

SENTRY RCBO

(Residual Current Operated
Circuit Breaker with Integral
Over-Current Protection)

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Please leave this leaflet with the
end user for future reference

43060PL Ed.3



A. INTRODUCTION

MK offer a comprehensive range of Single Module width RCBOs suitable for use in domestic, commercial and industrial installations. Each product provides dual protection; from Over-Current via its MCB section, and from Earth Leaking Fault Current (Residual Current) via its RCD section. These devices provide RCD protection in full compliance with the requirements of the Standards BS EN 61009-1. They also provide very effective RCD protection in the Supply Voltage Range of **50V to 253V a.c.**, meeting the requirements of the Standard for sensitivity and trip speed at $I_{\Delta n}$ and $5I_{\Delta n}$. Effective operation down to 50V a.c. means that the devices provide protection against leakage currents to earth right down to the safe, **Extra Low Voltage** level. They meet the requirements of the current edition of the UK Wiring Regulations (BS 7671), as regards to the ability to trip with Earth Loop Impedance of up to 1667 Ω (for 30mA RCD), by being able to operate with Earth Loop Impedance of up to 10,000 Ω .

The products in this range comply with the following standards: BS EN 61009-1; BS EN 61009-2-2; EN 61543 for EMC; IEC 60898.

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B. SAFETY INSTRUCTIONS

- This product must be installed by a competent person (e.g. a qualified electrician) in accordance with these instructions and the current edition of IEE Wiring Regulations.
- The RCBO must be installed within a SENTRY Consumer Unit RCBO enclosure (K5592s) 'A' or 'B' Type Distribution Board**.
- The RCBO should not be regarded as a substitute for basic safety precautions.
- It is essential that all connections are made as instructed, that cables are not stressed, and terminals are fully tightened (Load, Line & Neutral 1.5Nm, Supply 2.5Nm).
- Test the RCBO quarterly, as detailed in the current edition of the IEE Wiring Regulations, by pressing the TEST BUTTON marked 'T', provided on the product (see label on the enclosure).

Figure 1 Line (Supply)

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B. SAFETY INSTRUCTIONS (cont.)

Do not use the product if it fails to trip during this operation. Failure to trip indicates either no supply to the RCBO or a faulty device. Consult a qualified electrician or contact Technical Sales Service.

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- The rated load of the RCBO must not exceed the rating marked on the front of the device.
- Product and packaging waste is not classed as hazardous. Household waste should be disposed of via civic amenity facilities. Commercial waste should be disposed of in accordance with the Environmental Protection Act.

** Select from the MK Range.

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C. INSTALLATION INSTRUCTIONS

Please read this leaflet before installing the Sentry RCBO and leave this leaflet with the installed unit for future users.

C1. General notes on installation

- The RCBO shall be installed at the source of the circuit in which the Earth Fault and Over-current protection is required.
- The RCBO's may be installed alongside other SENTRY Modular Products, as part of a larger assembly.
- The RCBO is a sensitive device designed for fixed installation in a clean and dry environment. The device must not be installed as part of a portable system which may be subject to mechanical shocks and vibration.
- An adhesive label giving test instructions is provided with each RCBO. This label shall be placed in a prominent position close to the RCBO (preferably on the enclosure Cover).
- If installing the RCBO in superseded old SENTRY (no suffix 'K', no prefix 's') consumer units, please refer to the instructions supplied with the SENTRY MCB/RCBO "Retro-fit kit", List No. 5567s, in addition to this leaflet.

C2. Installation in a Sentry Enclosure

Before installation, reference should be made to the Installation Guide supplied with the relevant enclosure.

- Choose and install a suitable enclosure from the range of MK Sentry

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C. INSTALLATION INSTRUCTIONS (cont.)

Consumer Units, RCBO enclosures (K5592s), 'A' or 'B' Type Distribution Boards.

- If using MK Sentry Consumer Unit or 'A' Type Distribution Board, mount the RCBO(s) onto the DIN rail with the L (Supply) terminal at the bottom (shown in Figure 1). It is important that the RCBO is supplied via a Double Pole Isolator (Switch Disconnecter).
- If using MK Sentry 'B' Type Distribution Board, mount the RCBO(s) onto the half DIN rail with the L (Supply) terminal towards the central busbar assembly (see instructions supplied with 'B' Type Distribution Board).
- Strip the Supply Neutral Cable and the Load Cables to expose 12mm of conductor prior to insertion into the RCBO terminals.
- Connect the Supply Line to the Line (Supply) Terminal to the unit's busbar. Alternatively, a suitable cable can be used, which should be stripped to expose 15mm of conductor for connection.
- Connect the Neutral (Blue) flying lead of the RCBO to the Supply Neutral Terminal Bar.
- Connect the Earth (Cream) flying lead of the RCBO to the Supply Earth Terminal Bar.
- Connect the Load, Line and Neutral connections to the outgoing terminals at the top of the RCBO, marked L (OUT) and N (OUT), respectively.
- Connect the Load Earth conductor to the Earth Terminal Bar.

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C. INSTALLATION INSTRUCTIONS (cont.)

IMPORTANT: Upon completion, ensure that all terminal screws are tightened to the correct torque values (Load, Line and Neutral Terminal - 1.5Nm, Supply Line Terminal - 2.5Nm).

- Test the RCBO as detailed in Section D of this leaflet.
- AFFIX LABEL SUPPLIED TO THE SENTRY ENCLOSURE
- Leave this Instruction Leaflet with the end user for future use.

D. TESTING

When the installation has been completed, testing should be carried out in accordance with the latest edition of the IEE Wiring Regulations.

