Experience the Latest & Safest in Building Circuit Protection

Catalogue 2016

- Protection Device
- Control & Monitoring Device
- Distribution System

QRG GROUP

HAVELLS

About Havells

Havells India Ltd is a billion-dollar-plus organization, and is one of the largest & India's fastest growing electrical and power distribution equipment manufacturer with products ranging from Industrial & Domestic Circuit Protection Switchgear, Cables & Wires, Motors, Fans, Power Capacitors, LED luminaires, CFL Lamps, Luminaires for Domestic, Commercial & Industrial applications, Modular Switches, Water Heaters and Domestic Appliances covering the entire gamut of household, commercial and industrial electrical needs.

Havells owns some of the prestigious global brands like Crabtree, Sylvania, Concord, Luminance & Standard.

With 91 branches / representative offices and over 6500 professionals in over 50 countries across the globe, the group has achieved rapid success in the past few years. Its 11 state-of-the-art manufacturing units in India located at Haridwar, Baddi, Noida, Faridabad, Alwar, Neemrana, and 6 state-of-the-art manufacturing plants located across Europe, Latin America & Africa churn out globally acclaimed products. Havells is a name synonymous with excellence and expertise in the electrical industry. Its 20000 strong global distribution network is prompt to service customers.

The company has acquired a number of International certifications, like CSA, KEMA, CB, CE, ASTA, CPA, SEMKO, SIRIUM (Malaysia), SPRING (Singapore), TSE (Turkey), SNI (Indonesia) and EDD (Bahrain) for various products. Today, Havells and its brands have emerged as the preferred choice of electrical products for discerning individuals and industrial consumers both in India and abroad.

In an attempt to transform itself from an industrial product company to a consumer products company, Havells launched the consumer electrical products such as LED luminaires, CFLs, Fans, Modular Switches Luminaires, Water Heaters and Domestic Appliances. The company has been consistent in its brand promotion with sponsorship of Cricket events like T20 World Cup, India-Australia Series and IPL Season first, second, third and fourth.

The company has also taken the initiative to reach directly to the consumers through "Havells Galaxy" – a one stop shop for all electrical and lighting needs. Havells has more than 250 such Galaxies across the country.

Social and environmental responsibility has been at the forefront of Havells operating philosophy and as a result the company consistently contributes to socially responsible activities. For instance, the company is providing mid-day meal in government schools in Alwar district, covering 50000 students per day. Besides this company has acquired land for constructing a larger kitchen with all the modern facilities to serve freshly cooked food to 50000 students in the area. We also set up free medical check-up camps. In the past also, the company has generously contributed to the society during various national calamities like the Bihar Flood, Tsunami and Kargil National Relief Fund etc.

The essence of Havells success lies in the expertise of its fine team of professionals, strong relationships with associates and the ability to adapt quickly and efficiently, with the vision to always think ahead.

A Billion-Dollar-Plus Fast Moving Electrical Goods (FMEG) Company

Over 6500 Professionals across 91 branches, representative offices & 17 state-of-the-art manufacturing plants in over 50 countries

A 20000 strong global Distribution Network continuously strives to set new benchmarks in prompt delivery and service to customers

More than 250 Havells Galaxies Across the Country

EURO-II

LATEST. SAFEST.

Presenting a range of Euro II MCB with a host of world-class safety features.












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EURO-II

LATEST. SAFEST.

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

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 60947-2

RCCB Range
16A, 25A, 32A, 40A & 63A - Type 'A' / Type 'AC'
80A & 100A - Type 'AC'

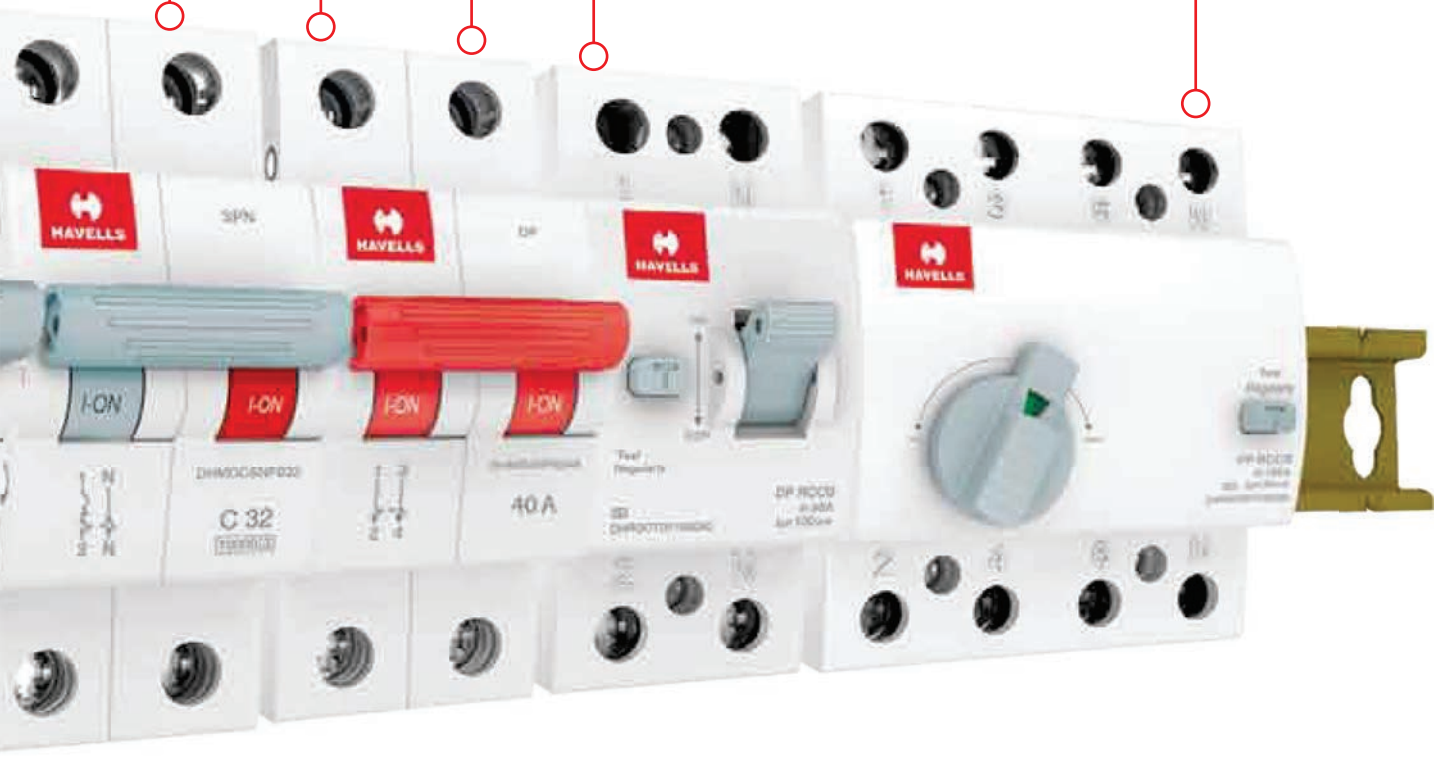
Execution
Double Pole (2P)
Four Pole (4P)

Specification
IS 12640 Part 1
IEC 61008-1 / EN 61008 - 1

ISOLATOR Range
40A - 100A

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

Specification
IS / IEC 60947 - 3



EURO-II

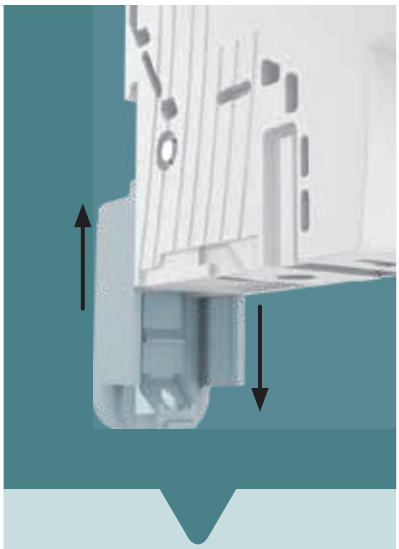
MINIATURE CIRCUIT BREAKER

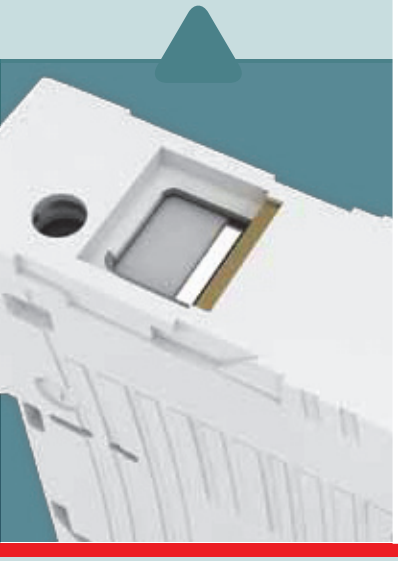
LATEST.
SAFEST.

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.

Safety Terminals -

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





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

Large Cable Terminals -

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

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

Features

- Precise hammer action
- Low power consumption, thus cost effective & energy saving
- 13 Plates Arc Chute for effective arc quenching
- Trip free mechanism
- Longer electrical life
- Wide range availability

Range

6A to 63A - 'B' Curve
0.5A to 63A - 'C' Curve
0.5A to 63A - 'D' Curve
0.5A to 63A 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

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.

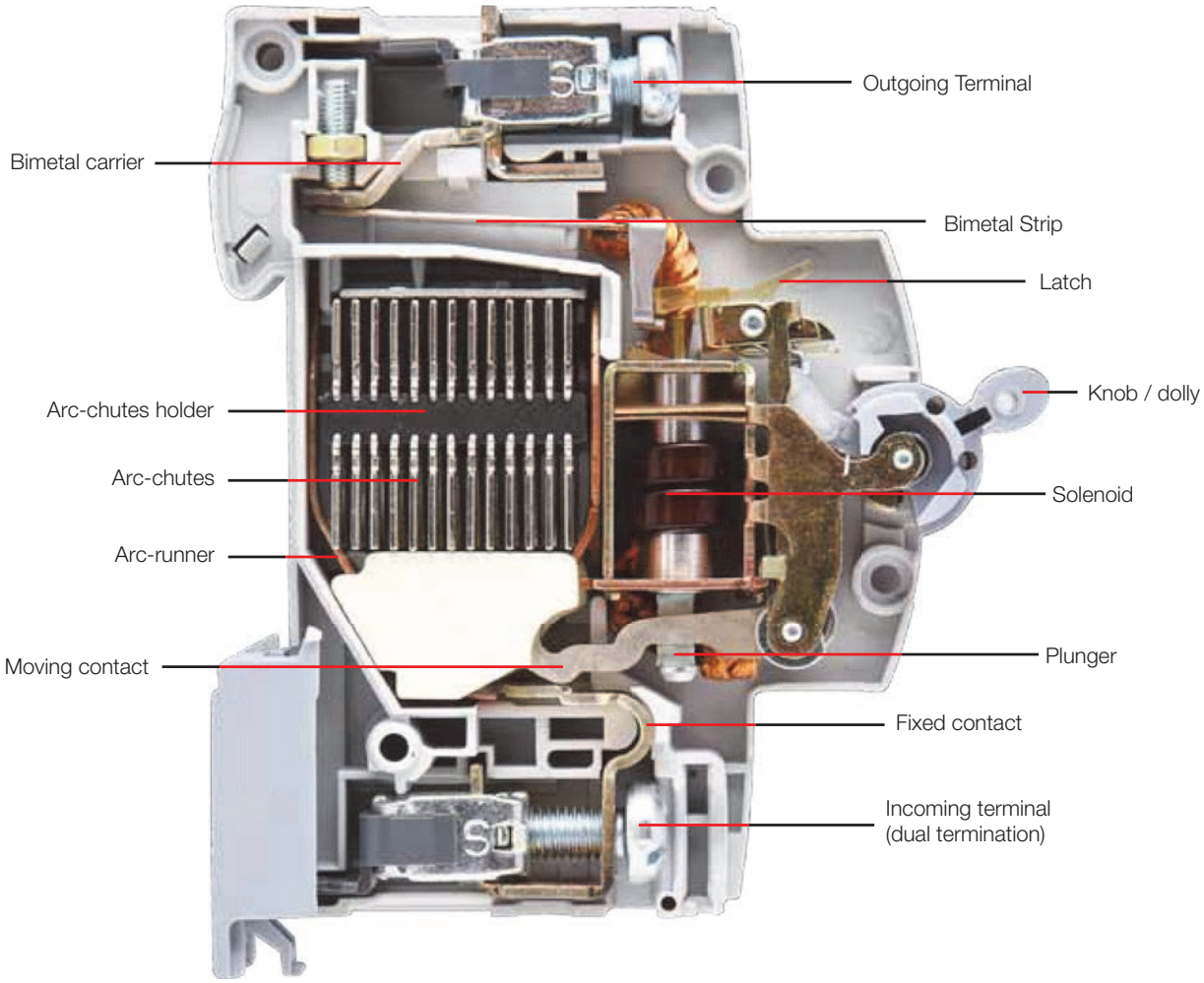
Thermal Operation

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

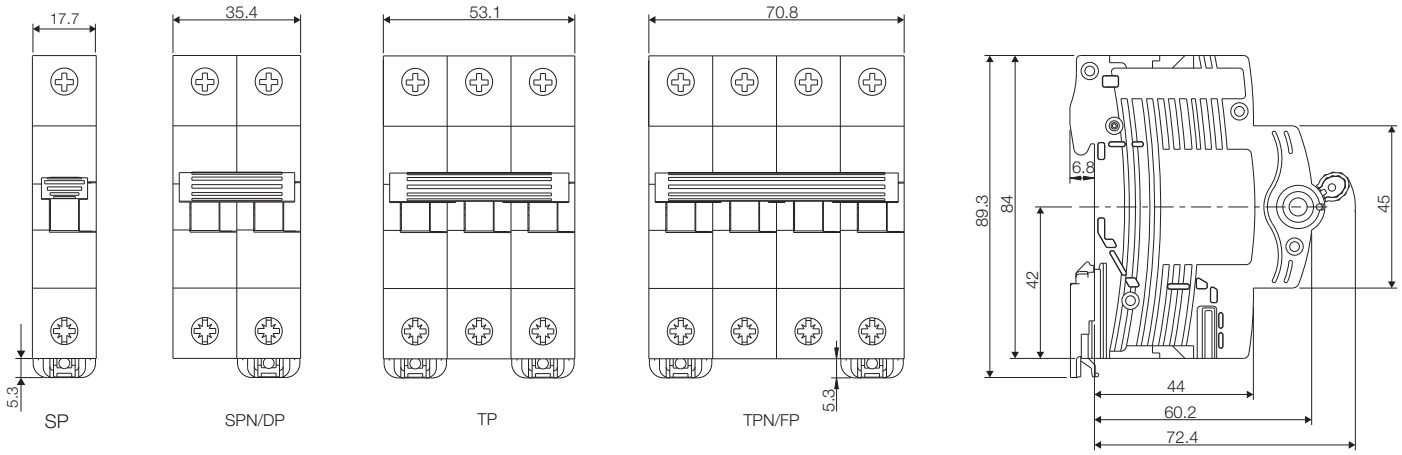
* Current Ratings -

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

20, 25, 32, 40, 50, 63

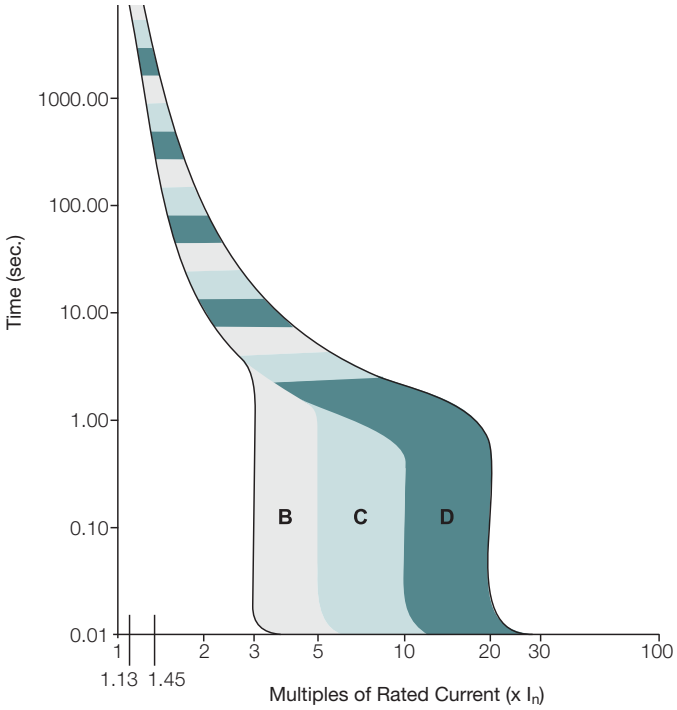
** 1P Single Pole
1P+N Single Pole Neutral
2P Double Pole
3P Three Pole
3P+N Three Pole Neutral
4P Four Pole

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		≥1h	3 x I_n		≥0.1s
		1.45 x I_n	<1h		5 x I_n	<0.1s
C Curve	1.13 x I_n		≥1h	5 x I_n		≥0.1s
		1.45 x I_n	<1h		10 x I_n	<0.1s
D Curve	1.13 x I_n		≥1h	10 x I_n		≥0.1s
		1.45 x I_n	<1h		20 x I_n	<0.1s
I_3 = 2.55 x I_n	1 s < t < 60s for I_n (In ≤ 32A) 1 s < t < 120s for I_n (In > 32A)					



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

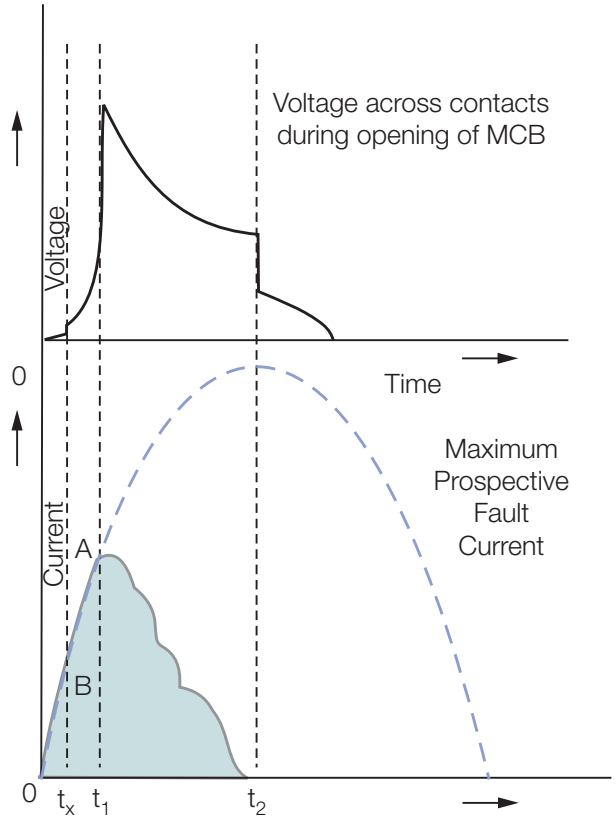
In a current limiting breaker, the tripping & arc control mechanism are so designed that under short circuit conditions, the contacts are physically separated and the electrodynamics forces set up by fault current, assist the extinction in less than half cycle.
The figure shows the current limiting effect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

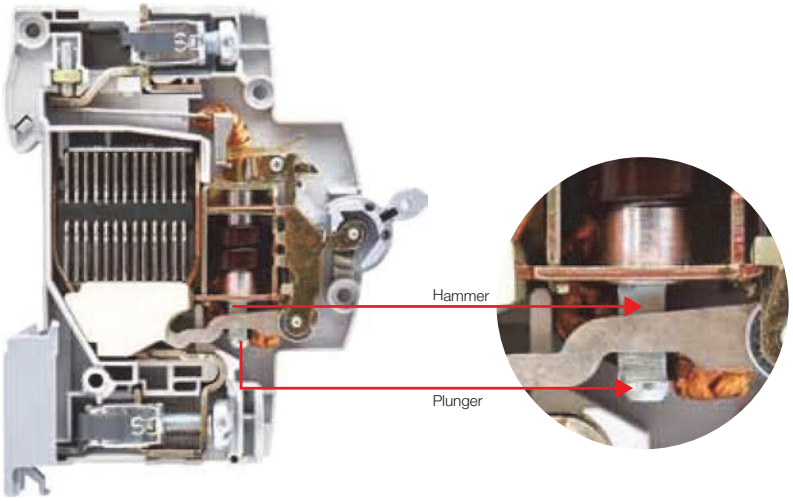
t_2 = Time to total extinction of arc (i.e., complete shutdown of fault current)



Hammer Trip Mechanism

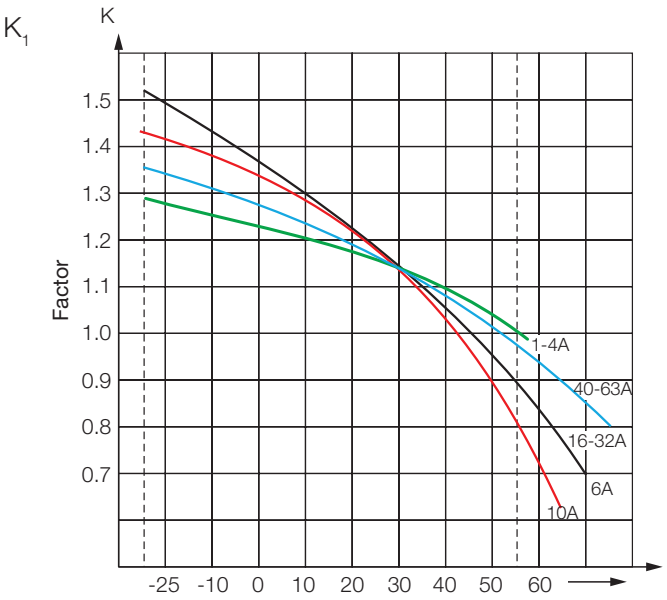
Current Limiting design in itself may not fulfil the requirement of quick breaking (instantaneous action) mainly due to inertia of the Latch mechanism and interconnected sequence of operations.

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.



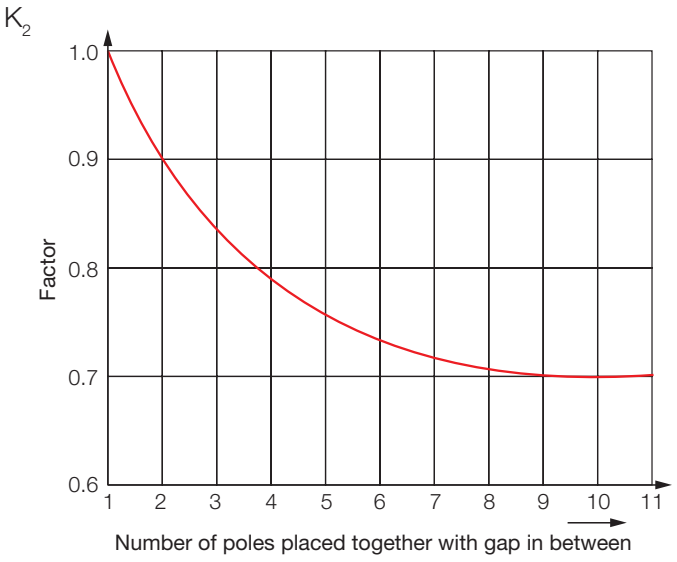
Ambient Temperature Compensation / Diversity Factor Chart

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 = 10A, and the amb. temp. is 50°C kept with no gap in between
Solution	K1 =0.89 (from graph 1) K2 =0.78 (from graph 2) I_n / pole = 0.89 x 0.78 x 10 = 6.94 A

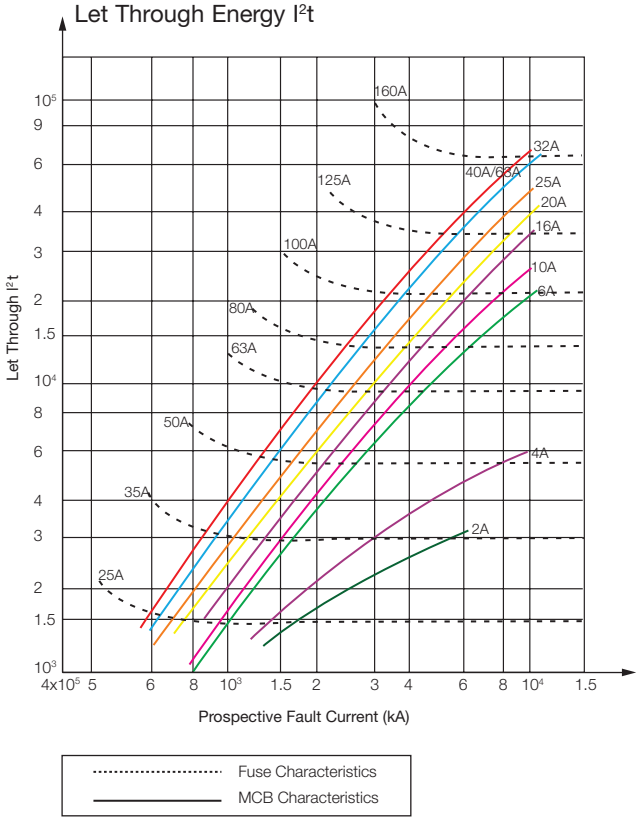
Effect Of Frequency Variation

MCBs are designed to operate at AC frequency 50/60 Hz. However, MCBs specially suitable for DC applications and for frequencies upto 400Hz 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	100Hz	200Hz	400Hz	
Multiplication Factor	1.1	1.2	1.5	1.5



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	4000.00	1.0
1	1178.00	1.2
2	280.00	1.3
4	92.00	2.0
6	25.00	1.2
10	11.68	1.4
13	10.10	1.7
16	8.00	2.2
20	5.25	2.5
25	3.78	3.1
32	2.57	3.4
40	1.94	3.9
63	1.40	7.3

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 = (3-5) 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 : Isc = 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 = 15ms 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

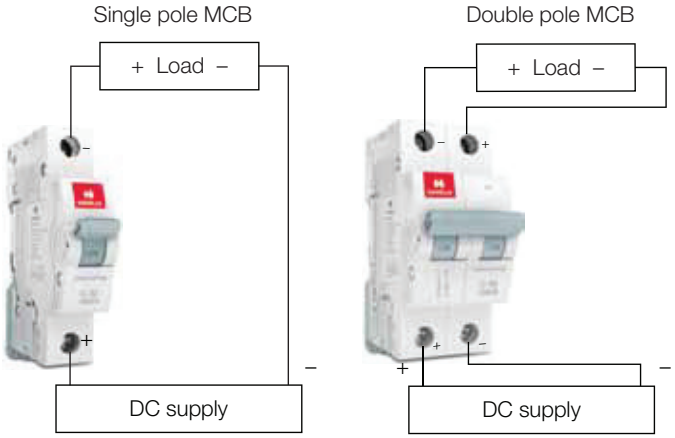
The voltage of the circuit is dependent upon the power supply. The lower the voltage the easier switching operations will be, but the voltage makes no difference to the running of the MCBs.

