420s
40A, double pole	2 module	7240s
63A, double pole	2 module	7263s
40A, four pole	3 module	7440s
63A, four pole	3 module	7463s
Auxiliary Contact	1 module (including ½ module blank)	7301s
Suppression block	1 module	7302s



Description

Sentry contactors provide a method of remotely switching single and three phase loads. In this regard, they are particularly useful for switching heating, lighting and ventilation circuits, in particular when used in conjunction with REC supply off-peak tariffs.

The Auxiliary Contact is suitable for fitting to all Sentry Contactors and allows remote indication of contactor status, one normally open and one normally closed contact is provided. The Auxiliary Contact is a half module width, a half module blank is supplied to complete installation.

The suppression block is suitable where contractor controls are not bounce free and connects across the coil terminals. It can be used in conjunction with one or two contactors.

They are suitable for mounting on a standard DIN rail and are therefore fully compatible with all Sentry Consumer Units and small enclosures. (5504s, 5604s, 5704s, 5702s.)

Functions

CONTROL

Achieved by energising and de-energising the contactor coil, via an MK Time Switch or REC meter during 'off peak' hours as set by supply authorities. A coil status indicator is visible through the small window on the front of the contactor.

MANUAL OVERRIDE (6720s only)

An extra function is offered by the Sentry Contactor with manual override. This performs in the same way, but has a switch on the front face to give the following extra facilities:

1. AUTO START MODE

This gives the same performance as above.

2. 'STOP' (0)

In this position the user is able to switch the load off when required, eg during periods of absence. The load remains off until manually reset.

3. MANUAL START MODE (1)

A manual override which allows the load to be energised outside the normal timed period when required. When the contactor is used via an MK Time Switch or by an REC supply meter, the override switch can either be reset manually or allowed to return to the 'auto' position at the commencement of the next timed period. During the 'manual' period, electricity will be used at the standard rate.

4. 'PERMANENTLY ON' MODE

The manual override switch features a locking mechanism which allows the contactor to be fixed in a 'permanently on' state. Note: this will not now reset at the commencement of the next timed period.

Contactors

Features

- Compatible with all Sentry Consumer Units (single phase only) and the following Sentry enclosures: 5504s, 5604s, 5704s, 5702s (for single and three phase).
- Suitable for heating, lighting and ventilation circuits
- Choice of functions
- Ideal for use with REC supply off-peak tariffs

Installation

a) When a contactor is mounted alongside an MCB of greater than 10 amp current rating, or two contactors are mounted alongside an MCB of any current rating, it is advisable to insert a module blank between them. (List No. 5544s.)

b) When mounting more than two contactors side by side, it is necessary to insert a module blank between every two contactors, to give ventilation.

c) When using dual rail consumer units, it is advisable to mount electronic products on the lower rail and contactors on the upper rail. If mounting in a single rail consumer unit, it is advisable to mount electronic products as far away as possible from contactors. As a minimum they should be spaced by a single module width blank.

d) Ensure the load to be controlled is protected against short circuit and overload conditions by a suitable rated Sentry MCB.

e) Contactors and Suppression Module are mounted into Sentry Consumer Units and enclosures, by clipping onto the DIN rail mounted in the base by means of the spring clip. If the contactor is required to be removed for any reason, unclip the contactor from the DIN rail by means of the spring clip on the contactor.

f) When using a single Auxiliary Contact, the half module blank supplied must be fitted to the DIN rail, to provide protection against access to the internal parts.

g) The suppression module can be used in conjunction with one or two contactors and should be fitted, in parallel with the contactor controls, when they are not bounce free. The module is suitable for 220/240A operation.

Technical specification

All Contactor List Nos. are designed to operate at either 20, 40 or 63 amps continuous current (AC1-AC7b) 50Hz and have a mechanical life of 1,000,000 operations. The coil voltages are 220/240V 50Hz.