1. Insulation resistance tests

NOTE: The following values of resistance will be encountered due to the circuit of the RCBO alone, while performing insulation resistance test using a 500V d.c. insulation test instrument.

Between L in or L out and N in or N out	> 100 M Ω
Between L in or L out and Functional Earth	> 100 M Ω
Between Neutral and Earth	2.7 M Ω approx.

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D. TESTING (cont.)

- After the installation is complete, turn on the supply to the RCBO and check that the supply voltage to the product is present at its L (Supply) and N (Supply) connection.
- Switch on the RCBO by moving its switch dolly upwards or outwards depending on enclosure used to show 'I' position. Press the Test Button on the device, the device should trip.
- Carry out the following tests using a calibrated RCD Tester.

Test Current	Result
0.5 $I_{\Delta n}$	RCBO must not trip
$I_{\Delta n}$	RCBO must trip within 300 ms
$5I_{\Delta n}$	RCBO must trip within 40 ms

where $I_{\Delta n}$ is the product specified tripping level

If the device fails to trip as required in steps 3. and 4. above, do not use the product.

Failure to trip according to steps 3. and 4. above, once it has been confirmed that the supply is present to the product, indicates to a faulty product. Consult a qualified electrician or contact:

Technical Sales Service

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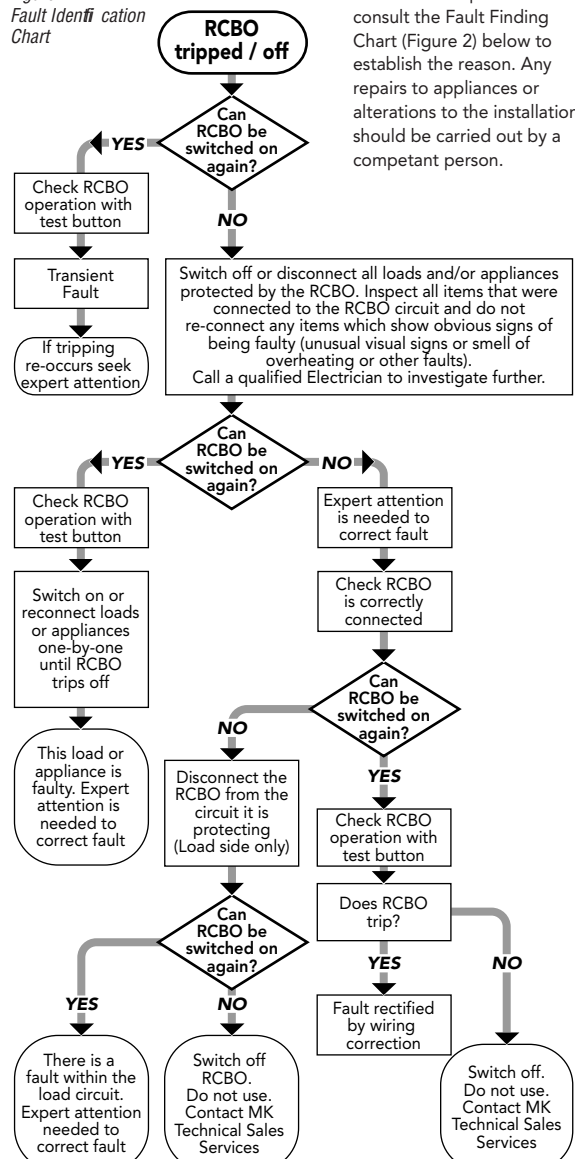
Maintenance

It is recommended that the RCBO is checked regularly, at least quarterly. Refer to Item 5 in Section B, Safety Instructions, of this leaflet.

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E . FAULT FINDING CHART

Figure 2.
Fault Identification
Chart



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F. PRODUCT SPECIFICATION**Electrical**

Number of Poles	Single Pole with Solid Neutral
Rated Supply Voltage	230V a.c. +10%, -15%
Supply Voltage Range	50V to 253V a.c.
Supply Frequency Range	45 to 66Hz
Supply Voltage Range for Test Device Operation	195V to 253V a.c.
RCD Trip Current Rating	10 mA / 30 mA / 100 mA*
Operating Characteristics for RCD	Type A (a.c. as well as pulsating d.c.)
MCB Type	B / C*
Rated Short Circuit Capacity I _{cn}	6 kA / 10kA*
Neutral Connection	Flying Lead
Earth Connection	Flying Lead

*See product marking

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F. PRODUCT SPECIFICATION (cont.)**Electrical**

Terminal Capacity	Line in - 25mm ² Line and Neutral out - 16mm ²
Product Width	18mm
Product Height above Din Rail	73mm
Product Length	112mm
Suitable Mounting Enclosure	MK Sentry Consumer Unit, RCBO enclosure, MK Sentry 'A' or 'B' Type Distribution Board**
Method of Mounting in Enclosure	Top Hat Mounting (DIN) Rail to EN 50022

Environmental

Ambient Temperature Range	-25°C to +40°C
Storage Temperature Range	-30°C to +85°C
Protection, Un-installed Device	IP 20
Protection, Installed in MK Sentry enclosure	IP 40

** Select from the MK range

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G. GUARANTEE

The Company undertakes to replace or repair, at its discretion, this product should it become defective within a period of 10 years after delivery, solely as a result of faulty materials and/or workmanship. Understandably, if the product has not been installed or maintained in accordance with the Company's instructions, has not been used appropriately, or if any attempt has been made to rectify, dismantle or alter the product in any way, the guarantee will be invalidated.

This Guarantee states the Company's entire liability. It does not extend to cover consequential loss or damage or installation costs arising from the defective product. This Guarantee does not restrict or infringe the normal statutory or other rights of the consumer.

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