

dewon ELECTRIC

Miniature Circuit Breaker (MCB)

Product Technical Specification



Contents

Dewon miniature circuit breaker product features

Design Features	4
Dewon Patented Design	4
Safety Features	4
a - True Contact Indication	4
b - IP20 Protection	4
c - Anti Single Phasing	5
d - Energy Class 3	5
e - Contact Separation	5
Reliability Features	6
a - Rigid Multi-Pole Coupling	6
b - Conforms to Major Standards	6
c - Ready for Connection	6
Performance Features	7
a - Line / Load Reversibility	7
b - Ventilation Channel	7
c - Contact Tip	7
Installation Features	8
a - Ergonomics: Better Grip	8
b - Multiple Cable Connection	8
c - Suitable for Multiple Tools	8
d - Multiple Termination	8
e - Terminal Shutter	8
f - Ease of Mounting	8
Environment Features	9
Performance and Technical Specification	10
General Characteristics	11
Dimensions	13
Installation and Ease of Use	14
Ordering Data	15

MCB **MINIATURE CIRCUIT BREAKER** : Product Features

Range Highlights

- Patented Design
- True contact indication for individual pole
- Conforms to IS/IEC 60898
- Breaking capacity of 10kA throughout the range
- Available in B & C Curve
- Low watt loss – almost 50% of the values prescribed
- Trip free mechanism
- Advance Design with hammer trip mechanism
- No Line – Load bias
- Ease of Busbar Connectivity
- IP 20 Protection

Short Circuit

Overload



Design Features



Dewon Patented Design

Dewon's MCB design is protected by patent for its novel tripping device: **uncompromising safety** (Unique arrangement for quick opening under fault condition).

Whole MCB is also protected for its industrial design

Safety Features



a) True Contact Indication

Dewon's MCB is designed to show true visual indication of the contact's status inside MCB, irrespective of handle position by Red and Green color flags.



b) IP20 Protection

Dewon's MCB qualifies protection rating of "IP20" which means protection from solid objects approximately 12mm in size, such as adult fingers;

Safety Features



c) Anti Single Phasing

Removal of the handle connector of Dewon's MCB is impossible for Multipole Breakers.

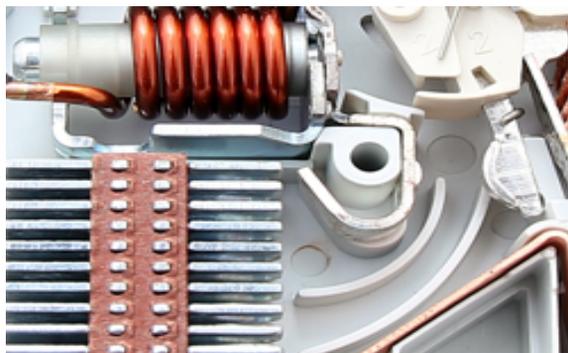
Even in the absence of the handle connector, it is not possible to turn the multi-pole MCB "ON".

This prevents closing even one pole of the Multi-Pole breaker in response to the overcurrent fault in any of poles.



d) Energy Class 3

Dewon's MCB design ensures the lowest possible flow of energy through the circuit in case of fault preventing damage to surrounding and downstream equipment and networks i.e energy Class 3 .



e) Contact Separation

1. In normal ON/OFF operation current separation distance is 7 mm, in case of abnormal /fault conditions the contacts get separated by 9 mm, which prevents the arc from restriking and ensures effective arc quenching.

2. Use as Isolator Benefits

- Prevents Arc re-striking
- Foolproof breaking of circuit
- Higher voltage withstand capability

Reliability Features

a) Conforms to Major Standard



Tested as per IS/IEC 60898-1, 2015



b) Ready for Connection

Dewon's MCB is ready for Cable / Busbar connection which reduces installation time as its MCB is provided with a Box Clamp in an open condition.

