MINIATURE CIRCUIT BREAKER

INDIA DESIGN MARK awarded in 2017

Electrical Distribution needs are continuously evolving in residential, commercial and industrial sectors. Improved operational safety, continuity of service, greater convenience and operating cost have assumed a tremendous significance. Miniature Circuit Breakers have been designed to continuously adapt to these changing needs.

Features

- Precise hammer action
- Low power consumption, thus cost effective & energy saving
- 13 Plates Arc Chute for effective arc quenching
- Dual termination for bus-bar as well as cable connection.
- Easy DIN-Rail extraction
- Energy Limiting Class 3 to ensure low let through energy to limit thermal & mechanical stress on cables.
- Trip free mechanism : MCB trips even if held in ON position.
- Longer electrical life
- ISI and CE marking. RoHS Complaint, 'Green Product'

Range

6 A to 63 A - 'B' Curve
0.5 A to 63 A - 'C' Curve
0.5 A to 63 A - 'D' Curve
0.5 A to 63 A for DC Application

Accessories

- Auxiliary Switch
- Shunt Trip

Execution

Single Pole (1P)
Single Pole & Neutral (1P+N)
Double Pole (2P)
Three Pole (3P)
Three Pole & Neutral (3P+N)
Four Pole (4P)

Specification

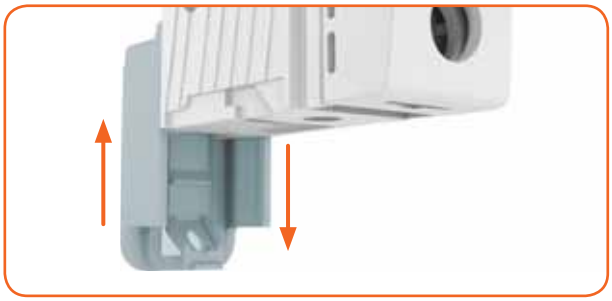
IS/IEC 60898-1
IEC 60898-2 for DC Application
IEC 60947-2 for Industrial Application

Safety Terminals

To avoid improper cable termination, the safety terminals guide the cable towards the cage terminal for systematic termination

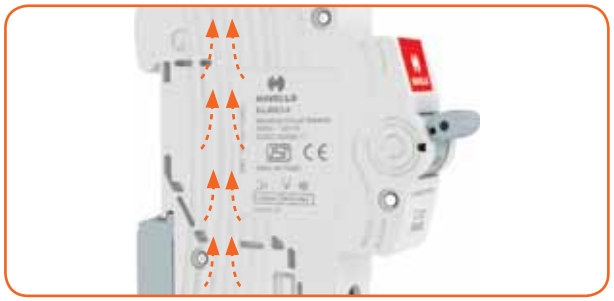
Large Cable Terminals

Suitable for copper and aluminum cables, these terminals are compatible with cables upto 35 mm^2 cross section area



Bi Stable Clip

Every device is provided with a dual position DIN rail clip, so it becomes much easier to change a device from a device bank connected to a bus-bar, without disturbing the existing wiring



Cooler Operation

Grooves provided on outer body, so that when individual poles are placed adjacent to each other in a distribution board it forms a very effective channel for better air circulation, resulting into a cooler operation

Construction

Miniature Circuit Breakers have precisely formed moulded case & cover of flame retardant high strength thermo-plastic material having high melting point, low water absorption, high dielectric strength and temperature withstand.

The Switching Mechanism is independent, manual and trip free, i.e., the breaker trips internally even if the operating knob is held in ON position.

The Contact Mechanism comprises of fixed & moving contacts specially designed for reliability, long life and anti-weld properties. The Arc Extinguishing Device comprises of 13 plates arc chute. The arc under the influence of the magnetic field and arc guide is moved into the arc chute where it is rapidly split and quenched. The tripping mechanism is Thermal Magnetic Type.

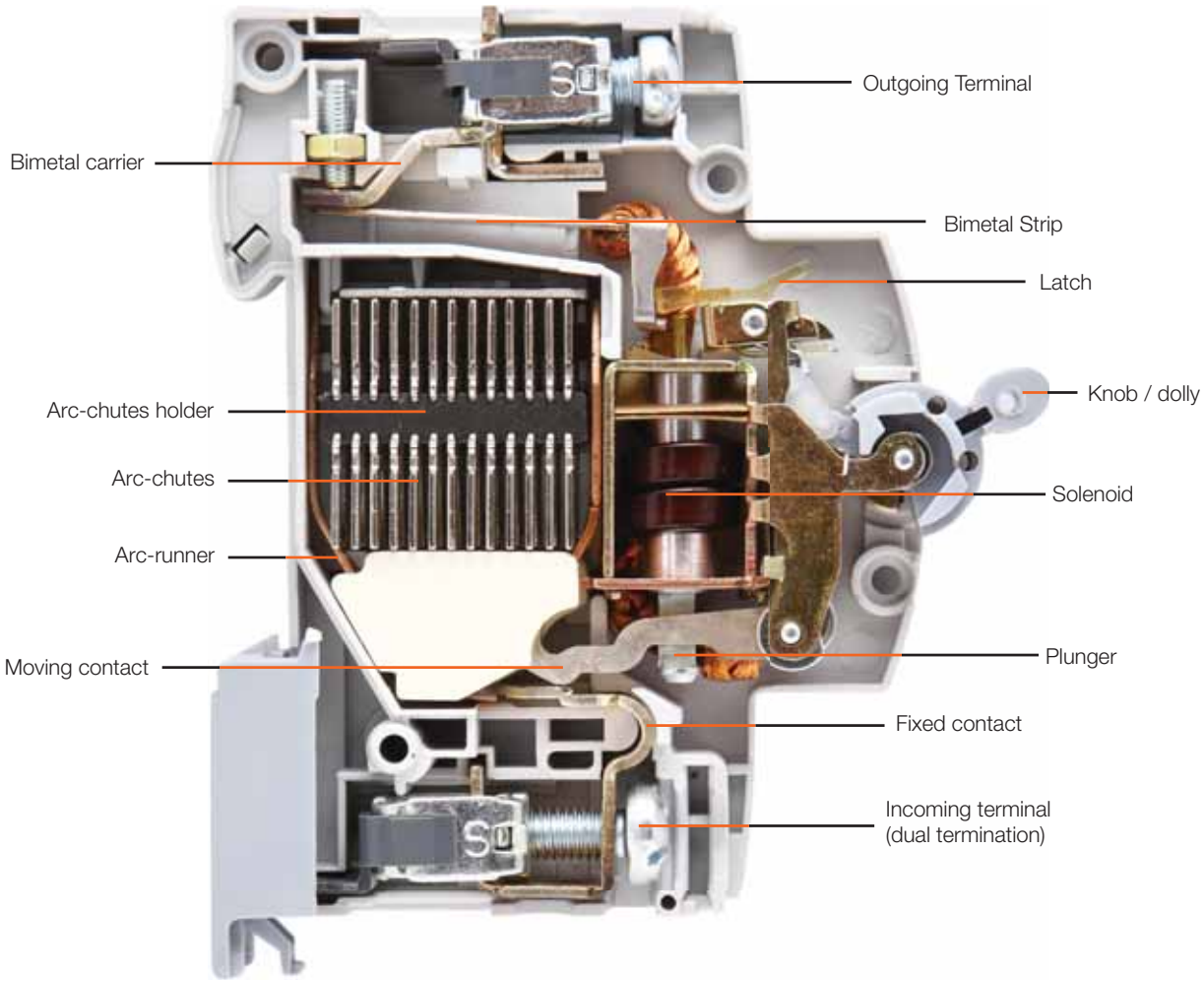
Thermal Operation

The thermal operation provides protection from moderate overloads. Under overload condition, a thermo-metallic element (bimetallic strip) deflects until it operates a latching mechanism allowing the main contacts to open.

Magnetic Operation

In magnetic operation, large overloads or short circuit current actuates a solenoid causing a plunger to strike the latching mechanism rapidly opening the main contacts.

Internal View



Technical Specification			
Standard Conformity	IS / IEC 60898 - 1		
Type / Series	B	C	D
Rated Current (In)	6 A-63 A*	0.5 A-63 A*	0.5 A-63 *
Rated Voltage (Ue)	240 V~/415 V~	240 V~/415 V~	240 V~/415 V~
Rated Frequency (f)	50 Hz		
No. of Poles (Execution)	1P, 1 P+N, 2P, 3P, 3P+N, 4P**		
Rated Short Circuit Breaking Capacity	10 kA	10 kA	0.5 A-32 A-10 kA 40 A-63 A-4.5 kA
Magnetic Release Setting	(3-5) In	(5-10) In	(10-20) In
Rated Insulation Voltage (Ui)	690 V		
Rated Impulse Voltage (Uimp)	4 kV		
Electrical / Mechanical Endurance ≤32 A (No. of operations)	20000		
Electrical / Mechanical Endurance >32 A (No. of operations)	10000		
Ambient Working Temperature	-5°C to + 55°C		
Terminal Capacity (max)	35 mm^2		
Vibration	3 g		
Shock Resistance	40 mm free fall		
Protection Class	IP 20		
Installation Position	Vertical / Horizontal		
Mounting	Clip on DIN Rail (35 mm x 7.5 mm)		
Case & Cover	Moulded, flame-retardant thermoplastic material		
Auxiliary Contacts	Yes		
Shunt Trip	Yes		

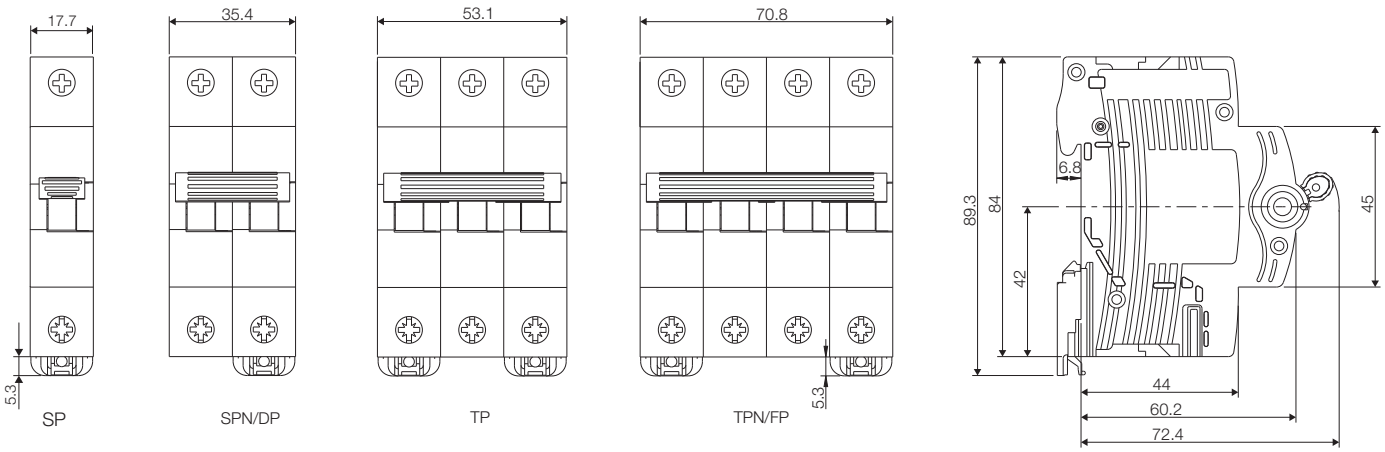
* Current Ratings (A) -

0.5 A, 1 A, 2 A, 3 A, 4 A, 5 A, 6 A, 8 A, 10 A, 13 A, 16 A,

20 A, 25 A, 32 A, 40 A, 50 A, 63 A

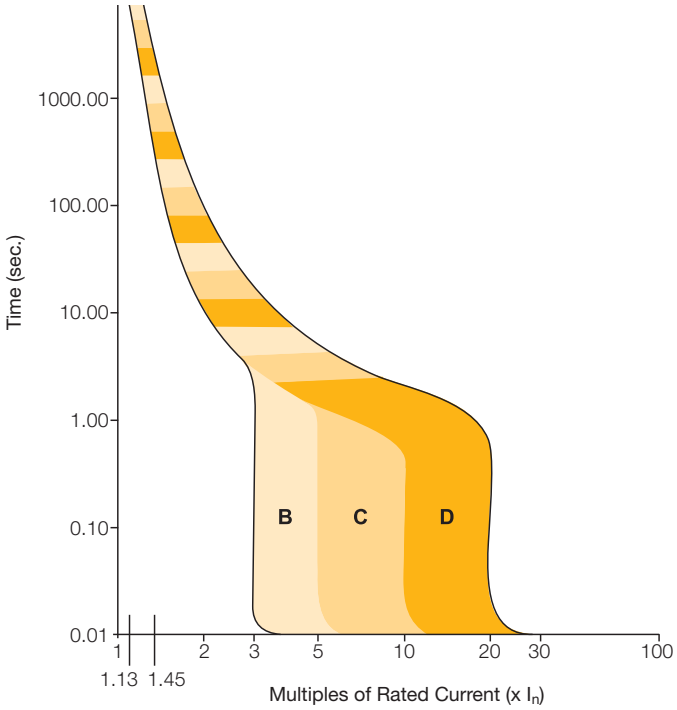
** 1P Single Pole
1P+N Single Pole Neutral
2P Double Pole
3P Three Pole
3P+N Three Pole Neutral
4P Four Pole

