

# Miniature Circuit Breaker

## SG-DPN

IEC/EN 60898-1

4500



### Applications



### Approval / Marking



### Function and Feature

- Integrate with switch phase and neutral in one module
- Protection against both overload and short circuit,
- Isolated both for phase and neutral
- 35mm DIN rail mounting and screw mounting
- Handle can be locked with pad-lock to prevent unwanted operation for safety.

### Technical Data

- Rated current(I<sub>n</sub>):6,10,16,20,25,32A
- Rate voltage(U<sub>n</sub>):230/240VAC
- Breaking capacity(I<sub>cn</sub> = I<sub>cs</sub>):4.5kA
- Rated frequency:50/60Hz
- Tripping characteristics:B,C
- Number of poles:1P+N(1 Mod)
- Rated impulse withstand voltage(U<sub>imp</sub>):4kV
- Electrical endurance:4000 cycles
- Mechanical endurance:20000 cycles
- Terminal:pillar type
- Cable termination:10mm<sup>2</sup>
- Torque of screw:1.2Nm
- IP degree:IP20
- Standards:IEC/EN 60898-1

### Catalog No.

CTN Size:46.5\* 24\* 17.5cm

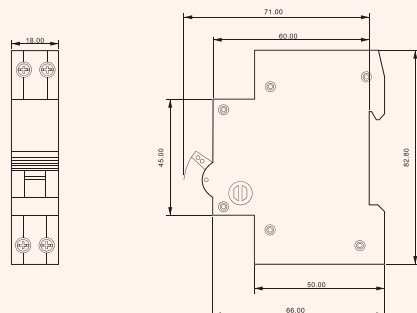
In(A)	B(3-5I <sub>n</sub> ) Model No.	C(5-10I <sub>n</sub> ) Model No.	QTY/Box PCS	QTY/CTN PCS
6A	SG-DPN 1P+N B6	SG-DPN 1P+N C6	12	120
10A	SG-DPN 1P+N B10	SG-DPN 1P+N C10	12	120
16A	SG-DPN 1P+N B16	SG-DPN 1P+N C16	12	120
20A	SG-DPN 1P+N B20	SG-DPN 1P+N C20	12	120
25A	SG-DPN 1P+N B25	SG-DPN 1P+N C25	12	120
32A	SG-DPN 1P+N B32	SG-DPN 1P+N C32	12	120



1P



### Dimensions(mm)



# Miniature Circuit Breaker

## SGB

IEC/EN 60898-1 6000



### Applications



### Approval / Marking



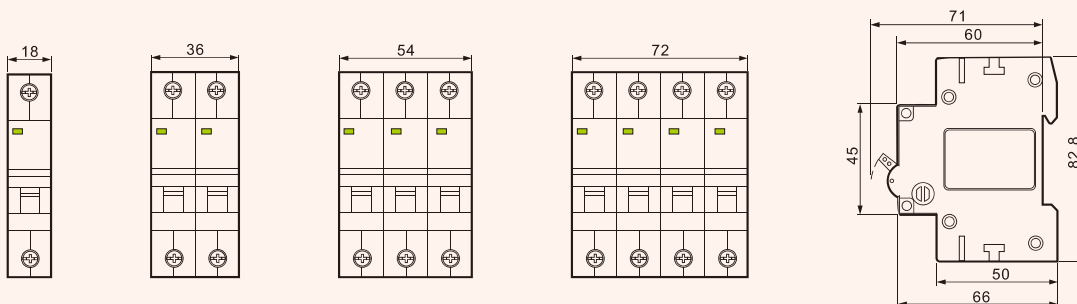
### Function and Feature

- Protection against both overload and short circuit, function of isolation
- High short circuit capacity
- Contact position indication
- Pin/fork type busbar terminal connection
- 35mm DIN rail mounting and screw mounting
- Handle can booe locked with pad-lock to prevent unwanted operation for safety.
- Full range accessories are available
- Add-on Auto Reset Motor Devices are available

