



Miniature Circuit Breaker

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We touch your electricity everyday!



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MCB

As power distribution needs play a pivotal role in all the significant sectors namely Commercial, Industrial and Residential, improved Breaker performance through better electrical safety, higher operational endurance, continued service and reduced cost have become of paramount importance. Unelec E 60 MCBs have been engineered to constantly fulfill the above requirements. With these features Unelec is setting new standards for user friendly and superlative electrical circuit protection.

The Unelec E 60 MCB is a high performing Thermal Magnetic current limiting device with the ability to disconnect short circuits up to 10KA. The range is available in trip types B,C and D for 1P, 1P+N, 2P, 3P & 4P configurations in 0.5 - 63 Amp current ratings.

All metal components for operating mechanism of E 60 circuit breaker are specially treated for high self lubrication leading to repeat accuracy during service life. The MCBs conform to Standards: IEC 60898-1995 and IS 8828-1996 and stand guaranteed for best quality for optimum performance.

- Also includes
- Auxiliary Contacts & Shunt Trip
 - RCCB and
 - Distribution Boards



Highlights

IP 20 Degree Protection

Prevents electrical shock by accidental touch. Terminals are finger touch proof.

Trip Free Mechanism with Padlocking Facility

MCB trips even if held in on position and can be locked for better safety during maintenance.

Low Power Consumption

Cost effective and energy saving. The Watt loss of WINtrip MCBs is extremely low providing valuable savings over its entire life cycle. It is due to appropriate contact configuration.

Range Rated Current (Amp)	Max. Power loss permissible as per IS:8828-1996 (Per Pole)	Power loss (Per Pole)
$I_n \leq 6$	3.0	0.70
$6 < I_n = 10$	3.0	1.7
$10 < I_n = 16$	3.5	2.3
$16 < I_n = 25$	4.5	2.5
$25 < I_n = 32$	6.0	3.2
$32 < I_n = 40$	7.5	4.0
63	13.0	7.0

Current Limiting Design - Class 3

Minimum let through energy under fault condition due to ultra fast contact separation and the rapid quenching of the emergency arc. This reduces stress on connected loads and cables.

High Terminal Capacity with Deep Serrations

Ensures proper termination and firm connection to accommodate 35sq mm Copper/ Aluminum cable.

Bi-connect Termination Possible

Choice to use Busbar and/or cable in the same terminal.

Din Rail Mounting

Two stage snapping device for simple effortless and firm seating on 35 mm Din Rail.

Combination Head Captive Screws

Safe and provides the flexibility of both normal and Philip Head screw driver.



Constructional

Housing

MCBs are made up of engineered thermo plastic for self lubrication and critical performance. The housing and other moulded components are fire retardant having high melting point, low water absorption and high dielectric strength therefore enabling it to withstand high temperature.

Operating Mechanism

Circuit Breakers are based on Thermal Magnetic technology. The protection is ensured by combining a temperature receptive mechanism (bimetal) and a current sensitive electro-magnetic device. The thermal operation provides protection from normal overload and the electro-magnetic device against large overloads and short circuits.

Superior Contact Mechanism

The mechanism comprises of fixed and moving contacts made up of silver graphite for surety, extended life span and anti-weld properties. These contacts have low contact resistance resulting in reduced voltage drop and low watt loss commensurating to energy savings.

High Tech Arc Blower

Protects from hazards of overloads and short-circuits. The arc under the influence of magnetic field is moved into the arc chute where it is quickly extinguished and quenched.

Maximum Backup Protection

To protect the Unelec circuit breakers against higher short circuit current, fuses should be installed at the incoming side. The current rating of these fuse links should not be more than the values stated in the table.

Integrated label channel holders

Easy identification of circuits irrespective of position on the Distribution Board. Very useful during maintenance. A unique feature.