Dimensions (in mm)



Characteristics Curves

As per	Thermal Tripping			Magnetic Tripping		
	No tripping	Tripping	Time	Hold	Trip	Time
IS/IEC 60898-1	Current	Current	Limits	Current	Current	Limits
	I_1	I_2	t	I_4	I_5	t
B Curve	1.13 x I_n		≥1 h	3 x I_n		≥0.1 s
		1.45 x I_n	<1 h		5 x I_n	<0.1 s
C Curve	1.13 x I_n		≥1 h	5 x I_n		≥0.1 s
		1.45 x I_n	<1 h		10 x I_n	<0.1 s
D Curve	1.13 x I_n		≥1 h	10 x I_n		≥0.1 s
		1.45 x I_n	<1 h		20 x I_n	<0.1 s
I_3 = 2.55 x I_n	1 s <t <60 s for I_n (In ≤32 A) 1 s <t <120 s for I_n (In >32 A)					



Tripping Characteristics

Based on the Tripping Characteristics, MCBs are available in 'B', 'C' and 'D' curve to suit different types of applications.

'B' Curve: for protection of electrical circuits with equipment that does not cause surge current (lighting and distribution circuits). Short circuit release is set to (3-5) In

'C' Curve: for protection of electrical circuits with equipment that causes surge current (inductive loads and motor circuits).
Short circuit release is set to (5-10) In

'D' Curve: for protection of electrical circuits which causes high inrush current, typically 12-15 times the thermal rated current (transformers, X-ray machines etc.) Short circuit release is set to (10-20) In

Current Limiting Design

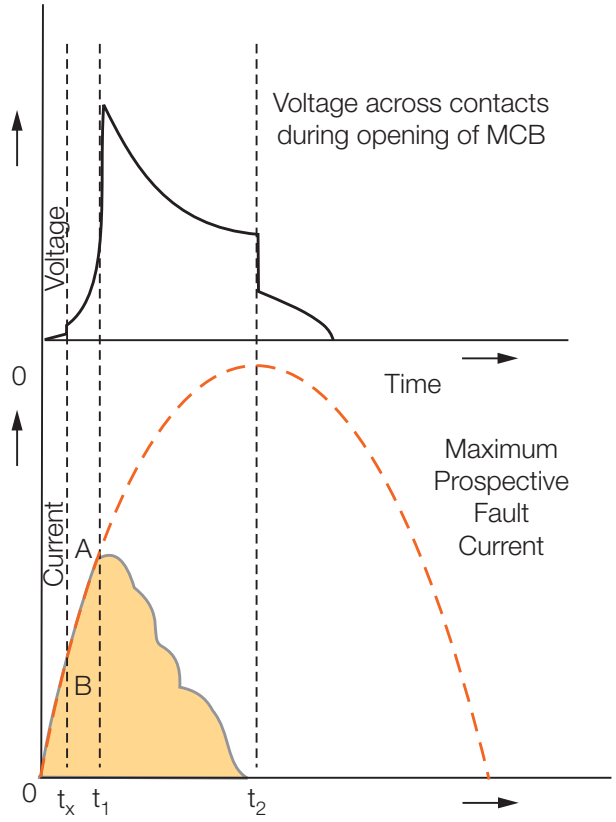
In a current limiting breaker, the tripping & arc control mechanism are so designed that under short circuit conditions, the contacts are physically separated and the electrodynamics forces set up by fault current, assist the extinction in less than half cycle.
The figure shows the current limiting effect of circuit breakers.
Fault Traces for Voltage & Current

0 = Point of fault initiation

t_x = Contact opening time (i.e., creation of arc)

t_1 = Current / Voltage peak (i.e., current limitation)

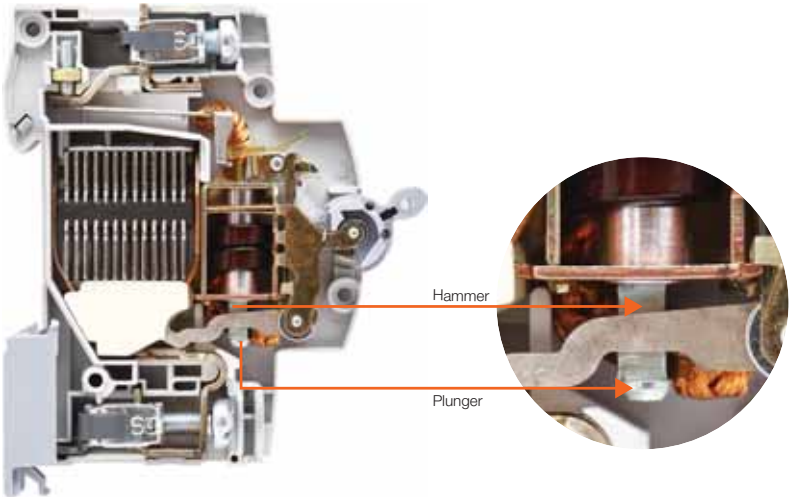
t_2 = Time to total extinction of arc (i.e., complete shutdown of fault current)



Hammer Trip Mechanism

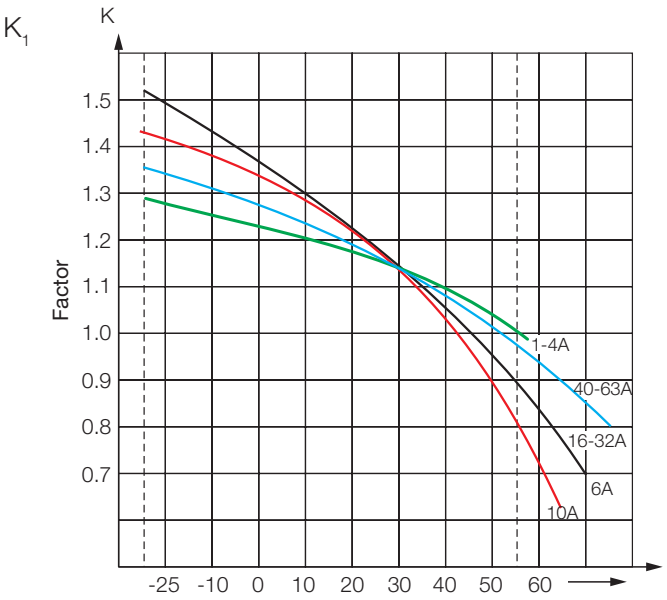
Current Limiting design in itself may not fulfil the requirement of quick breaking (instantaneous action) mainly due to inertia of the Latch mechanism and interconnected sequence of operations.

A Hammer directly connected to the plunger strikes the moving contact arm with a force proportional to the peak current there by forcibly separating the moving contact from the fixed contact much before the latch mechanism operates. This further reduces the opening time of the circuit breaker.



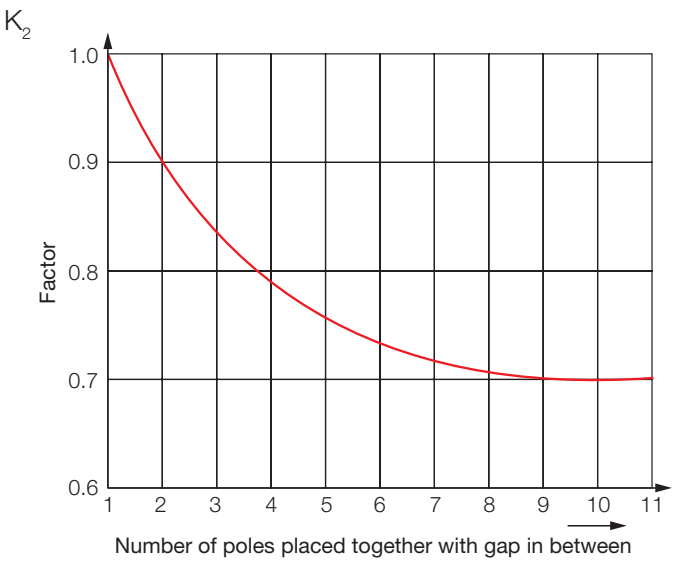
Ambient Temperature Compensation / Diversity Factor Chart

Maximum Permissible Rated Current (K_1 Factor)



Graph 1

Diversity Factor (K_2 Factor)



Graph 2

Calculation	I_n / MCB = K_1 x K_2 x I_n
Example	4 MCBs with I_n = 10 A, and the amb. temp. is 50°C kept with no gap in between
Solution	K_1 = 0.89 (from graph 1) K_2 = 0.78 (from graph 2) I_n / pole = 0.89 x 0.78 x 10 = 6.94 A

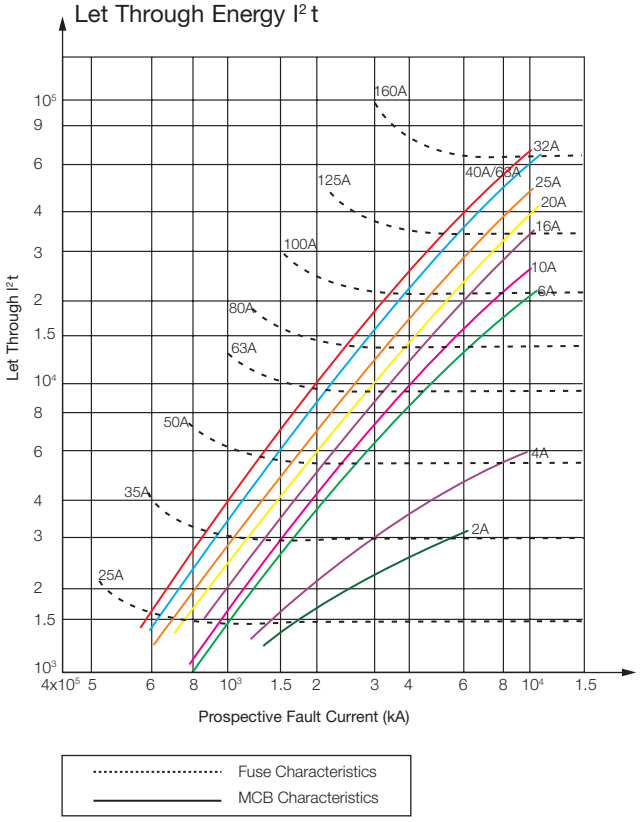
Effect Of Frequency Variation

MCBs are designed to operate at AC frequency 50/60 Hz. However, MCBs specially suitable for DC applications and for frequencies upto 400 Hz can be supplied on request.