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 130V DC

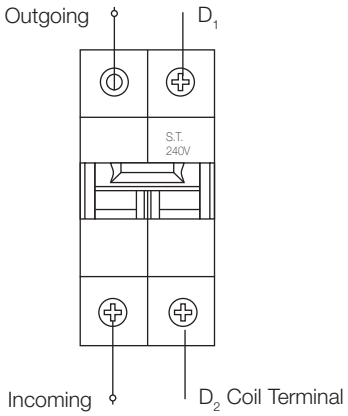
Shunt Trip

Attachment Used For Remote Tripping			
Standard Conformity			IS / IEC 60947-3
Coil Consumption		VA	6
Rated Voltage	(ac) (Ue)	V	240
	(dc) (Ue)	V	48, 24, 12
Frequency		Hz	50
Operating Voltage Range			70% - 110% of rated voltage
Electrical Endurance (No. of operations)			10000
Terminal Capacity (Max)		mm^2	35
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



Incoming Connection

Discrimination Data

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

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

MCB Downstream	MCCB Upstream C Curves																				
C curve	16A	20A	25A	32A	40A	50A	63A	80A	100A	125A	160A	200	250A	320A	400A	500A	630A	800A	1000A	1250A	1600A
0.5 to 6A	1100	1200	1400	1700	2000	2500	3400	4800	5800	6700	T	T	T	T	T	T	T	T	T	T	T
10A	-	1100	1200	1400	1700	2100	2500	3000	3500	4300	T	T	T	T	T	T	T	T	T	T	T
16A	-	-	-	1300	1600	1900	2100	2400	2700	3200	8300	T	T	T	T	T	T	T	T	T	T
20A	-	-	-	-	1600	1900	2100	2400	2700	2500	8300	T	T	T	T	T	T	T	T	T	T
25A	-	-	-	-	-	1700	1800	2000	2200	2500	5400	8700	T	T	T	T	T	T	T	T	T
32A	-	-	-	-	-	-	1800	2000	2200	2500	5400	8700	T	T	T	T	T	T	T	T	T
40A	-	-	-	-	-	-	-	1500	1700	2000	4300	7000	T	T	T	T	T	T	T	T	T
50A	-	-	-	-	-	-	-	-	1300	1500	3600	5900	9000	T	T	T	T	T	T	T	T
63A	-	-	-	-	-	-	-	-	-	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									
	20A	25A	32A	40A	50A	63A	80A	100A	125A	160A
0.5 to 6A	700	850	960	1200	1350	1750	2800	4500	5200	6000
10A		700	960	1200	1350	1750	2800	4500	5200	6000
13A			850	1200	1200	1750	2800	4500	5200	6000
16A				960	1100	1500	2500	3200	5200	6000
20A					1100	1500	2500	3200	4500	5200
25A					960	1350	2000	3200	4500	5200
32A						1200	1750	2800	4500	5200
40A							1750	2800	4500	5200
50A								2500	3200	4500
63A									3200	4500

MCB Selection Chart For Household Applications

Appliances	Capacity / watt (Load) (240V~1ph)	Current Rating of MCB	Type of MCB
Air Conditioner	1.0 ton	10A*	“C” series
	1.5 ton	16A*	“C” series
	2.0 ton	20A*	“C” series
Refrigerator	165 litres	3A*	“C” series
	350 litres	4A*	“C” series
Oven cum Griller	4500W	32A	“B” series
	1750W	10A	“B” series
Oven only Hot Plate only Room Heater	750W	6A	“B” series
	2000W	10A	“B” series
	1000W	6A	“B” series
	2000W	10A	“B” series
Washing Machine	300W	2A	“C” series
Washing Machine (with heater)	1300W	8A	“C” series
(storage/instant)	1000W	6A	“B” series
	2000W	10A	“B” series
	3000W	16A	“B” series
	6000W	32A	“B” series
Electric iron	750W	6A	“B” series
	1250W	8A	“B” series
(2 slices)	1200W	8A	“B” series
Electric Kettle	1500W	10A	“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 (Watt)	Number of Lamps	Rating (A)
20W	8	1
	12	1.5
40W	2	0.5
	10	2
	12	2.5
60W	1	0.5
	4	1.5
	8	3
	12	4
80W	1	0.5
	2	1
	5	2
	8	4
	12	5
100W	1	1
	2	1.5
	4	2.5

“B” series MCB is used for all Lighting Applications

MCB Selection Chart For Motor Protection

S. No.	kW	HP	1 Phase 230V DOL Starting		3 Phase 400V DOL Starting		3 Phase 400V 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 : $\frac{\text{Total Load in Watts}}{240V}$

Incomer Current Rating, For Three Phase : $\frac{\text{Total Load in Watts}}{\sqrt{3}X240V}$

“C” series MCB is used for all Motor Applications

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

'B' Series MCB

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

Rating	Pack Qty.	SP Cat. No.
6-32A	12	DHMGBSPF006-032
40-63A	12	DHMGBSPF040-063

'C' Series MCB

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

Rating	Pack Qty.	SP Cat. No.
0.5-5A	12	DHMGCSPF0x5-005
6-32A	12	DHMGCSPF006-032
40A	12	DHMGCSPF040
50A	12	DHMGCSPF050
63A	12	DHMGCSPF063

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

Rating	Pack Qty.	SPN Cat. No.
0.5-5A	6	DHMGCSNF0x5-005
6-32A	6	DHMGCSNF006-032
40A	6	DHMGCSNF040
50A	6	DHMGCSNF050
63A	6	DHMGCSNF063

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

Rating	Pack Qty.	DP Cat. No.
0.5-5A	6	DHMGCDPF0x5-005
6-32A	6	DHMGCDPF006-032
40A	6	DHMGCDPF040
50A	6	DHMGCDPF050
63A	6	DHMGCDPF063

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

Rating	Pack Qty.	TP Cat. No.
0.5-5A	4	DHMGCTPF0x5-005
6-32A	4	DHMGCTPF006-032
40A	4	DHMGCTPF040
50A	4	DHMGCTPF050
63A	4	DHMGCTPF063

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

Rating	Pack Qty.	TPN Cat. No.
0.5-5A	3	DHMGCTNF0x5-005
6-32A	3	DHMGCTNF006-032
40A	3	DHMGCTNF040
50A	3	DHMGCTNF050
63A	3	DHMGCTNF063

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

Rating	Pack Qty.	FP Cat. No.
0.5-5A	3	DHMGCFPF0x5-005
6-32A	3	DHMGCFPF006-032
40A	3	DHMGCFPF040
50A	3	DHMGCFPF050
63A	3	DHMGCFPF063

'D' Series MCB

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

Rating	Pack Qty.	SP Cat. No.
0.5-5A	12	DHMGDSPF0x5-005
6-32A	12	DHMGDSPF006-032
40A	12	DHMGDSPF040
50A	12	DHMGDSPF050
63A	12	DHMGDSPF063

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

Rating	Pack Qty.	DP Cat. No.
0.5-5A	6	DHMGDDPF0x5-005
6-32A	6	DHMGDDPF006-032
40A	6	DHMGDDPF040
50A	6	DHMGDDPF050
63A	6	DHMGDDPF063

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

Rating	Pack Qty.	TP Cat. No.
0.5-5A	4	DHMGDTPF0x5-005
6-32A	4	DHMGDTPF006-032
40A	4	DHMGDTPF040
50A	4	DHMGDTPF050
63A	4	DHMGDTPF063

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

Rating	Pack Qty.	FP Cat. No.
0.5-5A	3	DHMGDFPF0x5-005
6-32A	3	DHMGDFPF006-032
40A	3	DHMGDFPF040
50A	3	DHMGDFPF050
63A	3	DHMGDFPF063

'DC' Series MCB

'DC' Series SP MCB

For DC Supply, upto 220V (IS/IEC 60947-2)

Rating	Pack Qty.	SP Cat. No.
0.5-5A	12	DHMCESPF0x50013 - 0050013
6-32A	12	DHMCESPF0060013 - 0320013
40A	12	DHMCESPF0400013
50A	12	DHMCESPF0500013
63A	12	DHMCESPF0630013

'DC' Series DP MCB

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

Rating	Pack Qty.	DP Cat. No.
0.5-5A	6	DHMCEDPF0x50013 - 0050013
6-32A	6	DHMCEDPF0060013 - 0350013
40A	6	DHMCEDPF0400013
50A	6	DHMCEDPF0500013
63A	6	DHMCEDPF0630013

'DC' Series Railway MCB

For Railway Applications (with extended terminals & mounting brackets)

Rating	Pack Qty.	TP Cat. No.
0.5-5A	12	DHMCRSPF0x50013 - 0050013
6-35A	12	DHMCRSPF0060013 - 0350013
40A	12	DHMCRSPF0400013
50A	12	DHMCRSPF0500013
60A	12	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)

EURO-II

MINIATURE CIRCUIT BREAKER (80A - 125A)

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.

Positive Contact Indication -

It clearly indicates 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 50mm^2 cross section area

Features

- Trip Free mechanism
- Positive Contact Indication
- Thermal and Magnetic trip function
- Current Limiting design for short circuit fault protection

Range

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

Execution

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

Specification

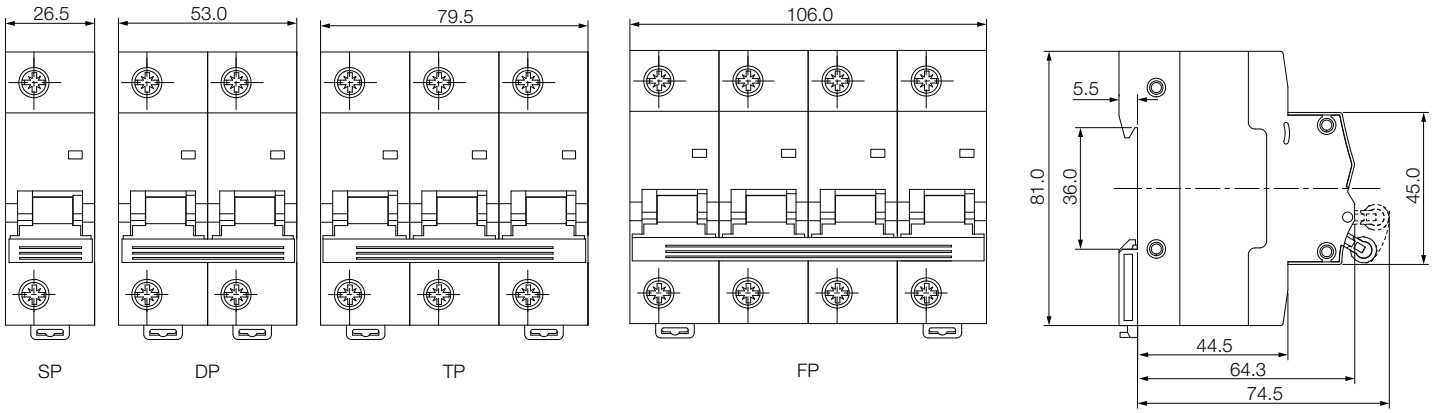
IS / IEC 60947-2

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

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

Rating	Pack Qty.	SP Cat. No.
80A	6	DHMJCSPF080
100A	6	DHMJCSPF100
125A	6	DHMJCSPF125

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

Rating	Pack Qty.	DP Cat. No.
80A	3	DHMJCDPF080
100A	3	DHMJCDPF100
125A	3	DHMJCDPF125

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

Rating	Pack Qty.	TP Cat. No.
80A	2	DHMJCTPF080
100A	2	DHMJCTPF100
125A	2	DHMJCTPF125

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

Rating	Pack Qty.	FP Cat. No.
80A	1	DHMJCFPF080
100A	1	DHMJCFPF100
125A	1	DHMJCFPF125

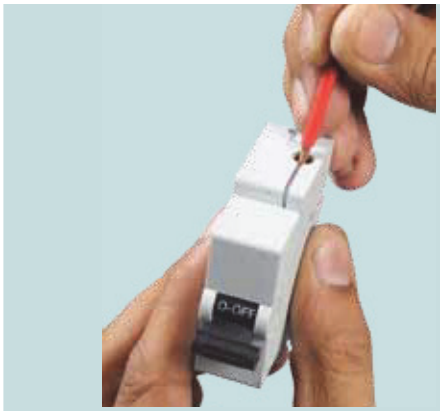
EURO-II

MINI MCB & ISOLATOR

Havells Mini MCB is a single composite device, which provides, protection against overload and short circuit faults. It is designed with unique mounting concept, for use in domestic & commercial distribution systems, at the most downstream circuit (switchboards/DESB), ensuring even higher degree of protection for discriminating applications. In normal operation, this new Mini MCB is safe to use & there is no threat to user and environment.

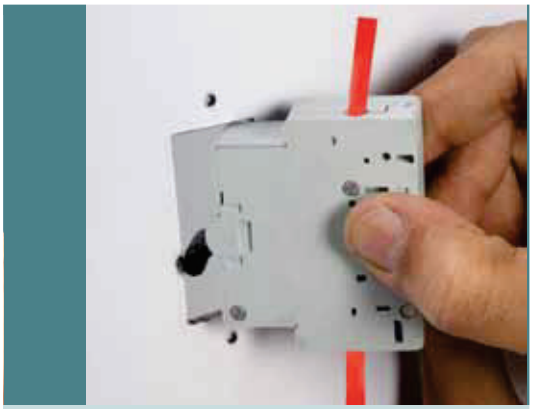
Separate the front plate from Mini MCB by pulling off

Screw mount Mini MCB front plate on the Switchboard



Connect the outgoing phase wire on upper terminal & tight it

Connect the incoming phase wire on lower terminal & tight it



Push fit the Mini MCB on to the front plate

Mini MCB is successfully installed

Features
(Mini MCB)

- Protection in Switch Board against overload & short circuit
- Suitable for both DESB (Decorative Electrical Switch Board) & switch board
- Short circuit breaking capacity 3kA
- Reliability & Continuity of service
- Compact in size

(Mini Isolator)

- Low watt loss
- Longer electrical life
- Low power consumption, thus cost effective & energy saving

Range

Mini MCB - 6A, 10A, 16A, 20A, 25A & 32A

Mini Isolator - 40A

Execution

Mini MCB - Single Pole (1P), Double Pole (2P)

Mini Isolator - Double Pole (2P)

Specification

Mini MCB - IS / IEC 60898 - 1

Mini Isolator - IS / IEC 60947 - 3

Installation Instruction

1. Separate the front plate from Mini MCB by pulling off
2. Screw mount Mini MCB front plate on the Switchboard
3. Connect the outgoing phase wire on upper terminal & tight it
4. Connect the incoming phase wire on lower terminal & tight it
5. Push fit the Mini MCB on to the front plate
6. Mini MCB is successfully installed

Construction

Havells Mini MCB is a single composite device, which provides, protection against overload and short circuit faults. It is designed with unique mounting concept, for use in domestic & commercial distribution systems, at the most downstream circuit (switchboards / DESB), ensuring even higher degree of protection for discriminating applications.

Technical Specification		MIni Single Pole MCB (1P)	MIni Double Pole MCB (2P)	Mini Double Pole Isolator (2P)
Reference		IS / IEC : 60898-1	IS / IEC : 60898-1	IS / IEC : 60947-3
Rated Current In	A	6, 10, 16, 20, 25, 32	6, 10, 16, 20, 25, 32	40
Rated Voltage Un	V~	240	240/415	240/415
Tripping Curve		C	C	
Rated Insulation Voltage	V	500	500	500
Rated Frequency	Hz	50	50	50
No. of Pole		Single Pole	Two Pole	Two Pole
Rated Short Circuit Capacity Icn	kA	3	3	
Conditional Short Circuit withstand Capacity	kA	-	-	3

Mini MCB

Mini SP MCB

'C' Series (In accordance with IS/IEC 60898-1) 240V, 50Hz, 3kA

Rating	Pack Qty.	SP Cat. No.
6A	12	DHMNCSPA006
10A	12	DHMNCSPA010
16A	12	DHMNCSPA016
20A	12	DHMNCSPA020
25A	12	DHMNCSPA025
32A	12	DHMNCSPA032

Mini DP MCB

'C' Series (In accordance with IS/IEC 60898-1) 240/415V, 50Hz, 3kA

Rating	Pack Qty.	DP Cat. No.
6A	6	DHMNCDPA006
10A	6	DHMNCDPA010
16A	6	DHMNCDPA016
20A	6	DHMNCDPA020
25A	6	DHMNCDPA025
32A	6	DHMNCDPA032

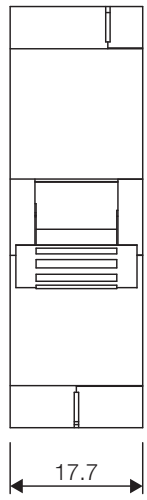
Mini Isolator

Mini DP Isolator

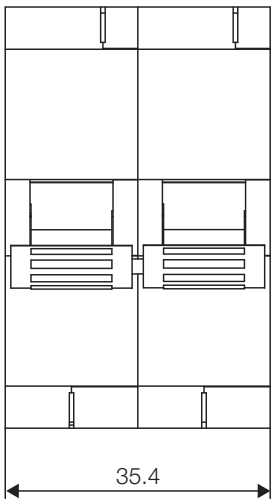
(In accordance with IS/IEC 60947-3) 240/415V, 50Hz

Rating	Pack Qty.	DP Cat. No.
40A	6	DHMNIDPX040

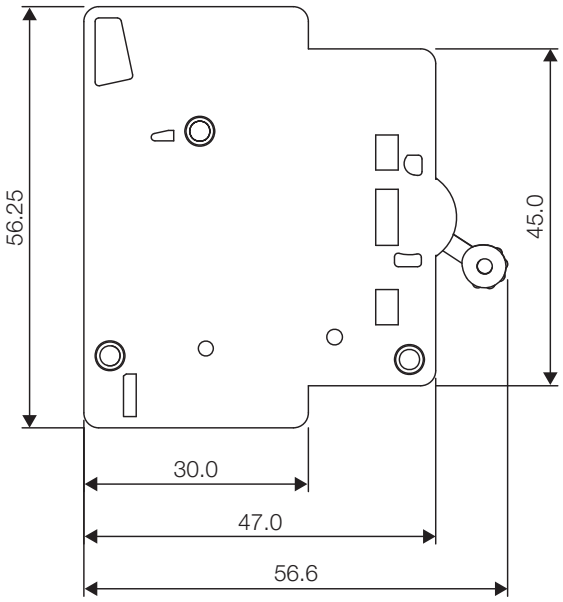
Dimensions (in mm)

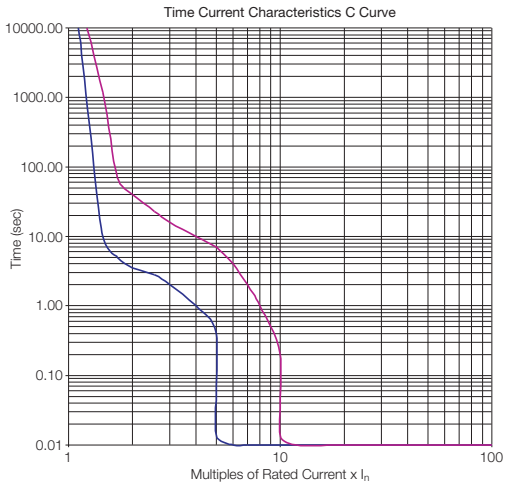


Mini MCB SP



Mini MCB DP
& Isolator





EURO-II

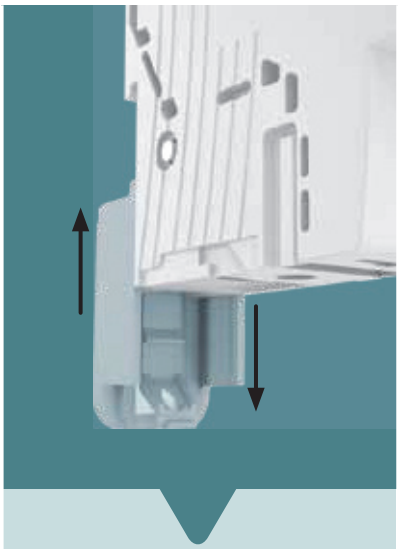
MCB ISOLATOR SWITCHING DEVICES

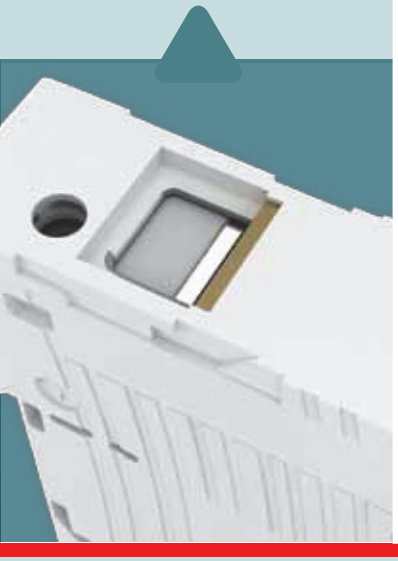
LATEST. SAFEST.

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.

Safety Terminals -

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





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

Large Cable Terminals -

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

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

Features

- Low Watt Loss
- Longer Electrical Life
- Wide Range
- Value for Money
- Low power consumption, thus cost effective & energy saving

Range

40A - 63A
80A - 125A

Accessories

- Auxiliary Switch
- Shunt Trip

Execution

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

Specification

IS/IEC 60947-3

Technical Specification		
Standard Conformity		IS / IEC 60947-3
Rated Current (In)	A	40 - 63 & 80 - 125
Rated Voltage (Ue)	V~	240/415
Rated Frequency (f)	Hz	50
No. of Poles (Execution)		1P, 2P, 3P, 4P
Utilization Category		AC 22 A
Rated Insulation Voltage (Ui)	V	690
Rated Impulse Voltage (Uimp)	kV	4
Electrical / Mechanical Endurance	(No. of operations)	10000
Ambient Temperature	^{0}C	-5 to + 55
Terminal Capacity (Max)		35 mm^2 upto 63A & 50 mm^2 for 80A-125A
Vibration	g	5
Shock Resistance		40mm free fall
Protection Class		IP-20
Installation Position		Vertical / Horizontal
Mounting		Clip on DIN Rail (35mm x 7.5mm)
Case & Cover		Molded, flame retardant thermoplastic material

MCB Isolator

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

Rating	Pack Qty.	SP Cat. No.
40A	12	DHMGISPX040
63A	12	DHMGISPX063

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

Rating	Pack Qty.	DP Cat. No.
40A	6	DHMGIDPX040
63A	6	DHMGIDPX063
80A	6	DHMGIDPX080
100A	6	DHMGIDPX100
125A	6	DHMGIDPX125

TP MCB ISOLATOR (Switching Devices)

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

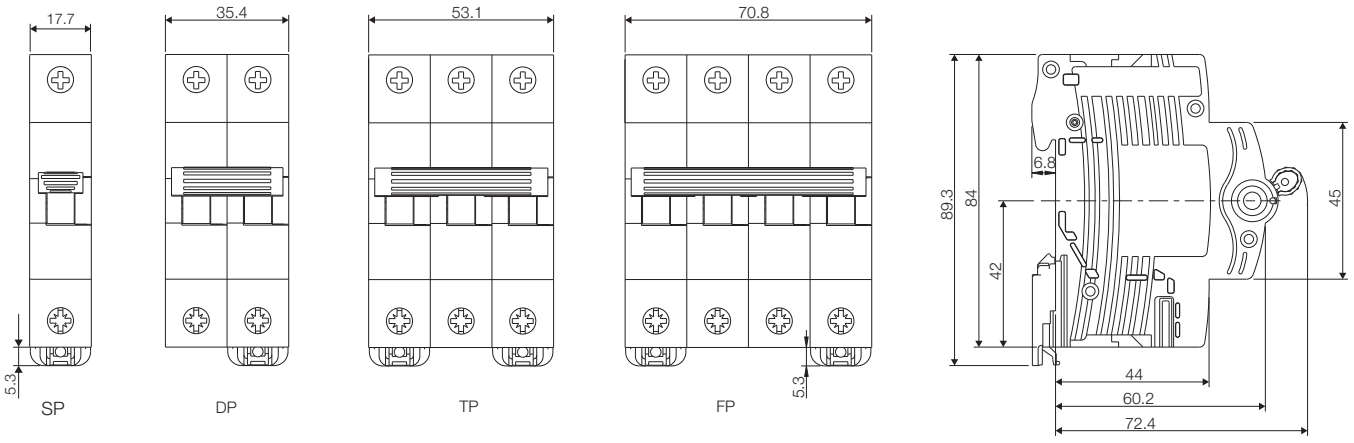
Rating	Pack Qty.	TP Cat. No.
40A	4	DHMGITPX040
63A	4	DHMGITPX063
80A	4	DHMGITPX080
100A	4	DHMGITPX100
125A	4	DHMGITPX125

FP MCB ISOLATOR (Switching Devices)

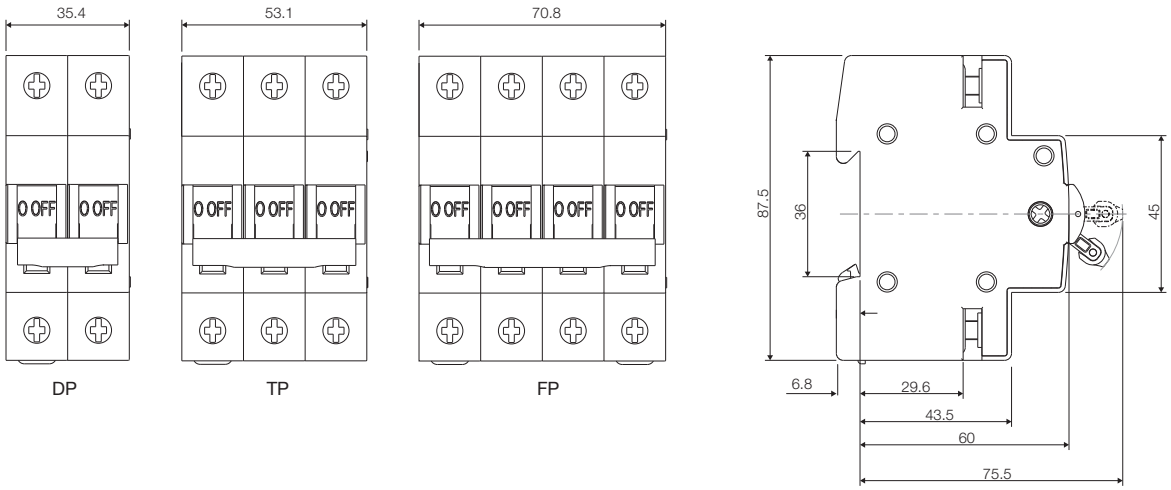
MCB Isolators (AC-22A, In accordance with IS/IEC 60947-3) 240/415V, 50Hz

Rating	Pack Qty.	FP Cat. No.
40A	3	DHMGIFPX040
63A	3	DHMGIFPX063
80A	3	DHMGIFPX080
100A	3	DHMGIFPX100
125A	3	DHMGIFPX125

Dimensions (in mm) for 40A & 63A



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



EURO-II

RESIDUAL CURRENT CIRCUIT BREAKER (16A - 63A)

LATEST. SAFEST.

The flow of current through electrical facilities always involves risks. Poorly insulated equipment, faulty wires and incorrect use of an electrical device cause currents 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).

Safety Terminals -

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

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

Large Cable Terminals -

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

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

Features

- Pulsating DC protection - Type A
- Simple and Robust operating mechanism
- Rotary handle with ON/OFF indication in FP
- 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 (2P)
Four Pole (4P)

Specification

IS 12640 Part 1/ IEC 61008-1 / EN 61008 - 1

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 small currents flowing to earth and reduces the risk of electrocution. Effect of electric current through human body has been well researched and following chart summarizes the results:

Effect of electric current through human body has been well researched and following chart summarizes the results:

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:

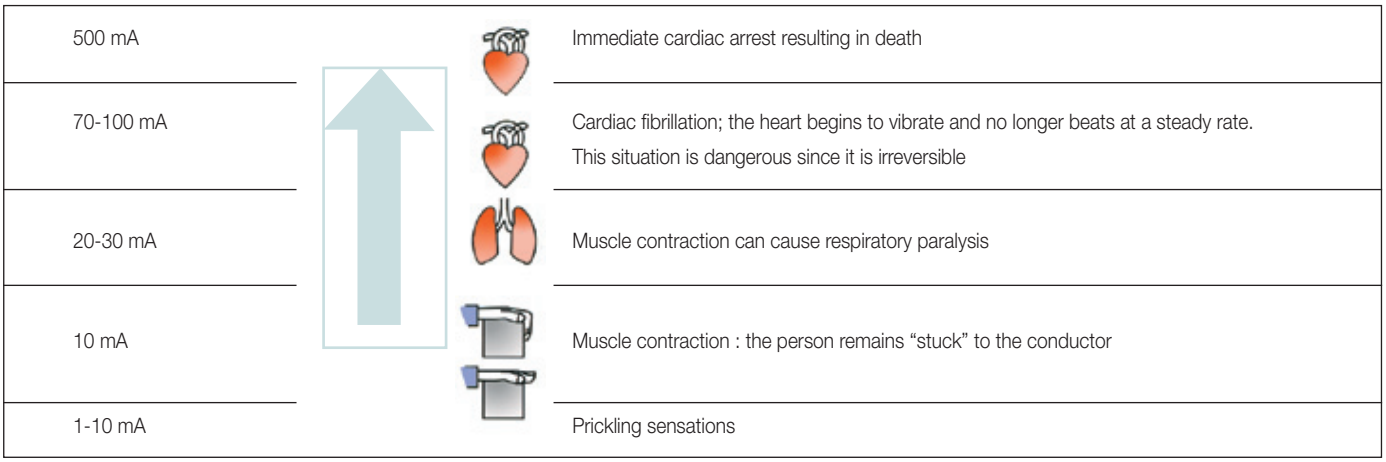
- Under normal dry conditions, voltage limit = 50V
- In damp surroundings, voltage limit = 25V

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 / In = 50/0.03 = 1,666



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 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.

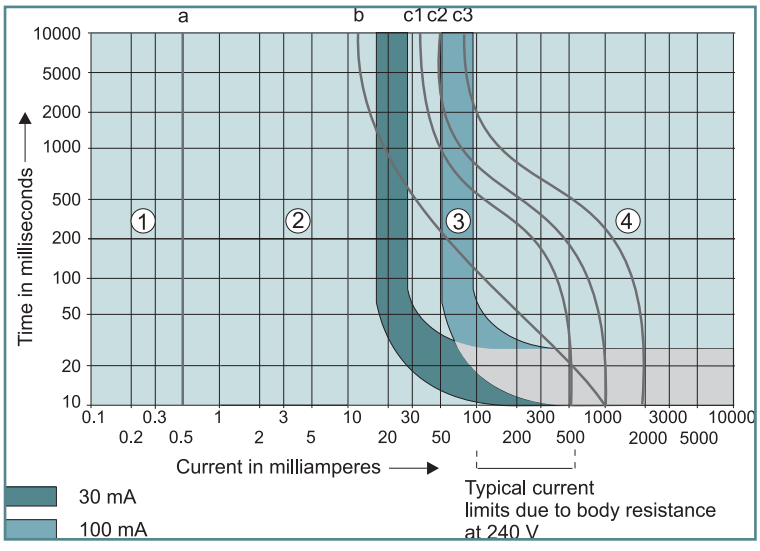
Technical Specifications		DP	FP
Rated Current (In)	A	16, 25, 32, 40, 63	25, 40, 63
Sensitivity (In)	mA	30, 100, 300	30, 100, 300
Rated Voltage (Un)	Vac	240	415
Rated Insulation Voltage (Ui)	V	690	690
Rated Frequency	Hz	50	50
Conditional short circuit capacity (Inc)	kA	10	10
Residual Making Breaking Capacity	A	500 A or 10 In whichever is greater	500 A or 10 In whichever is greater
Ambient Temperature	°C	-25 to + 55	-25 to + 55
Shock Resistance		40 mm free fall	40 mm free fall
Vibration Resistance	g	3	3
Electrical /Mechanical	(No. of operations)	10000	10000
Mounting		Din Rail (35 mm x 7.5 mm)	Din Rail (35mm x 7.5mm)
Degree of Protection		IP 20	IP 20
Terminal Capacity (max)	mm^2	35	35

*500 mA is available on request

Working Principle

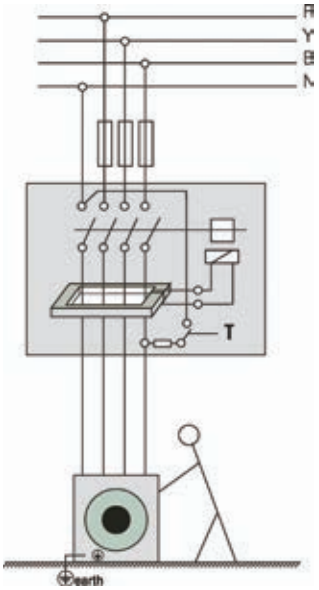
The RCCB works on the current balance principle. The supply conductors, i.e. the phases and the neutral, are passed through a toroid and form the primary windings of a current transformer. Its secondary winding is connected to a highly sensitive electromagnetic trip relay, which operates the trip mechanism.

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.



Selection 30 mA

A 30 mA RCCB 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 if ventricular fibrillation increased upto 5% (curve C_2) upto 50% (curve C_3) 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 below. It is necessary for the RCCB to operate within 50ms at 240 mA and 150ms at 80mA. Both these conditions are satisfied by 30mA RCCB.

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

100 mA

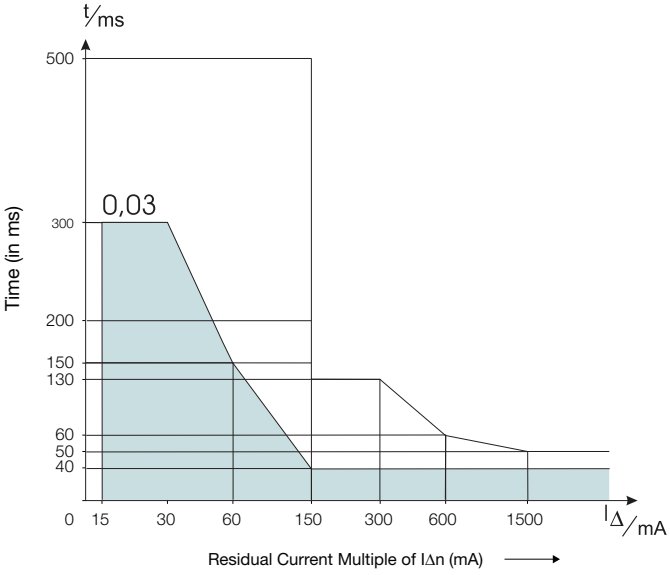
A 100mA RCCB will normally give high degree of protection against electrocution but there is a possibility that the shock current could fall below the tripping level of RCCB. This could occur if additional resistances to that of human body are included in the earth path.