MCB Rating	Back-up Fuse Rating
1A	25A
4A	50A
6A	80A
10A	100A
63A	100A

Characteristics

MCB-AC	MCB		
Standard Conformity	IEC 60898:95 IS 8828:96		
Type	B	C	D
Rated Current (In)	6-63A	0.5-63A	0.5-63A
Rated Voltage AC (Ue)	240/415V		
Utilization Category			
Rated Frequency Hz	50Hz		
No. of Poles (Execution)	1P, 1P+N, 2P, 3P, 3P+N & 4P		
Rated Short Circuit Breaking Capacity	10kA	10kA	10kA
Rated Insulation Voltage (Ui)	500V		
Magnetic Release Setting	(3-5)In	(5-10)In	(10-20)In
Rated Impulse Voltage (Uimp)	6kV		
Electrical/Mechanical Life			
<32A	30,000		
>32A	10,000		
Ambient Temperature	-5°C to +55°C		
Energy Limiting Class	ELC 3		
Mounting	Clip on Din rail (35 mm x 7.5 mm)		
Line Terminal Capacity	35 mm ²		
Degree of Protection	IP 20		
Resistance to Shock	40mm free fall		

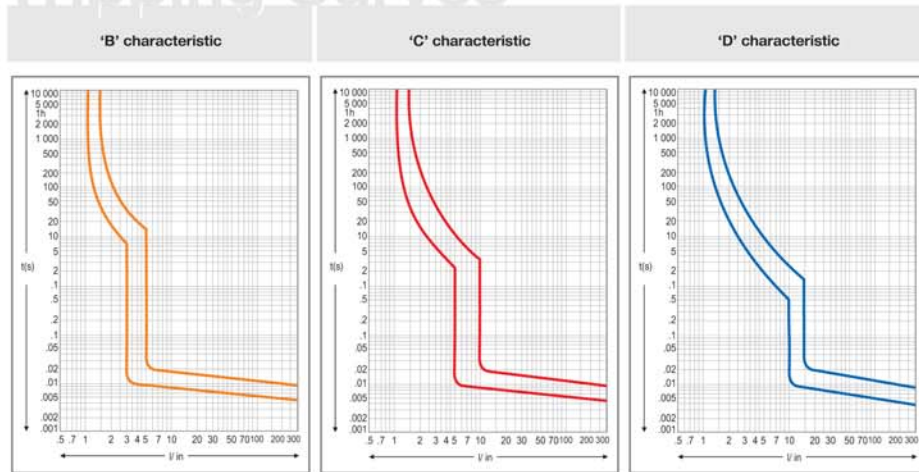
MCB-DC

Circuit Breakers for DC application are engineered to fulfill tough arc quenching conditions. DC MCB incorporates built in magnet to direct the arc into the arc quenching chamber.

Specifications

Standard Conformity	IEC 60947-2 & IS 13947-2
Current Rating	0.5-63A
No. of Poles	1P & 2P
Voltage Rating	130V (max.) on 1P
Short Circuit Breaking Capacity	1kA

Tripping Curves



Type	Application	Thermal Test Current		Tripping Time $I_n > 63A$	Electro Magnetic Test Current	Tripping Time (t)
		Low	High			
B	Lighting & Distribution with no surge Current	1.13xI _n		>1hour	3xI _n	≥0.1s
			1.45xI _n	<1hour	5xI _n	<0.1s
C	Inductive Load with surge Current	1.13xI _n		>1hour	5xI _n	≥0.1s
			1.45xI _n	<1hour	10xI _n	<0.1s
D	High Inductive Load & High Inrush Current	1.13xI _n		>1hour	10xI _n	≥0.1s
			1.45xI _n	<1hour	20xI _n	<0.1s

Temperature derating

In plant engineering situations, where ambient temperature is higher than the regulatory reference temperature of 30°C, the circuit breakers may be subjected to untimely tripping, i.e. opening when not required, since the increase in temperature is interpreted as a current surge. Ambient temperature, as a matter of fact, affects the initial deformation of the bimetal. At a temperature above 30°C the thermal release trips faster, behaving like a relay with a lower nominal current. It is therefore imperative to take into account nominal current derating if the circuit breaker is installed in an ambient temperature above 30°C.