These can be used on different frequencies in supply from 50-60 Hz without any deration.

For higher frequencies, normal MCBs can be used with a multiplication factor which shall only affect its magnetic trip current.

Supply	AC			DC
Frequency	100 Hz	200 Hz	400 Hz	
Multiplication Factor	1.1	1.2	1.5	1.5



Energy Limiting Class 3

MCBs are designed to have low-let through energy during faults, thus ensuring a better protection of cables and equipment.

Maximum Backup Protection

At site, no. of MCBs are used for outgoing connection. To protect the MCBs under short circuit (higher breaking capacity), we need to put fuses in the incoming side. The current rating of fuses should not be more than the values given in the table.

MCB Current Rating	Backup Fuse Rating
1 A	25 A
2 A	35 A
4 A	50 A
6 A	80 A
10-63 A	100 A

Cold Resistance & Power Loss Details

The power loss value declared are at rated current.

Rated Current I_n (A)	Cold Resistance R_I (mΩ)	Power Loss per Pole P_v (W)
0.5	3100.00	0.8
1	860.80	1.0
2	280.00	1.2
4	70.00	1.2
6	25.00	1.3
10	11.68	1.4
13	10.10	1.6
16	8.00	2.2
20	4.50	2.3
25	3.78	3.1
32	2.57	3.3
40	1.94	3.6
63	1.30	6.2

Remarks:- Tolerance ±5%

DC Application

MCBs for DC application are specially designed to meet tough arc quenching conditions. While selecting circuit breaker for DC applications following parameters have to be taken into consideration.

Normal Circuit Currents

The rating and normal running temperature of the MCB are unaffected by DC. The MCB can be selected using the thermal section of the standard time / current curves .

Magnetic tripping on DC is different from the equivalent AC by a peak factor of 1.4

ie., for 'B' curve AC MCB, magnetic range = $(3\text{-}5)I_n$

for DC MCB, magnetic range = $1.4(3\text{-}5)I_n = (4\text{-}7)I_n$

for 'C' curve AC MCB, magnetic range = $(5\text{-}10)I_n$

for DC MCB, magnetic range = $1.4(5\text{-}10)I_n = (7\text{-}14)I_n$

Short Circuit Currents

The maximum short circuit current possible on a DC system is determined by the voltage of the battery and the total internal resistance of the cells.

It is given by Ohm's law : I_{sc} = Vb/Rb

Where, I_{sc} is the Short Circuit Current

V_b is the voltage of the battery (with 100% charged battery)

R_b is the internal resistance of the battery cells

(this is usually stated by the manufacturer)

Circuit Time Constant

The time constant is given by : L/R = 15 ms max where L is the inductance of the circuit

R is The Resistance Of The Circuit

The time constant is usually given in milliseconds (ms.). Ideally, DC circuits would be mainly resistive (i.e. a low number), as inductive circuits produce a back emf when the current suddenly falls. This in turn tends to prolong arcing during switching operations, and so reduce contact life.

Circuit Voltage

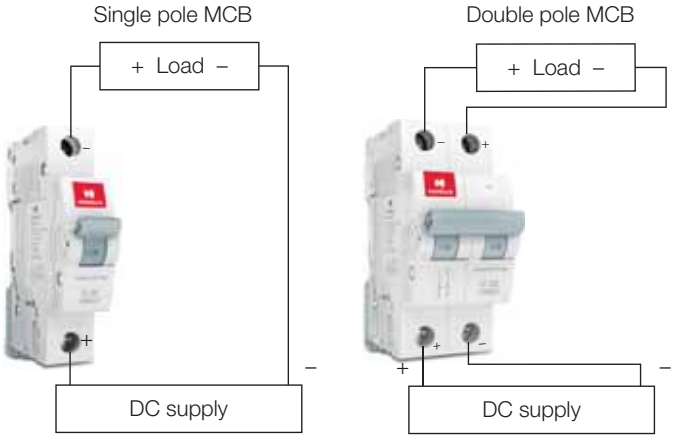
The voltage of the circuit is dependent upon the power supply. The lower the voltage the easier switching operations will be, but the voltage makes no difference to the running of the MCBs.

Contact life can be significantly increased by reducing the voltage, drop across each pole. This can be achieved by wiring poles in series.

Technical data

Correct polarity connections for DC MCBs

- Connection diagram



Standard Conformity		IS/IEC 60947-2
Rated Current (In)	A	0.5-63
Rated Voltage (Ue)	V⎓	220
No. of Poles (Execution)		1P, 2P
Rated Short Circuit Breaking Capacity	kA	3

*Also available in 130 Vdc

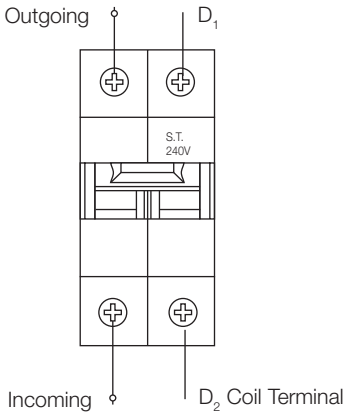
Shunt Trip

Attachment Used For Remote Tripping		
Standard Conformity		IS / IEC 60947-3
Coil Consumption		6 VA
Rated Voltage	(ac) (Ue)	240 V
	(dc) (Ue)	48 V, 24 V, 12 V
Frequency		50 Hz
Operating Voltage Range		70%-110% of rated voltage
Electrical Endurance (No. of operations)		10000
Terminal Capacity (Max)		35 mm^2
Protection Class		IP 20 as per IS 2147 & IEC 60529
Mounting		Right side of MCB (Factory assembled)

Shunt Trip Coil

1. To trip the Circuit Breaker through Shunt Trip Coil, 70% to 110% of the rated voltage is to be applied across D1 & D2.
2. The Shunt Trip coil is supplied for a short time rated voltage and it trips the breaker instantaneously. (i.e., continuous duty not required).

Shunt Trip Connection Diagram



Discrimination Data

MCB Downstream	MCB Upstream C Curves								
C curve	10 A	13 A	16 A	20 A	25 A	32 A	40 A	50 A	63 A
0.5 A to 5 A	50	65	80	100	125	160	200	250	315
6 A		65	80	100	125	160	200	250	315
10 A				100	125	160	200	250	315
13 A					125	160	200	250	315
16 A						160	200	250	315
20 A							200	250	315
25 A								250	315
32 A									315
40 A									
50 A									

MCB Downstream	MCB Upstream B Curves									
B curve	6 A	10 A	13 A	16 A	20 A	25 A	32 A	40 A	50 A	63 A
0.5 A to 5 A		30	39	48	60	75	96	120	150	189
6 A		30	39	48	60	75	96	120	150	189
10 A				48	60	75	96	120	150	189
13 A					60	75	96	120	150	189
16 A						75	96	120	150	189
20 A							96	120	150	189
25 A								120	150	189
32 A										189

MCB Downstream	MCCB Upstream																			
C curve	16 A	20 A	25 A	32 A	40 A	50 A	63 A	80 A	100 A	125 A	160 A	200 A	250 A	320 A	400 A	500 A	630 A	800 A	1000 A	1250 A	1600 A
0.5 to 6 A	1100	1200	1400	1700	2000	2500	3400	4800	5800	6700	T	T	T	T	T	T	T	T	T	T	T
10 A	-	1100	1200	1400	1700	2100	2500	3000	3500	4300	T	T	T	T	T	T	T	T	T	T	T
16 A	-	-	-	1300	1600	1900	2100	2400	2700	3200	8300	T	T	T	T	T	T	T	T	T	T
20 A	-	-	-	-	1600	1900	2100	2400	2700	2500	8300	T	T	T	T	T	T	T	T	T	T
25 A	-	-	-	-	-	1700	1800	2000	2200	2500	5400	8700	T	T	T	T	T	T	T	T	T
32 A	-	-	-	-	-	-	1800	2000	2200	2500	5400	8700	T	T	T	T	T	T	T	T	T
40 A	-	-	-	-	-	-	-	1500	1700	2000	4300	7000	T	T	T	T	T	T	T	T	T
50 A	-	-	-	-	-	-	-	-	1300	1500	3600	5900	9000	T	T	T	T	T	T	T	T
63 A	-	-	-	-	-	-	-	-	-	1100	2800	5200	8200	T	T	T	T	T	T	T	T

Prospective Fault Levels to which selectivity is achieved (T = Total Selectivity)

Discrimination With Fuses

HRC Fuse Upstream Type gG

MCBs Downstream	HRC Fuse Link Upstream									
	20 A	25 A	32 A	40 A	50 A	63 A	80 A	100 A	125 A	160 A
0.5 A to 6 A	700	850	960	1200	1350	1750	2800	4500	5200	6000
10 A		700	960	1200	1350	1750	2800	4500	5200	6000
13 A			850	1200	1200	1750	2800	4500	5200	6000
16 A				960	1100	1500	2500	3200	5200	6000
20 A					1100	1500	2500	3200	4500	5200
25 A					960	1350	2000	3200	4500	5200
32 A						1200	1750	2800	4500	5200
40 A							1750	2800	4500	5200
50 A								2500	3200	4500
63 A									3200	4500

MCB Selection Chart For Household Applications

Appliances	Capacity / W (Load) (240 V~ 1 phase)	Current Rating of MCB	Type of MCB
Air Conditioner	3.5 kW (1.0 Ton)	10 A*	“C” series
	5.28 kW (1.5 Ton)	16 A*	“C” series
	7.03 kW (2.0 Ton)	20 A*	“C” series
Refrigerator	165 L (litres)	3 A*	“C” series
	350 L (litres)	4 A*	“C” series
Oven cum Griller	4500 W	32 A	“B” series
	1750 W	10 A	“B” series
Oven only Hot Plate only Room Heater	750 W	6 A	“B” series
	2000 W	10 A	“B” series
	1000 W	6 A	“B” series
	2000 W	10 A	“B” series
Washing Machine	300 W	2 A	“C” series
Washing Machine (with heater)	1300 W	8 A	“C” series
(storage/instant)	1000 W	6 A	“B” series
	2000 W	10 A	“B” series
	3000 W	16 A	“B” series
	6000 W	32 A	“B” series
Electric iron	750 W	6 A	“B” series
	1250 W	8 A	“B” series
(2 slices)	1200 W	8 A	“B” series
Electric Kettle	1500 W	10 A	“B” series

* It may vary from manufacturer to manufacturer. Please check before installation.

Rating Of MCBs For Specified No. of Fittings (“B” Series MCBs)

Lamp (W)	Number of Lamps	Rating (A)
20 W	8	1 A
	12	1.5 A
40 W	2	0.5 A
	10	2 A
	12	2.5 A
60 W	1	0.5 A
	4	1.5 A
	8	3 A
	12	4 A
80 W	1	0.5 A
	2	1 A
	5	2 A
	8	4 A
	12	5 A
100 W	1	1 A
	2	1.5 A
	4	2.5 A

“B” series MCB is used for all Lighting Applications

MCB Selection Chart For Motor Protection

S. No.	kW	HP	1 Phase 230 V DOL Starting		3 Phase 400 V DOL Starting		3 Phase 400 V Assisted Starting Star Delta		
			Full Load Current	MCB Selection	Full Load Current	MCB Selection	Full Load Current	MCB Selection	
1	0.18	0.24	2.8	10	0.9	2	—	—	—
2	0.25	0.34	3.2	10	1.2	2	—	—	—
3	0.37	0.50	3.5	10	1.2	2	—	—	—
4	0.55	0.74	4.8	16	1.8	3	—	—	—
5	0.75	1.01	6.2	20	2.0	3	—	—	—
6	1.1	1.47	8.7	25	2.6	6	—	—	—
7	1.5	2.01	11.8	32	3.5	10	—	—	—
8	2.2	2.95	17.5	50	4.4	10	—	—	—
9	3	4.02	20.0	63	6.3	16	6.3	16	10
10	3.75	5.03	24.0	80	8.2	20	8.2	20	10
11	5.5	7.37	26.0	80	11.2	25	11.2	32	16
12	7.5	10.05	47.0	125	14.4	40	14.4	40	25
13	10	13.40	—	—	21.0	50	21.0	50	32
14	15	20.11	—	—	27.0	100	27.0	63	40
15	18.5	24.80	—	—	32.0	125	32.0	—	50
16	22	29.49	—	—	38.0	125	38.0	—	63
17	30	40.21	—	—	51.0	125	51.0	—	63

Calculation Formulae :

Incomer Current Rating, For Single Phase : $\frac{\text{Total Load in Ws}}{240\ \text{V}}$

Incomer Current Rating, For Three Phase : $\frac{\text{Total Load in Ws}}{\sqrt{3}\text{X}240\ \text{V}}$

“C” series MCB is used for all Motor Applications

Note : One lighting circuit can have up to 800 W or up to 10 lighting points
One power circuit can have up to 2000 W or 1 power points

'B' Series MCB

'B' Series SP MCB
(In accordance with IS/IEC 60898-1) 240 V, 50 Hz,10 kA Suitable for lighting and other domestic loads.