The 100mA RCCB protects against leakage currents and indirect contact with earth loop impedance up to 500 Ohms.

300 / 500mA

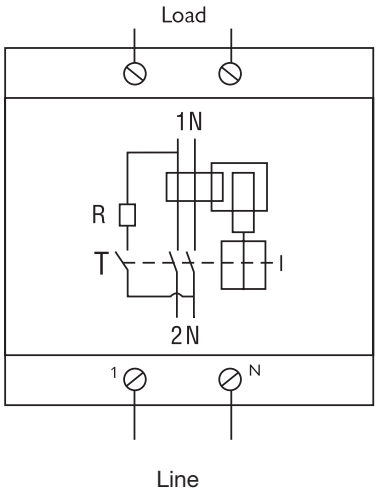
A 300/500 mA RCCB may be used where only fire protection is required. e.g., on lighting circuits, where the risk of electric shock is small. 300/500mA RCCB will not give any protection against electrocution.

Actuation Time Characteristics

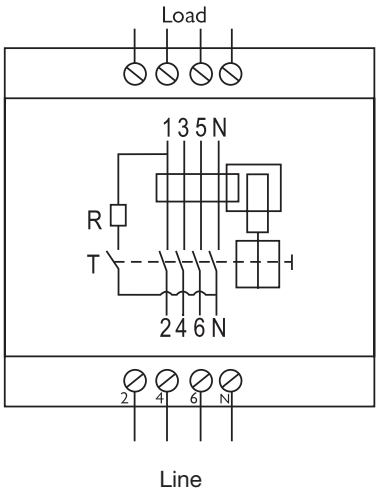


Wiring Diagram

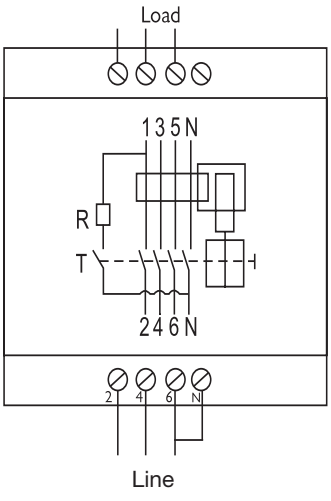
For Single Phase - 2 Wire connections



For Three Phase - 4 Wire connections



For Three Phase - 3 Wire connections



The Havells 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 currents. In the majority of cases (standard applications), they are used for AC current detection at 50 / 60 Hz

RCCB - 'AC' Type

RCCB - 'AC' Type DP
(In accordance with IS 12640-1 & IEC 61008-1) 240V, 50Hz with 10kA conditional short circuit capacity

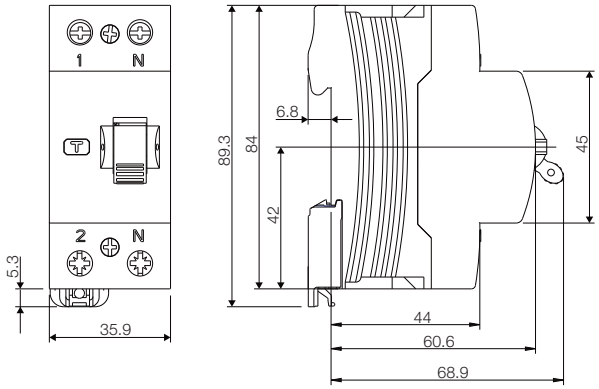
Rating	30mA Cat. No.	100mA Cat. No.	300mA Cat. No.
16A	DHRGCTDF030016	DHRGCTDF100016	DHRGCTDF300016
25A	DHRGCTDF030025	DHRGCTDF100025	DHRGCTDF300025
32A	DHRGCTDF030032	DHRGCTDF100032	DHRGCTDF300032
40A	DHRGCTDF030040	DHRGCTDF100040	DHRGDTDF300040
63A	DHRGCTDF030063	DHRGCTDF100063	DHRGCTDF300063

RCCB - 'AC' Type FP
(In accordance with IS 12640-1 & IEC 61008-1) 415V, 50Hz with 10kA conditional short circuit capacity

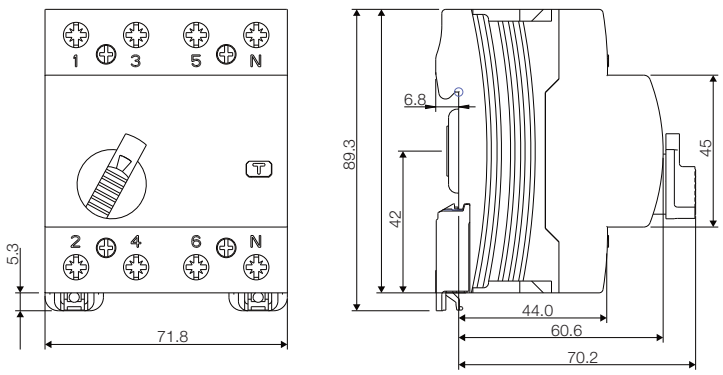
Rating	30mA Cat. No.	100mA Cat. No.	300mA Cat. No.
25A	DHRGCRFF030025	DHRGCRFF100025	DHRGCRFF300025
40A	DHRGCRFF030040	DHRGCRFF100040	DHRGCRFF300040
63A	DHRGCRFF030063	DHRGCRFF100063	DHRGCRFF300063

Dimensions (in mm)

2 POLE



4 POLE



EURO-II

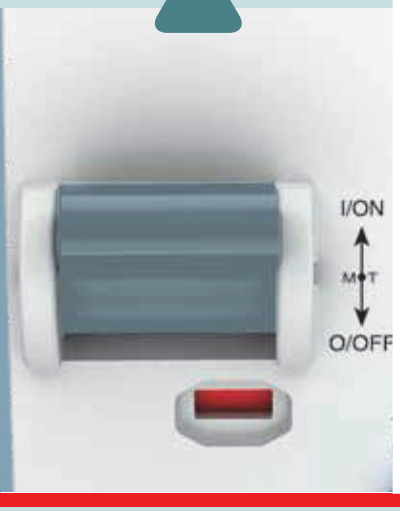
RESIDUAL CURRENT CIRCUIT BREAKER (80A - 100A)

The flow of current through electrical facilities always involves risks. Poorly insulated equipment, faulty wires and incorrect use of an electrical device cause currents 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).

Mid Trip -

Different knob position to indicate whether the device is Switched OFF by a fault or Switched OFF manually



Positive Contact Indication -

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

Large Cable Terminals -

The terminals are suitable for cables up to 50mm^2 cross section area thus making it suitable for copper and aluminium cables

Test Button -

Test button for regular inspection/testing

Features

- Conditional short circuit 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
- Positive contact indication

Range
80A - 100A

Sensitivity
30mA, 100mA & 300mA

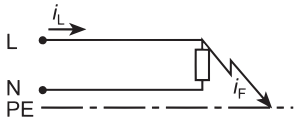
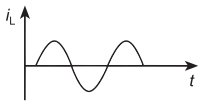
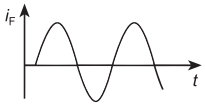
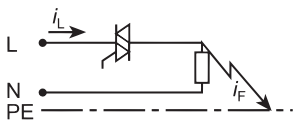
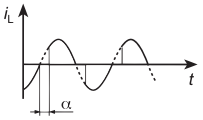
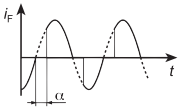
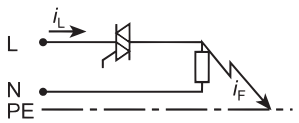
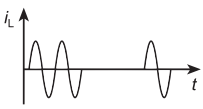
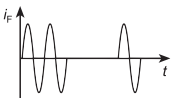
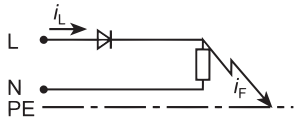
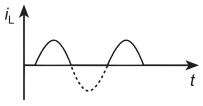
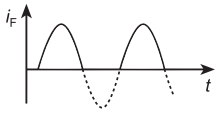
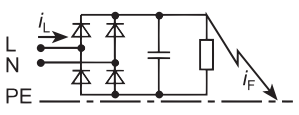
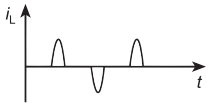
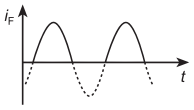
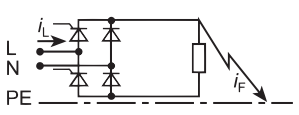
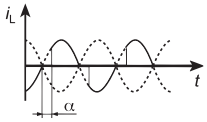
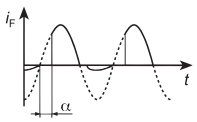
Execution
Double Pole (2P)
Four Pole (4P)

Specification
IS 12640 Part-1/ IEC 61008-1 / EN 61008-1

Technical Specification		DP	FP
Specification Reference		IEC 61008-1 & IS 12640-1	IEC 61008-1 & IS 12640-1
Rated current (In)	A	80, 100	80, 100
Sensitivity (IDn)	mA	30, 100, 300	30, 100, 300
Rated Voltage (Ue)	V~	240	415
Rated Insulation voltage (Ui)	V	690	690
Rated Frequency	Hz	50	50
Trip Time		IΔn < 300ms, 5 IΔn < 40ms	IΔn < 300ms, 5 IΔn < 40ms
Conditional short circuit Capacity	kA	10	10
Residual Making Breaking capacity	A	10 In	10 In
Ambient Working Temperature	°C	-25 to + 55	-25 to + 55
Shock Resistance		40mm free fall	40mm free fall
Vibration Resistance	g	5	5
Electrical Endurance	(No. of operations)	>2000	>2000
Mechanical Endurance	(No. of operations)	>3000	>3000
Mounting		Din Rail (35mm x7.5 mm)	Din Rail (35mm x7.5 mm)
Degree of protection		IP 20	IP 20
Terminals Capacity (Max)	mm^2	50	50

RCCB Type A

RCCB for which tripping is ensured for residual sinusoidal alternating currents and residual pulsating direct currents, whether suddenly applied or slowly rising. It can therefore handle the residual current waveforms which can occur in the power supply units of single-phase loads with electronic components (e.g. ECG, dimmer switches). This type of residual current protective device is suitable for electronic equipment with input current circuits 1 to 6 in table 1.

Suitable RCD-Type			Circuit	Load Current	Residual Current
A	AC	1			
		2			
		3			
		4			
		5			
		6			

RCCB - 'A' Type

RCCB - 'A' Type DP

(In accordance with IS 12640-1 & IEC 61008-1) 240V, 50Hz with 10kA Conditional short circuit capacity

Rating	30mA Cat. No.	100mA Cat. No.	300mA Cat. No.
16A	DHRMAMDF030016	DHRMAMDF100016	DHRMAMDF300016
25A	DHRMAMDF030025	DHRMAMDF100025	DHRMAMDF300025
32A	DHRMAMDF030032	DHRMAMDF100032	DHRMAMDF300032
40A	DHRMAMDF030040	DHRMAMDF100040	DHRMAMDF300040
63A	DHRMAMDF030063	DHRMAMDF100063	DHRMAMDF300063

RCCB - 'A' Type FP

(In accordance with IS 12640-1 & IEC 61008-1) 415V, 50Hz with 10kA Conditional short circuit capacity

Rating	30mA Cat. No.	100mA Cat. No.	300mA Cat. No.
16A	DHRMAMFF030016	DHRMAMFF100016	DHRMAMFF300016
25A	DHRMAMFF030025	DHRMAMFF100025	DHRMAMFF300025
32A	DHRMAMFF030032	DHRMAMFF100032	DHRMAMFF300032
40A	DHRMAMFF030040	DHRMAMFF100040	DHRMAMFF300040
63A	DHRMAMFF030063	DHRMAMFF100063	DHRMAMFF300063

Higher Rating RCCB

Higher Rating RCCB (80 - 100A) DP

(In accordance with IS 12640-1 & IEC 61008-1) 415V, 50Hz with 10kA Conditional short circuit capacity

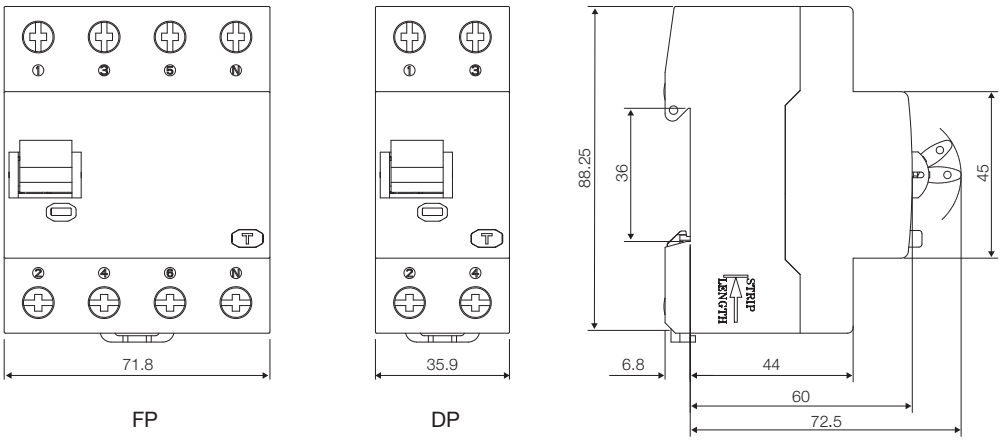
Rating	30mA Cat. No.	100mA Cat. No.	300mA Cat. No.
80A	DHRMCMDF030080	DHRMCMDF100080	DHRMCMDF300080
100A	DHRMCMDF030100	DHRMCMDF100100	DHRMCMDF300100

Higher Rating RCCB (80 - 100A) FP

(In accordance with IS 12640-1 & IEC 61008-1) 415V, 50Hz with 10kA Conditional short circuit capacity

Rating	30mA Cat. No.	100mA Cat. No.	300mA Cat. No.
80A	DHRMCMFF030080	DHRMCMDF100080	DHRMCMDF300080
100A	DHRMCMFF030100	DHRMCMDF100100	DHRMCMDF300100

Dimensions (in mm)



FP DP

EURO-II

RESIDUAL CURRENT CIRCUIT BREAKER WITH OVERLOAD & SHORT CIRCUIT PROTECTION - RCBO

Havells New RCBO is a single composite device which provides protection against over currents and earth leakage faults, it comes in the same width and profile as that of a standard MCB. It is designed for use in domestic, commercial and industrial distribution systems at the most downstream circuit for ensuring high degree of protection to the user for a particular circuit. In normal use, it is safe to use and free of to user as well as to environment.

Test Button -

Test button for regular inspection/testing

Positive Contact Indication -

It clearly indicates 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 with upto 35mm^2 cross section area

Features

- Pulsating DC protection - Type A
- Discrimination using time delay - Type S RCBO
- Controlled response VD RCBO (Electronic)
- Protection in case of loss of supply neutral
- Enhanced immunity to nuisance tripping

Range

6A to 40A

Sensitivity

30mA, 100mA & 300mA

Execution

Single Pole & Neutral (1P+N)
Three Pole & Neutral (3P+N)

Specification

IS 12640 : Part 2/ IEC 61009-1 / EN : 61009-1

Construction

Havells new RCBO is a single composite device which provides protection against over currents and earth leakage faults, it comes in the same width and profile as that of a standard MCB. It is designed for use in domestic, commercial and industrial distribution systems at the most downstream circuit for ensuring high degree of protection to the user for a particular circuit. In normal use, it is safe to use and poses no threat to user as well as to environment.

Features

- Positive contact indication: Red for ON, Green for OFF
- Short circuit breaking capacity 10 kA.
- Large terminal capacity: RCBOs have 35 mm^2 for cool running while in operation.
- Protection in case of loss of supply neutral: Even in event of loss of supply neutral, Havells RCBO provides protection against earth faults. The Functional Earth (FE) white color wire connected to earth provides this protection.
- Controlled response & immunity to nuisance tripping: The trip level and the response time of the Havells VD (Voltage Dependent) RCBO using electronic circuit is set to very precise values and thereby provide greater immunity to nuisance tripping that can be caused by mains borne noise, surge voltages, lighting surges, reactive loads, mains filters, etc.
- Neutral to earth faults: A connection that occurs between N and E on the load side of any RCBO will impact on its performance and cause the trip level to increase. In the case of a N - E fault, the user may have no way of knowing that this fault exists and that the RCBO has been desensitized. Under this condition, the Havells VD RCBO provides a far greater level of protection than a normal VI (Voltage Independent) RCBO.

Aesthetics & Convenience

- The new module's unique compact construction enables far more devices to be fitted into a distribution board than previously possible, and 2 Module RCBO can simply replace existing MCB 2 pole when upgrading a board.
- High stacking density = smaller chassis & distribution boards.

Reliability & Continuity Of Service

- Enhanced discrimination with Havells MCBs
- Retrofits Havells MCBs in distribution boards with no modifications in general
- Robust construction.

Energy Limiting

Havells RCBO meets the requirements for energy let through by IEC & British Standard for energy limiting class 3.

Technical Specifications		SPN (2 Module)	TPN (4 Module)
Specification Reference		IS 12640 (Part 2) & IEC 61009 - 1	IS 12640 (Part 2) & IEC 61009 - 1
Rated Current (In)	A	6, 10, 16, 20, 25, 32, 40	6, 10, 16, 20, 25, 32, 40
Rated Residual Operating Current (IΔn)	mA	30, 100, 300	30, 100, 300
Instantaneous Tripping Current		'C 'curve	'C 'curve
Rated Voltage (Un)	V~	240	415
Rated Insulation Voltage (Ui)	V	660	660
Rated Frequency	Hz	50	50
No. of Pole		1P+N	3P+N
Rated Short Circuit Capacity (Icn)	kA	10	10
Rated Residual Making Breaking Capacity (IΔm)	A	500	500
Operating Characteristics in case of Residual Currents		'A' Type	'A' Type
Method of Mounting		Panel Board Type (DIN Rail)	Panel Board Type (DIN Rail)
Degree of Protection		IP 20	IP 20
Terminals for External Conductors	mm^2	35	35
Net Weight (in Kg)		0.420	0.84
Ambient Working Temperature	°C	-5 to + 55	-5 to + 55
Mechanical Endurance	(No. of Operations)	4000	4000
Electrical Endurance	(No. of Operations)	4000	4000
Trip Time (milli Second)		<40	<40
Shock Resistance		40mm free fall	40mm free fall
Vibration Resistance	g	3	3

Additional Range - Type A & S

Type A - Pulsating DC Protection: Any electrical appliance with power control has the ability to produce earth fault currents with pulsating DC (rectified AC) components. RCBOs that provide this type of protection are referred to as Type A RCBOs.

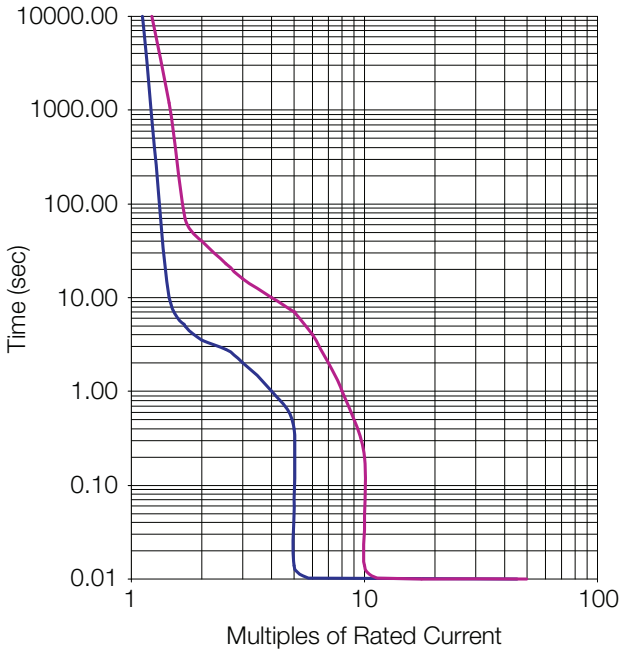
Standard VI RCBOs do not provide this protection, and are referred to as Type AC RCBOs. Havells VD RCBOs have been specifically designed to provide protection against pulsating DC fault currents.

- Type S- Selective or Time Delay: RCBOs are also divided into two categories determined by their response time to an earth fault current, as follows
- General Type - having a trip time<300mS for fault currents of IΔn and < 40ms for fault currents > 5IΔn.
- S Type - having a trip time of 150 - 500mS for IΔn, and 40 - 130mS for >5IΔn.

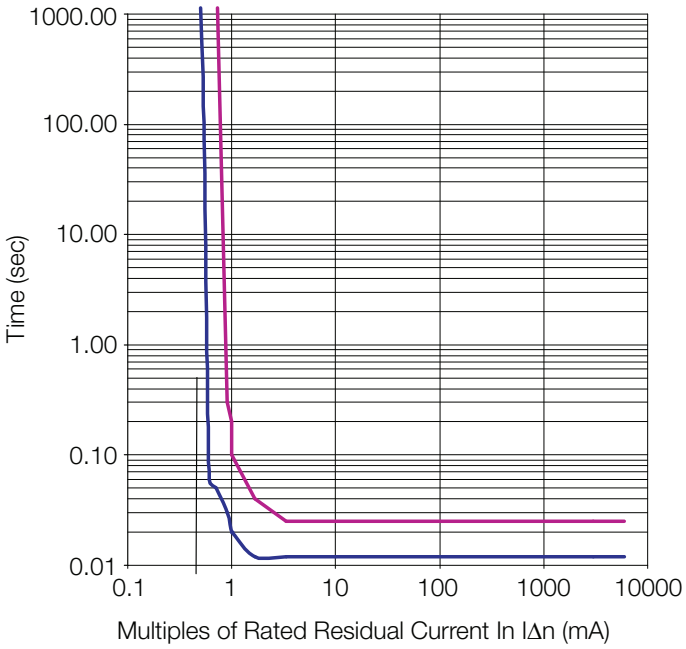
(IDn is the rated residual operating current of the RCBO)

As the name implies, general types are intended for general purpose use. However, S (selective) types are normally used in conjunction with downstream general type RCBOs.

The S type effectively provides discrimination in terms of the response time to earth fault currents for upstream ad downstream RCBOs. For example, when two RCBOs are connected in series the first RCBO will often be an S type.



Time Current Characteristics C Curve



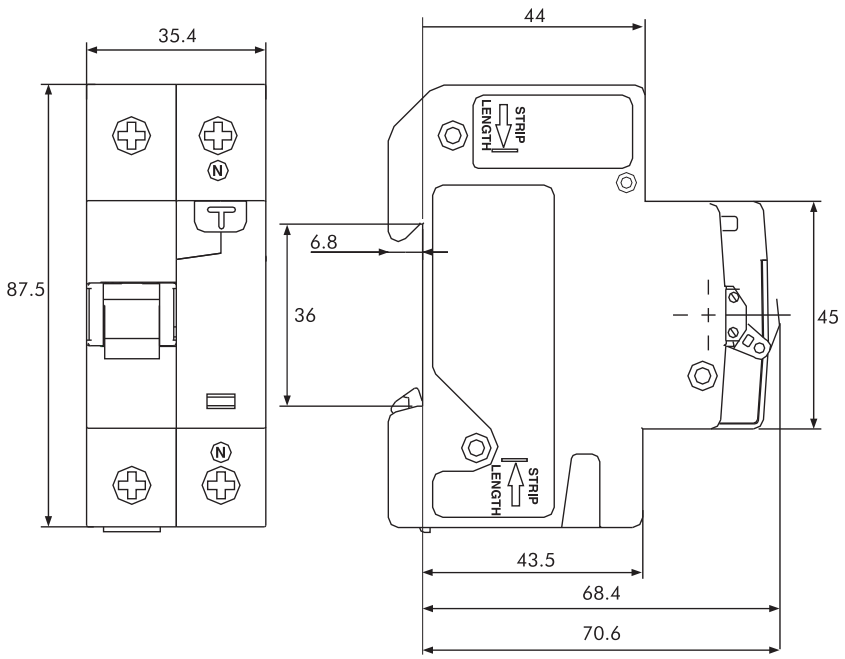
Residual Current Tripping Characteristics (General Type)

RCBO - A Type SPN

RCBO - A Type (SPN - 2M)
(In accordance with IS 12640-2 & IEC 61009-1) 240V, 50Hz, with 10 kA short circuit capacity

Rating	30mA Cat. No.	100mA Cat. No.	300mA Cat. No.
6A	DHCEACSN2030006	DHCEACSN2100006	DHCEACSN2300006
10A	DHCEACSN2030010	DHCEACSN2100010	DHCEACSN2300010
16A	DHCEACSN2030016	DHCEACSN2100016	DHCEACSN2300016
20A	DHCEACSN2030020	DHCEACSN2100020	DHCEACSN2300020
25A	DHCEACSN2030025	DHCEACSN2100025	DHCEACSN2300025
32A	DHCEACSN2030032	DHCEACSN2100032	DHCEACSN2300032
40A	DHCEACSN2030040	DHCEACSN2100040	DHCEACSN2300040

Dimensions (in mm)

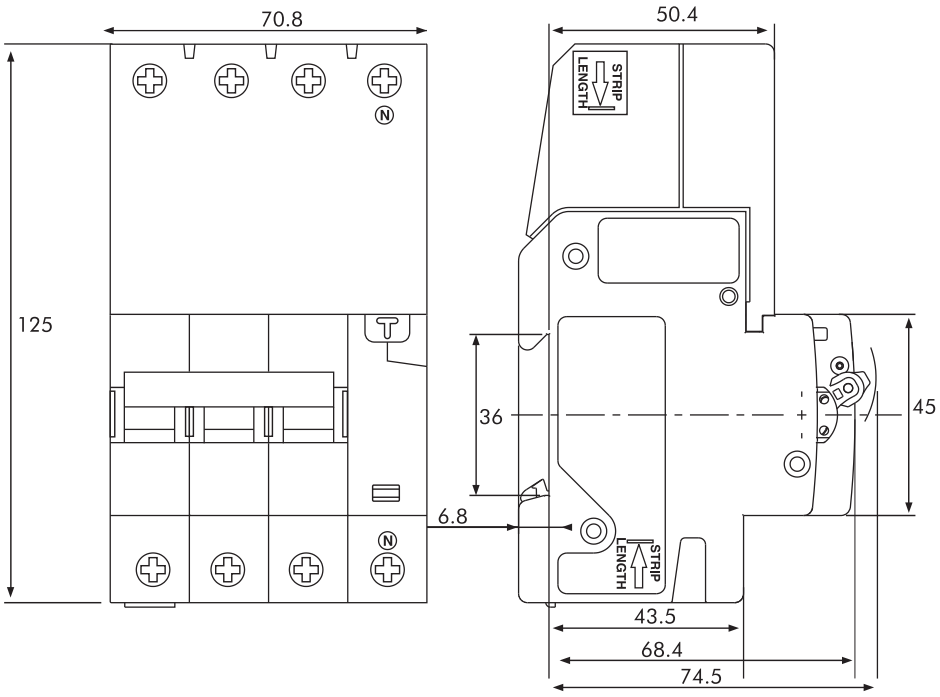


RCBO - A Type TPN

RCBO - A Type (TPN - 4M)
(In accordance with IS 12640-2 & IEC 61009-1) 415V, 50Hz, with 10 kA short circuit capacity

Rating	30mA Cat. No.	100mA Cat. No.	300mA Cat. No.
6A	DHCEACTN4030006	DHCEACTN4100006	DHCEACTN4300006
10A	DHCEACTN4030010	DHCEACTN4100010	DHCEACTN4300010
16A	DHCEACTN4030016	DHCEACTN4100016	DHCEACTN4300016
20A	DHCEACTN4030020	DHCEACTN4100020	DHCEACTN4300020
25A	DHCEACTN4030025	DHCEACTN4100025	DHCEACTN4300025
32A	DHCEACTN4030032	DHCEACTN4100032	DHCEACTN4300032
40A	DHCEACTN4030040	DHCEACTN4100040	DHCEACTN4300040

Dimensions (in mm)



EURO-II

MCB CHANGEOVER

LATEST. SAFEST.

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.

Bi-stable Clip

Centre Position OFF

Large Cable Terminals -

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

Features

- Compact construction
- Double break contacts
- Silver cadmium oxide contact tips
- Shrouded terminals
- Front operation with three stable positions I-O-II
- Centre position OFF
- Easy snap on DIN Rail mounting
- Bi-stable Clip (for 63A)
- Can be mounted with other products viz. MCB, RCCBs, Isolator in Distribution Board

Range

25A, 40A & 63A

Execution

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

Specification

IS / IEC 60947-3

Construction

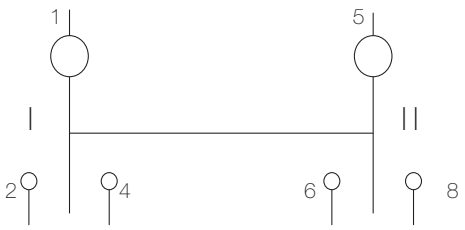
The entire switching mechanism along with the fixed and moving contact assembly are housed in FR thermo plastic moulded case / cover, having high dielectric strength, excellent mechanical & thermal properties.