List No.	6220s	6420s	6720s	7240s	7263s	7440s	7463s	7301s	7302s
Description	Contactor			Contactor				Auxiliary Contact	Suppression Module
Contactor rating (Ith)	20A	20A	20A	40A	63A	40A	63A	5A	n/a
Includes manual override?	No	No	Yes	No	No	No	No	n/a	n/a
No. of poles (normally open only)	2	4	2	2	2	4	4		n/a
Width in 18mm modules	1	2	1	2	2	3	3	1 (inc ½ mod blank)	1
Rated Voltage (V)									
(i) Insulation (Ui)	500	500	500	500	500	500	500	500	
(ii) Max. operating (Ue)	250	415	250	250	250	415	415	250	
Average consumption of control circuit coil (VA)	– inrush – closed		15 3.8	34 4.6	15 3.8	53 6.5	53 6.5	53 6.5	53 6.5
Terminal cable capacity (max.)	Controls							2.5mm ² flexible rigid	
	2 x 2.5mm ² flexible 2 x 1.5mm ² rigid								
	Power			2 x 4mm ² flexible 2 x 25mm ² rigid				n/a n/a	
	2 x 2.5mm ² flexible 2 x 6mm ² rigid								
Torque for terminals	1.4Nm			3.5Nm				1.4Nm	

Contactors

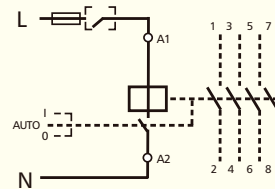
Terminal Layout

i) Contactor

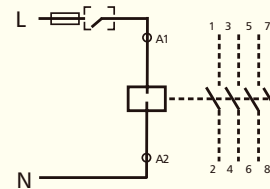
- a) The coil connections to control energisation should be made between terminals A1 and A2.
- b) One normally open main contact is between terminals 1 and 2.
- c) A second normally open main contact is between terminals 3 and 4.
- d) In the case of four pole contactors, the other main contacts are between terminals 5 and 6, and 7 and 8 respectively.

Typical schematic layouts of modular contactors.

With Manual Override

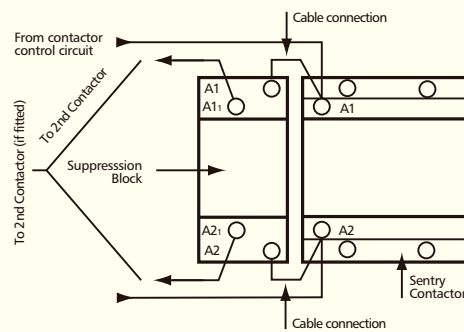


Without Manual Override



ii) Suppression module

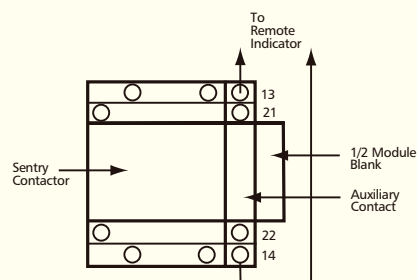
The suppression module should be connected with suitable cable (1.5mm²) across the coil terminals A1 and A2 or A1' and A2'.



iii) Auxiliary contact

Connection of cables should be made between terminals of auxiliary contact.

- a) Normally closed contact between terminals 21 and 22.
- b) Normally open contact between terminals 13 and 14.



Contactors

Applications and Maximum Ratings

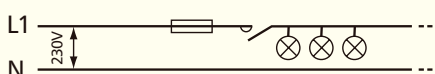
LIGHTING – Maximum number of lamps

Presentation of installations according to type of supply.

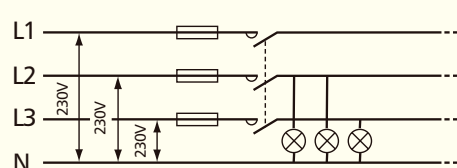
The maximum number of lamps which can be operated per phase is equal to the total number of lamps in the "Single-Phase 230V" table.

For a full range of corresponding products, see pages 225 in the product selector.

Single-phase circuit, 230V



3-phase circuit, 400V (with neutral)

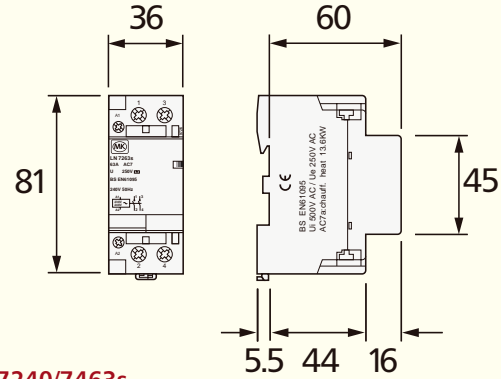
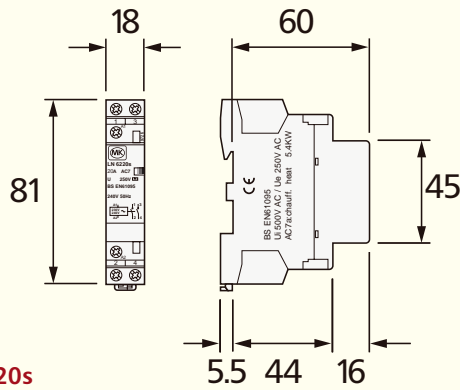
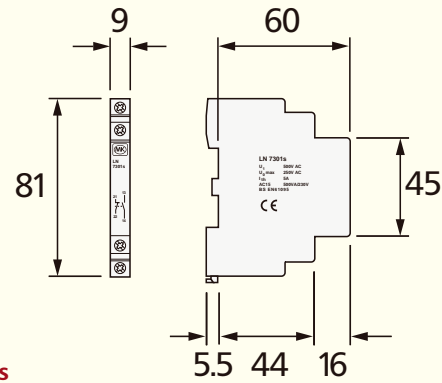