Rating	Std. / Master Packing (No. of Unit/s)	SP Cat. No.
6 A-32 A	12 N	DHMGBSPF006-032
40 A-63 A	12 N	DHMGBSPF040-063

'C' Series MCB

'C' Series SP MCB
(In accordance with IS/IEC 60898-1) 240 V, 50 Hz, 10 kA Suitable for Motor and other Inductive loads.

Rating	Std. / Master Packing (No. of Unit/s)	SP Cat. No.
0.5 A-5 A	12 N	DHMGCSPF0x5-005
6 A-32 A	12 N	DHMGCSPF006-032
40 A	12 N	DHMGCSPF040
50 A	12 N	DHMGCSPF050
63 A	12 N	DHMGCSPF063

'C' Series SPN MCB
(In accordance with IS/IEC 60898-1) 240 V, 50 Hz, 10 kA Suitable for Motor and other Inductive loads.

Rating	Std. / Master Packing (No. of Unit/s)	SPN Cat. No.
0.5 A-5 A	6 N	DHMGCSNF0x5-005
6 A-32 A	6 N	DHMGCSNF006-032
40 A	6 N	DHMGCSNF040
50 A	6 N	DHMGCSNF050
63 A	6 N	DHMGCSNF063

'C' Series DP MCB
(In accordance with IS/IEC 60898-1) 240 V/415 V, 50 Hz, 10 kA Suitable for Motor and other Inductive loads.

Rating	Std. / Master Packing (No. of Unit/s)	DP Cat. No.
0.5 A-5 A	6 N	DHMGCDPF0x5-005
6 A-32 A	6 N	DHMGCDPF006-032
40 A	6 N	DHMGCDPF040
50 A	6 N	DHMGCDPF050
63 A	6 N	DHMGCDPF063

'C' Series TP MCB
(In accordance with IS/IEC 60898-1) 240 V/415 V, 50 Hz, 10 kA Suitable for Motor and other Inductive loads.

Rating	Std. / Master Packing (No. of Unit/s)	TP Cat. No.
0.5 A-5 A	4 N	DHMGCTPF0x5-005
6 A-32 A	4 N	DHMGCTPF006-032
40 A	4 N	DHMGCTPF040
50 A	4 N	DHMGCTPF050
63 A	4 N	DHMGCTPF063

'C' Series TPN MCB
(In accordance with IS/IEC 60898-1) 240 V/415 V, 50 Hz, 10 kA Suitable for Motor and other Inductive loads.

Rating	Std. / Master Packing (No. of Unit/s)	TPN Cat. No.
0.5 A-5 A	3 N	DHMGCTNF0x5-005
6 A-32 A	3 N	DHMGCTNF006-032
40 A	3 N	DHMGCTNF040
50 A	3 N	DHMGCTNF050
63 A	3 N	DHMGCTNF063

'C' Series FP MCB
(In accordance with IS/IEC 60898-1) 240 V/415 V, 50 Hz, 10 kA Suitable for Motor and other Inductive loads.

Rating	Std. / Master Packing (No. of Unit/s)	FP Cat. No.
0.5 A-5 A	3 N	DHMGCFPF0x5-005
6 A-32 A	3 N	DHMGCFPF006-032
40 A	3 N	DHMGCFPF040
50 A	3 N	DHMGCFPF050
63 A	3 N	DHMGCFPF063

'D' Series MCB

'D' Series SP MCB

(In accordance with IEC 60898-1) 240 V/415 V, 50 Hz Suitable for high inrush current loads.

Rating	Std. / Master Packing (No. of Unit/s)	SP Cat. No.
0.5 A-5 A	12 N	DHMGDSPF0x5-005
6 A-32 A	12 N	DHMGDSPF006-032
40 A	12 N	DHMGDSPF040
50 A	12 N	DHMGDSPF050
63 A	12 N	DHMGDSPF063

'D' Series DP MCB

(In accordance with IEC 60898-1) 240 V/415 V, 50 Hz Suitable for high inrush current loads.

Rating	Std. / Master Packing (No. of Unit/s)	DP Cat. No.
0.5 A-5 A	6 N	DHMGDDPF0x5-005
6 A-32 A	6 N	DHMGDDPF006-032
40 A	6 N	DHMGDDPF040
50 A	6 N	DHMGDDPF050
63 A	6 N	DHMGDDPF063

'D' Series TP MCB

(In accordance with IEC 60898-1) 240 V/415 V, 50 Hz Suitable for high inrush current loads.

Rating	Std. / Master Packing (No. of Unit/s)	TP Cat. No.
0.5 A-5 A	4 N	DHMGDTPF0x5-005
6 A-32 A	4 N	DHMGDTPF006-032
40 A	4 N	DHMGDTPF040
50 A	4 N	DHMGDTPF050
63 A	4 N	DHMGDTPF063

'D' Series FP MCB

(In accordance with IEC 60898-1) 240 V/415 V, 50 Hz, 10 kA Suitable for high inrush current loads.

Rating	Std. / Master Packing (No. of Unit/s)	FP Cat. No.
0.5 A-5 A	3 N	DHMGDFPF0x5-005
6 A-32 A	3 N	DHMGDFPF006-032
40 A	3 N	DHMGDFPF040
50 A	3 N	DHMGDFPF050
63 A	3 N	DHMGDFPF063

'DC' Series MCB

'DC' Series SP MCB
For DC Supply, upto 220 V (IS/IEC 60947-2)

Rating	Std. / Master Packing (No. of Unit/s)	SP Cat. No.
0.5 A-5 A	12 N	DHMCESPF0x50013 - 0050013
6 A-32 A	12 N	DHMCESPF0060013 - 0320013
40 A	12 N	DHMCESPF0400013
50 A	12 N	DHMCESPF0500013
63 A	12 N	DHMCESPF0630013

'DC' Series DP MCB
For DC Supply, up to 220 V (IS/IEC 60947-2)

Rating	Std. / Master Packing (No. of Unit/s)	DP Cat. No.
0.5 A-5 A	6 N	DHMCEDPF0x50013 - 0050013
6 A-32 A	6 N	DHMCEDPF0060013 - 0350013
40 A	6 N	DHMCEDPF0400013
50 A	6 N	DHMCEDPF0500013
63 A	6 N	DHMCEDPF0630013

'DC' Series Railway MCB
For Railway Applications (with extended terminals & mounting brackets)

Rating	Std. / Master Packing (No. of Unit/s)	TP Cat. No.
0.5 A-5 A	12 N	DHMCRSPF0x50013 - 0050013
6 A-35 A	12 N	DHMCRSPF0060013 - 0350013
40 A	12 N	DHMCRSPF0400013
50 A	12 N	DHMCRSPF0500013
60 A	12 N	DHMCRSPF0600013

Suitable for Railway application as per RDSO, Drg. SKEL. 3700 alt-1 and specification No. SPEC/E-12/1/04 (with extended terminals and mounting brackets)

MINIATURE CIRCUIT BREAKER (80 A-125 A)

Electrical Distribution needs are continuously evolving in residential, commercial and industrial sectors. Improved operational safety, continuity of service, greater convenience and operating cost have assumed a tremendous significance. Miniature Circuit Breakers have been designed to continuously adopt to these changing needs.

Features

- Trip Free mechanism
- Positive Contact Indication
- Thermal and Magnetic trip function
- Current Limiting design for short circuit fault protection
- CE marking. RoHS Complaint, 'Green Product'

Range

80 A, 100 A & 125 A - 'C' Curve

Execution

Single Pole (1P), Double Pole (2P)
Three Pole (3P), Four Pole (4P)

Specification

IS/IEC 60947-2

Positive Contact Indication

It clearly indicates true contact position through Flag Indication (Red-ON, Green-OFF) thus enhancing safety

Large Cable Terminals

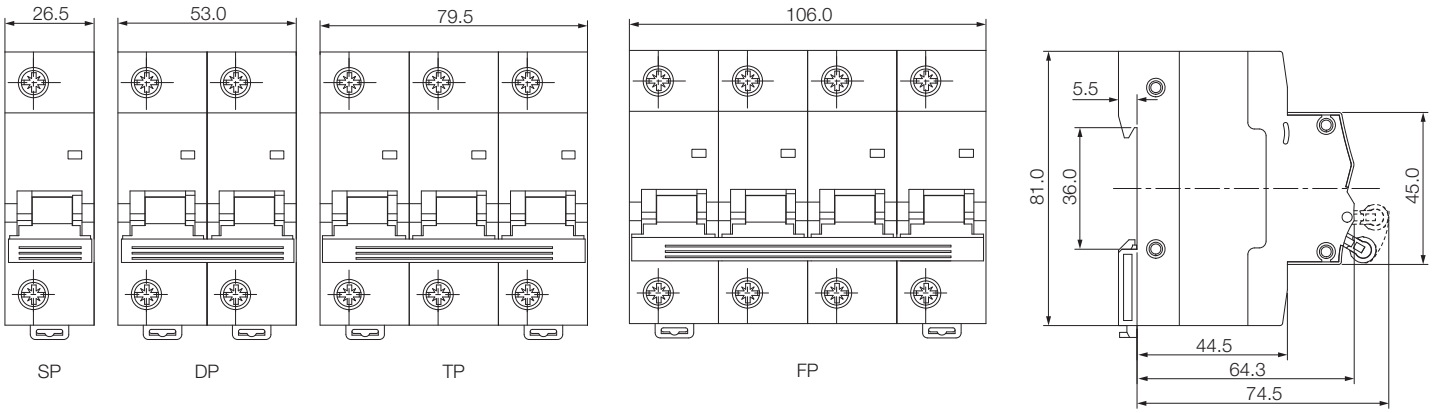
Suitable for copper and aluminum cables, these terminals are compatible with cables upto 35 mm^2 cross section area

Technical Specification		
Standard Conformity		IS/IEC 60947-2
Type / Series		C
Rated Current (In)		80 A-125 A*
Rated Voltage (Ue)		240 V~/415 V~
Rated Insulation Voltage (Ui)		690 V
Rated Impulse Withstand Voltage (Uimp)		6 kV
Rated Frequency		50 Hz/60 Hz
No. of Poles		1P, 2P, 3P, 4P**
Rated Short Circuit Breaking Capacity (Icn)		10 kA
Rated Ultimate Short Circuit Breaking Capacity (Icu)		10 kA
Rated Service Short Circuit Breaking Capacity (Ics)		75% of Icu
Magnetic Release Setting (In)		(5 A-10 A)
Mechanical Life	No. of Operations	20000
Electrical Life	No. of Operations	5000
Ambient Temperature		-5°C to + 55°C
Terminal Capacity		50 mm^2
Tightening Torque		3.5 Nm
Protection Class		IP 20
Installation Position		Vertical / Horizontal
Mounting		Clip on DIN Rail (35 mm x 7.5 mm)