Performance Features



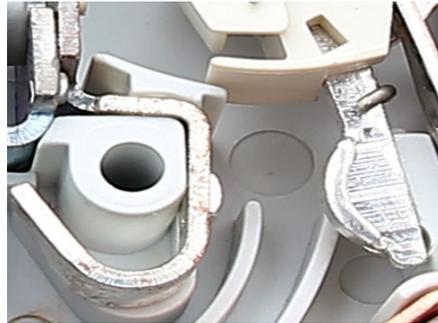
a) Line/Load Reversibility

An incoming supply can be connected either to the upper or lower side and load to the opposite side without compromising the breaking capacity and isolation.



b) Ventilation Channel

Dewon's MCB has uniquely designed air channels located between adjacent poles which facilitates better heat dissipation during operation.



c) Contact Tip

Dewon's MCB uses Silver Graphite contact tips which ensures higher life and maximum safety against contact welding due to superior anti-welding properties and enhances safety and life of system

Installation Features



- a) Ergonomics:** The ergonomically designed handle assists the manual operation of the circuit breaker (single pole to four poles) with optimum force and ensures a secure grip while operating the handle due its wide surface area and prominent strips around the periphery,



- c) Screw (Pozi Pan Head)** used in Dewon's MCB is Suitable for multiple tools and larger hole allows the use of an insulated screwdriver to tighten the screws of both wire terminals, ensuring maximum operational safety.



e) Safety Shutter

Insertion of cable in the wrong place (when box terminal is partially or fully closed) is not possible. Flat Locking Shutters covers the gap below the box terminal to eliminate the possibility of wrong entry of wire during installation.



b) Multiple Cable Connection

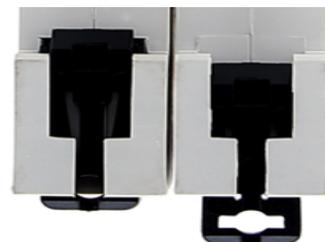
Cable terminals allow connection of cables from 0.5mm² up to 35mm². Conductors of different sizes can be used in the same terminal, with up to five conductors of size 1.5 mm²



d) Multiple Termination

Incoming and outgoing terminals of Dewon's MCB are suitable for

- Normal Cable
- Fork Type Busbar
- Comb Type Busbar
- Fork Busbar + Cable simultaneous connection.

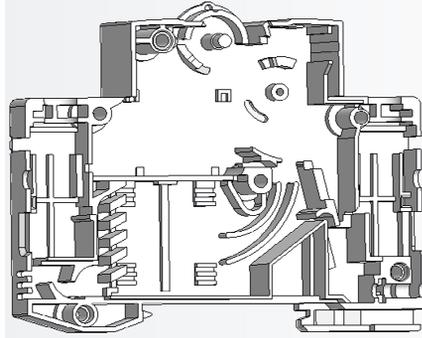


f) Ease of Mounting

Dewon's MCB is designed with Two-position Din Clip which facilitates easy mounting and removal of MCB from Din Rail channel for convenient installation.

Environment Features

RoHS compliant – **dewon** uses environmentally friendly state-of-the-art housing material. With the latest generation of halogen free thermoplastics for MCBs it is now possible to recycle the MCBs completely which reduces environmental pollution. **dewon** entire range of circuit protection devices conform to RoHS Standards.



General Characteristics

Power Loss

The power (watt) loss is calculated on the basis of the voltage drop across the main terminals measured at the device rated current.

MCB rated Current (A)	6	10	16	20	25	32	40	50	63
Watts loss per pole (W)	1.2	1.7	1.8	2.4	2.6	3.8	3.8	4	6

Energy Limiting

Energy is measured in Joules. *James Prescott Joule proved that thermal energy was produced when an electric current flowed through a resistance for a certain time, giving us the formula:

Joules = $I^2 \times R \times t$ or because we know that watts = I^2R

Joules = watts x seconds

Therefore, we can say that:

One Joule = one watt second

Or energy = watts x seconds = $I^2R t$

All **dewon** MCBs are well within the limits of energy let-through set by IEC 60898 for energy limiting class 3.

The circuit breaker can have the line/load connected to either top or bottom terminals.