SINGLE-PHASE 230V TABLE						
Type of lighting application (AC5a and AC5b categories)	6220s/6420s/6720s Maximum No. of lamps		7240s/7440s Maximum No. of lamps		7263s/7463s Maximum No. of lamps	
Incandescent and halogen lamps						
40 W	57		115		172	
60 W	45		85		125	
100W	28		70		100	
Halogen lamps used with transformer						
60 W	14		27		40	
80 W	12		23		35	
Fluorescent lamp with starter (single fitting with parallel correction)						
15 W	20		40		60	
20 W	20		40		60	
40 W	20		40		60	
Fluorescent lamp with starter (single fitting non-corrected)						
15 W	30		70		100	
20 W	30		70		100	
40 W	28		70		100	
Electronic ballast (fluorescent lamp single setting)						
18 W	111		222		333	
36 W	58		117		176	
Electronic compact lamp (low consumption)						
7 W	200		400		600	
11 W	120		240		360	
15 W	88		176		264	
20 W	66		132		200	
MOTORS – Maximum Power						
Type of small motor application (AC1 – AC7a categories)						
220/240V single phase with capacitor	1.1kW		2.2kW		4kW	
400V three phase motor	4kW		7.5kW		11kW	
HEATING – Maximum Power						
Type of small heating application (AC7b category)						
Number of operating cycles	230V	400V	230V	400V	230V	
	Single Ph	3 Ph	Single Ph	3 Ph	Single Ph	
	100,000	5.4kW	16kW	8.6kW	26kW	13.6kW
	150,000	4.6kW	14kW	7.4kW	22kW	11.6kW
	200,000	3.5kW	10kW	5.6kW	17kW	8.8kW
500,000	1.6kW	5kW	2.6kW	7.5kW	4kW	12kW
1,000,000	1.2kW	3.5kW	1.9kW	6kW	3kW	9kW
ELECTRICAL ENDURANCE						
AC1 and AC7a categories	250,000 operations					

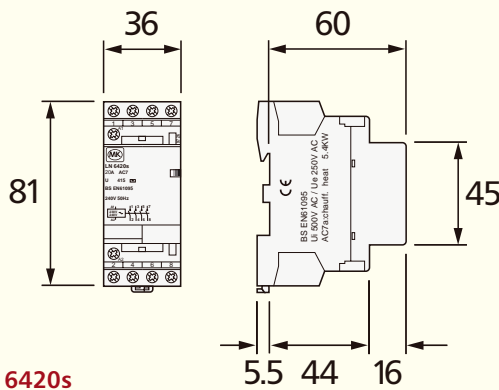
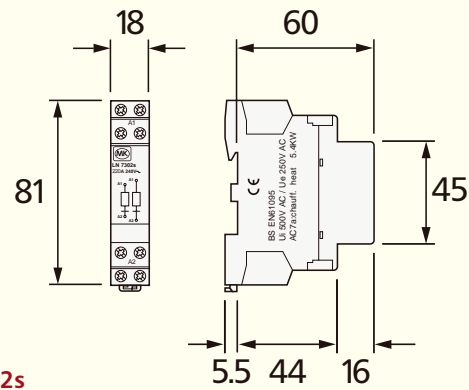
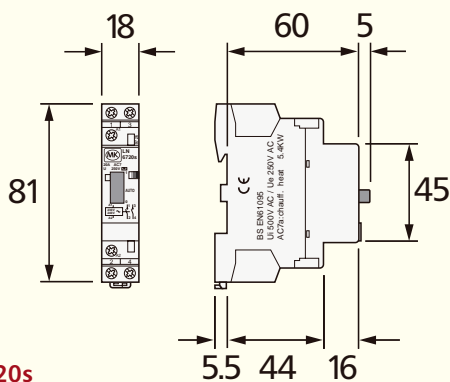
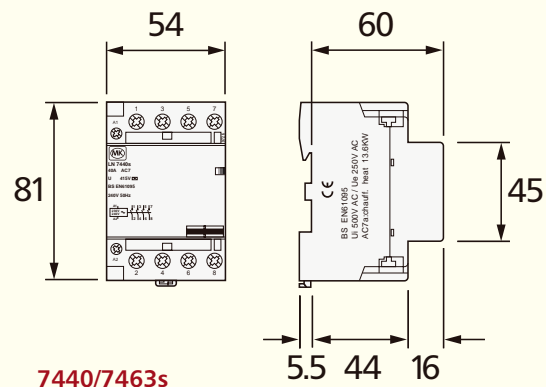
Contactors