* Current Ratings: 80 A, 100 A, 125 A

** 1P Single Pole 3P Three Pole
2P Double Pole 4P Four Pole

Dimensions (in mm)



Higher Rating MCB

Higher Rating SP MCB (80 A-125 A) 'C' Series,
(In accordance with IS/IEC 60947-2) 240 V/415 V, 50 Hz, 10 kA

Rating	Std. / Master Packing (No. of Unit/s)	SP Cat. No.
80 A	6 N	DHMJCSPF080
100 A	6 N	DHMJCSPF100
125 A	6 N	DHMJCSPF125

Higher Rating DP MCB (80 A-125 A) 'C' Series,
(In accordance with IS/IEC 60947-2) 240 V/415 V, 50 Hz, 10 kA

Rating	Std. / Master Packing (No. of Unit/s)	DP Cat. No.
80 A	3 N	DHMJCDPF080
100 A	3 N	DHMJCDPF100
125 A	3 N	DHMJCDPF125

Higher Rating TP MCB (80 A-125 A) 'C' Series,
(In accordance with IS/IEC 60947-2) 240 V/415 V, 50 Hz, 10 kA

Rating	Std. / Master Packing (No. of Unit/s)	TP Cat. No.
80 A	2 N	DHMJCTPF080
100 A	2 N	DHMJCTPF100
125 A	2 N	DHMJCTPF125

Higher Rating FP MCB (80 A-125 A) 'C' Series,
(In accordance with IS/IEC 60947-2) 240 V/415 V, 50 Hz, 10 kA

Rating	Std. / Master Packing (No. of Unit/s)	FP Cat. No.
80 A	1 N	DHMJCFPF080
100 A	1 N	DHMJCFPF100
125 A	1 N	DHMJCFPF125

MCB CHANGEOVER

MCB Changeover switch finds wide & varied applications in industries as well as in domestic sphere for use in low voltage distribution circuits, wherever continuity of supply is necessary, for switching to an alternate source of supply from main supply and vice - versa.

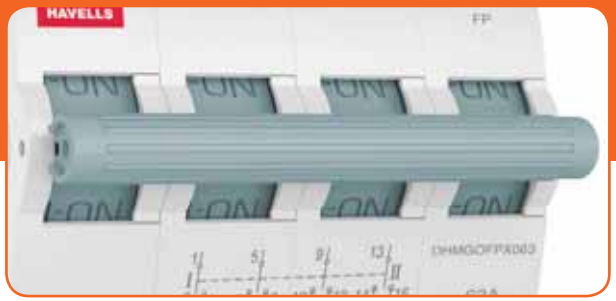
Features
- Compact construction
- Double break contacts
- Silver cadmium oxide contact tips
- Shrouded terminals
- Can be mounted with other products viz. MCB, RCCBs, Isolator in Distribution Board
- CE and RoHS Complaint. 'Green Product'

Range
25 A, 40 A & 63 A

Execution
Double Pole (2P), Four Pole (4P)

Specification
IS/IEC 60947-3

Compact Size
Optimized space in the distribution board.



Center Position OFF
Front operation with three stable positions I-O-II, where center position is OFF.

Large Cable Terminals
Suitable for copper and aluminum cables, these terminals are compatible with cables 10 mm^2 upto 40 A / 25 mm^2 for 63 A cross section area

Cooler Operation
Grooves provided on outer body, which form an effective channel for better air circulation, resulting into a cooler operation

Construction

The entire switching mechanism along with the fixed and moving contact assembly are housed in FR thermo plastic moulded case / cover, having high dielectric strength, excellent mechanical & thermal properties.

The switching mechanism is double break type. The contacts tips are made of Silver Cadmium oxide for long electrical life, sustained current carrying capacity and they ensure temperature rise is within specified limits.

Technical Specification		
Standard Conformity		IS/IEC 60947-3
No. of Poles (Execution)		2 Pole, 4 Pole
Rated Current (In)		25 A, 40 A, 63 A
Rated Voltage (Ue)		240 V~/415 V~
Rated Frequency		50 Hz
Rated Insulation Voltage		690 V
Dielectric Strength		2.5 kV
Rated Impulse Voltage		4 kV
Utilization Category		AC 21 A
Ambient Temp.		-5°C to +55°C
Mechanical Life	(No. of operations)	10000
Electrical Life	(No. of operations)	10000
Mounting		Clip on DIN Rail (35 mm x 7.5 mm)
Mounting Position		Vertical / Horizontal
Terminal Capacity 25 A & 40 A		10 mm^2
Terminal Capacity 63 A		25 mm^2
Weight Double Pole 40 A		134 g
Weight Four Pole 40 A		268 g
Weight Double Pole 63 A		156 g
Weight Four Pole 63 A		314 g

Connection Diagrams / Terminal Marking

Two Pole

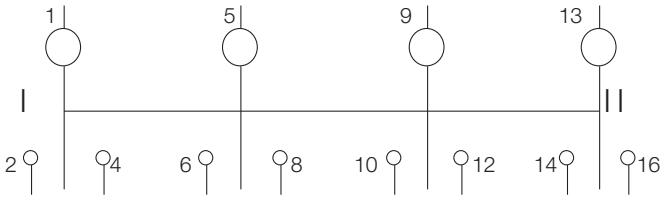
"I" - Incoming terminals (main supply) - 2 & 6

"II" - Incoming terminals (standby supply) - 4 & 8

Outgoing terminals (to load) - 1 & 5

*Mid position of knob is 'OFF' position

Four Pole



"I" - Incoming terminals (main supply) - 2 , 6, 10 & 14

"II" - Incoming terminals (standby supply) - 4 , 8, 12 & 16

Outgoing terminals (to load) - 1, 5, 9 & 13

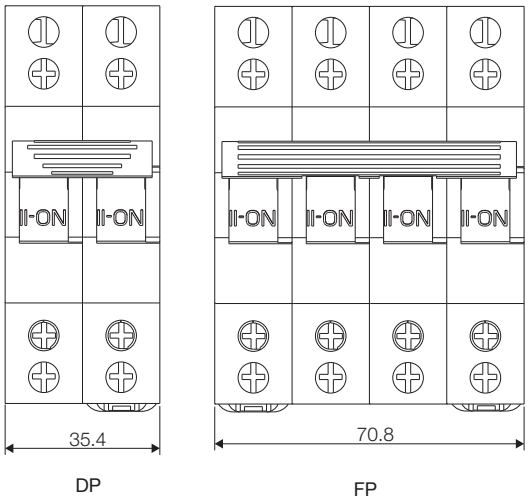
*Mid position of knob is 'OFF' position

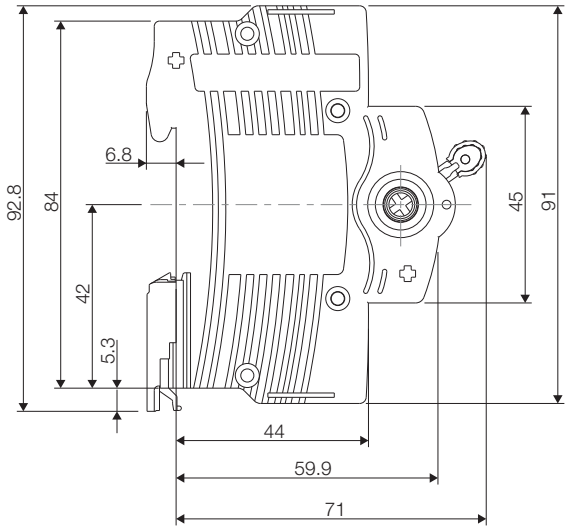
MBC Changeover

Two Way Centre Off MCB Changeover
For Dual Electricity Supply Management (In accordance with IS/IEC 60947-3)

Rating	DP Cat. No.	FP Cat. No.
25 A	DHMGODPX025	DHMGOFPX025
40 A	DHMGODPX040	DHMGOFPX040
63 A	DHMGODPX063	DHMGOFPX063

Dimensions (in mm)





AUTOMATIC SOURCE CHANGEOVER DEVICES

The power instability in developing countries along with changing modern lifestyle creates a need for alternative power sources such as gen-sets to back-up the utility supply. Most residential and commercial complexes today go for automatic solutions to meet 24 x 7 power.

Havells offers its wide range of modular and compact Automatic Changeover solutions to meet the ever-changing requirements. These devices overcome the disadvantages of manual changeovers such as increased downtime, disruption in key activities as well as possible damage of expensive equipment, human error, accidents etc. In addition, ACCL devices also offer current limiting function, thereby ensuring proper rationalization of generator power between multiple users.

With these inherent strengths along-with a host of user-friendly features, Havells Automatic Changeover devices have proven to be strong and effective power distribution management tools for all sectors.

Features for ACCL

- Automatic Changeover between Mains and Generator supply
- Current limiting function on Generator side
- Provision of automatic reset*
- Operational Status Indication through LEDs
- Consumes less power
- Easy maintenance
- Microcontroller based design
- Provision of auto/manual mode (TPN ACCL)

*Available in basic version

Range

Mains 40 A/63 A/80 A, Gen 10 A-80 A (TPN)
Mains 30 A/Gen 1.5 A to 20 A (SPN)
Mains 30 A/Gen 30 A (Automatic Changeover)

Execution

Three Pole with Neutral (TPN)
Single Pole with Neutral (SPN)

Specification

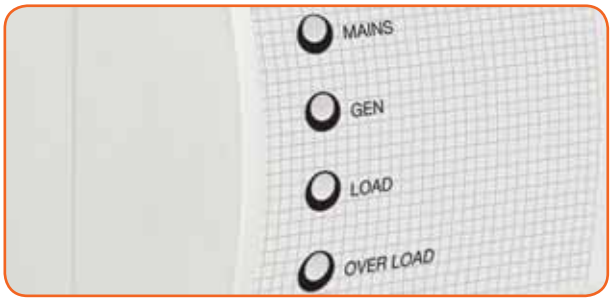
IEC 60947-6-1

Reset Button

Manual reset provision for restoring supply, when in sleep mode

Mountable in Distribution Boards

Modular design - easy to mount in distribution boards



LEDs Indication

Operational Status Indication through LEDs- Maine ON, Genset ON, Genset Overload etc.

Cable Terminals

Staggered terminal design with bottom wiring for better isolation between phase & neutral

SPN ACCL

Havells offers SPN ACCL for single phase systems - fully automatic high precision microcontroller based source changeover devices which also have current limiting function and offer easy and 'controllable' changeover between main power supply and generator supply. They are ideally suited for efficient utilization of standby generator used in multi-storied apartments, commercial complexes etc.

They are available in two versions – Basic and Premium to meet the varying needs of commercial/ residential installations.