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)	A	25, 40, 63
Rated Voltage (Ue)	V~	240 /415
Rated Frequency	Hz	50
Rated Insulation Voltage	V	690
Dielectric Strength	kV	2.5
Rated Impulse Voltage	kV	4
Utilization Category		AC 21A
Ambient Temp.	^{0}C	-5 to +55
Mechanical Life	(No. of operations)	10000
Electrical Life	(No. of operations)	10000
Mounting		Clip on DIN Rail (35mm x 7.5 mm)
Mounting Position		Vertical / Horizontal
Terminal Capacity 25A & 40A	mm^2	10
Terminal Capacity 63A	mm^2	25
Weight Double Pole 40A	g	134
Weight Four Pole 40A	g	268
Weight Double Pole 63A	g	156
Weight Four Pole 63A	g	314

Connection Diagrams / Terminal Marking

Two Pole



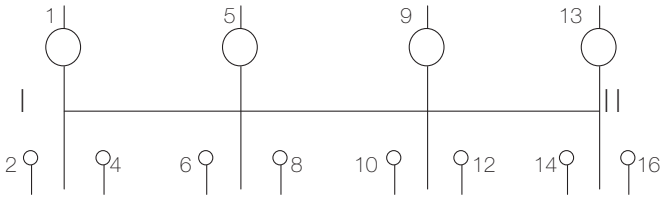
"I" - Incoming terminals (main supply) - 2 & 6

"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

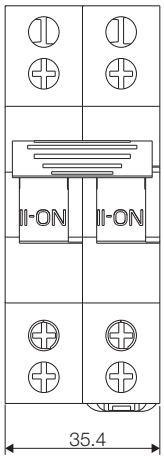
*Mid position of knob is 'OFF' position

MBC Changeover

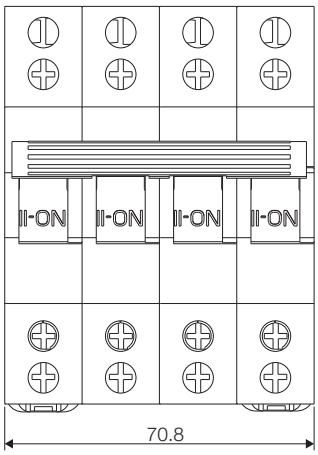
Two Way Centre Off MCB Changeover
For Dual Electricity Supply Management (In accordance with IS/IEC 60947-3)

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

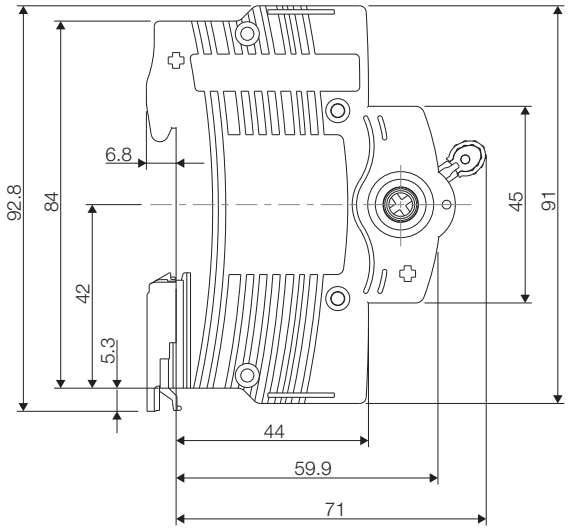
Dimensions (in mm)



DP



FP



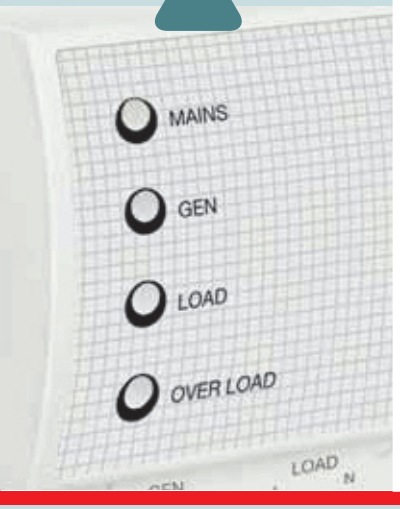
EURO-II

AUTOMATIC SOURCE CHANGEOVER WITH CURRENT LIMITER

ACCL is an electrical transfer switch that switches the load between two sources. It is installed where a backup generator is located, so that the generator may provide temporary electrical power if utility source fails. ACCL is designed to provide power to critical circuits only. It allows for load shielding as prioritization of optional circuit, such as heating /cooling equipment and lighting loads.

LEDs Indication -

Operational Status Indication through LEDs



Reset Button -

Manual reset provision for restoring supply, when in sleep mode

Cable Terminals -

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

DB Fitted

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 40A/63A/100A, Gen 10A - 100A (TPN)
Mains 30A/Gen 1.5A to 20A (SPN)
Mains 30A/Gen 30A (Automatic Changeover)

Execution

Triple Pole with Neutral (TPN)
Single Pole with Neutral (SPN)
Single Pole with Neutral (Automatic Changeover)

Specification

IEC 60947-6-1

PREMIUM SPN ACCL

Automatic Changeover With Current Limiter (ACCL)

An indispensable tool to automate power distribution, protect expensive gensets and prevent fatal risks - The power instability in developing countries along with the inefficient rationalized power distribution creates a need for the alternative source of power, to back up the utility supply, and hence, most of the commercial and residential complexes set-up alternate power sources, such as gensets, to provide efficient back-up for their power needs. However, most of these users of alternate power still depend on manual change-over, which leads to issues such as increased downtime, disruption in key activities as well as critical damage to the expensive equipment and could also prove fatal to the operators.

Nation's leading player in power generation and distribution equipment and solutions, now offers HAVELLS PREMIUM ACCL, a fully automatic high precision microcontroller based 'Source Changeover' device, which also has current limiting function and offers easy and 'controllable' changeover between main power supply and generator supply.

With these inherent strengths, HAVELLS PREMIUM ACCL is been increasingly adopted by leading power consumers, both at commercial as well as residential levels, as a strong and proven power distribution management tool.

So go ahead, and empower your premises and power distribution with HAVELLS ACCL today!

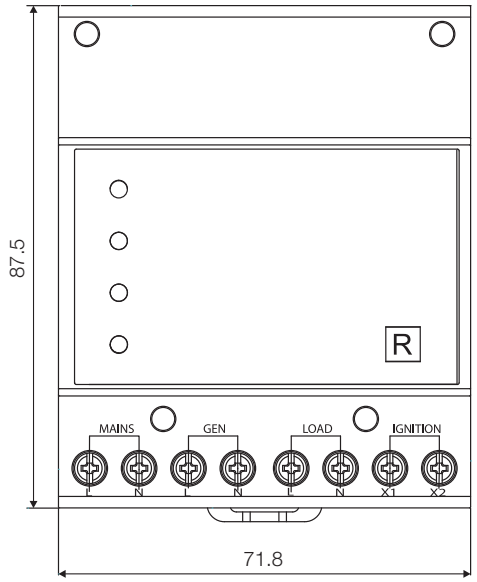
Technical Specification		
Standard Conformity		IEC 60947-6-1
No. of Poles		1P+N
Rated current (In)		30A on mains, 1.5-20A on generator
Rated voltage (Ue)	V~	240
Rated frequency	Hz	50
Rated insulation voltage	V	500
Transfer time	sec.	8-12
Restoring time	sec.	2-4 (Premium ACCL) & 0-2 (3M ACCL)
Utilization category		AC 31A
Class of equipment		PC
Environment		B
Indication		Mains, Generator, Load, Overload
Ambient temp.	°C	-5 to + 55
Electrical life	(No. of operations)	6000
Rated impulse voltage	kV	2.5
Duty		Uninterrupted
Pollution degree		2
Conditional short circuit current (Inc)	kA	3
Protection class		IP20
Mounting		standard mounting RAIL (35mmx7.5mm)
Mounting position		Vertical /Horizontal
Terminal Capacity	mm^2	10
Weight	g	350

PREMIUM SPN ACCL

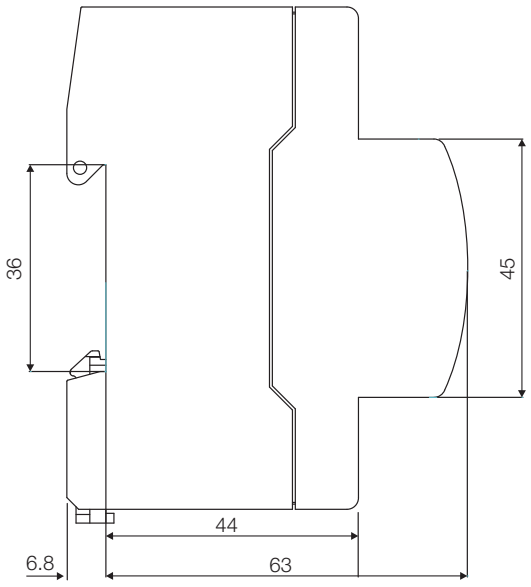
PREMIUM SPN ACCL
(Automatic Source Changeover with Current Limiter)

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

Dimensions (in mm)



Front view



Side view

SPN ACCL

Automatic Changeover With Current Limiter (ACCL)

An indispensable tool to automate power distribution, protect expensive gensets and prevent fatal risks - The power instability in developing countries along with the inefficient rationalized power distribution creates a need for the alternative source of power, to back up the utility supply, and hence, most of the commercial and residential complexes set-up alternate power sources, such as gensets, to provide efficient back-up for their power needs. However, most of these users of alternate power still depend on manual change-over, which leads to issues such as increased downtime, disruption in key activities as well as critical damage to the expensive equipment and could also prove fatal to the operators.

Nation's leading player in power generation and distribution equipment and solutions, now offers HAVELLS ACCL, a fully automatic high precision microcontroller based 'Source Changeover' device, which also has current limiting function and offers easy and 'controllable' changeover between main power supply and generator supply.

With these inherent strengths, HAVELLS ACCL is been increasingly adopted by leading power consumers, both at commercial as well as residential levels, as a strong and proven power distribution management tool.

So go ahead, and empower your premises and power distribution with HAVELLS ACCL today!

Feature Benefits of Havells SPN ACCL

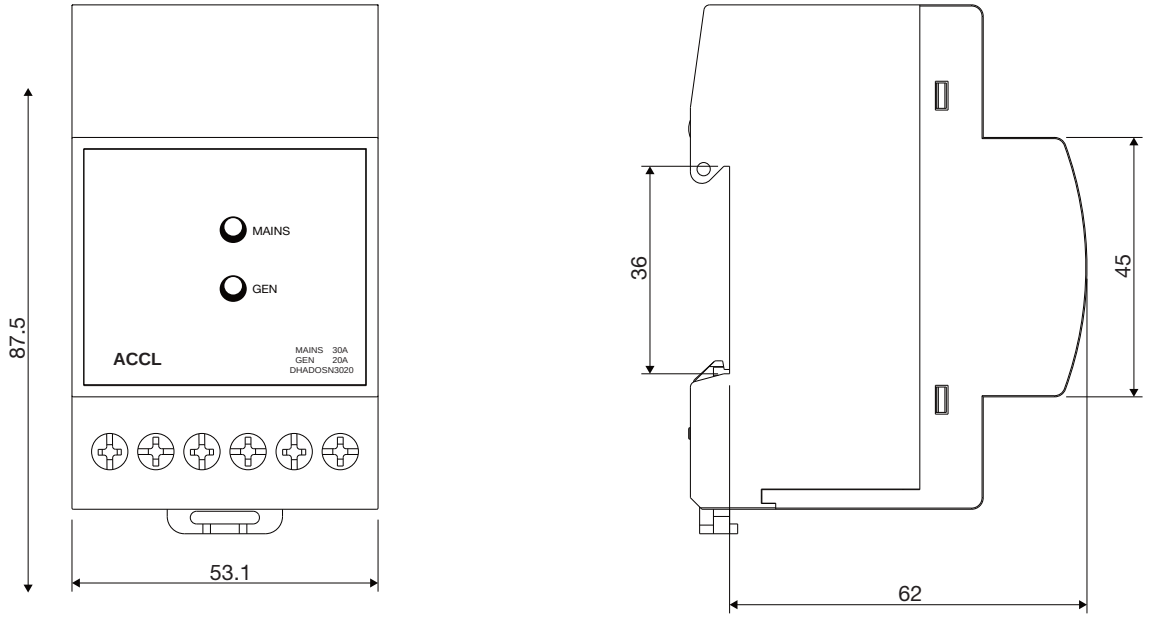
Features	Havells Premium SPN ACCL		Havells 3 Module SPN ACCL		Other Competitor Products	
OFF loadChangeover	✓	First Load is disconnected then changeoever to other supply takes place, ensurng the isolation of two power supplies hence there is no chance of short circuiting between them.	✓	ON Load Changeover	✓	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 Tranient 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	✓	3kA	✓	3kA	✗	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	✓	2.5kV	✓	2.5kV	✗	Not mentioned
Operational voltage	✓	80-300Vac	✓	150-270Vac	✓	180-240Vac
Pre trip indication in overload condition	✓	Provided	✗	Not Provided	✗	Not Provided
Compact design	✓	87.5*71.8*63	✓	87.5*53.1*63	✓	108*72*68

SPN ACCL

SPN ACCL

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

Dimensions (in mm)



Automatic Changeover

The Power instability in developing countries along with the inefficient rationalized power distribution creates a need for the alternative source of power, to back up the utility supply. This further necessitates the automation, in the distribution system as the rate of power outage & low voltage output becomes predominantly high. Most of the Residential & commercial processes are dependent on power supply & if the process of changeover is manual, this will not only create the hindrance in important activities but it may also damage the device or machine from human error during the changeover.

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

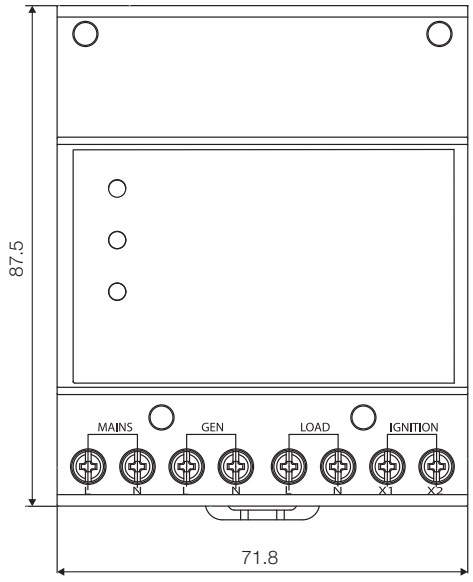
Technical Specification		
Standard Conformity		IEC 60947-6-1
No. of Poles		1P+N
Rated current (Ith)	A	30
Rated voltage (Ue)	V~	240
Rated frequency	Hz	50
Rated insulation voltage	V	500
Restoring Time	sec.	2-4
Mains to Gen transfer time	sec.	12-15
Rated impulse voltage (Uimp)	kV	2.5
Utilization Category		AC 31A
Conditional short circuit current	kA	3
Indication		Mains, Generator, Load
Degree of protection		IP-20
Ambient Temp.	˚C	-5 to +55
Electrical Life	(No. of operations)	6000
Mounting		Standard mounting RAIL (35mmx7.5mm)
Mounting Position		Vertical /Horizontal
Terminal Capacity	mm^2	10
Weight	g	365
Dimensions (in mm)		87.5 x 71.8 x 63

Automatic Changeover

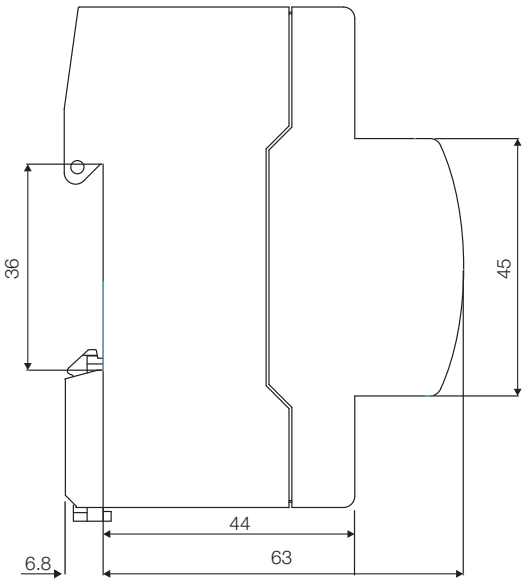
Automatic Changeover

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

Dimensions (in mm)



Front view



Side view

TPN ACCL

Three Phase Automatic Changeover With Current Limiter (TPN ACCL)

The Power instability in developing countries along with the inefficient rationalized power distribution creates a need for the alternative source of power, to back up the utility supply. This further necessitates the automation, in the distribution system as the rate of power outage & low voltage output becomes predominantly high. Most of the Residential & commercial processes are dependent on power supply & if the process of changeover is manual, this will not only create the hindrance in important activities but it may also damage the device or machine from human error during the changeover.

Havells TPN ACCL is a fully automatic high precision microcontroller based device and is ideally suited for proper/efficient utilization of standby generator used in multi-storied apartments, commercial complexes etc.

Technical Specification		
Standard Conformity		IEC 60947-6-1
No. of Poles		3P+N
Rated current (In)		40A/63A/80A on mains, 10-63A on generator
Rated voltage (Ue)	V~	415 / 220
Rated frequency	Hz	50
Transfer Time	sec.	8-12
Restoring Time	sec.	2-4
Rated Impulse Voltage (Uimp)	kV	6
Utilization Category		AC 31A
Class of Equipment		PC
Environment		B
Indicationt		Mains, Generator, Load, Overload (R,Y,B), mode of operation (auto/manual)
Pollution Degree		II
Conditional Short Circuit Capacity	kA	5
Ambient Temp.	˚C	- 5 to + 55
Electrical Life	(No. of operations)	6000
Mounting		Surface mounting
Mounting Position		Vertical
Terminal Capacity	mm^2	16/35
Duty		Uninterrupted
Weight	Kg	4.5/9.4
Dimensions	mm^3	260 x 243 x 115 /260 x 243 x 150/383 x 333 x 150

TPN ACCL

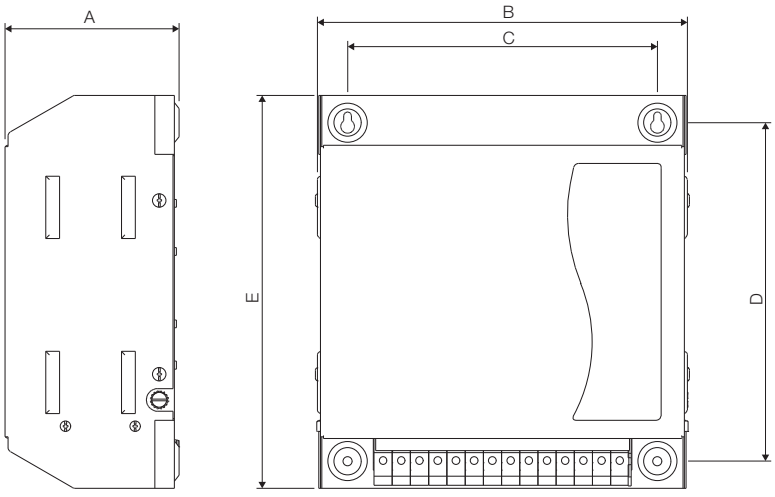
TPN ACCL (TPN/SPN)
(Automatic Source Changeover with Current Limiter)

Gen Rating	Description	Cat. No.	Cat. No. with GEN Start/Stop
20A	40A/20A TPN/SPN ACCL	DHACOTN4020	DHACWTN4020
25A	40A/25A TPN/SPN ACCL	DHACOTN4025	DHACWTN4025
30A	40A/30A TPN/SPN ACCL	DHACOTN4030	DHACWTN4030
40A	40A/40A TPN/SPN ACCL	DHACOTN4040	DHACWTN4040
20A	63A/20A TPN/SPN ACCL	DHACOTN6320	DHACWTN6320
25A	63A/25A TPN/SPN ACCL	DHACOTN6325	DHACWTN6325
30A	63A/30A TPN/SPN ACCL	DHACOTN6330	DHACWTN6330
40A	63A/40A TPN/SPN ACCL	DHACOTN6340	DHACWTN6340
63A	80A/63A 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
20A	40A/20A TPN/TPN ACCL	DHACOTT4020	DHACWTT4020
25A	40A/25A TPN/TPN ACCL	DHACOTT4025	DHACWTT4025
30A	40A/30A TPN/TPN ACCL	DHACOTT4030	DHACWTT4030
40A	40A/40A TPN/TPN ACCL	DHACOTT4040	DHACWTT4040
20A	63A/20A TPN/TPN ACCL	DHACOTT6320	DHACWTT6320
25A	63A/25A TPN/TPN ACCL	DHACOTT6325	DHACWTT6325
30A	63A/30A TPN/TPN ACCL	DHACOTT6330	DHACWTT6330
40A	63A/40A TPN/TPN ACCL	DHACOTT6340	DHACWTT6340
63A	80A/63A TPN/TPN ACCL	DHACOTT8063	–

Dimensions (in mm)



Side view

Front view

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

EURO-II

TIME SWITCH

Havells introduces the new range of Time Switches. The range offers a variety of feature benefits such as Controlling the opening and closing of electrical circuits according to a scheduled program, Minimum switching time, Internal battery to enable the timing function in case of power failure, Daily and weekly versions, Simple and compact design.

Digital Time Switch -

Daily & weekly program

Program Repeatability -

8 ON/OFF setting for Digital Programmable

Cable Terminals -

Suitable for copper and aluminum cables,

Features

- Digital Time Switch with daily & weekly program
- Text oriented user guidance in display
- Program repeatability with 8 ON/OFF setting for Digital Programmable & 6 ON/OFF setting for Astronomical Time Switch
- 150 hours running reserve for Digital Programmable Time Switch & Programmable Time Switch 24 Hour & 48 hours running reserve for Astronomical Time Switch
- Minimum Switching Time
  - 1 Min. for Digital Programmable & Astronomical Time Switch
  - 15 Min. for Programmable Time Switch 24 Hour

Range

- Programmable Time Switch 24 Hour
- Digital Weekly Programmable Time Switch
- Astronomical Programmable Time Switch
- Staircase Light Time Switch

Technical Specification	
Operating Voltage	220 - 240 Vac
Rated Frequency	50 Hz
Width	54.5 mm
Weight	0.2 kg
Installation Type	DIN Rail
Type of Contact	Changeover Contact
Program Functions	ON / OFF
Number of Memory Locations	48
Power Reserve	150 Hrs
Max. Switching Capacity at 250 VAC, cosΦ = 1	16 A
Max. Switching Capacity at 250 VAC, cosΦ = 0.6	10 A
Incandescent / Halogen Lamps	2300 watt
Shortest Switching Time	15 Min
Mechanical Life	10^7
Electrical Life	10^5
Time Accuracy	≤ 1 s/day
Power Consumption	5 VA
Degree of Protection	IP 20
Ambient Temperature	-10 ºC to + 55 ºC

Programmable Time Switch 24 Hour

Programmable Time Switch 24 Hour has a 24h dial and is used to switch an electrical circuit “ON” or “OFF” at selected times during a period of time programmed in advance. A program consists of a closing time and an opening time for a circuit.

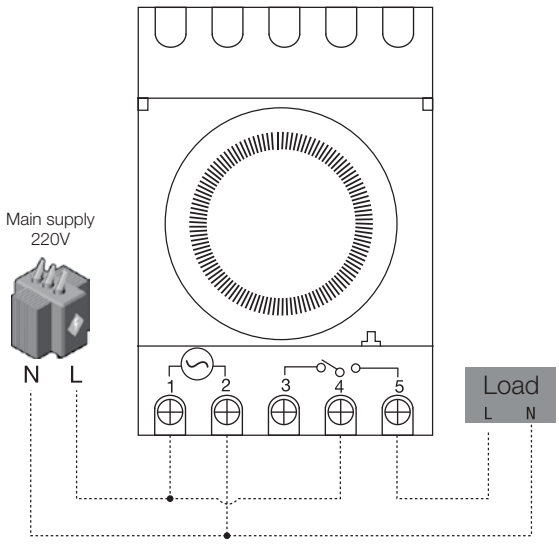
Applications:

The Programmable 24 Hour Electronic Time Switch is used in pre-programmed switching of:

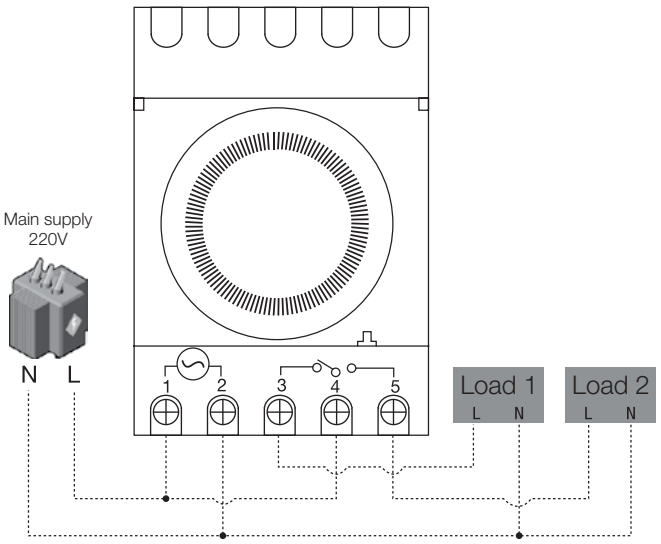
- Lighting (car parking, advertising sign boards)
- Heating equipment (home & work environment, water heating etc.)
- Motors for pumps & fans

Wiring Diagram

Single Load

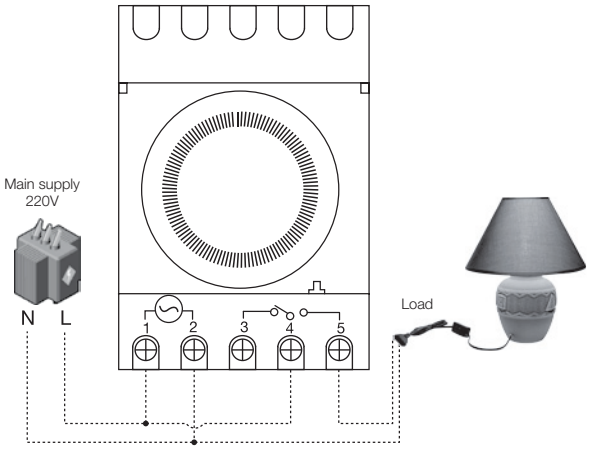


Multiple Load

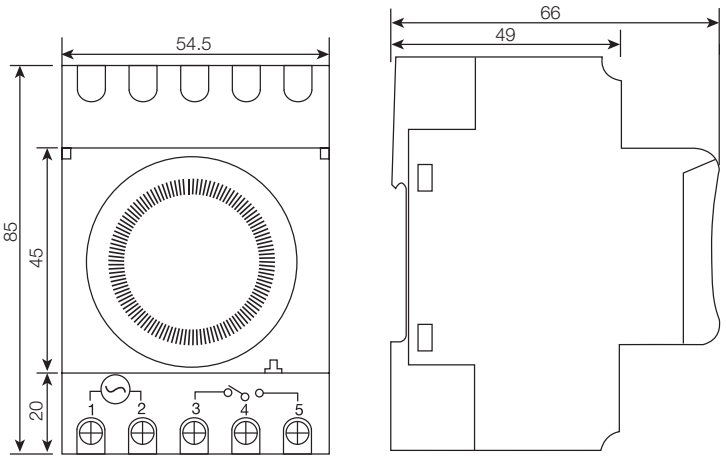


For example

Consider an Electric lamp in connection with Programmable Time Switch 24 Hour



Dimensions (in mm)



Time Switch

Programmable Time Switch 24 Hour

Description	Cat. No.
Programmable Time Switch 24 Hour	DHTDD15016

Technical Specification	
Operating Voltage	240 Vac
Rated Frequency	50 Hz
Width	36 mm
Weight	0.150 kg
Installation Type	DIN Rail
Type of Contact	Changeover Contact
Program	Weekly Program
Program Functions	ON / OFF
Number of Programming	8 ON / 8 OFF
Power Reserve	150 Hrs
Max. Switching Capacity at 250 VAC, cos = 1	16 A
Max. Switching Capacity at 250 VAC, cos = 0.6	10 A
Incandescent / Halogen Lamps	2300 watt
Shortest Switching Time	1 Min
Mechanical Life	10^7
Electrical Life	10^5
Time Accuracy	≤ 1 s/day
Power Consumption	5 VA
Degree of Protection	IP 20
Ambient Temperature	-10 ºC to + 55 ºC

Digital Weekly Programmable Time Switch

Time Switches are offered in order to guarantee the opening & closing of electrical circuits according to the scheduled program. Havells offers four types of time switches to satisfy the user requirement.

Digital Weekly Programmable Time Switch automatically turns lighting or other loads on/off when the programmed on/off time expires. Depending on the day of the week (Mon - Sun) different daily programs can be configured.

