

Domestic Products Catalogue 2017























ABOUT STANDARD

STANDARD is a brand of India's leading FMEG company, Havells India Ltd., that offers a wide range of highly differentiated Domestic & Industrial Switchgear products and Domestic Cables. The brand has been serving the Indian customers for over five decades and has built a formidable reputation with its high quality products in domestic as well as international markets.

It offers products such as MCBs, RCCBs, Distribution Boards (DBs), MCCBs, RCBOs Changeover Switches, Switch Disconnector Fuses (SDFs), HBC Fuses, Modular Switches, Copper Flexible Cables etc. In 2014-15, STANDARD marked its entry into consumer product category with the launch of premium range of Fans. Today, STANDARD boasts of having a comprehensive range of ceiling, table, wall-mounted, pedestal fans and domestic exhaust fans.

STANDARD has pan-India marketing and distribution network stretching over 42 branch offices, 1,200 authorized dealers and 10,000 strong retail outlets across the country. The company also has a wide presence in International markets including Middle East, South East Asian countries, Malaysia, Singapore, South Africa, Kenya, Ghana, Nigeria.

It has established a well-equipped infrastructure with state of the art facilities in terms of plant, machinery and testing. STANDARD products are manufactured at most modern and technologically advanced plants of its parent, Havells India, located in different parts of the country such as Haridwar, Baddi, Sahibabad, Faridabad and Alwar. All STANDARD products are designed on the lines of Indian & International specifications and tested by nationally accredited laboratories CPRI/ERDA.

STANDARD's R&D is ebbed in company's DNA. The company has a very strong R&D team that has driven innovation to continuously deliver world-class products. Its R&D centers are equipped with supreme quality CAD/CAM machines for its entire stage of design and development. The R&D team continuously works to create innovative solutions and new products of high reliability and safety catering to meet the ever-changing demands of various segments of customers. All its products are incorporated with special technology rated for 10% higher current carrying capacity and can withstand high temperature rise even during the worst of overloading conditions. It offers best in class safety features along with better performance during low voltage conditions too. STANDARD's entire product range offers high performance, best design and superior features like energy savings, longer life and shock proof to name a few.

With its mission to offer quality products, efficient customer service and everlasting relationship with partners, STANDARD holds unbeatable advantages like expertise in LT Switchgear since last four decades, technology leadership, excellent brand perception, wide dealer network, excellent after sales service and value for money to its customers.

HARIDWAR PLANT





CONTENTS



RESIDUAL CURRENT CIRCUIT BREAKER (RCCB / ELCB)





The flow of current through electrical facilities always involves risks. Poorly insulated equipment, faulty wires and incorrect use of an electrical device causes current to flow through the wrong path (i.e. through the insulation) to the earth. This current is called 'Leakage Current'.

Earth leakage is an electrical hazard and is responsible for electrical shocks and fire risk. Earth leakage and its associated hazard can be prevented by Residual Current Circuit Breaker (RCCB), also popularly known as Earth Leakage Circuit Breaker (ELCB).

FEATURES

- Simple and robust operating mechanism
- Rotary handle with ON/OFF indication
- Dual termination for Bus Bar as well as cable connection
- Advance neutral
- Test button for regular inspection
- Positive contact indication

RANGE

16A - 63A

SENSITIVITY

30mA, 100mA, 300mA

EXECUTION

- Double Pole (DP)
- Four Pole (FP)

SPECIFICATION

IS 12640 - Part 1 IEC / EN 61008-1

STANDARD RCCB/ELCB

PROTECTION - AGAINST ELECTROCUTION

The use of exposed, substandard, badly wired, wrongly connected or damaged equipment as well as frayed or badly repaired cables reduces the safety of an installation and increases the risk of person receiving an electric shock.

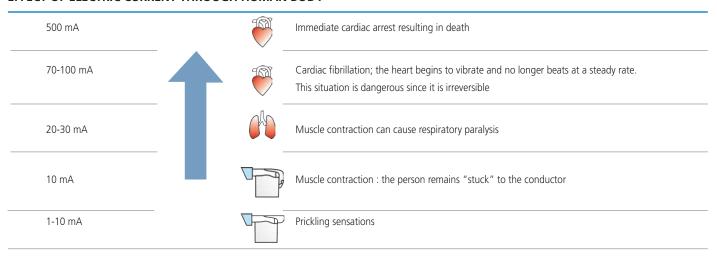
Electrocution is a passage of current through human body, which is dangerous. The flow of current through human body effects vital functions.

- 1. Breathing
- 2. Heartbeat

A correctly chosen RCCB can detect current flowing into earth and reduces the risk of electrocution. Effect of electric current through human body has been well researched and following chart summarizes the results.

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EFFECT OF ELECTRIC CURRENT THROUGH HUMAN BODY



However, electrocution should not be viewed in terms of "current" alone, but in terms of "contact voltage". A person gets electrocuted by coming in contact with an object that has a different potential from his/her own. The difference in potential causes the current to flow through the body.