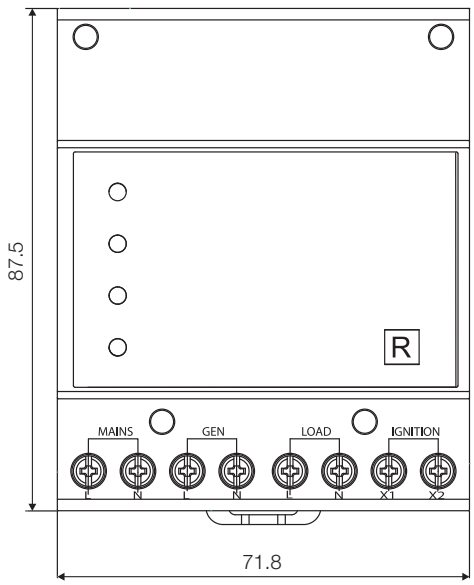
Premium SPN ACCL

SPN ACCL 3 Module (basic)

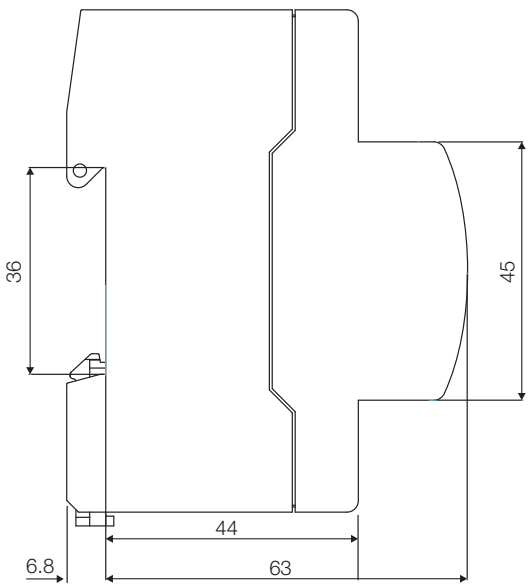
Features	Havells Premium SPN ACCL		Havells 3 Module SPN ACCL		Other Competitor Products	
OFF loadChangeover	✓	First Load is disconnected then changeoever to other supply takes place, ensurng the isolation of two power supplies hence there is no chance of short circuiting between them.	✓	ON Load Changeover	✓	ON Load Changeover
Zero Crossing Detection Technology	✓	Relay changeover takes place during zero crossing mark of the sinosudal AC supply. Which reduces the danger of Transient surges and Increases life of relay.	✗	Can takes place on peak of sinosudal AC supply which may result in harsh effect of Transient surges and decrease in life of relay.	✗	Can takes place on peak of sinosudal AC supply which may result in harsh effect of Transient surges and decrease in life of relay.
Advance Neutral	✓	First Neutral makes and last neutral breaks	✗	Neutral makes and break with phase.	✗	Neutral makes and break with phase.
Terminal for external conductors	✓	Indirect pressure type terminals	✓	Indirect pressure type terminals	✗	Direct Pressure type
Bottom Wiring	✓	Yes	✓	Yes	✗	No
Staggered Wiring	✓	Provides better isolation between phase and neutral	✓	Provides better isolation between phase and neutral	✗	Not Available
Conditional Shortcircuit current	✓	3 kA	✓	3 kA	✗	Not Mentioned
Eco friendly housing	✓	Thermoplastic, PA6 FR grade	✓	Thermoplastic, PA6 FR grade	✓	Thermoplastic
Local reset facility	✓	Reset button Provided, for restoring supply	✗	Not Provided	✗	Not Provided
Overload indication facility	✓	Seprate LED for Overload condition	✓	Generator LED blinks to show overload condition	✗	Not Provided
Standard conformity	✓	IEC 60947—6-1	✓	IEC 60947—6-1	✗	No marking on product
Rated impulse voltage	✓	2.5 kV	✓	2.5 kV	✗	Not mentioned
Operational voltage	✓	80-300 Vac	✓	150-270 Vac	✓	180-240 Vac
Pre trip indication in overload condition	✓	Provided	✗	Not Provided	✗	Not Provided
Compact design	✓	87.5 mm × 71.8 mm × 63 mm	✓	87.5 mm × 53.1 mm × 63 mm	✓	108 mm × 72 mm × 68 mm

Technical Specification	Premium SPN ACCL	SPN ACCL 3 Module
Standard Conformity	IEC 60947-6-1	IEC 60947-6-1
No. of Poles	1P+N	1P+N
Rated current (In)	30 A on mains, 1.5-20 A on generator	30 A on mains, 1.5-20 A on generator
Rated voltage (Ue)	240 V~	240 V~
Rated frequency	50 Hz	50 Hz
Rated insulation voltage	500 V	500 V
Transfer time	8 s-12 s	8 s-12 s
Restoring time	2 s-4 s	0 s-2 s
Utilization category	AC 31 A	AC 31 A
Class of equipment	PC	PC
Environment	B	B
Indication	Mains, Generator, Load, Overload	Mains, Generator, Overload
Ambient temp.	-5°C to +55°C	-5°C to +55°C
Electrical life (No. of operations)	6000	6000
Rated impulse voltage	2.5 kV	2.5 kV
Duty	Uninterrupted	Uninterrupted
Pollution degree	2	2
Conditional short circuit current (Inc)	3 kA	3 kA
Protection class	IP20	IP20
Mounting	standard mounting RAIL (35 mm x 7.5 mm)	standard mounting RAIL (35 mm x 7.5 mm)
Mounting position	Vertical /Horizontal	Vertical /Horizontal
Terminal Capacity	10 mm²	10 mm²
Weight	350 g	350 g

Dimensions (in mm) - Premium SPN ACCL

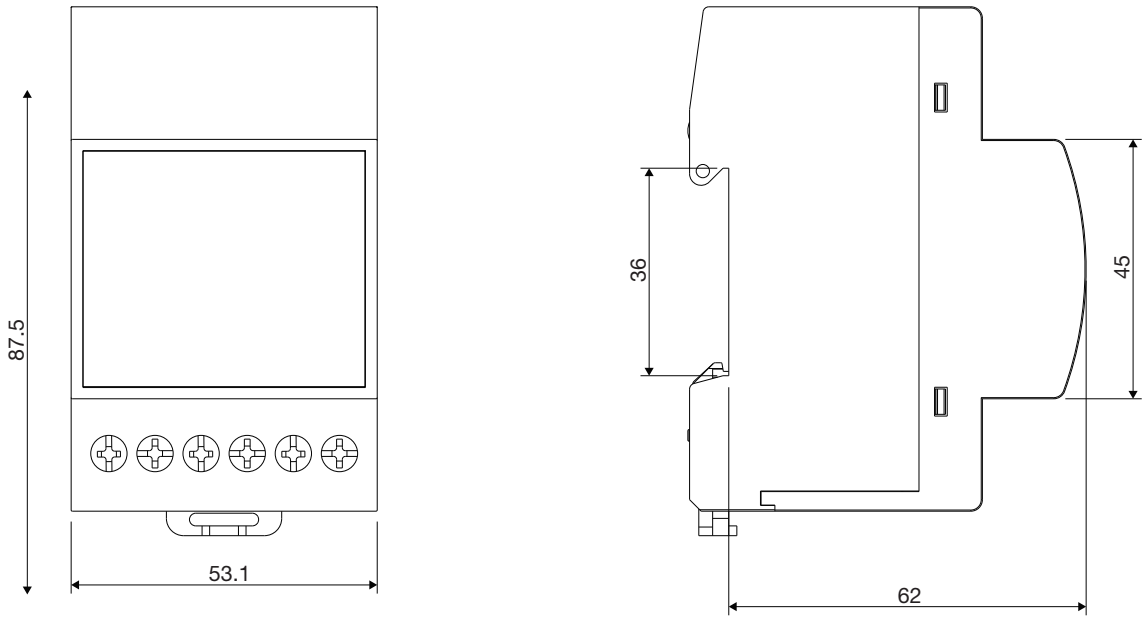


Front view



Side view

Dimensions (in mm) - SPN ACCL 3 Module (basic)



PREMIUM SPN ACCL

PREMIUM SPN ACCL

Gen Rating	Description	Cat. No. w/o GEN Start/Stop	Cat. No. with GEN Start/ Stop
SPN 1.5 (300 W)	30 A/1.5 A ACCL	DHABOSN301X	–
SPN 2.5 (500 W)	30 A/2.5 A ACCL	DHABOSN302X	–
SPN 3 (600 W)	30 A/03 A ACCL	DHABOSN3003	DHABWSN3003
SPN 4 (800 W)	30 A/4 A ACCL	DHABOSN3004	–
SPN 5 (1000 W)	30 A/5 A ACCL	DHABOSN3005	–
SPN 6 (1200 W)	30 A/06 A ACCL	DHABOSN3006	DHABWSN3006
SPN 9 (1800 W)	30 A/09 A ACCL	DHABOSN3009	DHABWSN3009
SPN 12 (2400 W)	30 A/12 A ACCL	DHABOSN3012	DHABWSN3012
SPN 15 (3000 W)	30 A/15 A ACCL	DHABOSN3015	DHABWSN3015
SPN 20 4000 W)	30 A/20 A ACCL	DHABOSN3020	DHABWSN3020

SPN ACCL

SPN ACCL (3 Module)

Mains Rating	Gen Rating	Product Code	Description
SPN 30 (6000 W)	SPN 1.5 (300 W)	DHADOSN301X	30 A/1.5 A ACCL W/O GEN START/STOP
SPN 30 (6000 W)	SPN 2.5 (500 W)	DHADOSN302X	30 A/2.5 A ACCL W/O GEN START/STOP
SPN 30 (6000 W)	SPN 3 (600 W)	DHADOSN3003	30 A/03 A ACCL W/O GEN START/STOP
SPN 30 (6000 W)	SPN 4 (800 W)	DHADOSN3004	30 A/4 A ACCL W/O GEN START/STOP
SPN 30 (6000 W)	SPN 5 (1000 W)	DHADOSN3005	30 A/5 A ACCL W/O GEN START/STOP
SPN 30 (6000 W)	SPN 6 (1200 W)	DHADOSN3006	30 A/06 A ACCL W/O GEN START/STOP
SPN 30 (6000 W)	SPN 9 (1800 W)	DHADOSN3009	30 A/09 A ACCL W/O GEN START/STOP
SPN 30 (6000 W)	SPN 12 (2400 W)	DHADOSN3012	30 A/12 A ACCL W/O GEN START/STOP
SPN 30 (6000 W)	SPN 15 (3000 W)	DHADOSN3015	30 A/15 A ACCL W/O GEN START/STOP
SPN 30 (6000 W)	SPN 20 (4000 W)	DHADOSN3020	30 A/20 A ACCL W/O GEN START/STOP

TPN ACCL

Havells offers TPN ACCL for three phase systems - fully automatic high precision microcontroller based source changeover devices which also have current limiting function and offer easy and 'controllable' changeover between main power supply and generator supply. They are ideally suited for efficient utilization of standby generator used in multi-storied apartments, commercial complexes etc.

They are available in two versions – Basic and Compact to meet the varying needs of users.

TPN ACCL

Compact TPN ACCL

FUNCTIONS

1. When mains supply is available

   The device will run the load on mains supply if the R phase is available irrespective of the availability of all other phases. It is recommended to connect the entire essential load to R phase.

2. When mains supply fails

   If mains supply goes off (detected by R phase), the device will automatically sense and actuate the inbuilt changeover mechanism to the generator supply. This takes 8-12 seconds so as to avoid sudden loading on generator. TPN ACCL also allows user to opt for manual mode for manual transfer of load to gen-set.

   Current Limiting feature on Generator side: If load current exceeds the preset allowable limit, then Overload LED will start glowing, but load will remain connected for 5 seconds to ignore the surge current. But if load still persists beyond the preset limit, it is disconnected for 8 second as a warning and then automatically reconnected. Such cycle of interruptions continue for a number of times during which the user is expected to switch off nonessential loads.

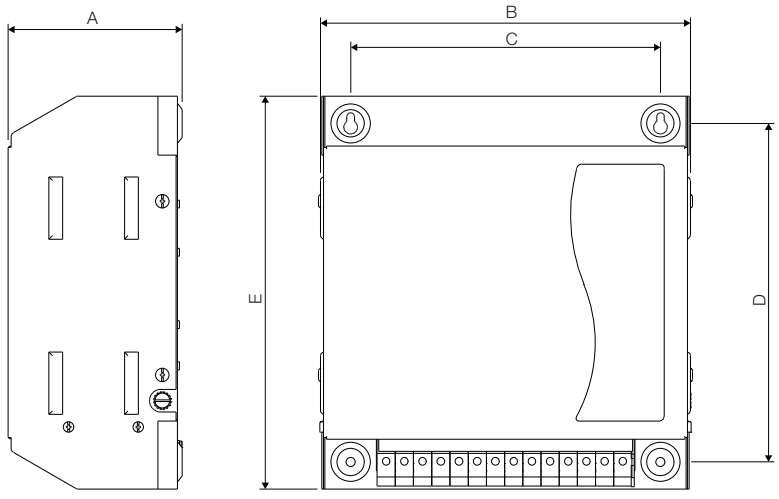
3. When mains supply restores

   On resumption of mains, the load is automatically transferred to main supply after a time delay of 2-4 seconds.