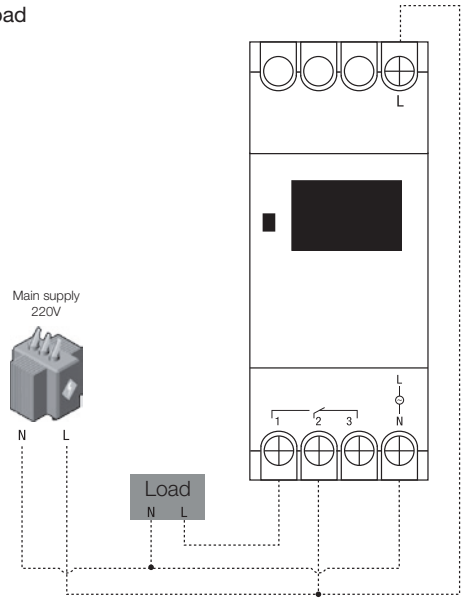
Applications

The Digital Weekly Programmable Time Switch can be used in pre – programmed switching of:

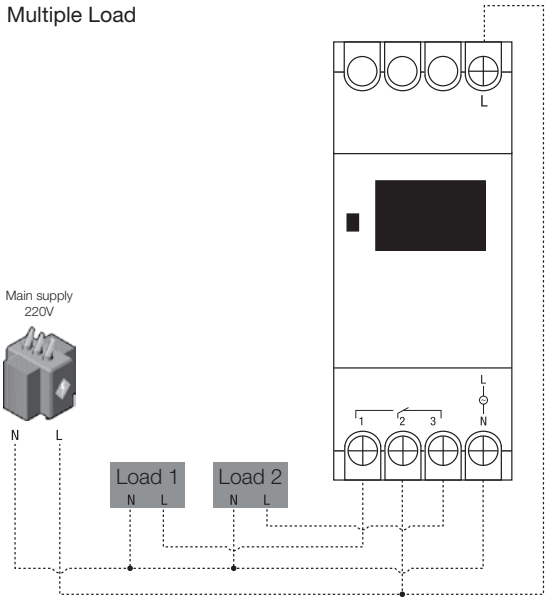
- Lighting (car parking, advertising sign boards)
- Heating equipment (Home & work environment, water heating etc.)
- Motors for pumps & fans

Wiring Diagram

Single Load

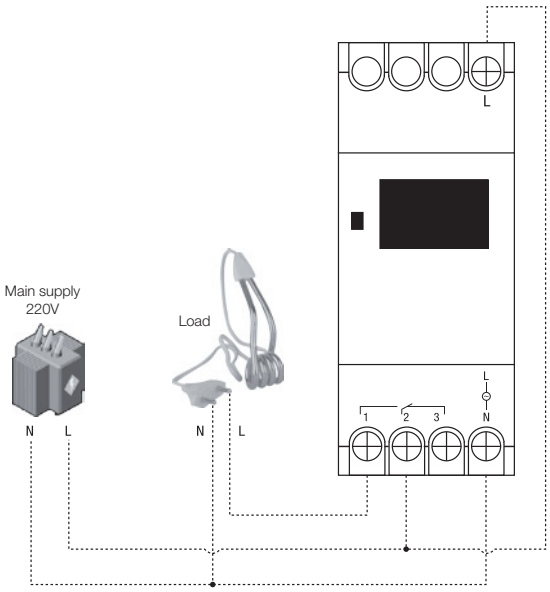


Multiple Load

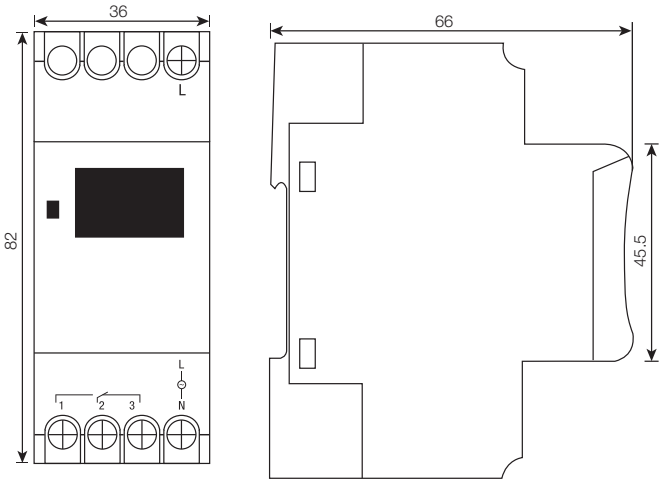


For example

Consider an Electric Heater in connection with Programmable Time Switch



Dimensions (in mm)



Time Switch

Digital Weekly Programmable Time Switch

Description	Cat. No.
Digital Weekly Programmable Time Switch	DHTAW01016

Technical Specification	
Operating Voltage	240 Vac
Rated Frequency	50 Hz
Width	36 mm
Weight	0.125 kg
Installation Type	DIN Rail
Type of Contact	Changeover Contact
Program Functions	ON / OFF
Number of Programming	8 ON / 8 OFF
Power Reserve	48 Hrs
Max. Switching Capacity at 250 VAC, cos = 1	16 A
Max. Switching Capacity at 250 VAC, cos = 0.6	10 A
Incandescent / Halogen Lamps	1000 watt
Shortest Switching Time	1 Min
Mechanical Life	10^7
Electrical Life	10^5
Time Accuracy	≤ 2 s/day
Power Consumption	< 4 VA
Degree of Protection	IP 20
Ambient Temperature	-10 °C to + 40 °C

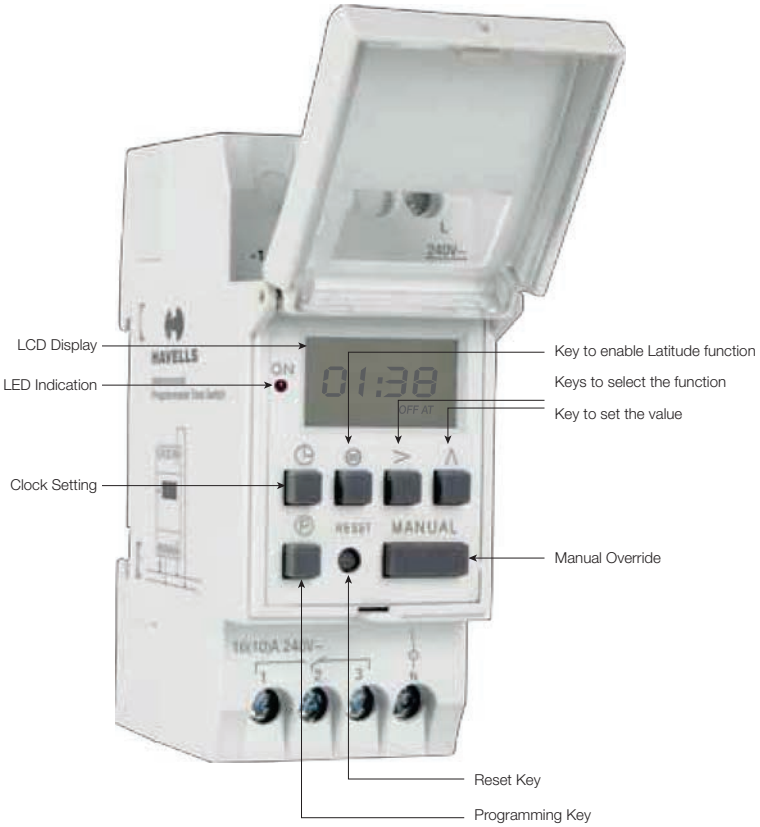
Astronomical Weekly Programmable Time Switch

Astronomical Programmable Time Switch automatically adjusts the set time along with seasonal variation to control ON/OFF for lighting on purpose of realizing that light is turned on when sun sets & turned off when sun rises.

Applications

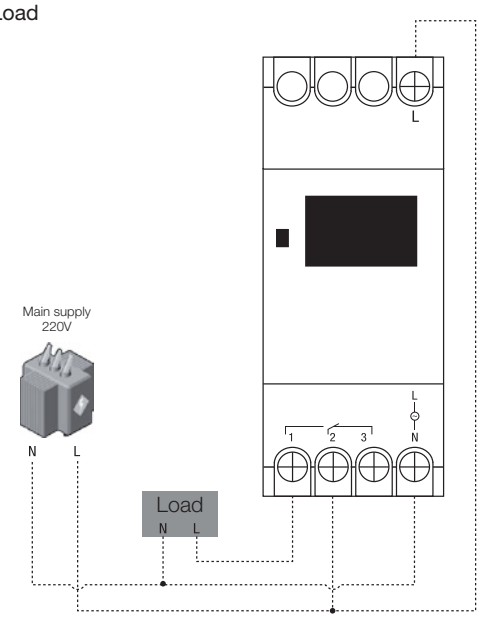
The Astronomical Time Switch is used in controlling:

- Street lights
- Advertising sign boards
- Car parking lights
- Garden lights
- Lights in shop windows

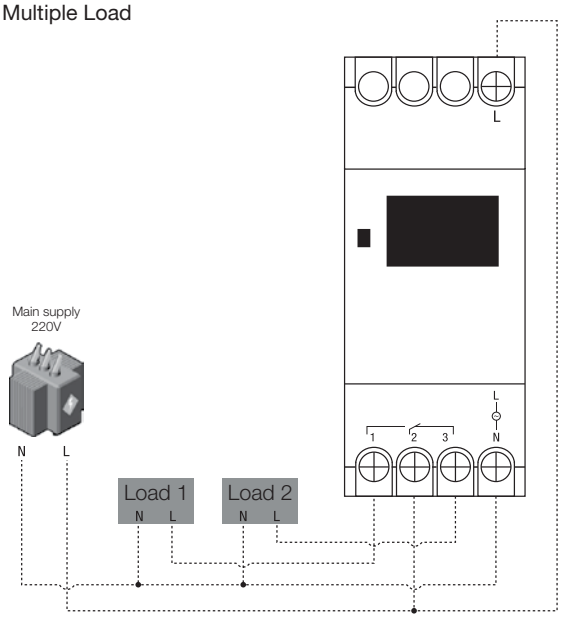


Wiring Diagram

Single Load

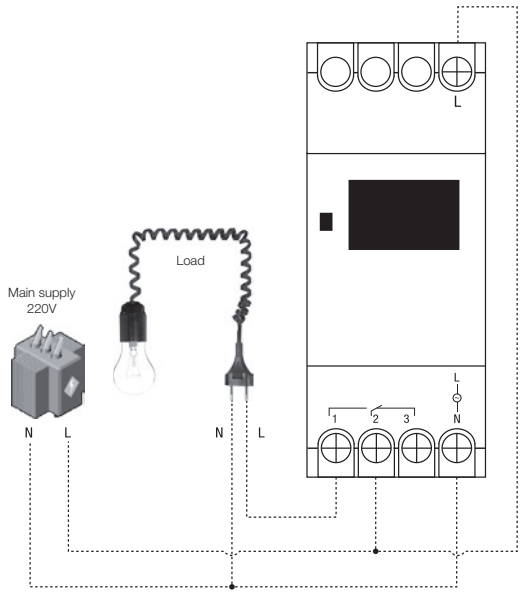


Multiple Load

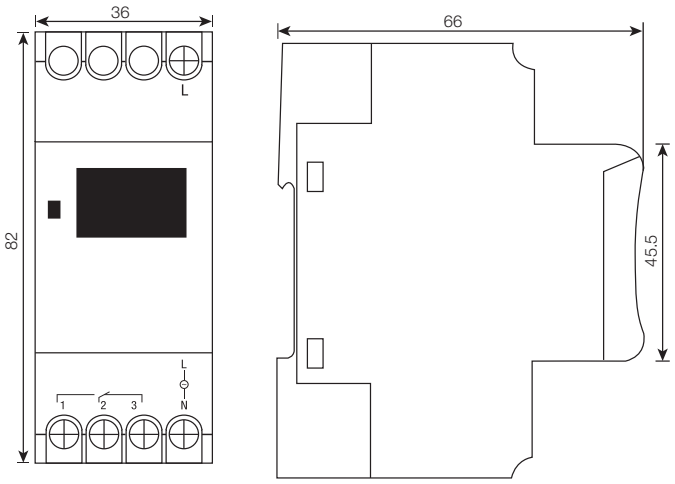


For example

Consider an Electric Bulb in connection with
Astronomical Weekly Programmable Time Switch



Dimensions (in mm)



Time Switch

Astronomical Weekly Programmable Time Switch

Description	Cat. No.
Astronomical Weekly Programmable Time Switch	DHTBW01006

Technical Specification	
Operating Voltage	240 Vac
Rated Frequency	50 Hz
Width	17.5 mm
Weight	0.075 kg
Installation Type	DIN Rail
Adjustment Range	0.5 - 20 Min
Type of Contact	NO Contact
Type of Connection	3-/4- conductor
Max. Switching Capacity at 250 Vac, cos = 1	16 A
Max. Switching Capacity at 250 Vac, cos = 0.6	10 A
Incandescent / Halogen Lamps	2300 watt
Switch for Permanent Light	Sliding Switch
Degree of Protection	IP 20
Ambient Temperature	-10 ºC to + 55 ºC

Staircase Light Time Switch

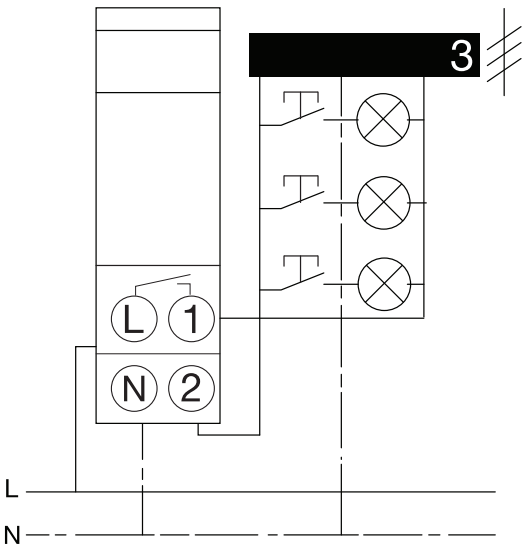
Staircase Light Time Switch is a variable delay timer to control stairwell lighting. A momentary action push button will initiate its output, which will then 'time out' after a pre - set delay has elapsed.

Applications:

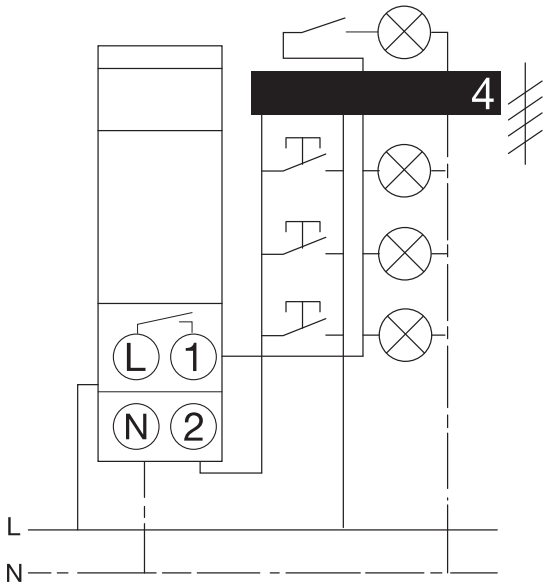
The Staircase Light Time Switch is specifically used in controlling stairwell lighting in multiplexes, hotels, offices etc.

Wiring Diagram

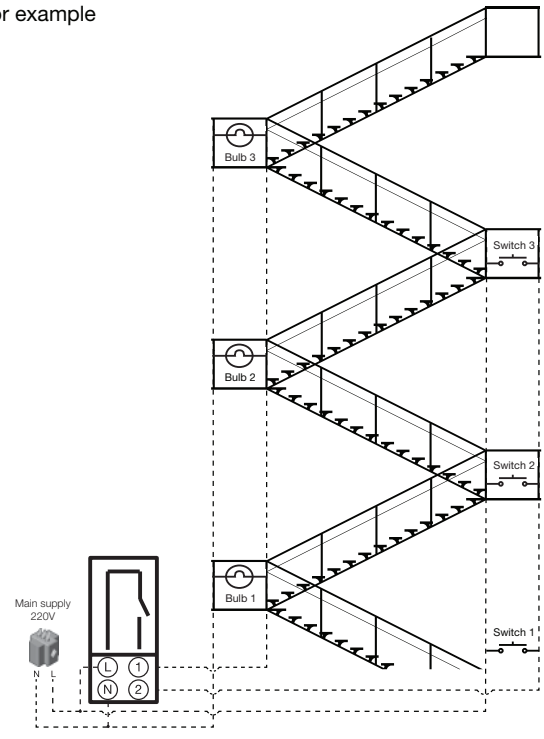
3 Wire Connection



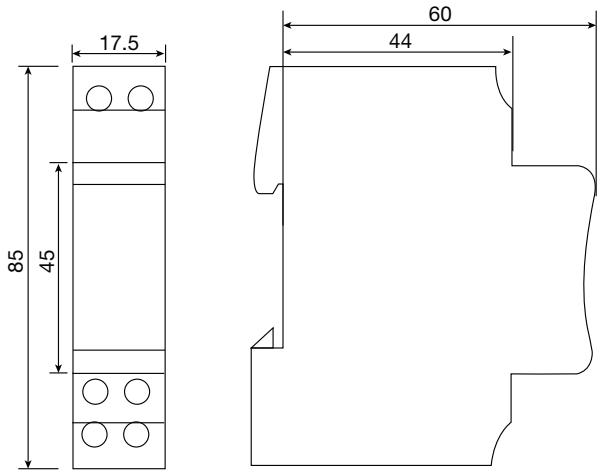
4 Wire Connection



For example



Dimensions (in mm)



Time Switch

Staircase Light Time Switch

Description	Cat. No.
Staircase Light Time Switch (0.5 - 20 Min)	DHTCNX5016

INDICATORS LIGHTS

Havells Indicator Light is a new addition to the product range and can be used in both building and industrial installations. Indicator lights are designed for signaling the incoming supply.

Applications

• Distribution Box • Three Phase Tier DB • Kiosks • Load Line DB
• Meter Boxes • Testing Panels • Switch Boards • MIMIC Panels
• Control panels

Features

- Modular Design enables Indicator Lamp replacement with lens of different varieties Very simple installation and easy to replace
- Easy mounting on DIN rail 35 X 7.5 mm long life & durable

Color

Red, Amber, Blue, Green & Clear

Execution

Single Pole (1P)

Specification

IS / IEC 60947- 5-1

Technical Specification		
Standard Conformity	IS / IEC 60947-5-1	IS / IEC 60947-5-1
Contacts	Rated Operation Voltage	240 V~
	Rating Electrical Power	1.2 watt
	Frequency	50 Hz
	Type of Lamp Socket	E - 10 Thread
	Terminal Capacity	10 mm^2
Light Indication	Color	
	Light	Permanent
	Source	Neon Lamp
Other Data	Mounting on DIN Rail	35 mm x 7.5 mm
	Degree of Protection	IP 20
	Ambient Temperature	-5 to 55°C

Indicator Light

Indicator Light
(In accordance with IS/IEC 60947-5-1) 240V~, 50 Hz

Colour	Pack Qty.	TP Cat. No.
Red	12	DHMCYSPX000
Amber	12	DHMCXSPX000

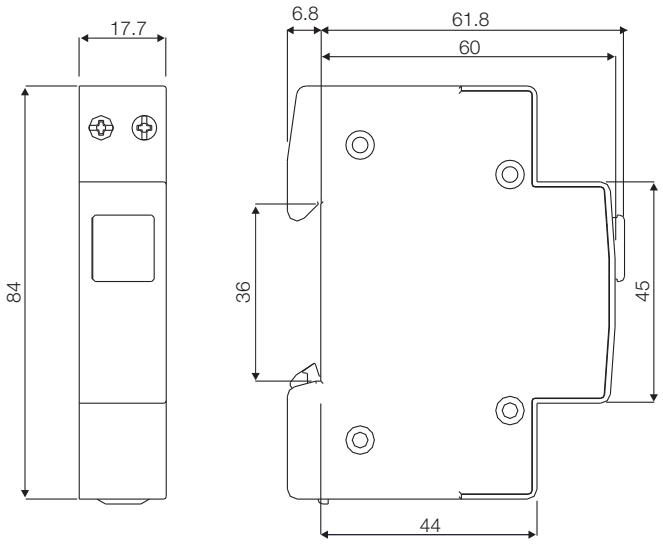
Indicator Light
(In accordance with IS/IEC 60947-5-1) 240V~, 50 Hz

Colour	Pack Qty.	TP Cat. No.
Blue	12	DHMCVSPX000
Green	12	DHMCZSPX000
Clear	12	DHMCWSPX000

Indicator Light (Colour cap)
Indicator Light - Spares

Colour	Pack Qty.	TP Cat. No.
Red	1	DCELDMCL001
Amber	1	DCELDMCL001
Blue	1	DCELDMCL001
Green	1	DCELDMCL001
Clear	1	DCELDMCL001

Dimensions (in mm)



Easy To Replace Spares

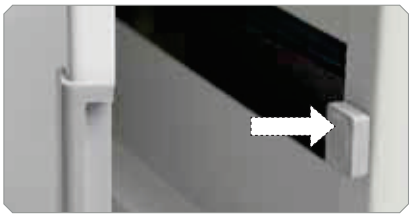
- The whole module
- Color Cap
- Old Lamp

METALICA DISTRIBUTION BOARDS

Metalica series of Distribution Boards is yet another testimony to the advanced Havells research which focuses on user-centered design especially in its aesthetics & engineering qualities, and pivots on the concepts of variety, performance and simplicity of use. The series has been designed to meet the aesthetic requirements of the modern interiors which demand that a distribution board should blend perfectly with other decorative elements of the room, be it the living room of a house or a corporate office or a showroom.

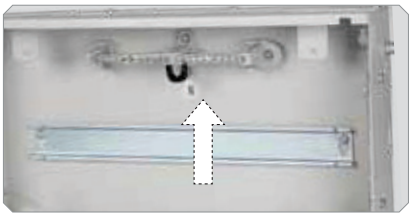
The unique design and 'ease of use' of Metalica Distribution Boards truly set them apart. The premium metallic finish, specially designed curved surface on the front cover and 'Pull To Open' type magnetic door handle reflect that even the smallest of detail has been perfected to ensure superior user experience. The provision for split neutral to provide for two different types of power supply is again a testimony to our extensive research and customer understanding.

Havells Metalica Distribution Boards have been designed using the latest available technology and comply with the following standards: IEC 61439 - 3.



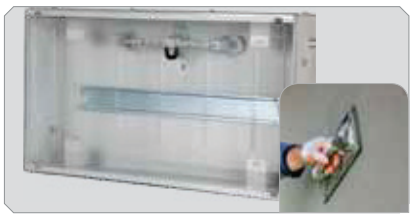
Magnetic door lock with easy to open door handle

Scratch resistant glossy surface



Remove link to use split neutral provision

- Use 1st neutral link for mains supply
- Use 2nd neutral link for stand by supply



Provided with transparent Cement Guard to protect your DB from construction spill over

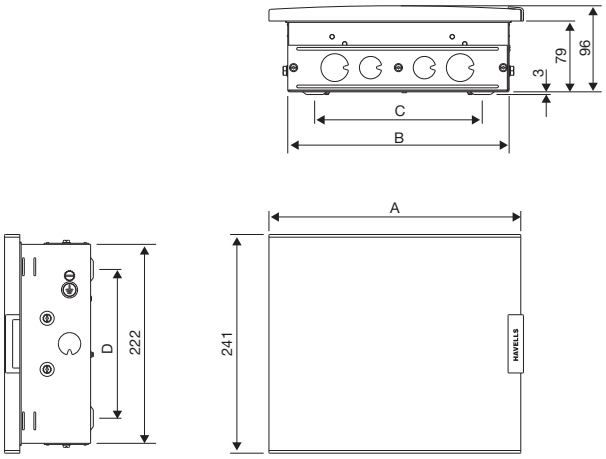
SPN Metalica DB

Range
SPN – 4, 6, 8,12 & 16W

Color
Silverish Grey, Sparkling White & Sparkling Gold

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Magnetic door lock with easy to open door handle
- Scratch resistant glossy surface
- Remove link to use split neutral provision
  - Use 1st neutral link for mains supply
  - Use 2nd neutral link for stand by supply
- Provided with transparent Cement Guard to protect your DB from construction spill over



Dimensions (in mm)

No. of Ways	A	B	C	D	Top		Bottom		Side	Sheet Thickness
					Ø25	Ø31	Ø25	Ø31		
4	209	175	125	172	3	-	3	-	1	1
6	245	211	151	166	3	-	3	-	1	1
8	281	247	187	166	2	2	2	2	1	1
12	353	319	269	176	4	2	4	2	1	1
16	425	391	341	172	4	2	4	2	1	1

Knockout Holes (Ø25)

SPN Metalica DB

No. of Ways	O/G	Sparkling White Cat. No.	Sparkling Gold Cat. No.	Silverish Grey Cat. No.
4	4	DHDNSHODAW04	DHDNSHODGW04	DHDNSHODDW04
6	6	DHDNSHODAW06	DHDNSHODGW06	DHDNSHODDW06
8	8	DHDNSHODAW08	DHDNSHODGW08	DHDNSHODDW08
12	12	DHDNSHODAW12	DHDNSHODGW12	DHDNSHODDW12
16	16	DHDNSHODAW16	DHDNSHODGW16	DHDNSHODDW16

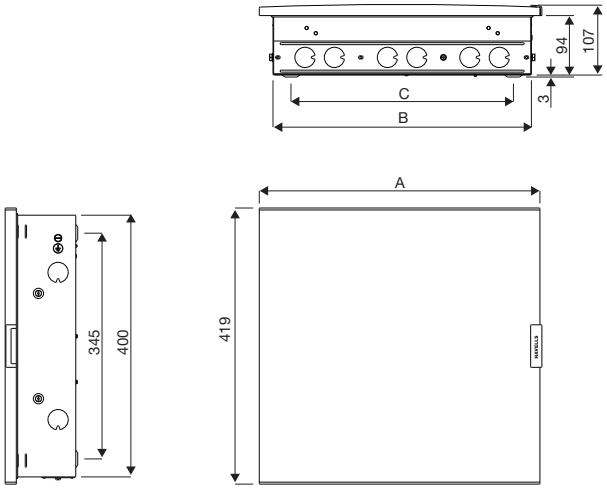
TPN Metalica DB

Range
TPN – 4, 6, 8 & 12W

Color
Silverish Grey, Sparkling White & Sparkling Gold

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Magnetic door lock with easy to open door handle
- Scratch resistant glossy surface
- Remove link to use split neutral provision
  - Use 1st neutral link for mains supply
  - Use 2nd neutral link for stand by supply
- Provided with transparent Cement Guard to protect your DB from construction spill over



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
				Ø31	Ø31		
4	285	251	196	4	4	2	1
6	357	323	268	6	6	2	1
8	429	395	340	6	6	2	1
12	568	534	479	8	8	2	1

Knockout Holes (Ø31)

TPN Metalica DB

No. of Ways	I/C+O/G	Sparkling White Cat. No.	Sparkling Gold Cat. No.	Silverish Grey Cat. No.
4	4+12	DHDNTHODAW04	DHDNTHODGW04	DHDNTHODDW04
6	8+18	DHDNTHODAW06	DHDNTHODGW06	DHDNTHODDW06
8	8+24	DHDNTHODAW08	DHDNTHODGW08	DHDNTHODDW08
12	8+36	DHDNTHODAW12	DHDNTHODGW12	DHDNTHODDW12

PHASE SELECTOR DISTRIBUTION BOARDS

The power instability in developing countries creates the need for phase selection to back up the utility supply. This further necessitates the automation in the distribution system as the rate of power outage and low voltage output becomes predominantly high. Most of the residential and commercial applications are dependent on power supply and if the process of changeover is manual, not only considerable time is wasted, but it may also cause hindrance in important activities. And moreover manual changing is not possible at every time as identifying the phase of power interruption is difficult. The solution to all the above problems can be achieved by Phase Selector Distribution Board

Range:

- Phase Selector (Horizontal - 4 Quadrant)
- Phase Selector (Vertical)
- Automatic Phase Selector DB
- Phase Selector Enclosure (Vertical)
- Automatic Phase Selector Unit

Specification

IEC 61439-3, IS:13032 & IS:8623

Phase Selector (Horizontal - 4 Quadrant)

Range

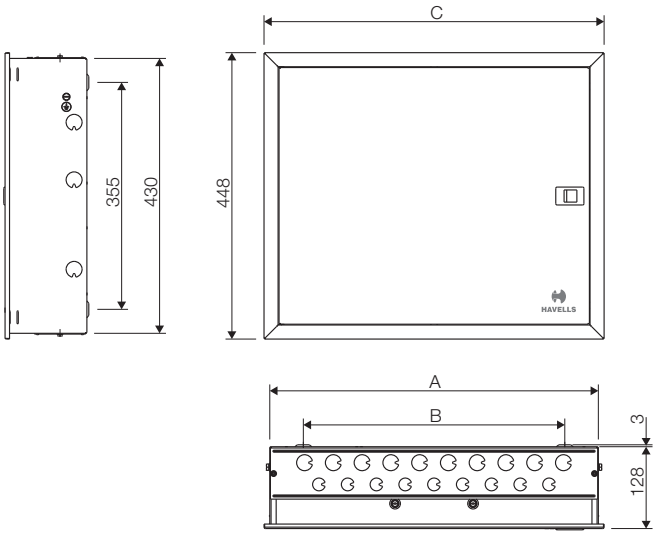
Phase Selector (Horizontal - 4 Quadrant) - 4, 6 & 8W

Specification

IEC 61439-3, IS:13032 & IS:8623

Features

- With inbuilt 3 nos. of 40A/63A phase selector switches and 3 nos piano switches
- Suitable for Flush mounting and Surface mounting
- With 100A copper busbar for each phase
- With neutral bar, earth bar and cable ties for cable management
- Fully insulated busbar and neutral bar
- Provision for 8W incomer, indicator light R, Y, B (FP MCB/ Isolator/RCCB)
- Supplied with wire set
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	D	E	Sheet Thickness
4	478	373	496	430	355	1
6	514	409	532	430	355	1
8	550	445	568	430	355	1

Knockout Holes (Ø31)

Phase Selector (Horizontal - 4 Quadrant)
(with rotary switches, duly wired)

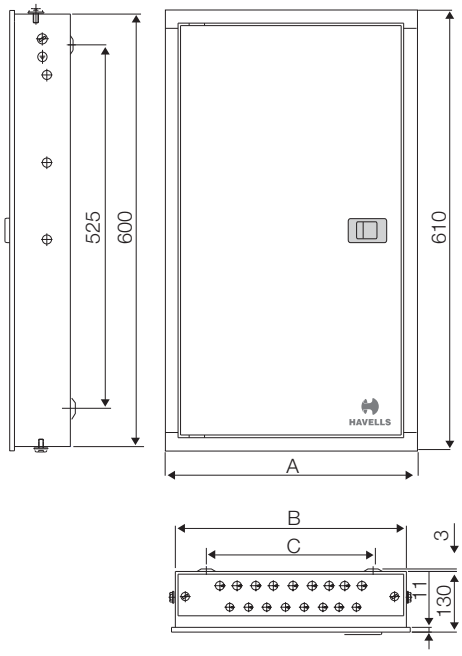
No. of Ways	Rating	Regal Grey Cat. No. (DD)	I/C
4	40A	DHDSCHDRZ04040	Eight way
4	63A	DHDSCHDRZ04063	Eight way
6	40A	DHDSCHDRZ06040	Eight way
6	63A	DHDSCHDRZ06063	Eight way
8	40A	DHDSCHDRZ08040	Eight way
8	63A	DHDSCHDRZ08063	Eight way

Phase Selector (Vertical)

Range
Phase Selector (Vertical) – 4, 6 & 8W

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- With inbuilt 3 nos. of 63A phase selector switches and 3 nos. piano switches
- Suitable for Flush mounting and Surface mounting
- With 100A copper busbar for each phase
- With neutral bar, earth bar and cable ties for cable management
- Fully insulated busbar and neutral bar
- Provision for 8W incomer, indicator light R, Y, B (FP MCB/ Isolator/RCCB)
- Supplied with wire set



Dimensions (in mm)

No. of Ways	A	B	C	Top		Bottom		Side	Sheet Thickness
				Ø25	Ø20	Ø25	Ø20		
4	333	323	248	9	8	9	8	3	1.2
4	333	323	248	9	8	9	8	3	1.2
6	405	395	320	9	8	9	8	3	1.2
6	405	395	320	9	8	9	8	3	1.2
8	405	395	320	9	8	9	8	3	1.2
8	405	395	320	9	8	9	8	3	1.2

Knockout Holes (Ø20 & Ø25)

Phase Selector (Vertical)
(with rotary switches, duly wired & provision for 8W I/C)

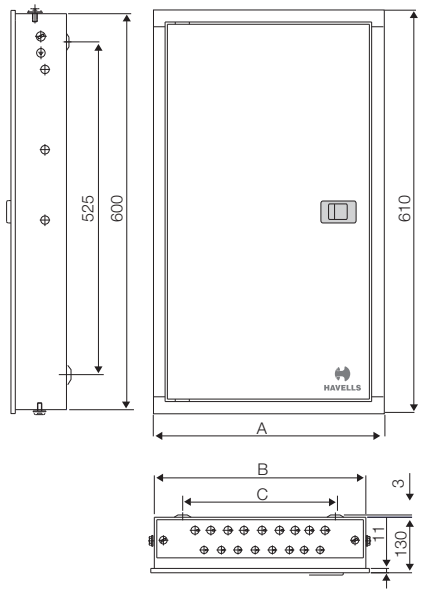
No. of Ways	Rating	Regal Grey Cat. No. (DD)	Pearl Ivory Cat. No. (DD)
4	40A	DHDSNVDRZ04040	DHDSNVDPZ04040
4	63A	DHDSNVDRZ04063	DHDSNVDPZ04063
6	40A	DHDSNVDRZ06040	DHDSNVDPZ06040
6	63A	DHDSNVDRZ06063	DHDSNVDPZ06063
8	40A	DHDSNVDRZ08040	DHDSNVDPZ08040
8	63A	DHDSNVDRZ08063	DHDSNVDPZ08063

Automatic Phase Selector DB

Range
Automatic Phase Selector

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Phase loss Protection
- Under voltage & overvoltage protection
- Manual phase priority selection
- Operational status indication through LEDs
- IP 42
- Incomer with prewired TPN MCB 63A



Dimensions (in mm)

No. of Ways	A	B	C	Top		Bottom		Side	Sheet Thickness
				Ø25	Ø20	Ø25	Ø20		
4	251	211	261	5	4	5	4	3	1.2
6	251	211	261	5	4	5	4	3	1.2
8	323	283	333	7	6	7	6	3	1.2

Knockout Holes (Ø20 & Ø25)

Automatic Phase Selector DB

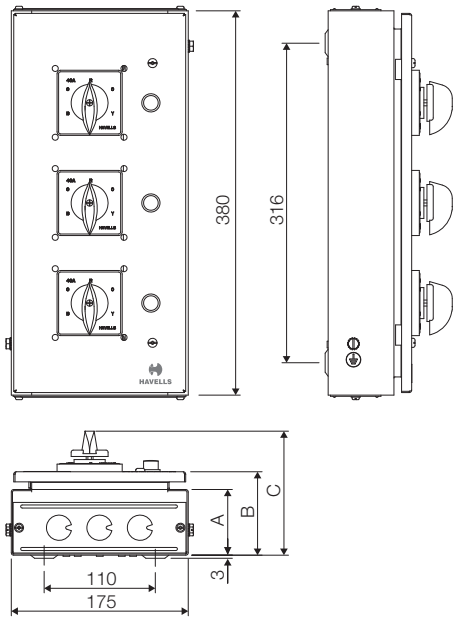
Incomer Rating	Rating APS	Ways	I/C + O/G	Cat. No.	Description
63A TPN MCB	32A	4	8+12	DHDANVDRZ04040	Auto Ph-Sel DB 4W D/D 40A
63A TPN MCB	32A	6	8+18	DHDANVDRZ06040	Auto Ph-Sel DB 6W D/D 40A
63A TPN MCB	32A	8	12+24	DHDANVDRZ08040	Auto Ph-Sel DB 8W D/D 40A

Phase Selector Enclosure (Vertical)

Range
40A to 63A

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Compact DBs which occupy minimum space
- Phase selector DBs provide flexibility in selecting and interchanging the phases in case there is power outage in one particular phase
- Suitable for surface & flush mounting
- Cost Effective Solution
- Supplied with rotary switches, duly wired
- Suitable for use on 240/415V, 50Hz supply
- IP 40



Dimensions (in mm)

Rating	A	B	C	Top	Bottom	Sheet Thickness
40A	65	83	123	7	7	1.2
63A	91	109	144	7	7	1.2

Knockout Holes (Ø31)

Phase Selector Enclosure (Vertical)
(with rotary switches, duly wired)

Rating	Regal Grey Cat. No. (DD)
40A	DHDATVFS40
63A	DHDATVFS63

Automatic Phase Selector Unit

The power instability in developing countries creates the need for phase selection to back up the utility supply. This further necessitates the automation in the distribution system as the rate of power outage and low voltage output becomes predominantly high. Most of the residential and commercial applications are dependent on power supply and if the process of changeover is manual, not only considerable time is wasted, but it may also cause hindrance in important activities. And moreover manual changing is not possible at every time as identifying the phase of power interruption is difficult.