### Technical Data

- Rated current(I<sub>n</sub>):1,2,3,4,6,10,13,16,20,25,32,40,45,50,63A
- Rate voltage(Un):230/240VAC,400/415VAC
- Breaking capacity(I<sub>cn</sub> = I<sub>cs</sub>):6kA
- Rated frequency:50/60Hz
- Tripping characteristics:B,C,D
- Number of poles:1P,2P,3P,4P,1P+N,3P+N
- Rated impulse withoostand voltage(U<sub>imp</sub>):4kV
- Electrical endurance:4000 cycles
- Mechanical endurance:20000 cycles
- Terminal:pillar type
- Cable termination:25mm<sup>2</sup>
- Torque of screw:2.5Nm
- IP degree:IP20
- Standards:IEC/EN 60898-1

### Dimensions(mm)

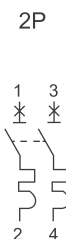


**Catalog No.**
**CTN Size: 46.5\* 24\* 17.5cm**


In(A)	B(3-5In)	C(5-10In)	D(10-20In)	QTY/Box	QTY/CTN
	Model No.	Model No.	Model No.	PCS	PCS
1A	SGB 1P B1	SGB 1P C1	SGB 1P D1	12	120
2A	SGB 1P B2	SGB 1P C2	SGB 1P D2	12	120
3A	SGB 1P B3	SGB 1P C3	SGB 1P D3	12	120
4A	SGB 1P B4	SGB 1P C4	SGB 1P D4	12	120
6A	SGB 1P B6	SGB 1P C6	SGB 1P D6	12	120
10A	SGB 1P B10	SGB 1P C10	SGB 1P D10	12	120
13A	SGB 1P B13	SGB 1P C13	SGB 1P D13	12	120
16A	SGB 1P B16	SGB 1P C16	SGB 1P D16	12	120
20A	SGB 1P B20	SGB 1P C20	SGB 1P D20	12	120
25A	SGB 1P B25	SGB 1P C25	SGB 1P D25	12	120
32A	SGB 1P B32	SGB 1P C32	SGB 1P D32	12	120
40A	SGB 1P B40	SGB 1P C40	SGB 1P D40	12	120
45A	SGB 1P B45	SGB 1P C45	SGB 1P D45	12	120
50A	SGB 1P B50	SGB 1P C50	SGB 1P D50	12	120
63A	SGB 1P B63	SGB 1P C63	SGB 1P D63	12	120



1A	SGB 1P+N B1	SGB 1P+N C1	SGB 1P+N D1	6	60
2A	SGB 1P+N B2	SGB 1P+N C2	SGB 1P+N D2	6	60
3A	SGB 1P+N B3	SGB 1P+N C3	SGB 1P+N D3	6	60
4A	SGB 1P+N B4	SGB 1P+N C4	SGB 1P+N D4	6	60
6A	SGB 1P+N B6	SGB 1P+N C6	SGB 1P+N D6	6	60
10A	SGB 1P+N B10	SGB 1P+N C10	SGB 1P+N D10	6	60
16A	SGB 1P+N B16	SGB 1P+N C16	SGB 1P+N D16	6	60
20A	SGB 1P+N B20	SGB 1P+N C20	SGB 1P+N D20	6	60
25A	SGB 1P+N B25	SGB 1P+N C25	SGB 1P+N D25	6	60
32A	SGB 1P+N B32	SGB 1P+N C32	SGB 1P+N D32	6	60
40A	SGB 1P+N B40	SGB 1P+N C40	SGB 1P+N D40	6	60
50A	SGB 1P+N B50	SGB 1P+N C50	SGB 1P+N D50	6	60
63A	SGB 1P+N B63	SGB 1P+N C63	SGB 1P+N D63	6	60