Parameters	TPN ACCL (TPN ACCL in Sheet metal)		Compact TPN ACCL (TPN ACCL in Thermoplastic)	
Automatic Changeover	✓		✓	
Overload Protection on Gen side	✓		✓	
Range	Mains	Gen	Mains	Gen
	TPN 63 A	TPN/SPN 2.5 A-50 A	TPN 63 A	TPN 2.5 A-40 A
	TPN 40 A	TPN/SPN 2.5 A-40 A	TPN 40 A	TPN 2.5 A-40 A
Dimensions	(260 mm x 243 mm x 115 mm) for 40 A TPN ACCL (260 mm x 243 mm x 150 mm) for 63 A TPN ACCL		(175 mm x 130 mm x 80.4 mm)	
Mode selection	✓		×	
Local reset facility	Required, as ACCL goes into the sleep mode after 5 cycles of interruption		Not required, as overload tripping continues till current is not within the limit	
Indications	Mains, Gen, Load, Overload on R, Y and B phase, Auto/manual mode through membrane keypad		Mains, Gen, Overload on R,Y and B phase, Pre-trip Indication	
Mounting	Surface mounted		1. Surface mounted, 2. DIN Rail mounted (35 mm and 75 mm DIN Rail)	
Housing	Sheet metal		Thermoplastic	

Technical Specification	TPN ACCL	Compact TPN ACCL
Standard Conformity	IEC 60947-6-1	IEC 60947-6-1
No. of Poles	3P+N	3P+N
Rated current (In)	40 A/63 A/80 A on mains, 10 A-63 A on gen	40 A on mains, 2.5 A-40 A on gen
Rated voltage (Ue)	415 V~/220 V~	415 V~/240 V~
Rated frequency	50 Hz	50 Hz
Transfer time	8 s-12 s	2 s-4 s(main to load), 8 s-12 s(gen to load)
Restoring time	2 s-4 s	2 s-4 s
Utilization category	AC 31 A	AC 31 A
Class of equipment	PC	PC
Environment	B	B
Indication	Mains, Generator, Load, Overload (R,Y,B), mode of operation (auto/manual)	Mains, Generator, Pre-trip, Overload (R, Y, B)
Ambient temp.	-5°C to +55°C	-5°C to +40°C
Electrical life (No. of operations)	6000	6000
Rated impulse voltage	6 kV	4 kV
Duty	Uninterrupted	Uninterrupted
Pollution degree	2	2
Conditional short circuit current (Inc)	5 kA	5 kA
Protection class	IP 20	IP 20
Mounting	surface mounting	din-rail (35 mm & 75 mm), surface mounting
Mounting position	Vertical	Vertical /Horizontal
Terminal Capacity	16 mm²/35 mm²	25 mm²
Weight	4.5 kg/9.4 kg	1.5 kg

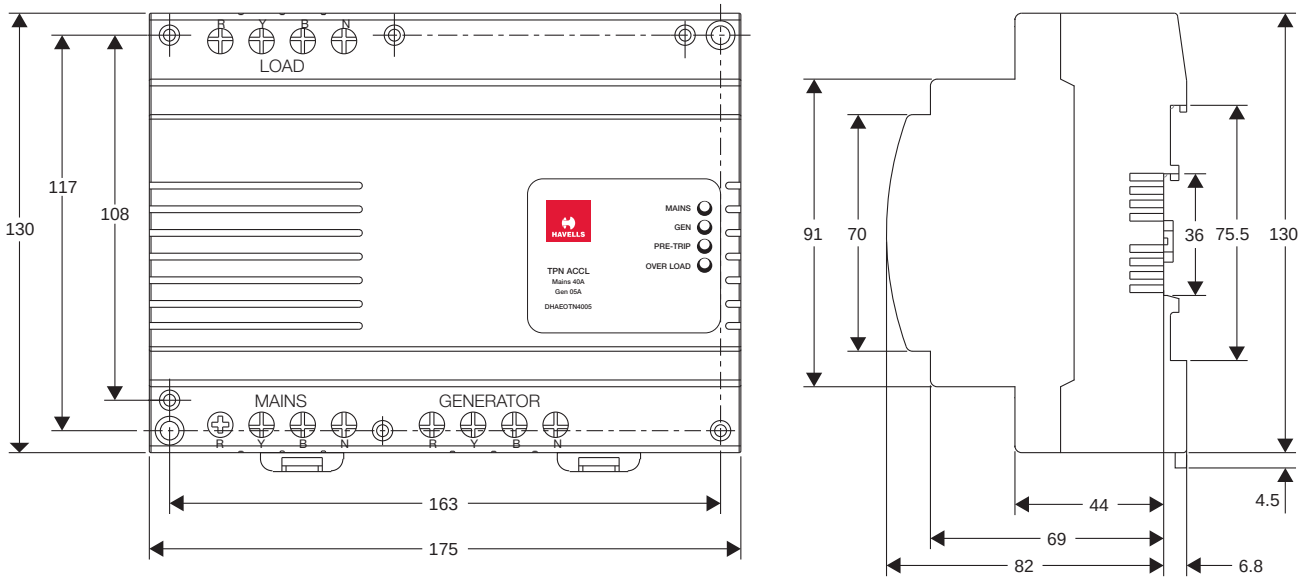
Dimensions (in mm) - TPN ACCL



Side view Front view

Rating	A	B	C	D	E
40 A TPN ACCL	115	243	205	224	260
63 A TPN ACCL	150	243	205	224	260
80 A TPN ACCL	150	333	293	337	383

Dimensions (in mm) - Compact TPN ACCL



TPN ACCL

TPN ACCL (TPN/SPN)
(Automatic Source Changeover with Current Limiter)

Gen Rating	Description	Cat. No.	Cat. No. with GEN Start/Stop
20 A	40 A/20 A TPN/SPN ACCL	DHACOTN4020	DHACWTN4020
25 A	40 A/25 A TPN/SPN ACCL	DHACOTN4025	DHACWTN4025
30 A	40 A/30 A TPN/SPN ACCL	DHACOTN4030	DHACWTN4030
40 A	40 A/40 A TPN/SPN ACCL	DHACOTN4040	DHACWTN4040
20 A	63 A/20 A TPN/SPN ACCL	DHACOTN6320	DHACWTN6320
25 A	63 A/25 A TPN/SPN ACCL	DHACOTN6325	DHACWTN6325
30 A	63 A/30 A TPN/SPN ACCL	DHACOTN6330	DHACWTN6330
40 A	63 A/40 A TPN/SPN ACCL	DHACOTN6340	DHACWTN6340
63 A	80 A/63 A TPN/SPN ACCL	DHACOTN8063	–

TPN ACCL (TPN/TPN)
(Automatic Source Changeover with Current Limiter)

Gen Rating	Description	Cat. No.	Cat. No. with GEN Start/Stop
20 A	40 A/20 A TPN/TPN ACCL	DHACOTT4020	DHACWTT4020
25 A	40 A/25 A TPN/TPN ACCL	DHACOTT4025	DHACWTT4025
30 A	40 A/30 A TPN/TPN ACCL	DHACOTT4030	DHACWTT4030
40 A	40 A/40 A TPN/TPN ACCL	DHACOTT4040	DHACWTT4040
20 A	63 A/20 A TPN/TPN ACCL	DHACOTT6320	DHACWTT6320
25 A	63 A/25 A TPN/TPN ACCL	DHACOTT6325	DHACWTT6325
30 A	63 A/30 A TPN/TPN ACCL	DHACOTT6330	DHACWTT6330
40 A	63 A/40 A TPN/TPN ACCL	DHACOTT6340	DHACWTT6340
63 A	80 A/63 A TPN/TPN ACCL	DHACOTT8063	–

CompactTPN ACCL

COMPACT TPN ACCL
(40 A Compact TPN ACCL)

Gen Rating	Cat. No.	Description
40 A	DHAEOTT402X	40 A/2.5 A Compact TPN/TPN ACCL
40 A	DHAEOTT4003	40 A/03 A Compact TPN/TPN ACCL
40 A	DHAEOTT4004	40 A/04 A Compact TPN/TPN ACCL
40 A	DHAEOTT404X	40 A/4.5 A Compact TPN/TPN ACCL
40 A	DHAEOTT4005	40 A/05 A Compact TPN/TPN ACCL
40 A	DHAEOTT4006	40 A/06 A Compact TPN/TPN ACCL
40 A	DHAEOTT4008	40 A/08 A Compact TPN/TPN ACCL
40 A	DHAEOTT4010	40 A/10 A Compact TPN/TPN ACCL
40 A	DHAEOTT4015	40 A/15 A Compact TPN/TPN ACCL
40 A	DHAEOTT4020	40 A/20 A Compact TPN/TPN ACCL
40 A	DHAEOTT4025	40 A/25 A Compact TPN/TPN ACCL
40 A	DHAEOTT4030	40 A/30 A Compact TPN/TPN ACCL
40 A	DHAEOTT4040	40 A/40 A Compact TPN/TPN ACCL

Automatic Changeover

Havells Automatic Changeover is a fully automatic high precision microcontroller based device and is ideally suited for unmanned power transfer operations between two sources in bungalows, multi storied apartments, commercial complexes, etc.

30 A Automatic Changeover

63 A Automatic Changeover

Functions

1. When the Mains Supply is available:
   - Load is connected to mains supply after time delay of 1 to 2 seconds (63 A) / 2 to 4 seconds (30 A) allows to draw full load current.
2. When the Mains supply fails:

(a) With AGS (automatic generator stop features)

- When the mains supply goes off i.e. fails, automatic changeover will sense Gen supply and actuate the inbuilt changeover mechanism.
- A consumer is automatically connected to the Generator supply after a time delay of 6 to 12 seconds (63 A) / 12 to 15 seconds (30 A) in order to limit the sudden load on the Generator.

When the Mains supply is restored:

- On resumption of the mains supply, the load is automatically transferred to the main supply after a time delay of 1 to 2 seconds (63 A) / 2 to 4 seconds (30 A) and stop signal is sent to Gen.

(b) Without AGS (automatic generator stop features)

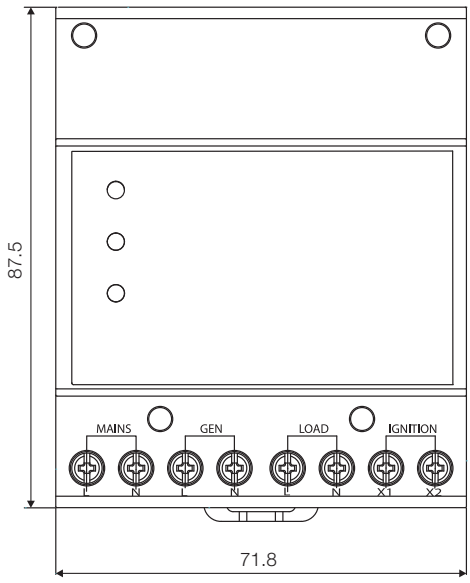
- When the mains supply goes off i.e. fails, automatic changeover will sense Gen supply and actuate the inbuilt changeover mechanism.
- A consumer is automatically connected to the Generator supply after a time delay of 6 to 12 seconds (63 A) / 12 to 15 seconds (30 A) in order to limit the sudden load on the Generator.