The solution to all the above problems can be achieved by Phase Selector Distribution Board

Functions:

• Automatic Phase Selector Unit introduces an automatic solution to overcome power fluctuations/ phase interruption by selecting next most healthy available phase.

• APS Unit maintains a constant output power supply irrespective of the available input supply by continually monitoring each phase, automatically switching between them and returning to the priority phase as necessary.

• The phase priority selection is manually carried out by the user through a priority selector switch present on the front facia of Automatic Phase selector. The user can select the desired priority sequence according to its own choice i.e. RYB, YBR or BRY.

Phase loss Protection

• In case of phase failure (if RYB priority sequence is selected), the Automatic switching equipment will first check the R phase. If the R phase is present and its phase voltage is in the required range, then the load will run on the R phase only, which will be indicated by the R phase LED blinking at the rate of 1 sec.

• But if the R phase goes off i.e. fails (the LED will stop glowing), then the Automatic switching equipment will check the voltage in the Y phase. If the Automatic switching equipment finds Y phase as the healthiest phase, then it will do the necessary switching to the Y phase within 3 sec (and Y phase LED will start blinking at the rate of 1 sec).

• If it does not find Y phase healthy, it will repeat the above procedure with the B phase.

Restoration of highest priority phase

• In the event of restoration of highest priority phase (say R phase), the entire load will be automatically transferred to that phase within 3 sec.

Undervoltage protection

• If the voltage level of the supplying phase falls below the undervoltage limit of 150V (factory sealed), then the Automatic switching equipment shifts the entire load to the next healthiest phase according to its priority. The under voltage condition on a particular phase is indicated by the LED of the respective phase blinking at the rate of 3 sec.

• The fault LED will also glow indicating the system under fault.

Overvoltage Protection

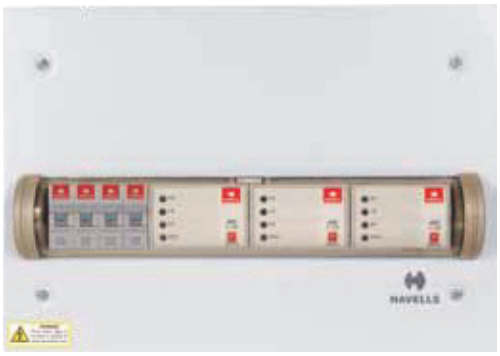
• The overvoltage limit is factory sealed or fixed at 300V. So if the voltage of the supplying phase goes above 300V, then the Automatic switching equipment will shift the entire load to the next available healthiest phase according to the priority set by the user. The over voltage condition on a particular phase is indicated by the LED of the respective phase blinking at the rate of 0.5 sec.

• The fault LED will also glow indicating the system under fault.

Technical Specification	
Incomer MCB	TPN 63A
Standard Conformity	IEC 60947-6-1
No. of poles	3P+N
Rated voltage (Ue)	415 Vac
Operating voltage range	200 to 415 Vac
Rated frequency	50 Hz
Time delay for phase changeover	3 seconds
Utilization category	AC31A
Indication	Individual phase (R, Y, B), load, fault, type of fault (i.e. Undervoltage or overvoltage)
Ambient temp	-5° C to +55° C
Electrical life	6000 operations
Rated impulse withstand voltage (Uimp)	2.5 kV
Conditional short circuit breaking capacity	3 kA
Mounting	DIN rail mounting
Terminal capacity	10 mm^2
Phase Priority selection	Manual (RYB, YBR, BRY)
Undervoltage Protection (L-N)	150 V (factory sealed)
Overvoltage Protection (L-N)	300 V (factory sealed)

Note: The switching capacity of the individual unit (APS) is 32 A. But the total load carrying capacity of APS on any single phase is 63 A (as incomer MCB is of 63 A).

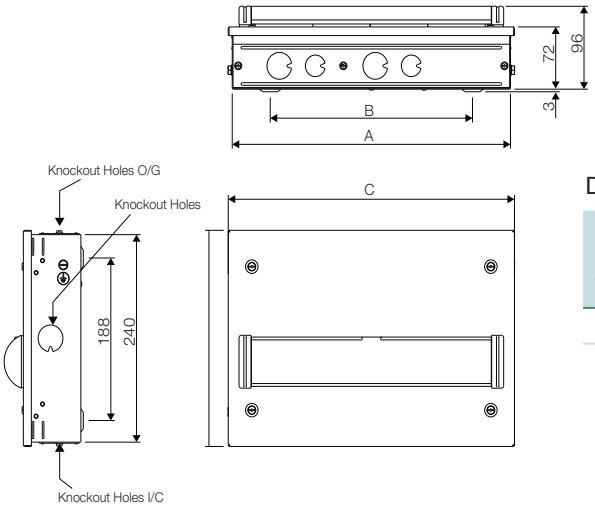
Automatic Phase Selector Unit



Range
Automatic Phase Selector Unit

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Can be easily connected with your exsisting DB
- Automatic Phase selection
- Phase loss Protection
- Under voltage & overvoltage protection
- Manual phase priority selection
- Operational status indication through LEDs
- It comes with prewired TPN MCB of 63A
- IP 42



Dimensions (in mm)

Incomer Rating TPN MCB	APS Rating	A	B	C	Top (O/G)		Bottom (I/C)		Side	Sheet Thickness
					Ø25	Ø31	Ø25	Ø31		
63A	32A	348	253	358	2	2	2	2	1	1

Automatic Phase Selector Unit

Rating	Cat. No.
32A	DHDAMHSCZ00032

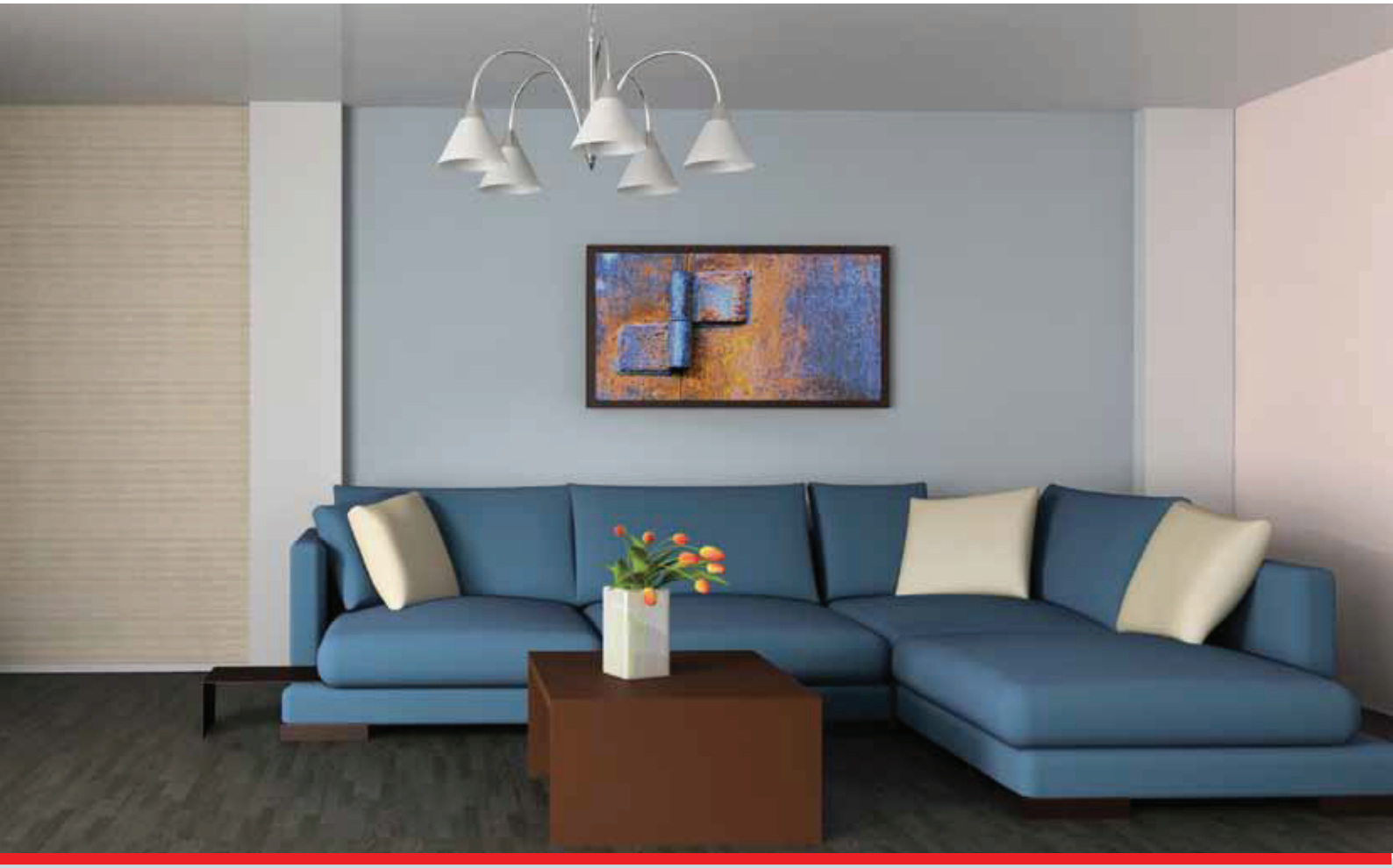
UTILITY DISTRIBUTION BOARDS

Electrical energy has brought along with it a lot of conveniences, beyond imagination. It's consumption has increased manifold be it in domestic, commercial or industrial applications, there by creating a need for scientific & effective method of distribution. The purpose of electrical wiring is to systematically distribute current. In the process the system mainly adopts methods to protect installation and human life from electrical hazards such as short circuit, overload and earth leakage.

The electrical wiring is carried out to distribute current from a single source of supply to various circuits, such an arrangement is made inside an enclosure called Distribution Board.

The Distribution Board is not merely an enclosure but a comprehensive system in itself, comprising of copper bus bars, brass neutral links, earth links to facilitate effective distribution of current. It incorporates safety devices such as MCBs, RCCBs and switch disconnectors, which serves to protect the installation.

A wide range of compact, elegant & economical DBs with unique features, designed & engineered to provide user safety, convenience and operational / maintenance advantages are offered.



Range:

- QVE Series SPN/TPN Distribution Boards
- Consumer Units
- MCB Enclosure SPN
- MCB Enclosure (Plastic & Sheet Steel)
- Plug & Socket

Specification

IEC 61439-3, IS:13032 & IS:8623

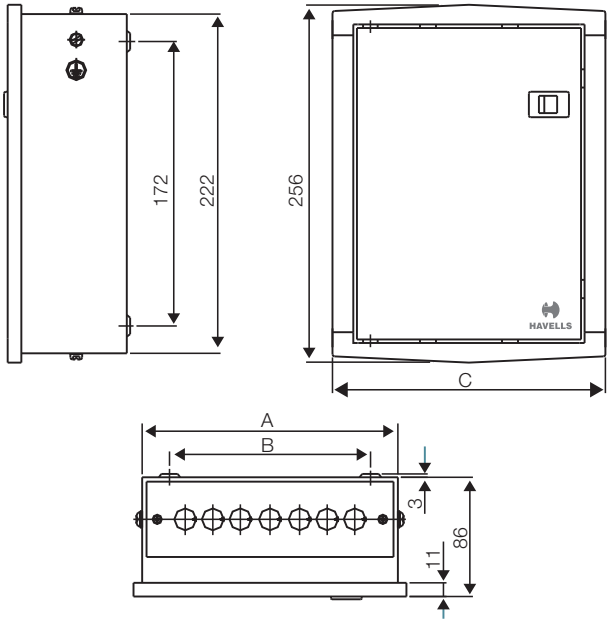
QVE Series SPN DB

Range
SPN – 4, 6, 8,12 & 16W

Color
Pearl Ivory & Regal Grey

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Compact DBs which occupy minimum space
- Raised neutral link for easy wiring
- Suitable for surface & flush mounting
- Detachable din bar with end stoppers for easy assembly of breakers
- Supplied with fully shielded bus-bars
- Level marks for providing indication for fitment in wall
- Supplied with neutral & earth link, top & bottom detachable plates
- Supplied with masking sheet to protect components from cement during plastering
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	175	125	197	3	3	1	1
6	211	151	233	3	3	1	1
8	247	187	269	5	5	1	1
12	319	269	341	7	7	1	1
16	391	341	413	9	9	1	1

Knockout Holes (Ø25)

SPN Distribution Boards

No. of Ways	I/C+O/G	Regal Grey Cat. No. (SD)	Regal Grey Cat. No. (DD)	Pearl Ivory Cat. No. (DD)
4	4	DHDPSHOSRW04	DHDPSHODRW04	DHDPSHODPW04
6	6	DHDPSHOSRW06	DHDQSHODRW06	DHDQSHODPWO6
8	8	DHDPSHOSRW08	DHDPSHODRW08	DHDPSHODPW08
12	12	DHDPSHOSRW12	DHDPSHODRW12	DHDPSHODPW12
16	16	DHDPSHOSRW16	DHDPSHODRW16	DHDPSHODPW16

QVE Series TPN DB

Suitable for MCB / RCCB / Isolator as Incomer

Range

TPN – 4, 6, 8 &12W

Color

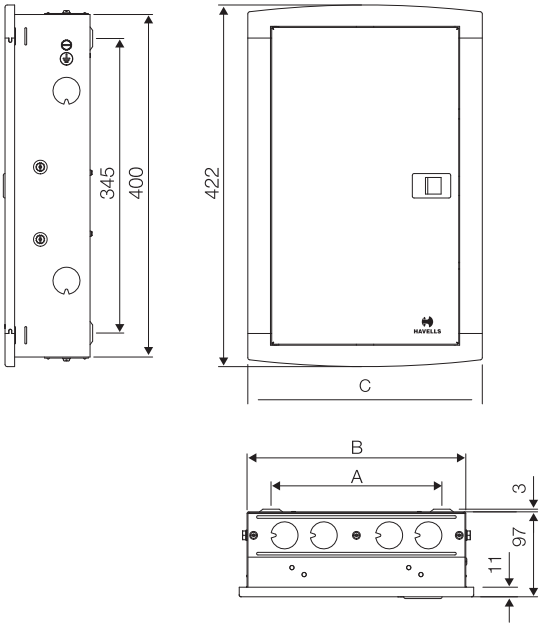
Pearl Ivory & Regal Grey

Specification

IEC 61439 - 3, IS:13032 & IS:8623

Features

- Compact DBs which occupy minimum space
- Raised neutral link for easy wiring
- Suitable for surface & flush mounting
- Detachable Din Bar with end stoppers for easy assembly of breakers
- Supplied with fully shielded bus-bars
- Level marks for providing indication for fitment in wall
- Supplied with neutral & earth link, top & bottom detachable plates
- Supplied with masking sheet to protect components from cement during plastering
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	251	196	269	4	4	2	1
*4	323	268	341	6	6	2	1
6	323	268	341	6	6	2	1
8	395	340	413	6	6	2	1
12	534	479	552	8	8	2	1

Knockout Holes (Ø31)

*8 way Incomer provision

TPN Distribution Boards (for Single Phase Outgoing) Suitable for MCB / RCCB / Isolator as Incomer

No. of Ways	I/C+O/G	Regal Grey Cat. No. (SD)	Regal Grey Cat. No. (DD)	Pearl Ivory Cat. No. (DD)
4	4+12	DHDQTHCSRW04	DHDNTHCDRW04	DHDNTHCDPW04
6	8+18	DHDQTHCSRW06	DHDNTHCDRW06	DHDNTHCDPW06
8	8+24	DHDQTHCSRW08	DHDNTHCDRW08	DHDNTHCDPW08
12	8+36	DHDQTHCSRW12	DHDNTHCDRW12	DHDNTHCDPW12

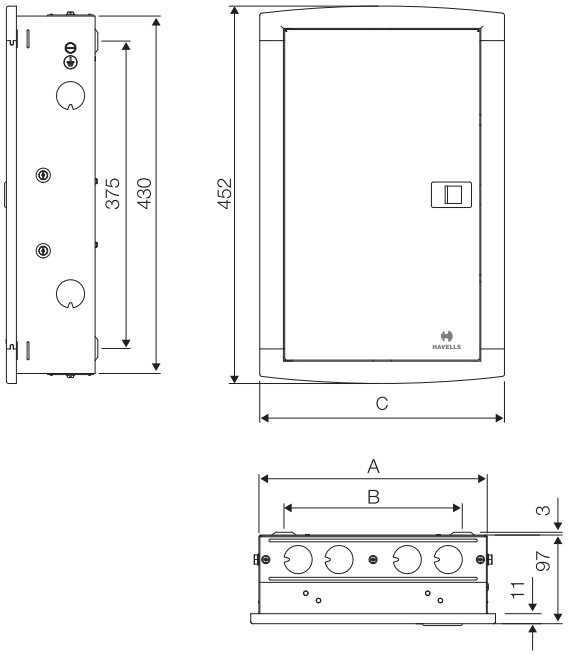
QVE Series TPN DB

Range
TPN – 4, 6, 8 &12W

Color
Pearl Ivory & Regal Grey

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Compact DBs which occupy minimum space
- Raised neutral link for easy wiring
- Suitable for surface & flush mounting
- Detachable Din Bar with end stoppers for easy assembly of breakers
- Supplied with fully shielded bus-bars
- Level marks for providing indication for fitment in wall
- Supplied with neutral & earth link, top & bottom detachable plates
- Supplied with masking sheet to protect components from cement during plastering
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	251	196	269	4	4	2	1
*4	323	268	341	6	6	2	1
6	323	268	341	6	6	2	1
8	395	340	413	6	6	2	1
12	534	479	552	8	8	2	1

Knockout Holes (Ø31)
*8 way Incomer provision

TPN Distribution Boards (for Single Phase Outgoing)

No. of Ways	I/C+O/G	Regal Grey Cat. No. (SD)	Regal Grey Cat. No. (DD)	Pearl Ivory Cat. No. (DD)
4	4+12	DHDPTHOSRW04	DHDPTHODRW04	DHDPTHODPW04
6	8+18	DHDPTHOSRW06	DHDPTHODRW06	DHDPTHODPW06
8	8+24	DHDPTHOSRW08	DHDPTHODRW08	DHDPTHODPW08
12	8+36	DHDPTHOSRW12	DHDPTHODRW12	DHDPTHODPW12

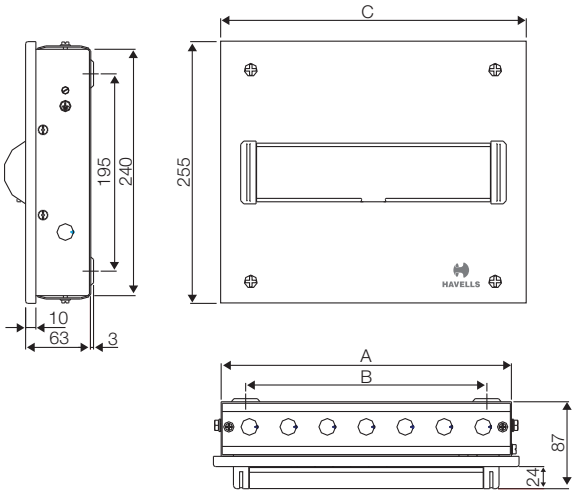
Consumer Units

Range
SPN – 4, 8,12 & 16W

Color
Regal Grey

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Compact DBs which occupy minimum space
- Raised neutral link for easy wiring
- Suitable for surface & flush mounting
- Detachable Din Bar with end stoppers for easy assembly of breakers
- Supplied with fully shielded bus-bars
- Level marks for providing indication for fitment in wall
- Supplied with neutral & earth link, top & bottom detachable plates
- IP 40



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	139	89	154	3	3	1	1
8	211	161	226	5	5	1	1
12	283	233	298	7	7	1	1
16	355	305	370	9	9	1	1

Knockout Holes (Ø25)

Single Door with Acrylic Window
Sheet Steel, Phosphatized, Powder Painted MCB DBs with Bus Bar, Neutral Link, Earth Bar and Din Rail
(In accordance with IS 13032, IS 8623, IEC/BSEN 60439-3)

No. of Ways	Regal Grey Cat. No.
4	DHDMSHOSRA04
8	DHDMSHOSRA08
12	DHDMSHOSRA12
16	DHDMSHOSRA16

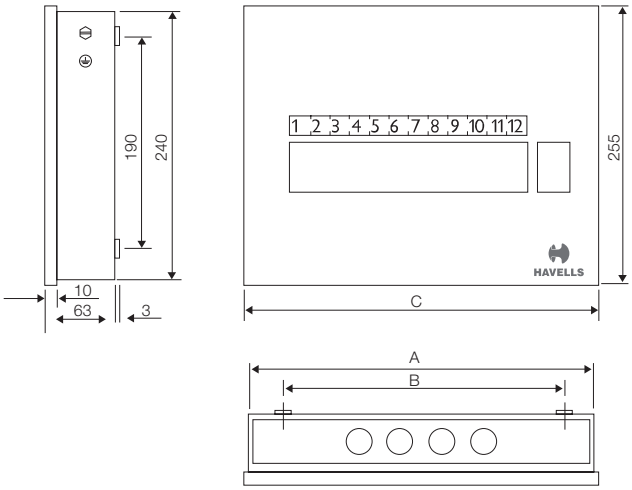
MCB Enclosure

Range
SPN – 2+4, 2+8 & 2+12

Color
Regal Grey

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Compact DBs which occupy minimum space
- Raised neutral link for easy wiring
- Suitable for surface & flush mounting
- Supplied with fully shielded bus-bars
- Level marks for providing indication for fitment in wall
- Supplied with neutral & earth link, top & bottom detachable plates
- IP 40



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Sheet Thickness
2 + 4	211	161	226	4	4	1
2 + 8	283	233	298	6	6	1
2 + 12	355	305	370	8	8	1

Knockout Holes (Ø25)

Single Door Consumer unit without Isolator

No. of Ways	Regal Grey Cat. No.
2+4	DHDCSHOSRW04
2+8	DHDCSHOSRW08
2+12	DHDCSHOSRW12

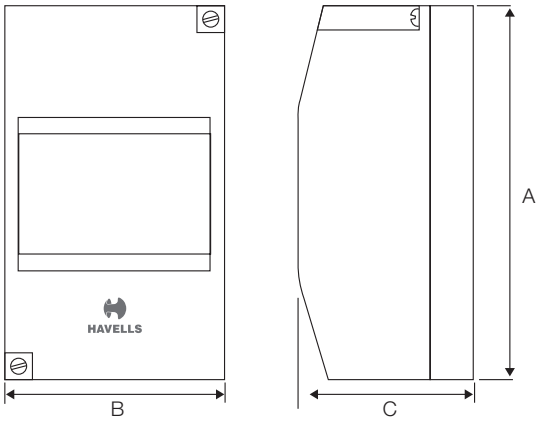
MCB Plactic Enclosure

Range
2 Pole & 4 Pole

Color
Regal Grey

Specification
IS:13032 & IS:8623

Features
- Suitable for surface
- Enclosures for independent cutoff / connection of the eletrical appliances



Dimensions (in mm)

No. of Ways	A	B	C
2	140	45	65
4	140	81	65

MCB Enclosure (Cutout)
(In accordance with IS 13032, IS 8623)

No. of Poles	Cat. No.
2	DHDEPDP
4	DHDEPFP

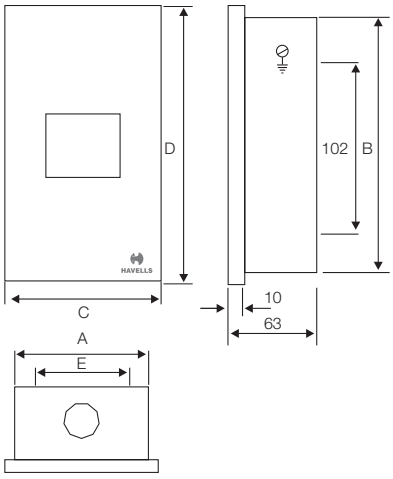
MCB Sheet Steel Enclosure

Range
2 Pole & 4 Pole

Color
Regal Grey

Specification
IS:13032 & IS:8623

Features
- Suitable for surface
- Enclosures for independent cutoff / connection of the eletrical appliances



Dimensions (in mm)

No. of Ways	A	B	C	D	E	Top	Bottom	Sheet Thickness
2	60	160	70	170	30	1	1	1
4	98	180	108	190	62	2	2	1

Knockout Holes (Ø25)

MCB Enclosure (Cutout)
Sheet Steel, Phosphatized, Powder Painted MCB DBs with Bus Bar, Neutral Link, Earth Bar and Din Rail (In accordance with IS 13032, IS 8623

No. of Poles	Cat. No.
2	DHDESDP
4	DHDESFP

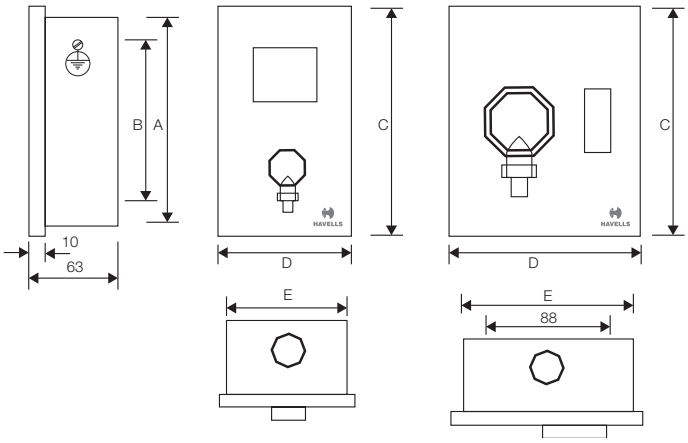
Plug & Socket

Range
SPN – 20A SP, 20A DP & 30A TP

Color
Regal Grey

Specification
IS:13032 & IS:8623

Features
- Compact DBs which occupy minimum space
- Suitable for surface
- Suitable for the protection of application like ACs, Motors etc.



Dimensions (in mm)

No. of Ways	A	B	C	D	E	Top	Bottom	Sheet Thickness
20A SP	152	116	167	139	124	2	2	1
20A DP	152	116	167	139	124	2	2	1
30A TP	278	230	293	129	114	1	1	1

Knockout Holes (Ø25)

Plug & Socket Boards

SPN enclosure with 2 Pole and Earth Metal Plug & Socket for incorporating 10A / 20A SPN / DP MCB		TPN enclosure with 3 Pole and Earth Metal Plug & Socket for Incorporating TP MCB	
Amp	Cat. No.	Amp	Cat. No.
20	DHDPUSN020 / DHDPUDP020	30	DHDPUTN030 / DHDPUTN030

DESIGNER DISTRIBUTION BOARDS

Electrical energy has brought along with it a lot of conveniences, beyond imagination. It's consumption has increased manifold be it in domestic, commercial or industrial applications, there by creating a need for scientific & effective method of distribution. The purpose of electrical wiring is to systematically distribute current. In the process the system mainly adopts methods to protect installation and human life from electrical hazards such as short circuit, overload and earth leakage.