Performance and Technical Specification

DewOn MCB Technical Data		
Product standard		IEC 60898-1
Tripping characteristics		B,C Curve
Electrical		
Rated current range (A)		6, 10, 16, 20, 25, 32, 40, 50, 63
Number of poles		SP,DP,TP,FP, SPN, TPN
Rated operational voltage (Ue) V AC	Single pole	240
	Multi pole	415
Rated insulation voltage (Ui) V AC		500
Rated impulse voltage (Uimp) kV		4
Rated ultimate short circuit		10kA
Rated service short circuit breaking capacity Ics (A) at 415V AC		7.5kA
Rated frequency (Hz)		50
Suitability for isolation		Yes
Thermal tripping characteristics		> 1 hour @ 1.13 In @30°C
Electrical endurance (Number of operation cycles)		≥10,000
Mechanical		
Protection degree		IP 20
Maximum terminal capacity (mm ²)		35
Tightening torque (Nm)		2.5
Mounting type		DIN rail 35 mm acc. to EN 60715
Method of connection		Cables / Busbar / Cables+Busbar
Frame width (mm) (max.)		17.5 mm per pole
Dimensions 1 Pole (W × H × D) (mm) (max.)		17.5 x 84 x 73
Dimensions 2 Pole (W × H × D) (mm) (max.)		35 x 84 x 73
Dimensions 3 Pole (W × H × D) (mm) (max.)		52.5 x 84 x 73
Dimensions 4 Pole (W × H × D) (mm) (max.)		70 x 84 x 73
Environmental/General		
Energy limiting class		3
Reference ambient air temperature		30°C
Operating temperature range		- 5°C to + 70°C
Storage temperature range		- 5°C to + 70°C

General Characteristics

Temperature Derating

MCBs are designed and calibrated to carry their rated current and to operate within their designated thermal time/current zone at 30°C. Testing is carried out with the breaker mounted singly in a vertical plane in a controlled environment. Therefore, if the circuit breaker is required to operate in conditions which differ from the reference conditions, certain factors must be applied to the standard data. For instance, if the circuit breaker is required to operate in a higher ambient temperature other than 50°C it will require progressively less current to trip within the designated time/current zone.

In (A)	-5° C	0° C	10° C	20° C	30° C	40° C	50° C	60° C	70° C
6.0	8.1	8.5	7.8	7.4	6.1	5.9	5.7	5.6	5.5
10.0	12.9	12.7	12.2	11.7	11.2	10.6	10.0	9.4	8.7
16.0	20.2	19.9	19.2	18.4	17.7	16.8	16.0	15.1	14.2
20.0	24.3	24.0	23.2	22.5	21.7	20.9	20.0	19.1	18.2
25.0	29.1	28.8	28.0	27.3	26.6	25.8	25.0	24.2	23.3
32.0	39.1	38.5	37.3	36.0	34.7	33.4	32.0	30.5	29.0
40.0	50.3	49.4	47.7	45.9	44.0	42.1	40.0	37.8	35.5
50.0	61.3	60.3	58.4	56.4	54.3	52.2	50.0	47.7	45.3
63.0	77.1	75.9	73.5	71.0	68.5	65.8	63.0	60.1	57.0

Grouping Factors

Consideration should also be given to the proximity heating effect of the breakers themselves when fully loaded and mounted together in groups. There is a certain amount of Watt-loss from each breaker depending on the trip rating which may well elevate the ambient air temperature of the breaker above the ambient air temperature of the enclosure. Grouping factor (rated current reduce by factor K).