When the Mains supply is restored:

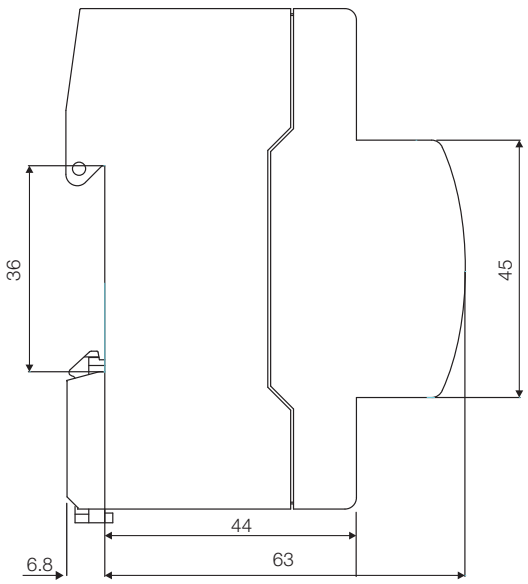
- On resumption of the mains supply, the load is automatically transferred to the main supply after a time delay of 1 to 2 seconds (63 A) / 2 to 4 seconds (30 A).

Technical Specification	30 A Automatic Changeover	63 A Automatic Changeover
Standard Conformity	IEC 60947-6-1	IEC 60947-6-1
No. of Poles	1P+N	1P+N
Rated current (In)	30 A	63 A
Rated voltage (Ue)	240 V~	240 V~
Rated frequency	50 Hz	50 Hz
Mains to Gen transfer time	12 s-15 s	6 s-12 s
Restoring time	2 s-4 s	1 s-2 s
Utilization category	AC 31 A	AC 31 A
Indication	Mains, Generator, Load	Mains, Generator, Load
Ambient temp.	-5°C to +55°C	-5°C to +55°C
Electrical life (No. of operations)	6000	6000
Rated impulse voltage	2.5 kV	2.5 kV
Rated insulation voltage	500 V	500 V
Conditional short circuit current (Inc)	3 kA	3 kA
Protection class	IP 20	IP 20
Mounting	din-rail (35 mm x 7.5 mm)	wall mounting
Mounting position	Vertical/Horizontal	Vertical/Horizontal
Terminal Capacity	10 mm²	16 mm²

Dimensions (in mm) - 30 A Automatic Changeover

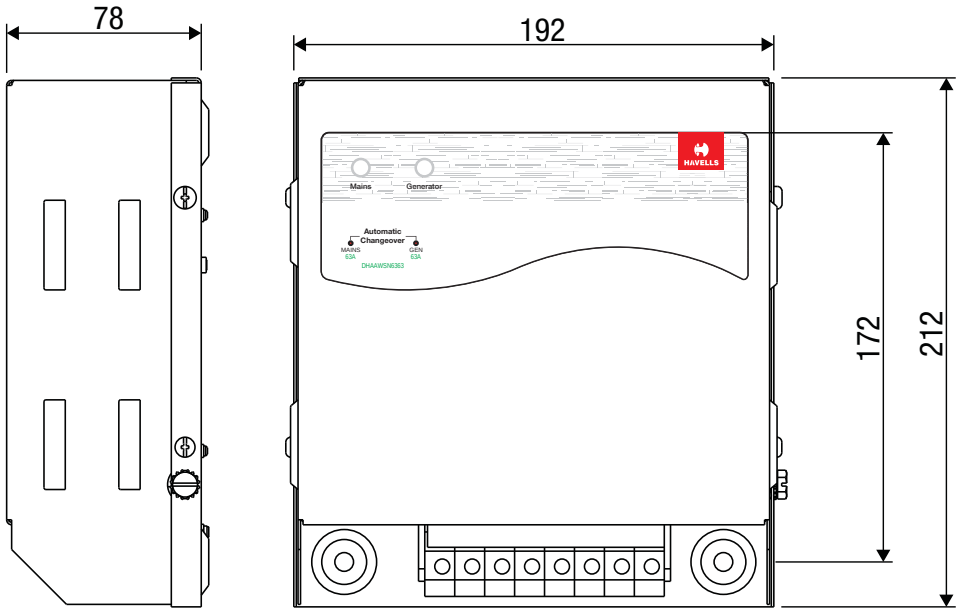


Front view



Side view

Dimensions (in mm) - 63 A Automatic Changeover



Automatic Changeover

30 A Automatic Changeover

Gen Rating	Description	Cat. No. w/o GEN Start/Stop	Cat. No. with GEN Start/Stop
SPN 30 (6000 W)	SPN 30 (6000 W)	DHAAOSN3030	DHAAWSN3030

63 A Automatic Changeover

Gen Rating	Description	Cat. No. w/o GEN Start/Stop	Cat. No. with GEN Start/Stop
SPN 63 (6000 W)	SPN 63 (6000 W)	DHAAOSN6363	DHAAWSN6363

MCB ISOLATOR SWITCHING DEVICES

They are switch disconnectors with independent manual operation, capable of making, carrying and breaking currents under normal circuit conditions, which may includes operating under overload condition and also carry currents under specified abnormal circuit conditions such as those of short circuit for a specified time.

Features
- Low W Loss
- Longer Electrical Life
- Wide Range
- Value for Money
- Low power consumption, thus cost effective & energy saving
- Dual termination for simultaneous connection of bus-bars and wires.
- CE and RoHS Complaint. 'Green Product'

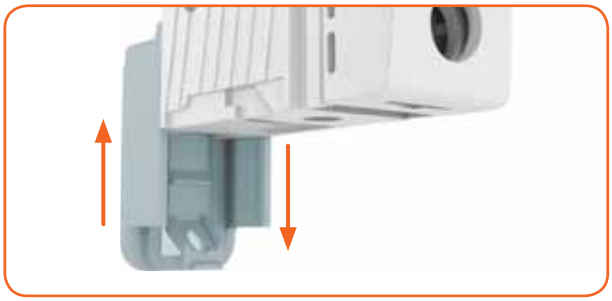
Range
40 A-63 A
80 A-125 A

Specification
IS/IEC 60947-3

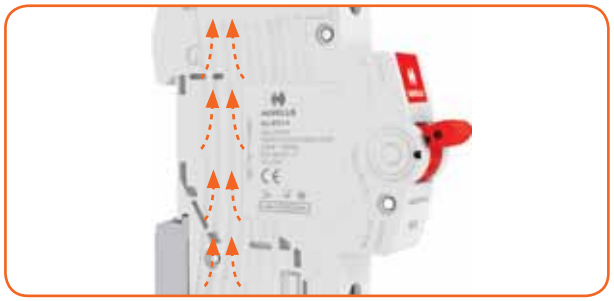
Execution
Single Pole (1P)
Double Pole (2P)
Three Pole (3P)
Four Pole (4P)

Safety Terminals
To avoid improper cable termination, the safety terminals guide the cable towards the cage terminal for systematic termination

Large Cable Terminals
Suitable for copper and aluminum cables, these terminals are compatible with cables having cross-section area upto 35 mm^2 (below 63 A) and upto 50 mm^2 (80 A-125 A)



Bi Stable Clip
Every device is provided with a dual position DIN rail clip, so it becomes much easier to change a device from a device bank connected to a bus-bar, without disturbing the existing wiring



Cooler Operation
Grooves provided on outer body, so that when individual poles are placed adjacent to each other in a distribution board it forms a very effective channel for better air circulation, resulting into a cooler operation

Technical Specification		
Standard Conformity		IS / IEC 60947-3
Rated Current (In)		40 A - 63 A & 80 A - 125 A
Rated Voltage (Ue)		240 V~/415 V~
Rated Frequency (f)		50 Hz
No. of Poles (Execution)		1P, 2P, 3P, 4P
Utilization Category		AC 22 A
Rated Insulation Voltage (Ui)		690 V
Rated Impulse Voltage (Uimp)		4 kV
Electrical / Mechanical Endurance	(No. of operations)	10000
Ambient Temperature		-5°C to +55°C
Terminal Capacity (Max)		35 mm^2 upto 63 A & 50 mm^2 for 80 A-125 A
Vibration		5 g
Shock Resistance		40 mm free fall
Protection Class		IP-20
Installation Position		Vertical / Horizontal
Mounting		Clip on DIN Rail (35 mm x 7.5 mm)
Case & Cover		Molded, flame retardant thermoplastic material

MCB Isolator

SP MCB Isolator (Switching Devices)
MCB Isolators (AC-22 A, In accordance with IS/IEC 60947-3) 240 V, 50 Hz

Rating	Std. / Master Packing (No. of Unit/s)	SP Cat. No.
40 A	12 N	DHMGISPX040
63 A	12 N	DHMGISPX063

DP MCB Isolator (Switching Devices)
MCB Isolators (AC-22 A, In accordance with IS/IEC 60947-3) 240 V/415 V, 50 Hz

Rating	Std. / Master Packing (No. of Unit/s)	DP Cat. No.
40 A	6 N	DHMGIDPX040
63 A	6 N	DHMGIDPX063
80 A	6 N	DHMGIDPX080
100 A	6 N	DHMGIDPX100
125 A	6 N	DHMGIDPX125

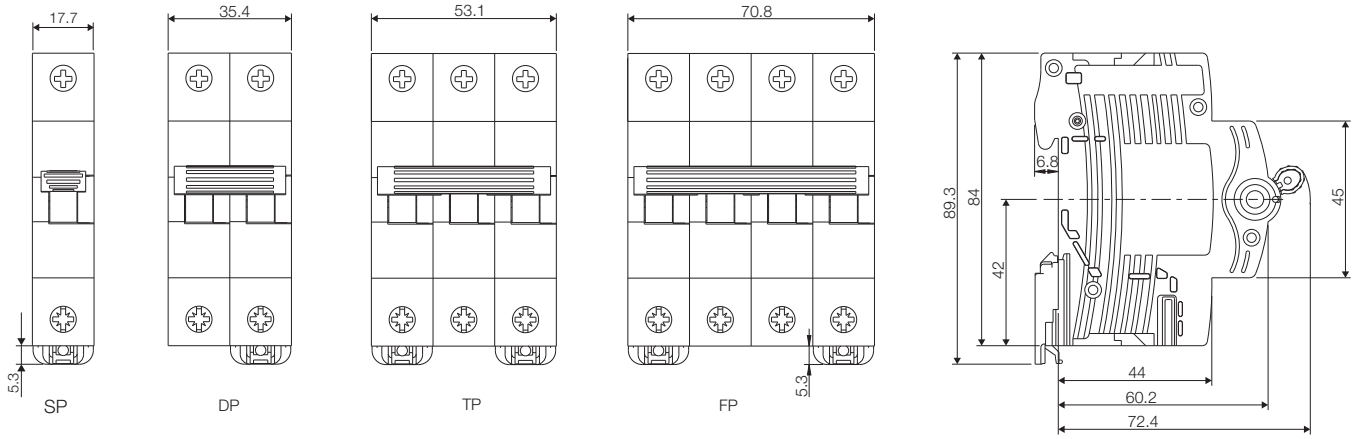
TP MCB ISOLATOR (Switching Devices)
MCB Isolators (AC-22 A, In accordance with IS/IEC 60947-3) 240 V/415 V, 50 Hz

Rating	Std. / Master Packing (No. of Unit/s)	TP Cat. No.
40 A	4 N	DHMGITPX040
63 A	4 N	DHMGITPX063
80 A	4 N	DHMGITPX080
100 A	4 N	DHMGITPX100
125 A	4 N	DHMGITPX125

FP MCB ISOLATOR (Switching Devices)
MCB Isolators (AC-22 A, In accordance with IS/IEC 60947-3) 240 V/415 V, 50 Hz

Rating	Std. / Master Packing (No. of Unit/s)	FP Cat. No.
40 A	3 N	DHMGIFPX040
63 A	3 N	DHMGIFPX063
80 A	3 N	DHMGIFPX080
100 A	3 N	DHMGIFPX100
125 A	3 N	DHMGIFPX125

Dimensions (in mm) for 40 A & 63 A



Dimensions (in mm) for 80 A, 100 A & 125 A