The electrical wiring is carried out to distribute current from a single source of supply to various circuits, such an arrangement is made inside an enclosure called Distribution Board.

The Distribution Board is not merely an enclosure but a comprehensive system in itself, comprising of copper bus bars, brass neutral links, earth links to facilitate effective distribution of current. It incorporates safety devices such as MCBs, RCCBs and switch disconnectors, which serves to protect the installation.

A wide range of compact, elegant & economical DBs with unique features, designed & engineered to provide user safety, convenience and operational / maintenance advantages are offered.

Range:

- DBOXx SPN/TPN Distribution Boards
- Translusent Distribution Boards
- Transparent Distribution Boards
- DBOXx MCB Protected Socket
- DBOXx MCB Protected Power Unit
- Mini MCB DP with Enclosure
- DBOXx MCB Protected Power Unit

Specification

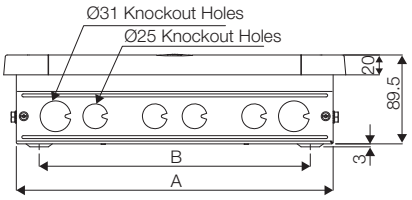
IEC 61439-3, IS:13032 & IS:8623

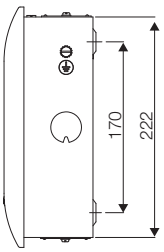
DBOXx SPN

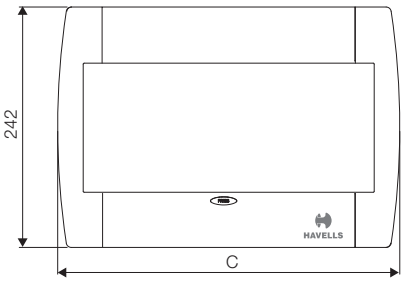
Range
DBOXx – (SPN) 8,12 & 16W

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- These are most elegantly designed DBs, to suit the decor of homes
- Raised neutral link for easy wiring
- Spring loaded outer cover swings open by just pressing the lock as in case of DBOXx
- Supplied with masking sheets to protect components from cement during plastering
- Supplied with neutral & earth link, top & bottom detachable plates
- IP 42







Dimensions (in mm)

No. of Ways	A	B	C	Top		Bottom		Side	Sheet Thickness
				Ø25	Ø31	Ø25	Ø31		
8	247	195	272	2	2	2	2	1	0.8
12	319	267	344	4	2	4	2	1	0.8
16	391	339	415	4	2	4	2	1	0.8

Knockout Holes (Ø25 & Ø31)

DBOXx SPN
The New Style statement for your DBs

No. of Ways	I/C+O/G	SPN Cat. No.
8	8	DHDPSHSDPC08
12	12	DHDPSHSDPC12
16	16	DHDPSHSDPC16

DBOXx TPN

Range

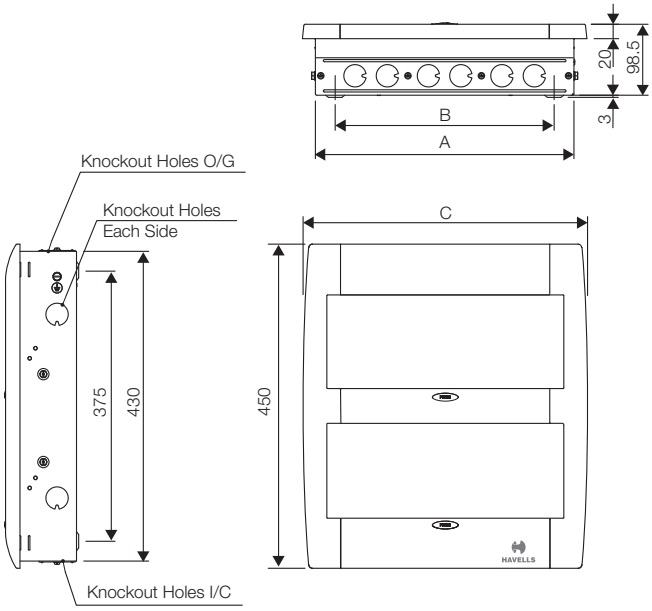
DBOXx – (TPN) 4, 6, 8 & 12W

Specification

IEC 61439-3, IS:13032 & IS:8623

Features

- These are most elegantly designed DBs, to suit the decor of homes
- Raised neutral link for easy wiring
- Spring loaded outer cover swings open by just pressing the lock as in case of DBOXx
- Supplied with masking sheets to protect components from cement during plastering
- Supplied with neutral & earth link, top & bottom detachable plates
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4 / 6	359	304	395	6	6	2	1
8	395	340	431	6	6	2	1
12	539	484	575	8	8	2	1

Knockout Holes (Ø31)

DBOXx TPN

The New Style statement for your DBs

No. of Ways	I/C+O/G	SPN Cat. No.
4/6	8 + 18	DHDPTHODPC06
8	8 + 24	DHDPTHODPC08
12	8 + 36	DHDPTHODPC12

Translusent

Range

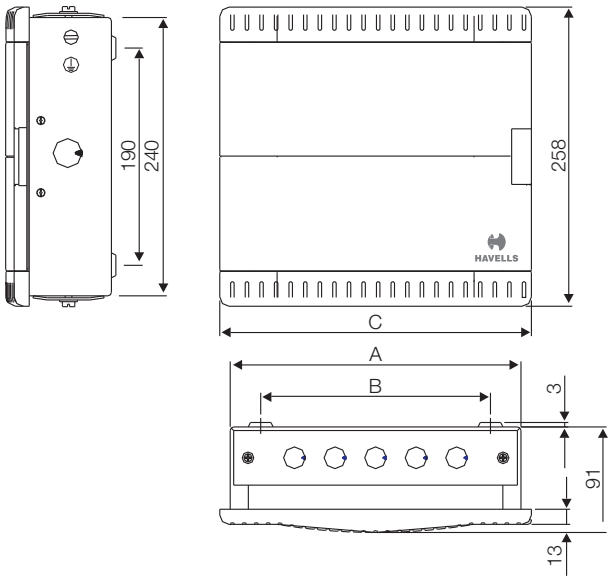
Translusent – (SPN) 4, 8,12 & 16W

Specification

IEC 61439-3, IS:13032 & IS:8623

Features

- These are most elegantly designed DBs, to suit the decor of homes
- Raised neutral link for easy wiring
- Outer Cover in light smoke gray colour
- Supplied with masking sheets to protect components from cement during plastering
- Supplied with neutral & earth link, top & bottom detachable plates
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	179	128	197	3	3	1	1
8	251	200	269	5	3	1	1
12	323	272	341	7	3	1	1
16	395	344	413	8	3	1	1.2

Knockout Holes (Ø25)

Translusent Designer Distribution Boards

No. of Ways	I/C+O/G	Cat. No. Single Phase (DD)
4	4	DHDPSHODRC04
8	8	DHDPSHODRC08
12	12	DHDPSHODRC12
16	16	DHDPSHODRC16

Transparent

Range

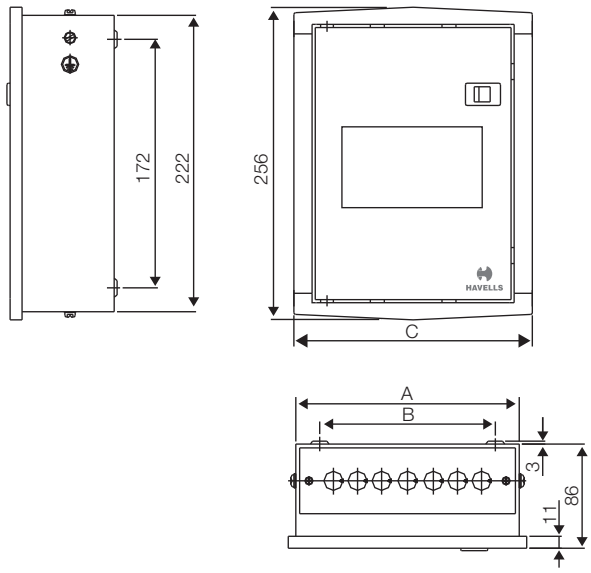
Transparent (SPN) – 4, 8, 12, & 16W

Specification

IEC 61439-3, IS:13032 & IS:8623

Features

- These are most elegantly designed DBs, to suit the decor of homes
- Raised neutral link for easy wiring
- Spring loaded outer cover swings open by just pressing the lock as in case of DBOXx
- Supplied with masking sheets to protect components from cement during plastering
- Supplied with neutral & earth link, top & bottom detachable plates
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	175	125	197	3	3	1	1
8	247	197	269	5	5	1	1
12	319	269	341	7	7	1	1
16	391	341	413	9	9	1	1.2

Knockout Holes (Ø25)

Transparent

No. of Ways	Cat. No. Single Phase (DD)	No. of Ways	Cat. No. Single Phase (DD)
4	DHDPSHODRT04	4	DHDNTHODRT04
8	DHDPSHODRT08	8	DHDNTHODRT08
12	DHDPSHODRT12	12	—
16	DHDPSHODRT16	16	—

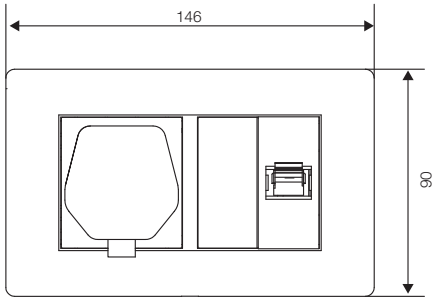
DBOXx MCB Protected Socket

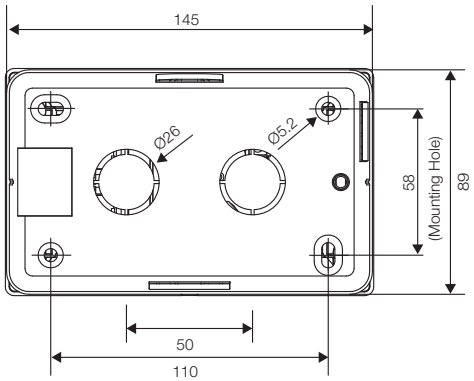
Range
MCB Protected Socket – 16A, 20A & 25A

Specification
IS:13032 & IS:8623

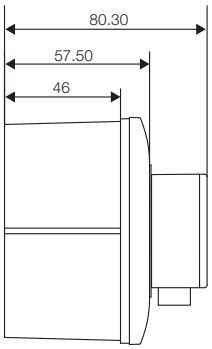
Features
- Aesthetic appeal
- Ideal for local sectioning - Selectivity
- High quality contacts of single phase starter ensures reliability & long life during operations
- Built in MCBs protection, short circuit breaking capacity (3kA)
- Suitable for protection of home appliances like ACs, LCD Geyser, Microwave & Computer etc.

Dimensions (in mm)





(Mounting Hole)



DBOXx MCB Protected Socket

No. of Ways	Cat. No.	Description
(With Sheet Steel Enclosure)		
16A	DHDMCSN0251016	16A MCB DBOXX COMBO
20A	DHDMCSN0251020	20A MCB DBOXX COMBO
25A	DHDMCSN0251025	25A MCB DBOXX COMBO
16A	DHDMCDP0253016	16A MCB DBOXX COMBO DP
20A	DHDMCDP0253020	20A MCB DBOXX COMBO DP
25A	DHDMCDP0253025	25A MCB DBOXX COMBO DP
With Plastic Enclosure (for surface mounting)		
16A	DHDTCSN0251016	16A MCB DBOXX COMBO Plastic
20A	DHDTCSN0251020	20A MCB DBOXX COMBO Plastic
25A	DHDTCSN0251025	25A MCB DBOXX COMBO Plastic
Without Enclosure		
16A	DHDWCSN0251016	16A MCB DBOXX COMBO W/O ENCL.
20A	DHDWCSN0251020	20A MCB DBOXX COMBO W/O ENCL.
25A	DHDWCSN0251025	25A MCB DBOXX COMBO W/O ENCL.
16A	DHDWCM30251016	16A MCB DBOXX COMBO 3M W/O ENCL.
20A	DHDWCM30251020	20A MCB DBOXX COMBO 3M W/O ENCL.
25A	DHDWCM30251025	25A MCB DBOXX COMBO 3M W/O ENCL

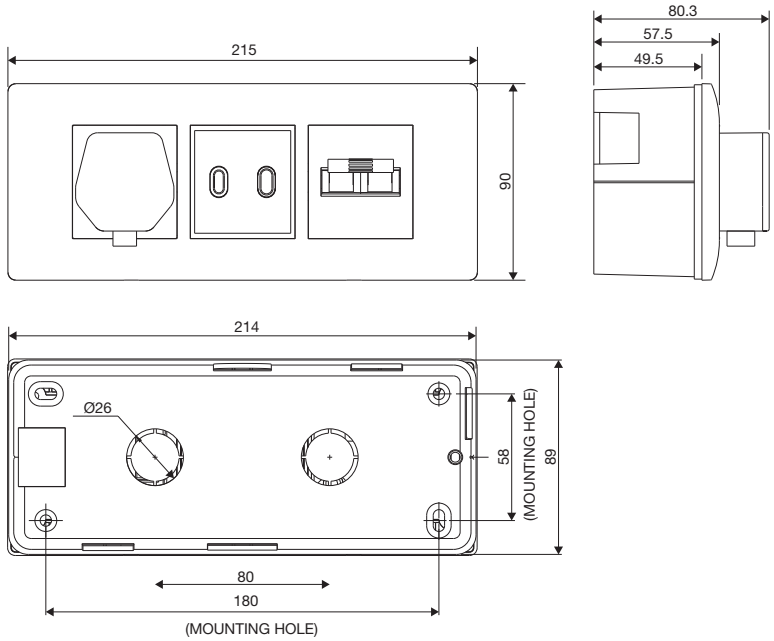
DBOXx MCB Protected Power Unit

Range
DBOXx MCB Protected Power Unit

Specification
IS:13032 & IS:8623

Features
- Aesthetic appeal
- Ideal for local sectioning - Selectivity
- High quality contacts of single phase starter ensures reliability & long life during operations
- Built in MCBs protection, short circuit breaking capacity (3kA)
- Suitable for protection of home appliances like ACs, LCD Geyser, Microwave & Computer etc.

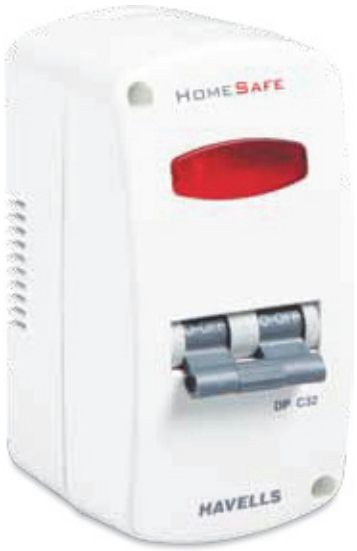
Dimensions (in mm)



DBOXx MCB Protected Power Unit

Rating	Description	Cat. No.
16A	16A MCB Protected Power Unit	DHDUCDP0253016
20A	20A MCB Protected Power Unit	DHDUCDP0253020
25A	25A MCB Protected Power Unit	DHDUCDP0253025

Mini MCB DP with Enclosure HOMESAFE



Havells launches HomeSafe a compact & aesthetic protection device which provides protection against overload & short circuit with help of MCB. It is designed for quick & easy installation.

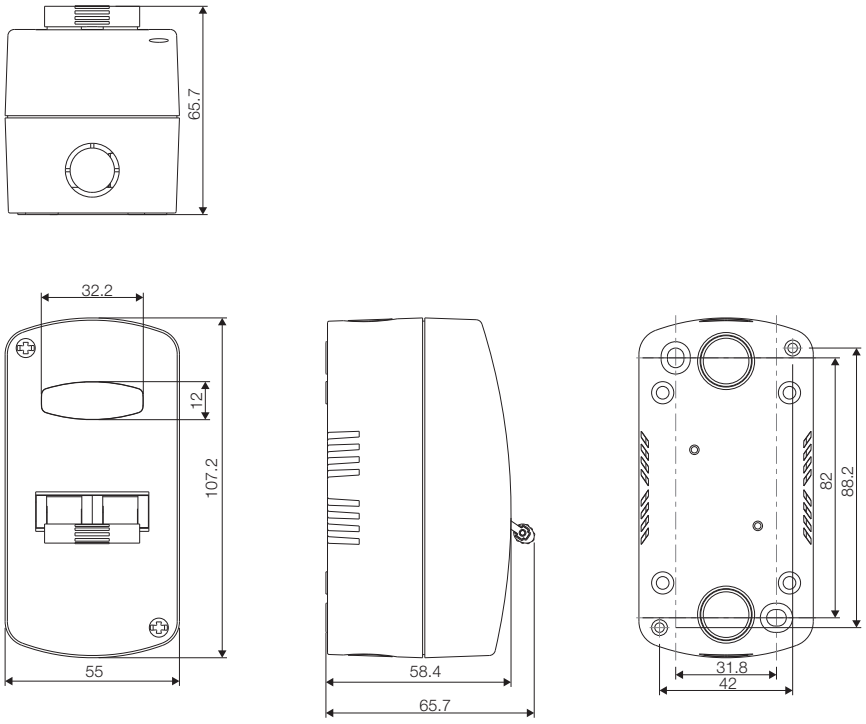
Features

- Appealing & Contemporary Aesthetics
- Compact & Space saving design
- Overload & Short Circuit Protection
- Proven MCB mechanism for longer life
- Easy to Operate & replace
- Completely insulated design
- Indication of Supply

Specification

Reference	:	IS/IEC: 60898-1
Rated Current In	:	6A, 10A, 16A, 20A, 25A & 32A
Rated Voltage Un	:	240V AC
Rated Insulation Voltage	:	500V AC
Rated Frequency	:	50 Hz
No. of Poles	:	DP
Rated Short Circuit Capacity	:	3kA
Degree of Protection	:	IP 20
Line / Load terminals	:	6 mm^2

Dimensions (in mm)



Mini MCB DP with Enclosure Home Safe

Rating	Description	Cat No.
32A	DP C 32A Mini MCB with Enclosure	DHMPCDPA032

DBOXx Plug & Socket DB

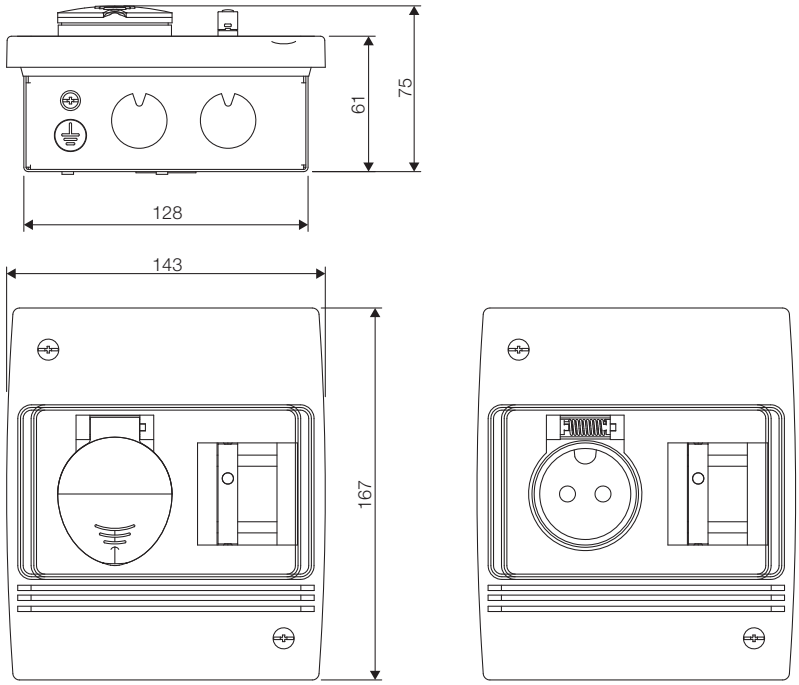
Applications

Air Conditioner
Refrigeration
Motors
Commercial Loads
Test Equipment

Features

- Insulated Engineered plastic Cover prevents Electric Shock
- Auto-shut Spring loaded Shutter Cap
- Indicator for Power ON-OFF Indication
- Metal base for proper Earthing
- Din Mounted Shrouded Neutral
- Elegant Aesthetics
- Ample space for wiring
- Complete Din Mounting arrangement
- IP 42

Dimensions (in mm)



DBOXx Plug & Socket DB

Rating	Cat. No.	Description
20A	DHDCUDP020	Plug & socket 20A DP With Plastic Cover D
20A	DHDCUSN020	Plug & socket 20A SPN With Plastic Cover D

SPECIAL APPLICATION DISTRIBUTION BOARDS

Electrical energy has brought along with it a lot of conveniences, beyond imagination. It's consumption has increased manifold be it in domestic, commercial or industrial applications, there by creating a need for scientific & effective method of distribution. The purpose of electrical wiring is to systematically distribute current. In the process the system mainly adopts methods to protect installation and human life from electrical hazards such as short circuit, overload and earth leakage.

The electrical wiring is carried out to distribute current from a single source of supply to various circuits, such an arrangement is made inside an enclosure called Distribution Board.

The Distribution Board is not merely an enclosure but a comprehensive system in itself, comprising of copper bus bars, brass neutral links, earth links to facilitate effective distribution of current. It incorporates safety devices such as MCBs, RCCBs and switch disconnectors, which serves to protect the installation.

A wide range of compact, elegant & economical DBs with unique features, designed & engineered to provide user safety, convenience and operational / maintenance advantages are offered.

Range:

- 7 Segment Distribution Boards
- TPN Vertical Distribution Boards
- TPN Vertical Loadline Distribution Boards
- SPN/TPN (IP 54)
- SPN/TPN Prewired Distribution Boards
- TPN Prewired (with Cable End Box)
- Per Phase Isolation (PPI) Vertical - 4 Tier
- Per Phase Isolation (PPI) - QVE Series

Specification

IEC 61439-3, IS:13032 & IS:8623

7 Segment

Range

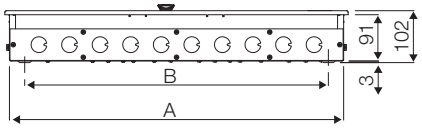
7 Segment DB - (TPN DD) - 4, 6, 8 & 12W

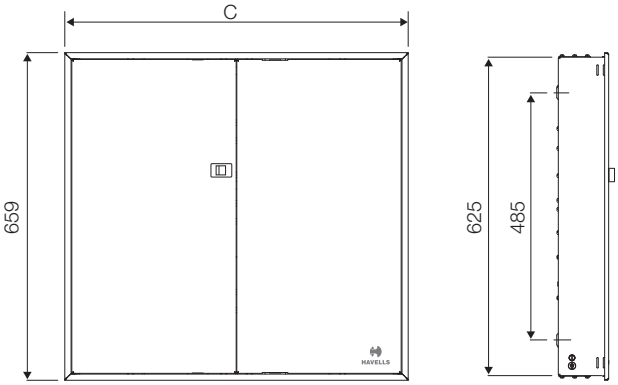
Specification

IEC 61439-3, IS:13032 & IS:8623

Features

- DBs with phase segregation and separation between incomer and outgoings
- Suitable for Flush mounting and Surface mounting
- With 100A copper busbar for each phase
- With neutral bar, earth bar
- Fully insulated busbar
- Main Incomer FP Isolator & FP Changeover, DP RCCB as subincomer and SP MCBs as outgoing
- Supplied with wire set
- IP 42





Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Sheet Thickness
4	440	380	474	7	7	1.2
6	548	488	582	8	8	1.2
8	656	596	690	10	10	1.6
12	872	812	906	13	13	1.6

Knockout Holes (Ø31)

7 Segment

No. of Ways	Regal Grey Cat. No. (DD).
4	DHDMTHDDRW04
6	DHDMTHDDRW06
8	DHDMTHDDRW08
12	DHDMTHDDRW12

TPN Vertical

Range

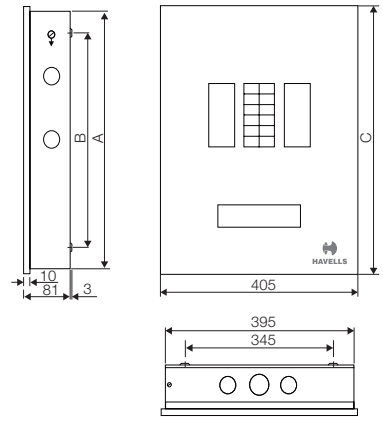
TPN Vertical DB - 4, 8 & 12W

Specification

IEC 61439-3, IS:13032 & IS:8623

Features

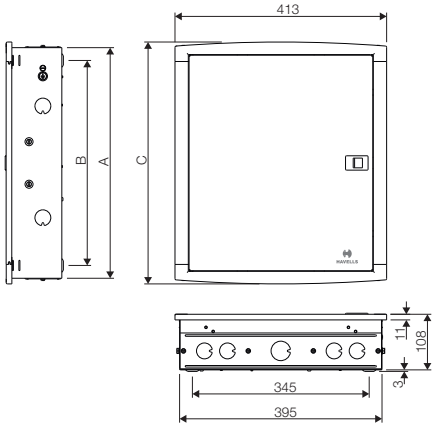
- Suitable for Flush mounting and Surface mounting
- With 125A copper busbar flat type
- With neutral & earth bars
- Pan assembly for ease of installation
- With provision for FP Isolator/RCCB as incomer and SP / TP MCBs as outgoing
- IP 40 (for Single Door)
- IP 42 (for Double Door)



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom Ø31	Bottom Ø38	Side	Sheet Thickness
4	450	400	460	5	2	1	2	1.0
8	558	508	568	5	2	1	2	1.0
12	666	616	676	5	2	1	2	1.0

Knockout Holes (Ø31 & Ø38)



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom Ø31	Bottom Ø38	Side	Sheet Thickness
4	450	400	472	5	2	1	2	1.0
8	558	508	580	5	2	1	2	1.0
12	666	616	688	5	2	1	2	1.0

Knockout Holes (Ø31 & Ø38)

TPN Vertical

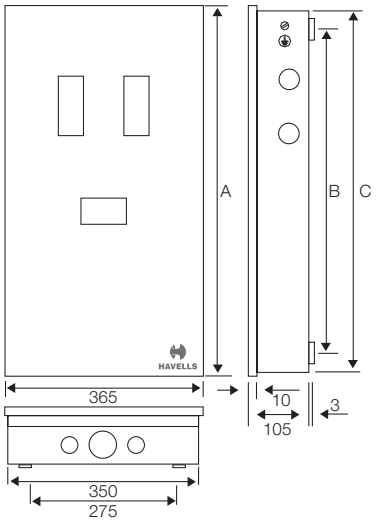
No. of Ways	I/C+O/G	Single Door	Double Door
4	8+12	DHDMTVOSRW04	DHDPTVODRW04
8	8+24	DHDMTVOSRW08	DHDPTVODRW08
12	8+36	DHDMTVOSRW12	DHDPTVODRW12

TPN Vertical Loadline

Range
Loadline DB - (TPN SD/DD) - 4, 8 & 12W

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Suitable for Flush mounting and Surface mounting
- With 160A & 250A copper busbar
- With neutral bars & earth bars
- With provision for TP 160 MCCB as incomer and SP / TP MCBs as outgoing
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom Ø31	Bottom Ø38	Side	Sheet Thickness
4	685	595	670	7	4	1	2	1.2
8	793	703	778	7	4	1	2	1.2
12	901	811	886	7	4	1	2	1.2

Knockout Holes (Ø31 & Ø38)

TPN Vertical Loadline
Loadline DBs are fitted with Bus Bars, Neutral Links, Blanking Plates **(without MCCB) (Suitable for TP/FP)**

No. of Ways	Cat. No.	Description
	SINGLE DOOR	SUITABLE FOR TP 'G FRAME' MCCB
4	DHDLVSRWGOFO04	DB LL 4W SD VERT W/O MCCB
8	DHDLVSRWGOFO08	DB LL 8W SD VERT W/O MCCB
12	DHDLVSRWGOFO12	DB LL 12W SD VERT W/O MCCB
	DOUBLE DOOR	SUITABLE FOR TP 'G FRAME' MCCB
4	DHDLVDRWGOFO04	DB LL 4W DD VERT W/O MCCB
8	DHDLVDRWGOFO08	DB LL 8W DD VERT W/O MCCB
12	DHDLVDRWGOFO12	DB LL 12W DD VERT W/O MCCB
	DOUBLE DOOR	SUITABLE FOR TP/FP 'A FRAME' MCCB
4	DHDLVDRWAOFO04	DB LL 4W DD VERT W/O MCCB
8	DHDLVDRWAOFO08	DB LL 8W DD VERT W/O MCCB
12	DHDLVDRWAOFO12	DB LL 12W DD VERT W/O MCCB

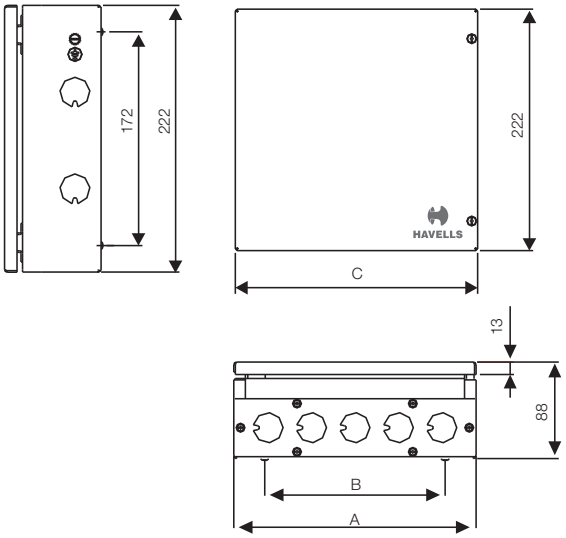
Note: (i) MCBs & Accessories Should Be Selected And Purchased Separately
(ii) For Any Other Configuration Contact Us
(iii) For Appropriate MCCB Price, Please see Havells IP Price List

SPN (IP 54)

Range
IP - 54 (SPN DD) - 4, 8 & 12W

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Suitable for Flush mounting and Surface mounting
- With 125A copper busbar
- With neutral bars & earth bar
- Fully insulated busbar
- IP 54



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	175	125	175	3	3	1	1.6
8	247	197	247	5	5	1	1.6
12	319	269	319	7	7	1	1.6

Knockout Holes (Ø31)

SPN (IP 54)