Dimensions (mm)

For a full range of corresponding products, see page 226 in the product selector.


7240/7463s

6220s

7301s

(a half module blank is included with this product to complete installation)


6420s

7302s

6720s

7440/7463s

Bell Transformer

Standards and approvals

The Sentry Bell Transformer is designed to comply fully with the requirements of EN 60558-2-8.

Technical specification

Electrical

Primary voltage: 220V/240V a.c. 50Hz

Secondary voltage: 8V a.c.

Rated output current: 1A

Physical

Width: 2 modules (36mm)

Terminal capacity: 1 x 2.5mm²

Ambient operating temp: -5°C to +40°C

IP rating: Front face IP4X

Max installation altitude: 2000 metres



Description

The Bell Transformer is of the safety isolating, fail safe type. The construction is all insulated, Class II.

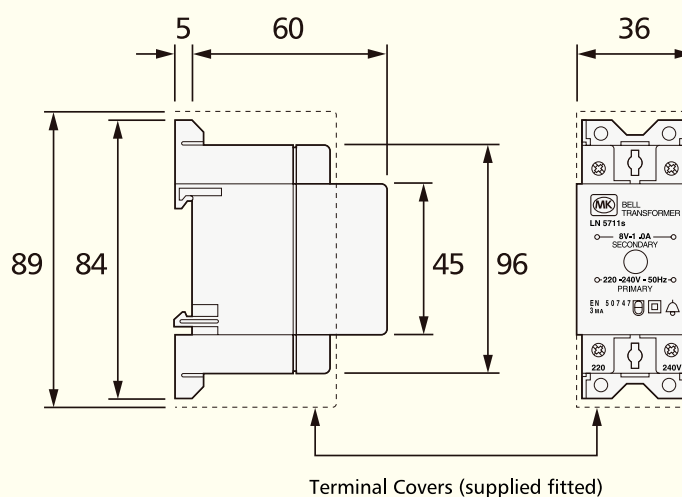
It may be mounted within a Sentry Consumer Unit within 2 or 4 module enclosures alongside MCBs, RCDs and RCBOs or surface mounted.

Installation

The Sentry Bell Transformer should always be connected in series with an MCB or other type of protective device of rating not exceeding 6A.

When installed in a 230V environment, i.e. inside a consumer unit, the cables used to connect the bell or chime to the transformer must have a 230V rated voltage. If bell wire is used, suitable sleeving must be provided to increase its insulation rating to 230V.

Dimensions (mm)



Electromechanical & Digital Timeswitches & Time Delay Switch

Standards and approvals

EN 60730-1, EN 60730-2-7

Features

- Ideal for independent programmable control of lighting, heating and other functions
- Can be mounted in Sentry Consumer Units and appropriate Sentry enclosures, or surface mounted
- Integral resistance to normal electrical interference
- Manual override of programmed commands
- Display indication of switch position for each Channel, i.e. ON or OFF (Digital only)
- Simple summer time to winter time (and vice versa) adjustment facility (Digital only)
- Random and holiday setting programme (5733s only)



Description

Sentry electromechanical and digital timeswitches enable pre-programmed commands to be executed on a given circuit. The Sentry time delay switches can be installed on circuits to energise suitable equipment for between 1 to 7 minutes.

Note: Inductive loads, particularly fluorescent lamps or energy saving lamps, place a heavy stress on the switching contacts. If in doubt about the ability of the timeswitches to directly switch a particular load it is advisable to install the timeswitch in conjunction with a suitable relay or contactor. If in doubt please consult the Technical Sales and Service Department for assistance.

Electromechanical

All Sentry electromechanical timeswitches are suitable for DIN rail mounting in Sentry Consumer Units and appropriate Sentry enclosures.

