



**GE Power Controls**, a global leader in Electrical Distribution & Controls offers you the total safety solution. A comprehensive range of **Safe-Trip** RCD's together with **GE Safe** MCB's & Distribution boards, protects people and installation against electrical leakage & short circuits.

Electricity if used without proper caution can be lethal. Leakage currents, arising due to faulty Wiring or damaged insulation flow to earth through an alternate path. Any direct or indirect contact with the leakage current can lead to fatal accidents. Consistent leakage currents of about 300 - 500 mA heat up the current path (material in-appropriate to actually carry current) and are capable of causing sparks that ignites fire.

**Direct Contact**



**Indirect Contact**



**Safe-Trip RCCB's** (ELCB's) and **RCBO's** (ELMCB's) offer reliable protection to human beings and installations from :

**Shock Hazards**



**Electrical Fire**



## RCCB

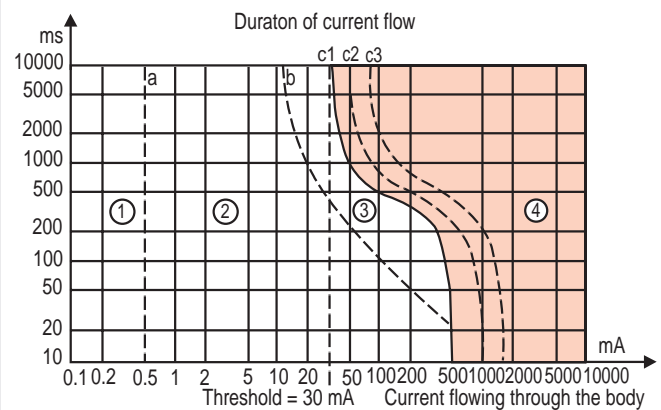


**The patho-physiological effects of electrical current** on people (tetanisation, external and internal burns, ventricular fibrillation and cardiac arrest) depend on a variety of factors: the physiological characteristics of the person in question, the environment (e.g. dry or wet) and the characteristics of the current passing through the body.

The touch voltage (voltage below which there is no risk to human beings) values specified by standard are:

- 50V for dry & wet premises
- 25V for damp premises

### Effect of AC Current (50Hz) on human body as per IEC 60479-1



- Zone 1 : Usually no reaction.
- Zone 2 : Usually no pathophysiological dangerous effect.
- Zone 3 : Usually no danger of fibrillation.
- Zone 4 : Fibrillation possible (C1-C2 - upto 5%, C2-C3 upto 50% and beyond C3>50%)

**As per Indian Electricity Rules - 61a, 71(1), 73(1), usage of RCCB, in all installation 5KW and above; in all luminous tubesigns & X-Ray installations, is mandatory.**



## RCBO



### Operational Principal

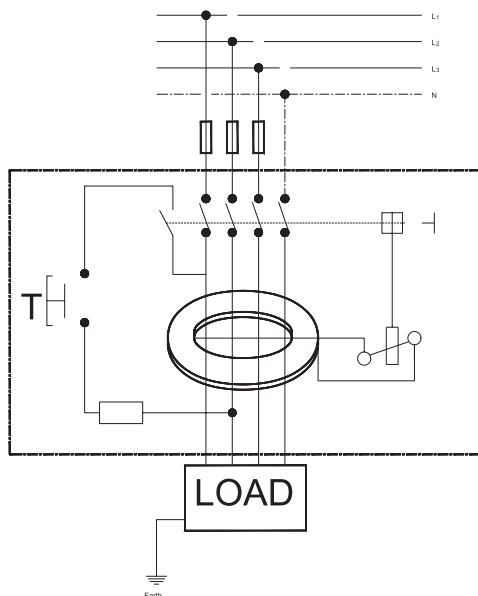
**Safe-trip RCCBs** and **RCBOs** are current operated devices and are independent of line voltage conditions. This means that they provide protection even when there is voltage dip or the neutral conductor is interrupted.

In a healthy system the vector sum of all currents in phase and neutral is equal to zero. The device senses imbalance or residual currents in the system and disconnects unhealthy circuit.

The supply conductors i.e phase and neutral are passed through a toroidal current transformer. In an unhealthy circuit, a residual current flows in the system. This is fed to a highly sensitive electromagnetic relay connected to the secondary winding of CBCT. On receipt of signal the electromagnetic relay mechanically actuates the tripping mechanism thereby instantaneously isolating the defective circuit.

The tripping time is < 40 ms as per IEC 1008.

### Wiring Scheme for RCCB



## Features

### Compact Size:

The RCCBs and RCBOs are sized in 2 & 4 module configurations; optimizing space in the Distribution board. It allows additional outgoing circuit in case of standard distribution board configurations.

### Disconnecter Function:

It incorporates neutral advance mechanism for safe interruption and can be used as a isolator.

### Anti Welding Contacts:

The contact tips are made of Silver Graphite which has high conductivity and anti welding properties. This ensures reliable operation of the devices even under fault conditions as contacts do not weld.

### Terminal Design:

#### - Dual Terminals

Double function terminal design allows simultaneous termination of busbar & conductors.

#### - Touch Proof Terminals

The terminals are touch proof to ensure maximum operator safety against accedential contacts ensuring IP 20 degree protection.