The human body has known limits:

- •Under normal dry conditions, voltage limit = 50V
- •In damp surroundings, voltage limit = 25V

Rated Tripping Current of the RCD	Maximum permissible earth fault loop impedance in	
10 mA	5,000	
30 mA	1,666	
100 mA	500	
300 mA	166	

AGAINST INDIRECT CONTACT

Over current protection devices like MCB are unable to act promptly on small earth leakage currents. To comply with wiring regulations, the earth fault loop impedance in Ohms, multiplied by the rated tripping current of the RCD in amperes must not exceed 50.

EXAMPLE

For an RCD with a rated tripping current of 30mA, the maximum permissible earth fault loop impedance is calculated as follows: Zs (max) = 50 / ln = 50/0.03 = 1,666

AGAINST FIRE

The majority of fires which occur as a result of faulty wiring are started by current flowing to earth. Fire can be started by fault current of less than 1 amp. The normal domestic overload protective device such as a fuse or MCB will not detect such a small current. A correctly chosen RCD will detect this fault current and interrupt the supply, hence, reducing the risk of a fire starting.

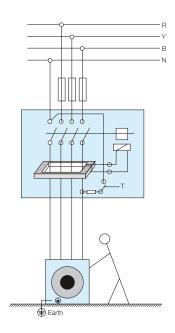
RCCB/ELCB STANDARD





Technical Information		2P	4P
Standard Conformity		IS 12640-1: IEC/ EN 61008-1	IS 12640-1: IEC / EN 61008-1
Rated Current (In)	А	16, 25, 32, 40, 63	25, 40, 63
Sensitivity * (In)	mA	30, 100, 300	30, 100, 300
Rated Voltage (Un)	Vac	240	415
Rated Insulation Voltage (Ui)	V	690	690
Rated Frequency	Hz	50	50
Short circuit Withstand Capacity	kA	6	6
Residual Making Breaking Capacity	А	500 A or 10 In wherever is greater	500 A or 10 In wherever is greater
Ambient Temperature	°C	-25°C to + 55°C	-25°C to + 55°C
Shock Resistance		40 mm free fall	40 mm free fall
Vibration Resistance	g	3	3
Electrical /Mechanical operations		10000	10000
Mounting		Din Rail (35 x 7.5) mm	Din Rail (35 x 7.5) mm
Degree of Protection		IP 20	IP 20
Terminal Capacity (max)	mm2	25	25

*500 mA is available on request



WORKING PRINCIPLE

The RCCB works on the current balance principle. The supply conductors, i.e. the phases and the neutral, are passed through a torroid and form the primary windings of a current transformer. Its secondary winding is connected to a highly sensitive electromagnetic trip relay, which operates the trip mechanism.

In a healthy circuit, sum of the currents in phases, is equal to the current in the neutral and the vector sum of all currents is equal to zero. If there is any insulation fault in the current and leakage current flows to earth, the currents do not balance and their vector sum is not equal to zero. This imbalance is detected by the core balanced current transformer, the RCCB is tripped and supply to load is interrupted. The trip mechanism is operated at a residual current between 50-100% of its rated tripping current.

STANDARD RCCB/ELCB

SELECTION

30 mA: A 30 mA ELCB will provide a high degree of protection against electrocution in an accidental shock hazard situation. The current flowing through human body could be between 80mA and 240mA depending on the resistance of the human body and the voltage across it.

Zone: Physiological Effects

Zone 1: Usually no reactions

Zone 2: Usually no harmful physiological effects

Zone 3: Usually no organic damage to be expected. Likelihood of muscular contraction and difficulty in breathing, reversible disturbances of formation and conduction of impulse in the heart and transient cardiac arrest without ventricular fibrillation increases with current magnitude and time.

Zone 4: In addition to the effects of Zone 3, probability of ventricular fabriliation increases upto 5% (curve C2) upto 50% (curve C3) and above 50% beyond curve C3. It increases with magnitude and time, and pathophysiological effects such as cardiac arrest, breathing arrest and heavy burns may occur.

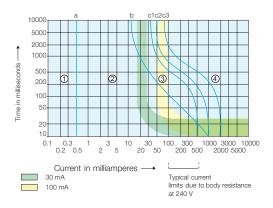
To be within zone of the IEC curve as shown above. It is necessary for the ELCB to operate within 50ms at 240 mA and 150ms at 80mA. Both these conditions are satisfied by 30mA ELCB.

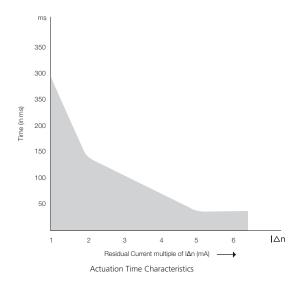
For households, individual outlets, wet areas and temporary installations, ELCB with sensitivity not exceeding 30mA is advisable.

100 mA: A 100mA ELCB will normally give high degree of protection against electrocution but there is a possibility that the shock current could fall below the tripping level of ELCB. This could occur if additional resistances to that of human body are included in the earth path.

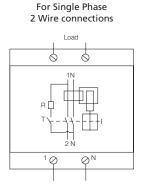
The 100mA RCCB protects against leakage current and indirect contact with earth loop impedance upto 500 Ohms.