The table gives the max. operating current referring to the different temperatures.

I _n (A)	Temperature						
	25°C	30°C	35°C	40°C	45°C	50°C	
2	2.04	2	1.96	1.9	1.86	1.82	
6	6.24	6	5.82	5.52	5.28	4.98	
10	10.40	10	9.7	9.2	8.8	8.3	
16	16.5	16	15.5	15	14.4	14.1	
20	20.6	20	19.4	18.8	18	17.6	
25	25.8	25	24.3	23.5	22.5	22	
32	33	32	31.04	30.1	28.8	28.2	
40	41.2	40	38.8	37.6	36	35.2	
63	64.89	63	61.79	60	58	56.07	

Selection - MCB

Description	I _n (A)	Reference		
		'B' Curve	'C' Curve	'D' Curve
Single Pole 	0.5		E10000B1C0.5	E10000B1D0.5
	1		E10000B1C1	E10000B1D1
	2		E10000B1C2	E10000B1D2
	3		E10000B1C3	E10000B1D3
	4		E10000B1C4	E10000B1D4
	5		E10000B1C5	E10000B1D5
	6	E10000B1B6	E10000B1C6	E10000B1D6
	10	E10000B1B10	E10000B1C10	E10000B1D10
	16	E10000B1B16	E10000B1C16	E10000B1D16
	20	E10000B1B20	E10000B1C20	E10000B1D20
	25	E10000B1B25	E10000B1C25	E10000B1D25
	32	E10000B1B32	E10000B1C32	E10000B1D32
	40	E10000B1B40	E10000B1C40	E10000B1D40
50	E10000B1B50	E10000B1C50	E10000B1D50	
63	E10000B1B63	E10000B1C63	E10000B1D63	
Single Pole + Neutral 	0.5		E10000B1C0.5N	E10000B1D0.5N
	1		E10000B1C1N	E10000B1D1N
	2		E10000B1C2N	E10000B1D2N
	3		E10000B1C3N	E10000B1D3N
	4		E10000B1C4N	E10000B1D4N
	5		E10000B1C5N	E10000B1D5N
	6	E10000B1B6N	E10000B1C6N	E10000B1D6N
	10	E10000B1B10N	E10000B1C10N	E10000B1D10N
	16	E10000B1B16N	E10000B1C16N	E10000B1D16N
	20	E10000B1B20N	E10000B1C20N	E10000B1D20N
	25	E10000B1B25N	E10000B1C25N	E10000B1D25N
	32	E10000B1B32N	E10000B1C32N	E10000B1D32N
	40	E10000B1B40N	E10000B1C40N	E10000B1D40N
50	E10000B1B50N	E10000B1C50N	E10000B1D50N	
63	E10000B1B63N	E10000B1C63N	E10000B1D63N	
Double Pole 	0.5		E10000B2C0.5	E10000B2D0.5
	1		E10000B2C1	E10000B2D1
	2		E10000B2C2	E10000B2D2
	3		E10000B2C3	E10000B2D3
	4		E10000B2C4	E10000B2D4
	5		E10000B2C5	E10000B2D5
	6	E10000B2B6	E10000B2C6	E10000B2D6
	10	E10000B2B10	E10000B2C10	E10000B2D10
	16	E10000B2B16	E10000B2C16	E10000B2D16
	20	E10000B2B20	E10000B2C20	E10000B2D20
	25	E10000B2B25	E10000B2C25	E10000B2D25
	32	E10000B2B32	E10000B2C32	E10000B2D32
	40	E10000B2B40	E10000B2C40	E10000B2D40
50	E10000B2B50	E10000B2C50	E10000B2D50	
63	E10000B2B63	E10000B2C63	E10000B2D63	