Quartz controlled units (5807s, 5824s) contain a power reserve of 150 hrs for accurate time keeping in the event of a mains failure.

3 module timeswitches have an additional insulated 'parking' terminal for earth or other connections.

24 hr units have a minimum switching time of 30 mins and 7 day units 3 hrs.

Digital

All Sentry digital timeswitches are suitable for DIN rail mounting in Sentry Consumer Units and 2 and 4 module Sentry enclosures.

Sentry digital timeswitches are available in both 1 and 2 module widths.

The 1 channel 1 module digital timeswitch (5733s) provides 42 programming selections, with random and holiday options. A simple summer to winter time (and vice versa) adjustment facility is provided. The timeswitch contains a power reserve of 150 hrs for accurate time keeping in the event of mains failure.

The two module digital timeswitches are available in both one channel (5731s) and 2 channel (5732s) versions. The units are supplied pre-programmed to UK time, and will automatically change from winter to summer time. The integral battery (with a 3 year power reserve) maintains the settings until the mains supply is connected. This feature will allow programming of switching commands prior to installation, if required.

The 1 channel 2 module digital timeswitch (5731s) provides for 20 programming selections.

The 2 channel 2 module digital timeswitch (5732s) provides a facility for independent control of two circuits. A maximum of 30 switching commands can be programmed for each channel.

All digital timeswitches have a minimum programming time of 1 minute and a manual override. Commands can be programmed for individual days or for groups of days.

Time delay

The Sentry time delay switch (5650s) is suitable for mounting in Sentry Consumer units and 2 and 4 module Sentry enclosures. The unit offers time delay control of complete circuits within the range of 1 to 7 minutes in increments of 15 seconds.

Note: The time delay switch is not applicable for control of low energy lamps.

Override of the time delay function is only possible by the use of the switch provided on the device and should not be achieved by remote 'switches'.

The use of PIR is not a recommended method of activating the time delay switch.

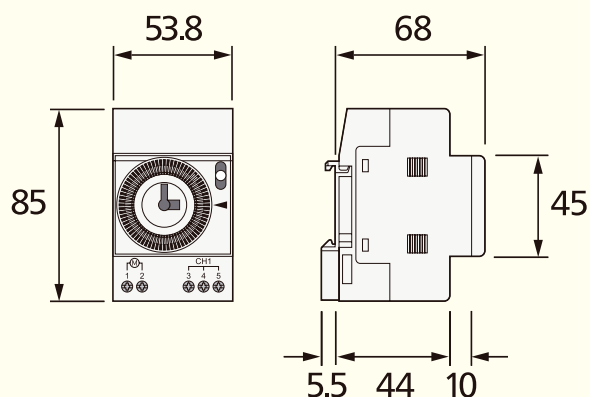
The time delay switch may be used to switch on an extractor fan if the fan does not have an over-run facility.

Technical specification					
Electromechanical	5707s	5724s	5833s	5807s	5824s
Supply voltage	220-240V a.c. 50Hz	220-240V a.c. 50Hz	220-240V a.c. 50Hz	220-240V a.c. 50-60Hz	220-240V a.c. 50-60Hz
Maximum power consumption	1VA	1VA	1VA	1VA	1VA
Switching capacity per channel – Resistive – Inductive – Fluorescent	16A 4A (Cos.Ø 0.6) 1350W	16A 4A (Cos.Ø 0.6) 1350W	16A 4A (Cos.Ø 0.6) 1350W	16A 4A (Cos.Ø 0.6) 1350W	16A 4A (Cos.Ø 0.6) 1350W
Switching arrangement	1 x c/o	1 x c/o	1 x n/o	1 x c/o	1 x c/o
No. of switching commands	56	48	48	56	48
Minimum programme time	3hrs	30mins	30mins	3hrs	30mins
Operating temperature range	–25°C to +55°C	–25°C to +55°C	–25°C to +55°C	–20°C to +55°C	–20°C to +55°C
Running reserve	–	–	–	*150hrs	*150hrs
Width of unit	54mm (3 mods)	54mm (3 mods)	18mm (1 mod)	54mm (3 mods)	54mm (3 mods)
Terminal capacity	2 x 2.5mm ²	2 x 2.5mm ²	2 x 4mm ²	2 x 2.5mm ²	2 x 2.5mm ²
Digital and Time delay	5731s	5732s	5733s	5650s	
Supply voltage	220-240V a.c. 50-60Hz	220-240V a.c. 50-60Hz	220-240V a.c. 50-60Hz	220-240V a.c. 50Hz	
Maximum power consumption	1VA	1VA	5VA	–	
Switching capacity per channel – Resistive – Inductive – Fluorescent	16A 2.5A (Cos.Ø 0.6) 1000W	16A 2.5A (Cos.Ø 0.6) 1000W	16A 2.5A (Cos.Ø 0.6) 1000W	16A 2A (Cos.Ø 0.6) uncompensated/ series compensated = 1300W, Parallel compensated = 480W	
Switching arrangement	1 x c/o	2 x c/o	1 x c/o	1 x n/o	
No. of switching commands	20	30	42	–	
Programme options	–	–	R/H	–	
Minimum programme time	1min	1min	1min	15sec	
Operating temperature range	–25°C to +55°C	–25°C to +55°C	–10°C to +55°C	–10°C to +55°C	
Operating accuracy @ 20°C	2.5sec/day	2.5sec/day	2.5sec/day	–	
Running reserve	3 years from factory	3 years from factory	*150hrs	–	
Width of unit	36mm (2 mods)	36mm (2 mods)	18mm (1 mod)	18mm (1 mod)	
Terminal capacity	2 x 2.5mm ²	2 x 2.5mm ²	2 x 4mm ²	1 x 4mm ²	
Summer/winter changeover	Yes	Yes	Yes	–	
Neon indicator lamp load	–	–	–	50mA max	