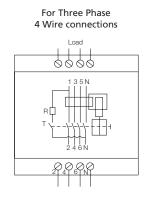
300 / 500mA: A 300/500 mA ELCB may be used where only fire protection is required. eg., on lighting circuits, where the risk of electric shock is lesser. 300/500mA ELCB will not give any protection against electrocution.

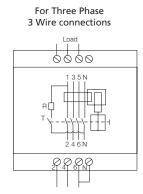




WIRING DIAGRAM







The STANDARD range of four pole RCCBs can be used to provide residual current protection in 3 phase, 3 wire circuits (no neutral), however a link from the neutral to an incoming should be made on the supply side of the RCCB, to enable the operation of the RCCB.

AC TYPE ~ - STANDARD APPLICATIONS

AC type RCDs detect AC residual current. In the majority of cses (standard applications), they are used for AC current detection at 50 / 60 Hz

DOUBLE POLE 'AC' TYPE

Current Rating (Amps.)	Cat No. B-Curve	C-Curve
16	30	DSRMCTDF030016
16	100	DSRMCTDF100016
16	300	DSRMCTDF300016
25	30	DSRMCTDF030025
25	100	DSRMCTDF100025
25	300	DSRMCTDF300025
32	30	DSRMCTDF030032
32	100	DSRMCTDF100032
32	300	DSRMCTDF300032
40	30	DSRMCTDF030040
40	100	DSRMCTDF100040
40	300	DSRMCTDF300040
63	30	DSRMCTDF030063
63	100	DSRMCTDF100063
63	300	DSRMCTDF300063

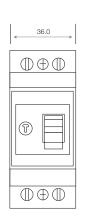


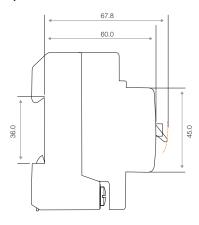
FOUR POLE 'AC' TYPE

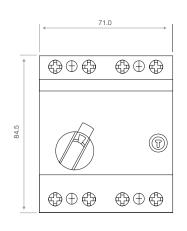
Current Rating (Amps.)	Cat No. B-Curve	C-Curve
16	30	DSRMCRFF030016
16	100	DSRMCRFF100016
16	300	DSRMCRFF300016
25	30	DSRMCRFF030025
25	100	DSRMCRFF100025
25	300	DSRMCRFF300025
32	30	DSRMCRFF030032
32	100	DSRMCRFF100032
32	300	DSRMCRFF300032
40	30	DSRMCRFF030040
40	100	DSRMCRFF100040
40	300	DSRMCRFF300040
63	30	DSRMCRFF030063
63	100	DSRMCRFF100063
63	300	DSRMCRFF300063

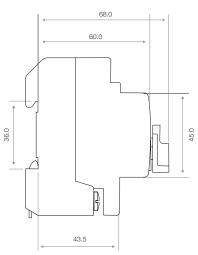


Dimensions (in mm)









HIGHER RATING RCCB (80A-100A)

FEATURES

- Short circuit breaking with stand capacity 10kA
- Different knob position to indicate whether it is switched by a fault or manually switched OFF (mid trip)
- Test button for regular inspection
- Contact position indication





Technical Specification		2P	4P
Specification reference		IS 12640-1 IEC / EN 61008-1	IS 12640-1 IEC / EN 61008-1
Rated current (In)	А	80, 100	80, 100
Sensitivity (IDn)	mA	30, 100, 300	30, 100 ,300, 500*
Rated voltage (Ue)	V	240 ac	415 ac
Rated insulation voltage (Ui)	V	690	690
Rated frequency	Hz	50	50
Trip time		1xl∆n<300ms 5l∆n<40ms	1xl∆n<300ms 5l∆n<40ms
Short circuit withstand capacity	kA	10	10
Residual making breaking capacity	А	10 ln	10 In
Ambient working temperature	°C	-25°C to + 55°C	-25°C to + 55°C
Shock resistance		40mm free fall	40mm free fall
Vibration resistance	g	3	3
Electrical endurance	operations	>2000	>2000
Mechanical endurance	operations	>3000	>3000
Mounting		Din Rail (35 x7.5 mm)	Din Rail (35 x7.5 mm)
Degree of protection		IP 20	IP 20
Terminals capacity (Max)	mm2	50	50

^{*500} mA is available on request

RCCB/ELCB STANDARD

DOUBLE POLE 'AC' TYPE

Current Rating (Amps.)	Sensitivity	Cat No.
80	30	DSRMCMDF030080
80	100	DSRMCMDF100080
80	300	DSRMCMDF300080
100	30	DSRMCMDF030100
100	100	DSRMCMDF100100
100	300	DSRMCMDF300100



FOUR POLE 'AC' TYPE

Current Rating (Amps.)	Sensitivity	Cat No.
80	30	DSRMCMDF030080
80	100	DSRMCMDF100080
80	300	DSRMCMDF300080
100	30	DSRMCMDF030100
100	100	DSRMCMDF100100
100	300	DSRMCMDF300100



Dimensions (in mm)