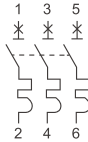
1A	SGB 2P B1	SGB 2P C1	SGB 2P D1	6	60
2A	SGB 2P B2	SGB 2P C2	SGB 2P D2	6	60
3A	SGB 2P B3	SGB 2P C3	SGB 2P D3	6	60
4A	SGB 2P B4	SGB 2P C4	SGB 2P D4	6	60
6A	SGB 2P B6	SGB 2P C6	SGB 2P D6	6	60
10A	SGB 2P B10	SGB 2P C10	SGB 2P D10	6	60
16A	SGB 2P B16	SGB 2P C16	SGB 2P D16	6	60
20A	SGB 2P B20	SGB 2P C20	SGB 2P D20	6	60
25A	SGB 2P B25	SGB 2P C25	SGB 2P D25	6	60
32A	SGB 2P B32	SGB 2P C32	SGB 2P D32	6	60
40A	SGB 2P B40	SGB 2P C40	SGB 2P D40	6	60
50A	SGB 2P B50	SGB 2P C50	SGB 2P D50	6	60
63A	SGB 2P B63	SGB 2P C63	SGB 2P D63	6	60

**Catalog No.**

**CTN Size: 46.5\* 24\* 17.5cm**



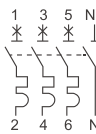
3P



In(A)	B(3-5In)	C(5-10In)	D(10-20In)	QTY/Box	QTY/CTN
	Model No.	Model No.	Model No.	PCS	PCS
1A	SGB 3P B1	SGB 3P C1	SGB 3P D1	4	40
2A	SGB 3P B2	SGB 3P C2	SGB 3P D2	4	40
3A	SGB 3P B3	SGB 3P C3	SGB 3P D3	4	40
4A	SGB 3P B4	SGB 3P C4	SGB 3P D4	4	40
6A	SGB 3P B6	SGB 3P C6	SGB 3P D6	4	40
10A	SGB 3P B10	SGB 3P C10	SGB 3P D10	4	40
16A	SGB 3P B16	SGB 3P C16	SGB 3P D16	4	40
20A	SGB 3P B20	SGB 3P C20	SGB 3P D20	4	40
25A	SGB 3P B25	SGB 3P C25	SGB 3P D25	4	40
32A	SGB 3P B32	SGB 3P C32	SGB 3P D32	4	40
40A	SGB 3P B40	SGB 3P C40	SGB 3P D40	4	40
50A	SGB 3P B50	SGB 3P C50	SGB 3P D50	4	40
63A	SGB 3P B63	SGB 3P C63	SGB 3P D63	4	40



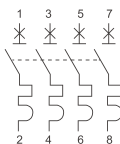
3P+N



1A	SGB 3P+N B1	SGB 3P+N C1	SGB 3P+N D1	3	30
2A	SGB 3P+N B2	SGB 3P+N C2	SGB 3P+N D2	3	30
3A	SGB 3P+N B3	SGB 3P+N C3	SGB 3P+N D3	3	30
4A	SGB 3P+N B4	SGB 3P+N C4	SGB 3P+N D4	3	30
6A	SGB 3P+N B6	SGB 3P+N C6	SGB 3P+N D6	3	30
10A	SGB 3P+N B10	SGB 3P+N C10	SGB 3P+N D10	3	30
16A	SGB 3P+N B16	SGB 3P+N C16	SGB 3P+N D16	3	30
20A	SGB 3P+N B20	SGB 3P+N C20	SGB 3P+N D20	3	30
25A	SGB 3P+N B25	SGB 3P+N C25	SGB 3P+N D25	3	30
32A	SGB 3P+N B32	SGB 3P+N C32	SGB 3P+N D32	3	30
40A	SGB 3P+N B40	SGB 3P+N C40	SGB 3P+N D40	3	30
50A	SGB 3P+N B50	SGB 3P+N C50	SGB 3P+N D50	3	30
63A	SGB 3P+N B63	SGB 3P+N C63	SGB 3P+N D63	3	30