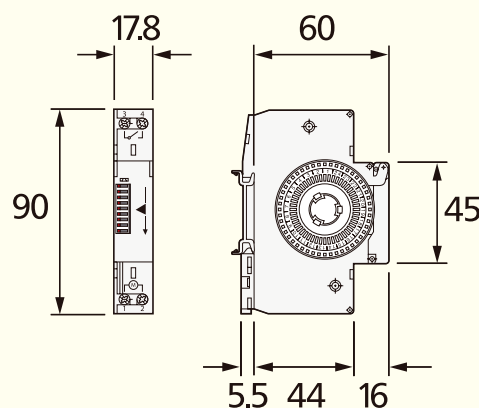
R/H = Random/holiday C/O = Changeover switch N/O = Normally open contact * = after 140hr charging time

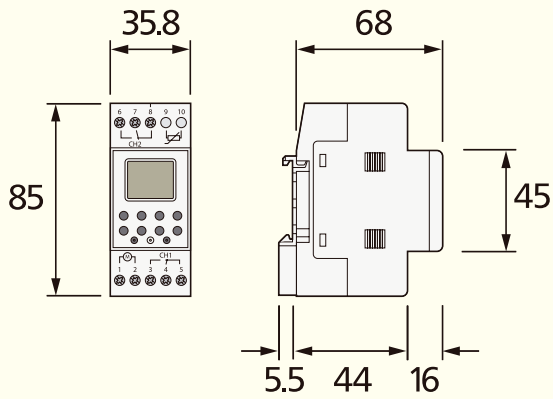
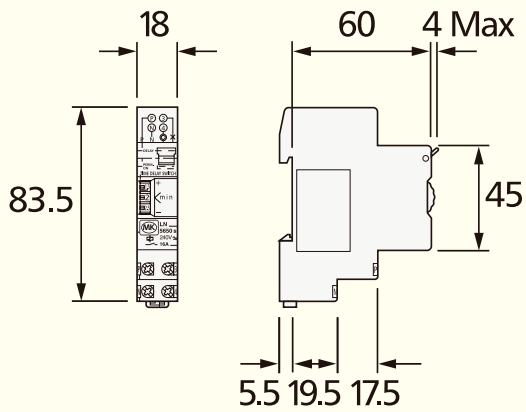
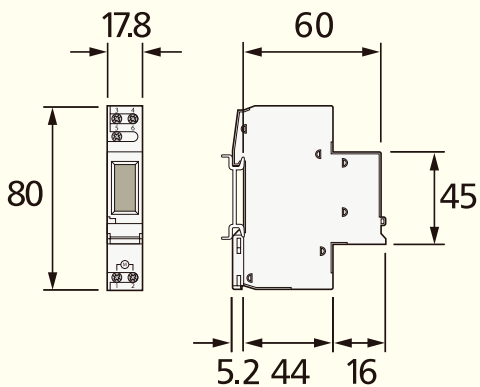
Dimensions (mm)

5707/5724/5807/5824s



5833s



**5731/5732s****5650s****5733s**