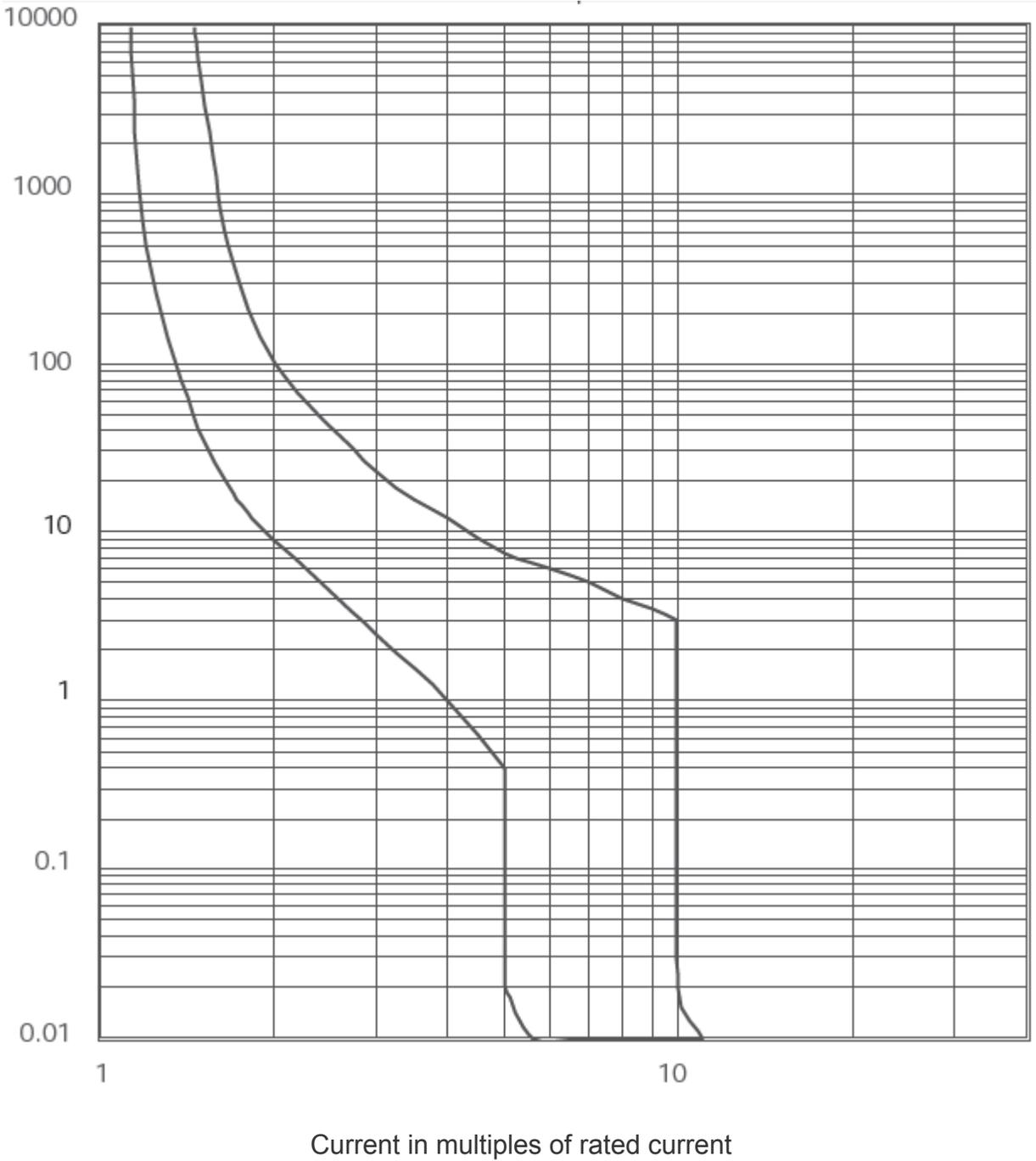
No of Device (n)	1	2≤n≤4	4≤n≤6	6≤n
K	1	0.95	0.9	0.85