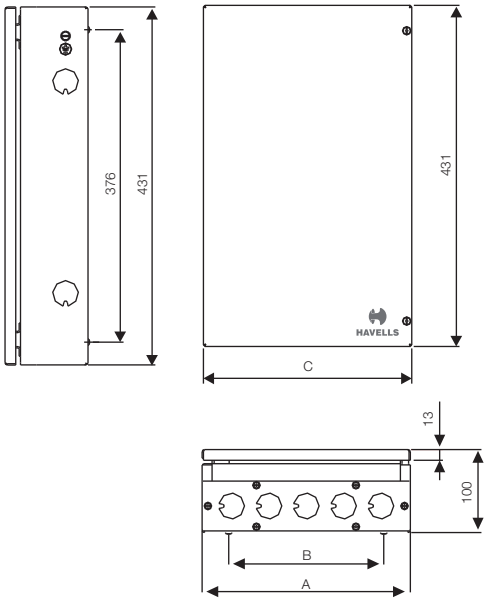
No. of Ways	Description	Horizontal Cat. No.
4	SPN DB DD 04W	DHDMSHODRW040002
8	SPN DB DD 08W	DHDMSHODRW080002
12	SPN DB DD 12W	DHDMSHODRW120002

TPN (IP 54)

Range
IP - 54 (TPN DD) - 4, 8 & 12W

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Suitable for Flush mounting and Surface mounting
- With 125A copper busbar
- With neutral bars & earth bar
- Fully insulated busbar
- IP 54



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	251	196	251	5	5	2	1.6
8	395	340	395	8	8	2	1.6
12	534	479	534	11	11	2	1.6

Knockout Holes (Ø31)

TPN (IP 54)

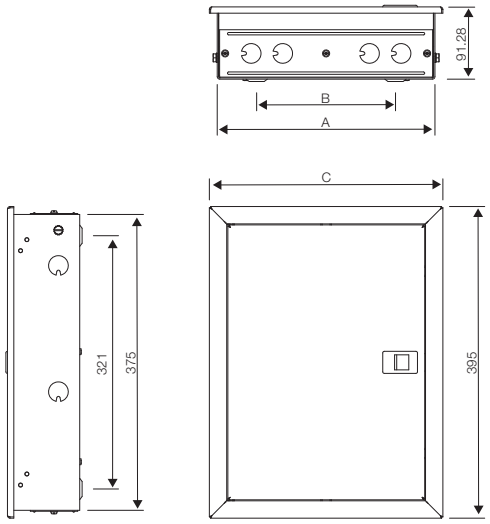
No. of Ways	Description	Horizontal Cat. No.	Vertical Cat. No.
4	TPN DB DD 04W	DHDMTHODRW040002	DHDMTVODR040002
8	TPN DB DD 08W	DHDMTHODRW080002	DHDMTVODR080002
12	TPN DB DD 12W	DHDMTHODRW120002	DHDMTVODR120002

SPN Prewired

Range
SPN DD – 6, 8, 10, 12 & 16W

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Phase/Neutral terminal block for termination of incoming and outgoing wires
- Colored flame retardant Polyamide terminal blocks and FRLS wiring for easy identification, Phases & Neutral
- A detachable cassette is provided for safe removal of MCB/RCCB from DB without loosening the internal cable connection of Phase & Neutral Circuit
- DBs are provided with integral loose wire box in SPN for accommodating extra bunch of wires
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
6	276	176	296	4	4	2	1.6
8	312	212	332	4	4	2	1.6
10	348	248	368	4	4	2	1.6
12	384	284	404	6	6	2	1.6
16	456	356	476	8	8	2	1.6

Knockout Holes (Ø25)

SPN Prewired
(with cable end box)

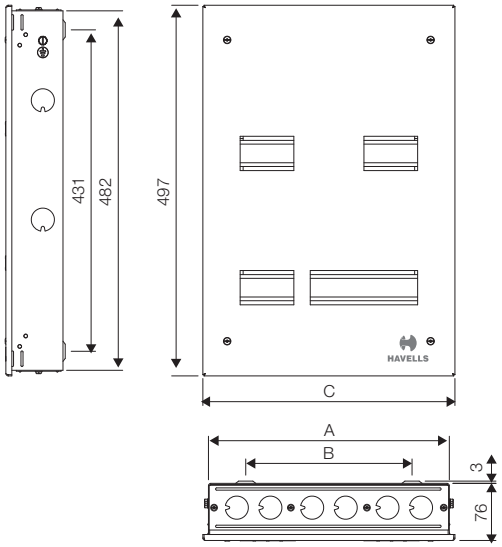
No. of Ways	IC/OG	DD Cat. No.
6	2+6	DHDMSHMLRW06
8	2+8	DHDMSHMLRW08
10	2+10	DHDMSHMLRW10
12	2+12	DHDMSHMLRW12
16	2+16	DHDMSHMLRW16

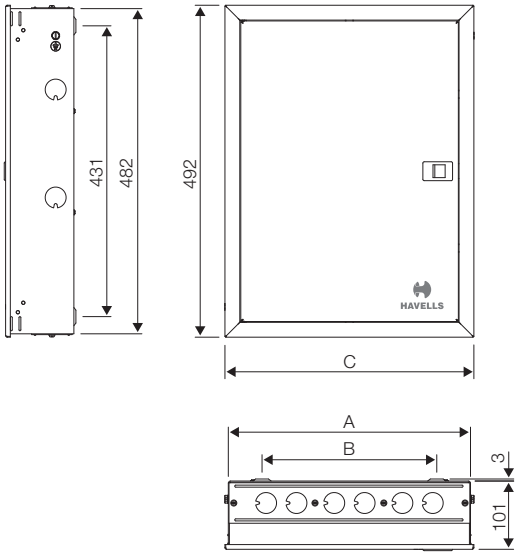
TPN Prewired

Range
TPN SD – 4, 6, 8 & 12W

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Phase/Neutral terminal block for termination of incoming and outgoing wires
- Colored flame retardant Polyamide terminal blocks and FRLS wiring for easy identification of R, Y & B Phases & Neutral
- A detachable cassette is provided for safe removal of MCB/RCCB from DB without loosening the internal cable connection of Phase & Neutral Circuit
- IP 42





Single Door Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	323	223	338	6	6	2	1.6
6	359	259	374	6	6	2	1.6
8	423	323	438	6	6	2	1.6
12	567	467	582	8	8	2	1.6

Knockout Holes (Ø25)

Double Door Dimensions (in mm)

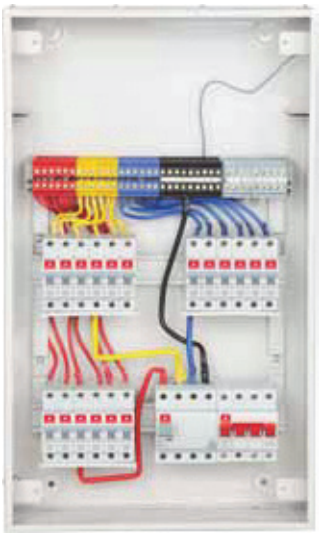
No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	323	223	333	6	6	2	1.6
6	359	259	369	6	6	2	1.6
8	423	323	433	6	6	2	1.6
12	567	467	577	8	8	2	1.6

Knockout Holes (Ø31)

TPN Prewired
(without cable end box)

No. of Ways	IC/OG	DD Cat. No.
4	8+12	DHDMTHMKDRA04
6	8+18	DHDMTHMKDRA06
8	8+24	DHDMTHMKDRA08
12	8+36	DHDMTHMKDRA12

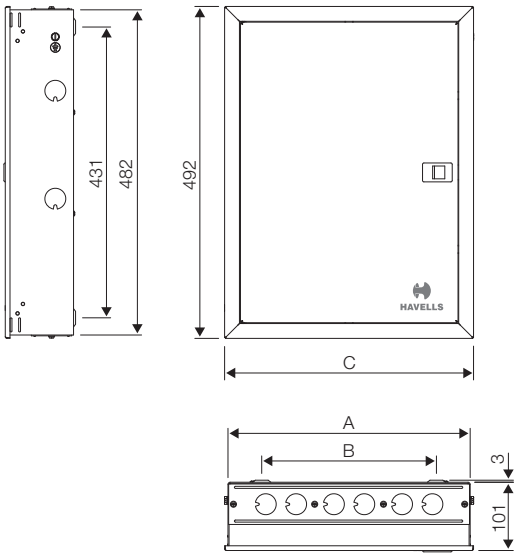
TPN Prewired (with Cable End Box)



Range
TPN DD – 4, 6, 8 & 12W

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- Phase/Neutral terminal block for termination of incoming and outgoing wires
- Colored flame retardant Polyamide terminal blocks and FRLS wiring for easy identification of R, Y & B Phases & Neutral
- A detachable cassette is provided for safe removal of MCB/RCCB from DB without loosening the internal cable connection of Phase & Neutral Circuit
- DBs are provided with integral loose wire box in TPN for accommodating extra bunch of wires
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
4	323	223	333	6	6	2	1.6
6	359	259	369	6	6	2	1.6
8	423	323	433	6	6	2	1.6
12	567	467	577	8	8	2	1.6

Knockout Holes (Ø31)

TPN Prewired
(with cable end box)

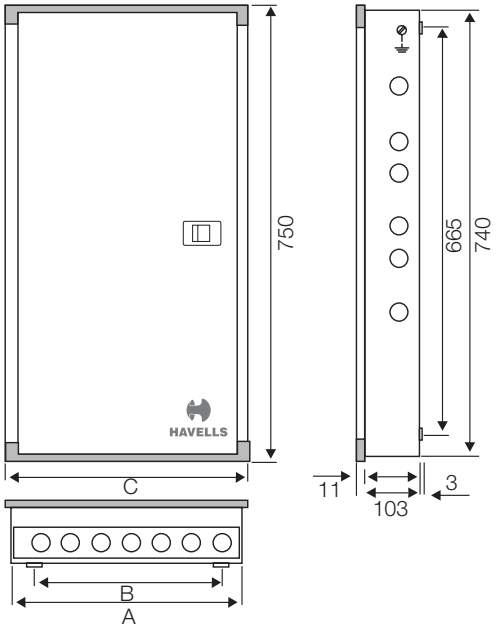
No. of Ways	IC/OG	DD Cat. No.
4	8+12	DHDMTHMLXW04
6	8+18	DHDMTHMLXW06
8	8+24	DHDMTHMLXW08
12	8+36	DHDMTHMLXW12

Per Phase Isolation (PPI) Vertical - 4 Tier

Range
PPI Vertical DB - 4 Tier - 2+8 & 2+12W

Specification
IEC 61439-3, IS:13032 & IS:8623

Features
- DBs with phase segregation and separation between incomer and outgoings
- Suitable for Flush mounting and Surface mounting
- With 125A copper busbar for each phase
- With neutral bar, earth bar and cable ties for cable management
- Fully insulated busbar
- With per phase neutral & earth bar
- Supplied with wire set
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
2 + 8	323	248	338	7	7	6	1.2
2 + 12	395	320	405	7	7	6	1.2

Knockout Holes (Ø31)

Per Phase Isolation (PPI) Vertical - 4 Tier

No. of Ways	I/C + O/G	Regal Grey Cat. No. (DD).
2+8	8+6+24	DHDPTVPDRW08
2+12	8+6+36	DHDPTVPDRW12

Per Phase Isolation (PPI) - QVE Series

Suitable for MCB/ RCCB / Isolator as Incomer

Range

TPN – 4, 6 & 8W

Color

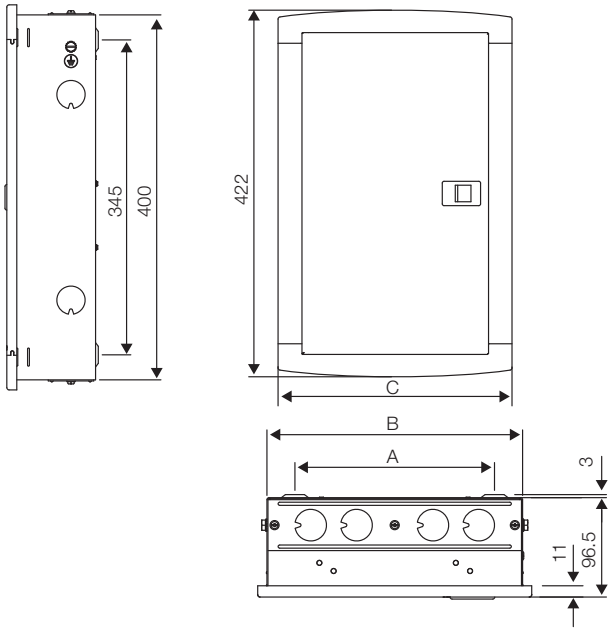
Pearl Ivory & Regal Grey

Specification

IEC 61439-3, IS:13032 & IS:8623

Features

- DBs with phase segregation and separation between incomer and outgoings
- Suitable for Flush mounting and Surface mounting
- With 100A copper busbar for each phase
- With neutral bar, earth bar and cable ties for cable management
- Fully insulated busbar
- With per phase neutral & earth bar
- Supplied with wire set
- IP 42



Dimensions (in mm)

No. of Ways	A	B	C	Top	Bottom	Side	Sheet Thickness
2+4	323	268	341	6	6	2	1
2+6	395	340	413	8	8	2	1
2+8	534	479	552	11	11	2	1

Knockout Holes (Ø31)

Per Phase Isolation (PPI) - QVE Series

No. of Ways	I/C + O/G	Regal Grey Cat. No. (DD)
2+4	4+6+12	DHDPTHPDRW04
2+6	4+6+18	DHDPTHPDRW06
2+8	4+6+24	DHDPTHPDRW08

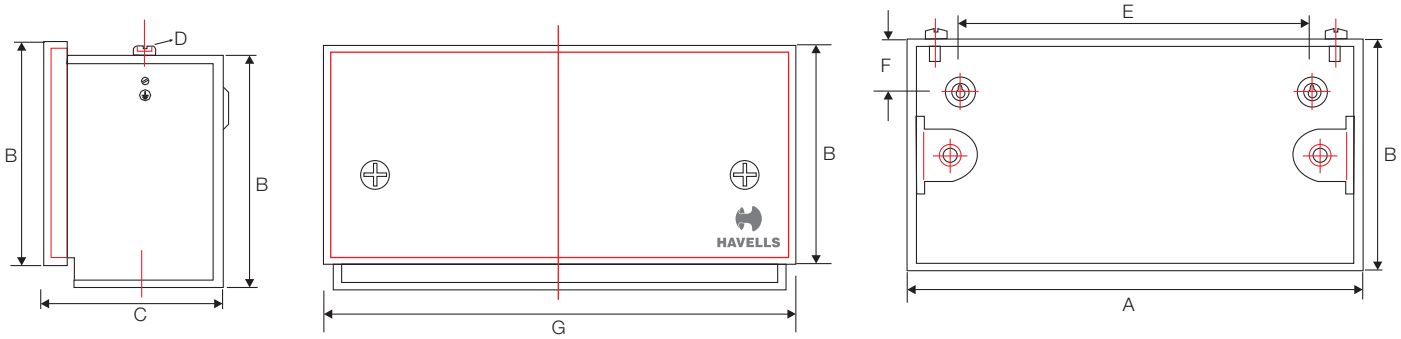
Cable End Box

No. of Ways	Item	Cat No.	
		Single Door	Double Dor
4	SPN	DHDASHOS04	DHDASHOD04
8	SPN	DHDASHOS08	DHDASHOD08
12	SPN	DHDASHOS12	DHDASHOD12
16	SPN	DHDASHOS16	DHDASHOD16
4	TPN - Horizontal	DHDATHOS04	DHDATHOD04
6	TPN - Horizontal	DHDATHOS06	DHDATHOD06
8	TPN - Horizontal	DHDATHOS08	DHDATHOD08
12	TPN - Horizontal	DHDATHOS12	DHDATHOD12
4/8/12	TPN - Vertical	DHDATVOS04	DHDATVOD04
4/8/12	Loadline	DHDATVLS04	DHDATVLD04
2+8	PPI	DHDATVTS10	DHDATVTD10
2+12	PPI	DHDATVTS14	DHDATVTD14

A. Single Door DB

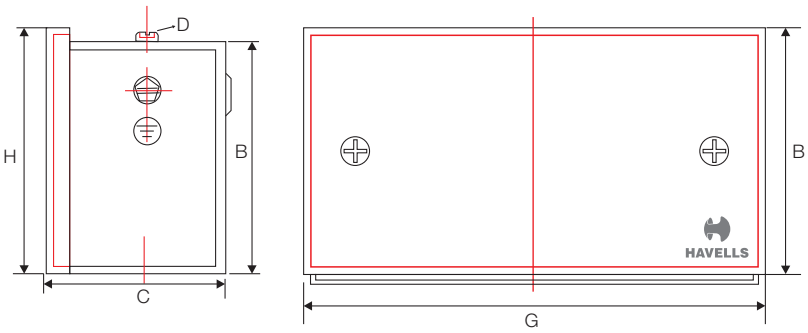
No. of Ways	Item	Dimensions							T (Sheet Thickness)	Cat. No.
		A	B	C	D	E	F	G		
4	SPN	139	100	63	3	89	25	154	1.0	DHDASHOS04
8		211	100	63	5	161	25	226	1.0	DHDASHOS08
12		283	100	63	7	233	25	298	1.0	DHDASHOS12
16		355	100	63	9	305	25	370	1.2	DHDASHOS16
4	TPN	270	125	78	5	195	37.5	285	1.2	DHDATHOS04
6		336	125	78	6	261	37.5	351	1.2	DHDATHOS06
8		414	125	78	8	339	37.5	429	1.2	DHDATHOS08
12		558	125	78	11	483	37.5	573	1.2	DHDATHOS12
4/8/12	Vertical	350	125	87	7	275	37.5	365	1.2	DHDATVOS04
4/8/12	Loadline	350	125	102	7	275	37.5	365	1.2	DHDATVLS04
2 + 8	PPI	323	125	78	6	248	37.5	338	1.2	DHDATVTS10
2 + 12		395	125	78	7	320	37.5	410	1.2	DHDATVTS14
10	Tier	323	125	78	6	248	37.5	338	1.2	DHDATVTS10
14		395	125	78	7	320	37.5	410	1.2	DHDATVTS14

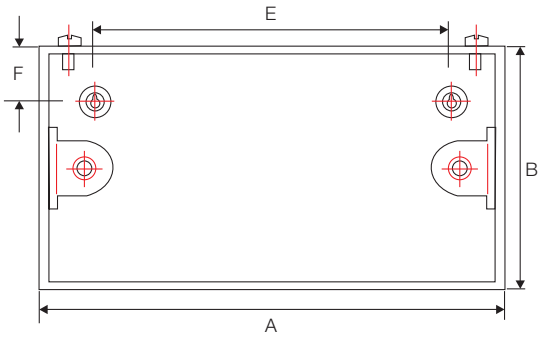
Dimensions (in mm)



B. Double Door D

No. of Ways	Item	Dimensions								T (Sheet Thickness)	Cat. No.
		A	B	C	D	E	F	G	H		
4	SPN	179	100	74	3	129	25	189	105	1.0	DHDASHOD04
8		251	100	74	5	201	25	261	105	1.0	DHDASHOD08
12		323	100	74	7	283	25	333	105	1.0	DHDASHOD12
16		395	100	74	9	345	25	405	105	1.2	DHDASHOD16
4	TPN	251	125	89	5	196	37.5	261	130	1.2	DHDATHOD04
6		323	125	89	6	268	37.5	333	130	1.2	DHDATHOD06
8		395	125	89	8	340	37.5	405	130	1.2	DHDATHOD08
12		558	125	89	11	483	37.5	588	130	1.2	DHDATHOD12
4/8/12	Vertical	395	125	98	7	320	37.5	405	130	1.2	DHDATVOD04
4/8/12	Loadline	350	125	130	7	275	37.5	380	130	1.2	DHDATVLD04
2 + 8	PPI	323	125	89	6	248	37.5	333	130	1.2	DHDATVTD10
2 + 12		395	125	89	7	320	37.5	405	130	1.2	DHDATVTD14
10	Tier	323	125	89	6	248	37.5	333	130	1.2	DHDATVTD10
14		395	125	89	7	320	37.5	405	130	1.2	DHDATVTD14





Comb Bus Bar

No. of Ways Three Phase	Capacity of 17.8 mm module	Features	Cat No.
2	6	TP I/C & TP O/G	DSCCPADBX022
3	9	TP I/C & TP O/G	DSCCPADBX023
4	12	TP I/C & TP O/G	DSCCPADBX024
5	15	TP I/C & TP O/G	DSCCPADBX025
10 SP*	10	SP O/G	DSCCPADBX026
14 SP*	14	SP O/G	DSCCPADBX027

*For Tire DBs

Plug & Sockets

Description	Cat. No.
20 A DP PLUG ASSEMBLY	DSSPLX0035
20 A DP SOCKET ASSEMBLY	DSSPLX0036
30 A TP PLUG ASSEMBLY	DSSPLX0037
30 A TP SOCKET ASSEMBLY	DSSPLX0038

Rotary Switch

Description	Cat. No.
40A PHASE-SEL. SWITCH	DSCCPAMCX010
63A PHASE-SEL. SWITCH	DSCCPAMCX009

Cat. No.	Description	Where used in List
DSCPGMDBX099	P-Channel SPN 12W Flat Grey	DHDSNVDRZ04040 DHDSNVDRZ04063 DHDPTVPDRW08
DSCPGMDBX100	P-Channel SPN 16W Flat Grey	DHDPTVODRW04 DHDPTVODRW08 DHDPTVODRW12 HDSNVDRZ06040 DHDSNVDRZ06063 DHDSNVDRZ08040 DHDSNVDRZ08063 DHDPTVPDRW12
DSCPGMDBX105	P-Channel SPN 12W Flat Ivory	DHDSNVDPZ04040 DHDSNVDPZ04063
DSCPGMDBX106	P-Channel SPN 16W Flat Ivory	DHDSNVDPZ06040 DHDSNVDPZ06063 DHDSNVDPZ08040 DHDSNVDPZ08063
DSCPGMDBX126	P-Channel SPN 4W Curve Grey	DHDPSHODRW04
DSCPGMDBX127	P-Channel SPN 8W Curve Grey	DHDPSHODRW08 DHDPTHODRW04
DSCPGMDBX128	P-Channel SPN 12W Curve Grey	DHDPSHODRW12 DHDPTHODRW06
DSCPGMDBX129	P-Channel SPN 16W Curve Grey	DHDPSHODRW16 DHDPTHODRW08
DSCPGMDBX131	P-Channel TPN 12W Curve Grey	DHDPTHODRW12
DSCPGMDBX132	P-Channel SPN 4W Curve Ivory	DHDPSHODPW04
DSCPGMDBX133	P-Channel SPN 8W Curve Ivory	DHDPSHODPW08 DHDPTHODPW04
DSCPGMDBX134	P-Channel SPN 12W Curve Ivory	DHDPSHODPW12 DHDPTHODPW06
DSCPGMDBX135	P-Channel SPN 16W Curve Ivory	DHDPSHODPW16 DHDPTHODPW08
DSCPGMDBX137	P-Channel TPN 12W Curve Ivory	DHDPTHODPW12

Miscellaneous

Description	Cat. No.
N/L BASE	DSCPGMDBX019
Dummy(Blanking)Plate 18mm	DSCPGMDBX001
KNOB SNAP TYPE GREY	DSCPGMDBX045
KNOB SNAP TYPE PI	DSCPGMDBX046
GREEN INDICATOR SWITCH SMALL	DSCCPAMCX005

Blanking Plate

No. of Ways	Length	Cat No.
1P	18 mm	DSCPGMDBX001

Single Phase Bus Bar

No. of Ways	Cat No.
4	DSCCUPDBP028
6	DSCCUPDBP032
8	DSCCUPDBP029
12	DSCCUPDBP030
16	DSCCUPDBP031

Spare Din Rails

No. of Ways	Length of DIN Rail	Cat No.
4	104 mm	CFEFDBX320
6	140 mm	CFEFDBX459
8	176 mm	CFEFDBX321
12	248 MM	CFEFDBX322
16	320 MM	CFEFDBX323

Spare Neutral Links

No. of Ways	Cat No.
2 P&S	DSCBRCDBX002
4 SPN	DSCBRCDBX011
6 SPN	DSCBRCDBX090
8 SPN	DSCBRCDBX012
12 SPN	DSCBRCDBX013
16 SPN	DSCBRCDBX014
4 TPN	DSCBRCDBX013
6 TPN	DSCBRCDBX015
8 TPN	DSCBRCDBX016
12 TPN	DSCBRCDBX017

Spare Earth Links

No. of Ways	Cat No.
4 SPN	DSCBRCDBX006
6 SPN	DSCBRCDBX093
8 SPN	DSCBRCDBX007
12 SPN	DSCBRCDBX003
16 SPN	DSCBRCDBX004
4 TPN	DSCBRCDBX003
6 TPN	DSCBRCDBX005
8 TPN	DSCBRCDBX009
12 TPN	DSCBRCDBX008

IP Ratings

The IP (Ingress Protection) rating given to an enclosure states the degree of protection it offers by means of two digits. A summary of these is shown below, for a more detailed defection, see IEC 60529 : 2000, BS EN 60529 : 1992.

First Digit

Protection against solid foreign objects and access to hazardous parts: The first digit covers protection against penetration by solid objects, which includes hands and tools such as screwdrivers. At the lowest of seven levels, 0, no protection is offered, either of the equipment itself from damage by intrusion or of a person contacting live or moving parts. At the highest, there shall be no entry of dust.

No Protection

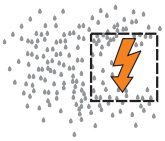
Protected against solid objects up to 50 mm. e.g. accidental touch by hands

Protected against solid objects up to 12 mm e.g. fingers

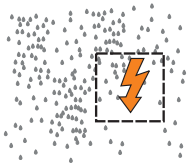
Protected against solid objects over 2.5 mm e.g. tools and wires

Protected against solid objects over 1 mm e.g. tools, wires and small wires

Protected against dust -limited ingress, no harmful deposits



Totally protected against dust.



Second Digit

Protection against ingress of water: The second digit covers the degree of protection against the entry of water, on a progressive scale. For example, number 1 indicates that dripping water shall have no harmful effect, and number 6, that water projected in powerful jets against the enclosure from any direction shall have no harmful effects.

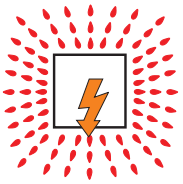
No Protection

Protected against vertically falling drops of water eg. condensation

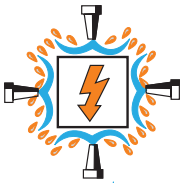
Protected against direct sprays of water up to 15° from the vertical

Protected against sprays of water up to 60° from the vertical

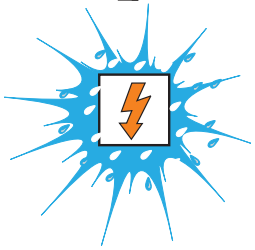
Protected against after splashed from all directions -limited ingress permitted



Protected against low pressure jets of water from all directions -limited ingress permitted



Protected against strong jets of water e.g. for use on ship decks -limited ingress permitted



The letter X can be used in place of the first or second digit to indicate that tests have either not been made or are not applicable.

Category Of Duty

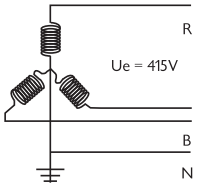
The category of duty defines the basic type of circuit and switching capability of the device, and selection should be made accordingly.

Utilisation Category Typical Applications

AC20/DC20	Connecting and disconnecting under no-load. Assumes all switching operations are carried out by other capable devices before this device is operated.
AC21/DC21	Switching of resistive loads including moderate overloads. Suitable for purely resistive type loads devices can switch 150% of its rated current under fault conditions
AC22/DC22	Switching of mixed resistive / inductive loads, including moderate overloads. Suitable for mixed resistive / inductive loads. Devices can switch 300% of its rated current under fault conditions.
AC23/DC23	Switching of highly inductive loads. Devices complying with AC23/DC23 are provided mainly as back-up to other means of switching. e.g. contacts. In the event of failure of functional devices, an AC23 / DC23 type device can safety interrupt a stalled motor current. Where devices are the only means of controlling individual motors, they should comply with the requirements of appendix A of the standard. (IEC 60947-3)

Ue = Rated Operational Voltage

The normal line-to-line voltage of the system should not exceed (Ue)



Ui = Rated Insulation Voltage

The voltage on which the dielectric properties have conventionally been based using tests at high voltage and mains frequency. It is intended to replace this value with (Uimp)

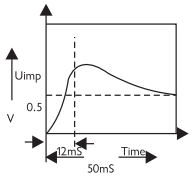
Ui = 660V
Tested@
2500V ac 50Hz

Uimp = The voltage on which clearance distances are based.

The value of transient peak voltage the circuit breaker can withstand from switching surges or lighting strikes imposed on the supply.

e.g. Uimp = 8kV, Tested @8kV peak with

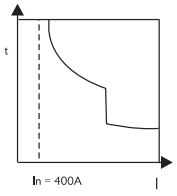
1.2/50m (ms)S impulse wave



In = Rated Current

The current which the circuit breaker will carry continuously under specified conditions and on which the time / current characteristics are based.

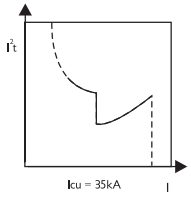
Unless otherwise slated (In) is based on a reference ambient temperature of 30° centigrade.



Icu-Rated Ultimate Short Circuit Breaking Capacity in kA

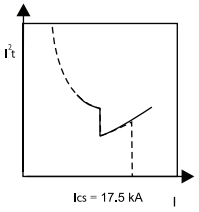
The calculated prospective fault current at the incoming terminals of the circuit breaker should not exceed (Icu).

Exception: Using back-up protection as specified by the manufacturer.



Ics-Rated Service Short Circuit Breaking Capacity in kA

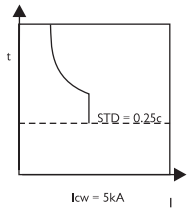
The maximum level of fault current operation after which further service is assured without loss of performance.



Icw-Rated Short-time Withstand Current

Circuit breakers of utilisation category 'B' have a short-time delay allowing time-graded selectivity between circuit breakers in series.

(Icw) is the current the circuit breaker will withstand for the maximum short-time delay time. Preferred times are 0.05, 0.1, 0.25, 0.5 and 1.0 second.



Certifications

(India) (Holland) (Europe) CB ASTA (UK) (Russia)

IS/IEC 60898-1 / EN 60898-1
IS 12640-1 : 2000 / IEC 61008-1 / EN 61008-1
IS 12640-2 : 2001 / IEC 61009-1 / EN 61009-1
IS/IEC 60947-3 / IEC 60947-3

...and in the process of attaining other International certificatioins

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