Single Pole



Double Pole

Selection - MCB

Selection - Isolator



Three Pole

Description	In(A)	Reference		
		'B' Curve	'C' Curve	'D' Curve
Three Pole 	0.5		E10000B3C0.5	E10000B3D0.5
	1		E10000B3C1	E10000B3D1
	2		E10000B3C2	E10000B3D2
	3		E10000B3C3	E10000B3D3
	4		E10000B3C4	E10000B3D4
	5		E10000B3C5	E10000B3D5
	6	E10000B3B6	E10000B3C6	E10000B3D6
	10	E10000B3B10	E10000B3C10	E10000B3D10
	16	E10000B3B16	E10000B3C16	E10000B3D16
	20	E10000B3B20	E10000B3C20	E10000B3D20
25	E10000B3B25	E10000B3C25	E10000B3D25	
32	E10000B3B32	E10000B3C32	E10000B3D32	
40	E10000B3B40	E10000B3C40	E10000B3D40	
50	E10000B3B50	E10000B3C50	E10000B3D50	
63	E10000B3B63	E10000B3C63	E10000B3D63	



Four Pole

Three Pole + Neutral 	0.5		E10000B3C0.5N	E10000B3D0.5N
	1		E10000B3C1N	E10000B3D1N
	2		E10000B3C2N	E10000B3D2N
	3		E10000B3C3N	E10000B3D3N
	4		E10000B3C4N	E10000B3D4N
	5		E10000B3C5N	E10000B3D5N
	6	E10000B3B6N	E10000B3C6N	E10000B3D6N
	10	E10000B3B10N	E10000B3C10N	E10000B3D10N
	16	E10000B3B16N	E10000B3C16N	E10000B3D16N
	20	E10000B3B20N	E10000B3C20N	E10000B3D20N
25	E10000B3B25N	E10000B3C25N	E10000B3D25N	
32	E10000B3B32N	E10000B3C32N	E10000B3D32N	
40	E10000B3B40N	E10000B3C40N	E10000B3D40N	
50	E10000B3B50N	E10000B3C50N	E10000B3D50N	
63	E10000B3B63N	E10000B3C63N	E10000B3D63N	

Four Pole 	0.5		E10000B4C0.5	E10000B4D0.5
	1		E10000B4C1	E10000B4D1
	2		E10000B4C2	E10000B4D2
	3		E10000B4C3	E10000B4D3
	4		E10000B4C4	E10000B4D4
	5		E10000B4C5	E10000B4D5
	6	E10000B4B6	E10000B4C6	E10000B4D6
	10	E10000B4B10	E10000B4C10	E10000B4D10
	16	E10000B4B16	E10000B4C16	E10000B4D16
	20	E10000B4B20	E10000B4C20	E10000B4D20
25	E10000B4B25	E10000B4C25	E10000B4D25	
32	E10000B4B32	E10000B4C32	E10000B4D32	
40	E10000B4B40	E10000B4C40	E10000B4D40	
50	E10000B4B50	E10000B4C50	E10000B4D50	
63	E10000B4B63	E10000B4C63	E10000B4D63	



Double Pole

Description	In(A)	Reference
Single Pole 	25	E10000B1ISO25
	40	E10000B1ISO40
	63	E10000B1ISO63
Double Pole 	25	E10000B2ISO25
	40	E10000B2ISO40
	63	E10000B2ISO63
Three Pole 	25	E10000B3ISO25
	40	E10000B3ISO40
	63	E10000B3ISO63
Four Pole 	25	E10000B4ISO25
	40	E10000B4ISO40
	63	E10000B4ISO63

Accessories

Auxiliary Contact

Attachment fitted with MCB (left side) used for interlocking, signaling and indication. The auxiliary switch is switched on or off along with the MCB through internal linkage.

Specifications

Standard Conformity	IS 13947-5
Current Rating	6A
Voltage Rating	240V AC
Contact Configuration	1NO + 1NC
Protection	IP 20
Electrical Endurance (nos)	10000
Fitment	Factory Fitted

Shunt Trip

Controls the remote tripping of the MCB to which it is attached (Right Side).

Specifications

Standard Conformity	IS 13947-2
Rated Voltage AC	220V
DC	12V, 24V, 48V
Operating Voltage	70-110% of Rated Voltage
Protection	IP 20
Electrical Endurance (nos)	10000

Ordering

Procedure