Minimum Peak Tripping Current

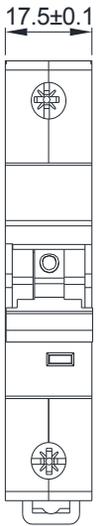
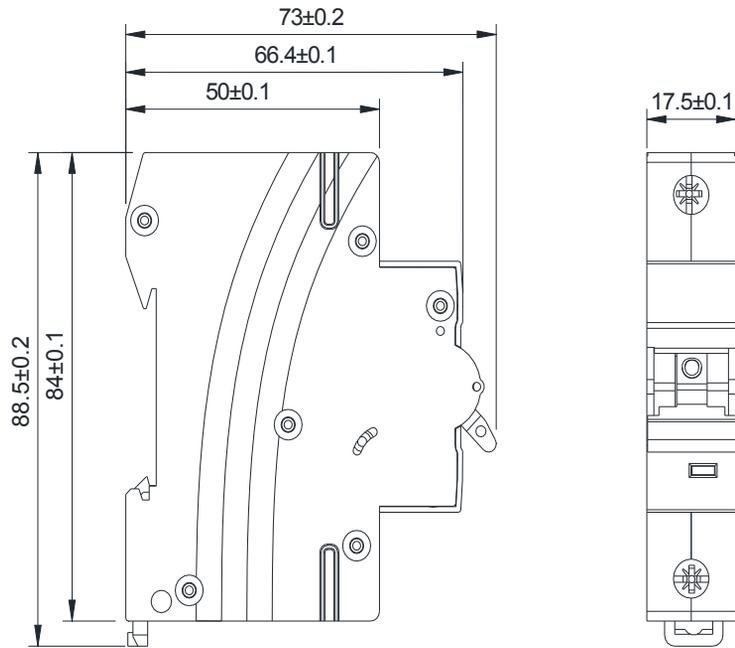
Circuit Breaker type	Circuit Breaker rated current								
	6A	10A	16A	20A	25A	32A	40A	50A	63A
C	52	73	119	142	170	223	280	380	443

General Characteristics

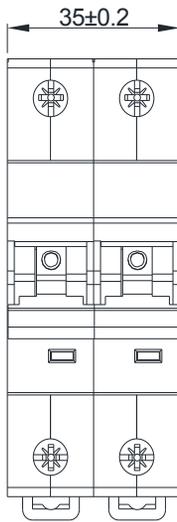
MCB C-curve Time Current Characteristics
Calibration temperature 35°C



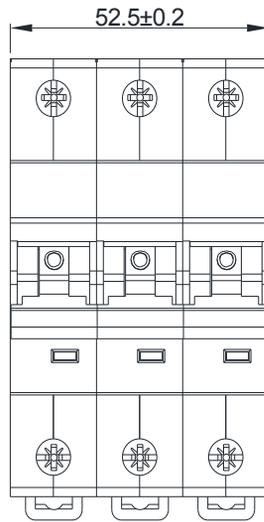
Dimensions



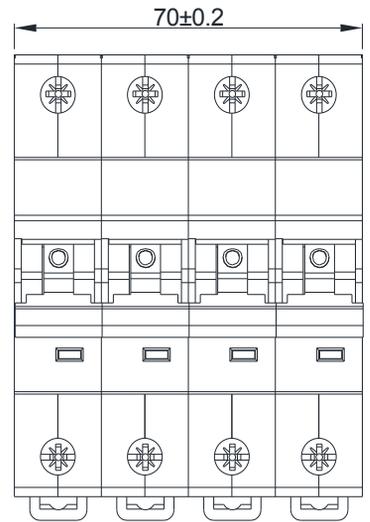
SP



DP/SPN



TP



FP/TPN

Installation and Ease of Use

1. Installation

Can be installed in the shown mounting position with Snap-On fixing in DIN rails as per EN 60 715, 35 mm width.

2. Connection

Ensure that conductors are connected correctly and firmly. Max. tightening torque 3.5 Nm.

3. Operation

Miniature circuit breakers are switched on by switching the handle in the direction of the nameplate. The operating lever now indicates the "I" operating position. If an MCB trips, probably due to overload, it can be switched on again. If the MCB trips again immediately when trying to reclose after a short period of time, then do not continuously re-close an existing short circuit or earth fault. The MCB trips under overload, or short circuit or earth fault conditions, even if the operating lever is maintained in the ON position.

4. Cleaning the device

MCBs soiled by installation work should be cleaned with a dry, or, if necessary, a damp and soapy cloth. Never use caustic agents or dissolvent.

5. Maintenance

dewon MCBs are maintenance-free.