#### - Terminal Size

The terminals can accommodate conductors up to 25mm<sup>2</sup> facilitating ease of wiring.

### Resistance against Unwanted Tripping:

A special filter circuit is incorporated to avoid nuisance tripping caused due to impulse voltage.

### Positive Contact Indication:

The Red and Green marking on the operating knob indicates the ON & OFF position in 2P RCCB & RCBO. In 4 module the same is indicated through flag in the window provided above the operating knob.

### Test Facility:

A test knob (T) is provided on the device to check the electrical & mechanical effectiveness. The RCCB/RCBO should be electrically connected in the circuit. When the test knob is operated, the device should trip instantaneously. It is recommended that the test knob should be operated periodically (at least once a month).

### No Ageing Effect:

No deviation in the characteristics shall occur over long periods of usage.



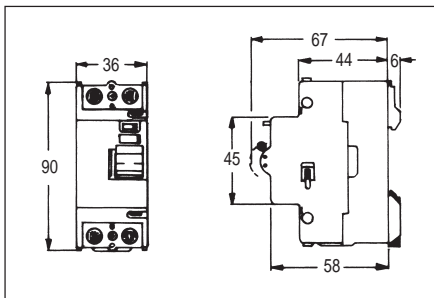
# Safe-trip RCCB - RCBO

## Technical Specifications

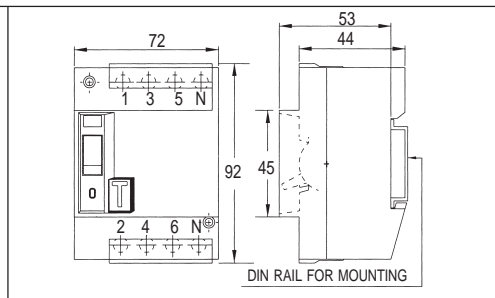
Particulars	RCCB	RCBO (ELMCB)
Standards	IS 12640, IEC 1008 & BS EN 61008	IEC 1009
Rated current (A)	In	6, 10, 16, 20, 25, 32, 40
Rated Tripping current	IoΔn	30, 100, 300mA
Number of Poles	2 Pole, 4 Pole	2 Pole / 4 Pole*
Frequency	50/60Hz	50/60Hz
Rated Voltage	Un	230V
Configuration	2/4 module	2 module
Rated Short Circuit Withstand Capacity (I <sub>nc</sub> )	10000A	10000A
Resistance against unwanted Tripping	8/20 μsec 250A (VDE 0664.1) 0.5, μsec 100 kHz 200A (EN 61008)	8/20, μsec 250A (VDE 0664.1) 0.5, μsec 100 kHz 200A (EN 61008)
Terminal Capacity	25mm <sup>2</sup>	25mm <sup>2</sup>
Optional Accessories	Display contacts Motor driver for remote closing (for 2 module version)	Auxiliary contacts Shunt Trip (Right only) & Motor Driver
Operating temperature range	-25° to +55°C	-25° to +55°C
Service life	20000 Operations	As per IEC 1009
Tripping Characteristics: In case of Earth Leakage current (RCCB Part)	Type AC (Sinusoidal current)	Type AC (Sinusoidal current)
In case of Overload & Short-circuit (MCB Part)	-	Type C (5-10 In)
Mounting arrangement	Snap fit on 35mm Din Channel	Snap fit on 35mm Din Channel

## Dimensions (mm)

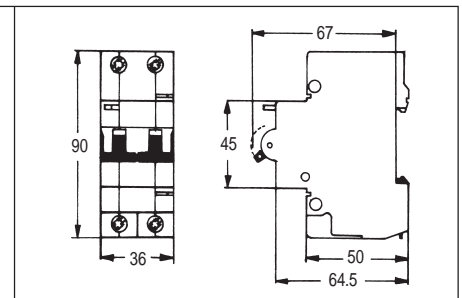
### RCCB 2-pole



### RCCB 4-pole



### RCBO 2-pole



## Type Reference

### RCCB Type AC

2 module version (Un - 240 V~)

30mA	100mA	300mA	In
304/022031-180	304/022101-180	304/022301-180	25A
304/024031-180	304/024101-180	304/024301-180	40A
304/026031-180	304/026101-180	304/026301-180	63A

4 module version (Un - 240/415 V)

SGE8124025	SGE8134025	SGE8144025	25A
SGE8124040	SGE8134040	SGE8144040	40A
SGE8124063	SGE8134063	SGE8144063	63A

### RCBO Type AC

Characteristic C, 2 module

30mA	300mA	In
305/206033-180	305/206033-180	6A
305/210033-180	305/210303-180	10A
305/216033-180	305/216303-180	16A
305/220033-180	305/220303-180	20A
305/225033-180	305/225303-180	25A
305/232033-180	305/232303-180	32A
305/240033-180	305/240303-180	40A

Note:

Available upon enquiry:

- \* Type A series RCCB & RCBO for non sinusoidal leakage current (with DC components)
- \* RCCB 2P, all standard ratings with 500 mA
- \* RCCB rated for 80A & 100A with 30/100/300/500mA sensitivity in 4 module.
- \* RCCB 10mA, 4A to 20A, 2 module
- \* 4 Pole RCBO upto 63A 30/300mA



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