6. Fitting of auxiliary switches

MCB has a knockout on the lower left hand side to add the auxiliary switch. Use a screwdriver to remove the knockout. Switch operating lever into the OFF position "O". Attach the auxiliary switch to the MCB and make sure that the outlines match the edges. Insert the driver extension of the auxiliary switch into the associated MCB handle. Then press the snap lock extension from the auxiliary, switch cover against the MCB to ensure it is firmly locked.

7. Wiring diagrams

Supply optional, top or bottom, terminal designation in accordance with EN 50 005/ IEC 60947-1/ IEC60898-1.

Warranty

Warranty period of 10 Years is valid only when this MCB is Installed with "Dewon Electric" distribution board by a Licensed Electrician. When installed with any other distribution board, warranty Period is 5 years.

Covered in Warranty : Manufacturing defect & technical problems

Not Covered in Warranty : Physical damage, Installation Abuse



Ordering Data

Current Rating (In)	Modules 1 Mod = 17.5mm	B-Curve Cat. No.	C-Curve Cat. No.
Single Pole (SP)			
6A	1	CB1001006B	CB1001006C
10A	1	CB1001010B	CB1001010C
16A	1	CB1001016B	CB1001016C
20A	1	CB1001020B	CB1001020C
25A	1	CB1001025B	CB1001025C
32A	1	CB1001032B	CB1001032C
40A	1	CB1001040B	CB1001040C
50A	1	CB1001050B	CB1001050C
63A	1	CB1001063B	CB1001063C
Double Pole (DP)			
6A	2	CB2001006B	CB2001006C
10A	2	CB2001010B	CB2001010C
16A	2	CB2001016B	CB2001016C
20A	2	CB2001020B	CB2001020C
25A	2	CB2001025B	CB2001025C
32A	2	CB2001032B	CB2001032C
40A	2	CB2001040B	CB2001040C
50A	2	CB2001050B	CB2001050C
63A	2	CB2001063B	CB2001063C
Three Pole (TP)			
6A	3	CB3001006B	CB3001006C
10A	3	CB3001010B	CB3001010C
16A	3	CB3001016B	CB3001016C
20A	3	CB3001020B	CB3001020C
25A	3	CB3001025B	CB3001025C
32A	3	CB3001032B	CB3001032C
40A	3	CB3001040B	CB3001040C
50A	3	CB3001050B	CB3001050C
63A	3	CB3001063B	CB3001063C
Four Pole (FP)			
6A	4	CB4001006B	CB4001006C
10A	4	CB4001010B	CB4001010C
16A	4	CB4001016B	CB4001016C
20A	4	CB4001020B	CB4001020C
25A	4	CB4001025B	CB4001025C
32A	4	CB4001032B	CB4001032C
40A	4	CB4001040B	CB4001040C
50A	4	CB4001050B	CB4001050C
63A	4	CB4001063B	CB4001063C
Single Pole Neutral (SPN)			
6A	2	CB1101006B	CB1101006C
10A	2	CB1101010B	CB1101010C
16A	2	CB1101016B	CB1101016C
20A	2	CB1101020B	CB1101020C
25A	2	CB1101025B	CB1101025C
32A	2	CB1101032B	CB1101032C
40A	2	CB1101040B	CB1101040C
50A	2	CB1101050B	CB1101050C
63A	2	CB1101063B	CB1101063C
Three Pole Neutral (TPN)			
6A	4	CB3101006B	CB3101006C
10A	4	CB3101010B	CB3101010C
16A	4	CB3101016B	CB3101016C
20A	4	CB3101020B	CB3101020C
25A	4	CB3101025B	CB3101025C
32A	4	CB3101032B	CB3101032C
40A	4	CB3101040B	CB3101040C
50A	4	CB3101050B	CB3101050C
63A	4	CB3101063B	CB3101063C

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Product Range

- Miniature Circuit Breaker (MCB)
- Isolator / Switch Disconnecter
- Residual Current Circuit Breaker (RCCB)
- Distribution Board (DB)
- Modular Plates
- Switch & Sockets
- Modular Accessories
- Lighting

Factory Address :

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301, Laxmirang Heights,
Near Pimpale Gaurav Bus Stop
Pune, Maharashtra, (India) - 411061

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