4P



1A	SGB 4P B1	SGB 4P C1	SGB 4P D1	3	30
2A	SGB 4P B2	SGB 4P C2	SGB 4P D2	3	30
3A	SGB 4P B3	SGB 4P C3	SGB 4P D3	3	30
4A	SGB 4P B4	SGB 4P C4	SGB 4P D4	3	30
6A	SGB 4P B6	SGB 4P C6	SGB 4P D6	3	30
10A	SGB 4P B10	SGB 4P C10	SGB 4P D10	3	30
16A	SGB 4P B16	SGB 4P C16	SGB 4P D16	3	30
20A	SGB 4P B20	SGB 4P C20	SGB 4P D20	3	30
25A	SGB 4P B25	SGB 4P C25	SGB 4P D25	3	30
32A	SGB 4P B32	SGB 4P C32	SGB 4P D32	3	30
40A	SGB 4P B40	SGB 4P C40	SGB 4P D40	3	30
50A	SGB 4P B50	SGB 4P C50	SGB 4P D50	3	30
63A	SGB 4P B63	SGB 4P C63	SGB 4P D63	3	30



## SGR-RCCB Type AC

Catalog No.

CTN Size: 47.5\* 25.6\* 17.5cm

In(A)	30mA	100mA	300mA	QTY/Box	QTY/CTN
	Model No.	Model No.	Model No.	PCS	PCS
16A	SGR 1P+N 16A	SGR 1P+N 16A	SGR 1P+N 16A	1	60
25A	SGR 1P+N 25A	SGR 1P+N 25A	SGR 1P+N 25A	1	60
32A	SGR 1P+N 32A	SGR 1P+N 32A	SGR 1P+N 32A	1	60
40A	SGR 1P+N 40A	SGR 1P+N 40A	SGR 1P+N 40A	1	60
63A	SGR 1P+N 63A	SGR 1P+N 63A	SGR 1P+N 63A	1	60
80A	SGR 1P+N 80A	SGR 1P+N 80A	SGR 1P+N 80A	1	60

In(A)	30mA	100mA	300mA	QTY/Box	QTY/CTN
	Model No.	Model No.	Model No.	PCS	PCS
16A	SGR 3P+N 16A	SGR 3P+N 16A	SGR 3P+N 16A	1	30
25A	SGR 3P+N 25A	SGR 3P+N 25A	SGR 3P+N 25A	1	30
32A	SGR 3P+N 32A	SGR 3P+N 32A	SGR 3P+N 32A	1	30
40A	SGR 3P+N 40A	SGR 3P+N 40A	SGR 3P+N 40A	1	30
63A	SGR 3P+N 63A	SGR 3P+N 63A	SGR 3P+N 63A	1	30
80A	SGR 3P+N 80A	SGR 3P+N 80A	SGR 3P+N 80A	1	30

## SGR-RCCB Type A

Catalog No.

CTN Size: 47.5\* 25.6\* 17.5cm

In(A)	30mA	100mA	300mA	QTY/Box	QTY/CTN
	Model No.	Model No.	Model No.	PCS	PCS
16A	SGR 1P+N 16A	SGR 1P+N 16A	SGR 1P+N 16A	1	60
25A	SGR 1P+N 25A	SGR 1P+N 25A	SGR 1P+N 25A	1	60
32A	SGR 1P+N 32A	SGR 1P+N 32A	SGR 1P+N 32A	1	60
40A	SGR 1P+N 40A	SGR 1P+N 40A	SGR 1P+N 40A	1	60
63A	SGR 1P+N 63A	SGR 1P+N 63A	SGR 1P+N 63A	1	60
80A	SGR 1P+N 80A	SGR 1P+N 80A	SGR 1P+N 80A	1	60

In(A)	30mA	100mA	300mA	QTY/Box	QTY/CTN
	Model No.	Model No.	Model No.	PCS	PCS
16A	SGR 3P+N 16A	SGR 3P+N 16A	SGR 3P+N 16A	1	30
25A	SGR 3P+N 25A	SGR 3P+N 25A	SGR 3P+N 25A	1	30
32A	SGR 3P+N 32A	SGR 3P+N 32A	SGR 3P+N 32A	1	30
40A	SGR 3P+N 40A	SGR 3P+N 40A	SGR 3P+N 40A	1	30
63A	SGR 3P+N 63A	SGR 3P+N 63A	SGR 3P+N 63A	1	30
80A	SGR 3P+N 80A	SGR 3P+N 80A	SGR 3P+N 80A	1	30

## SGC1

IEC/EN 61095

IEC/EN 60947-4-1



### Applications



### Approval / Marking



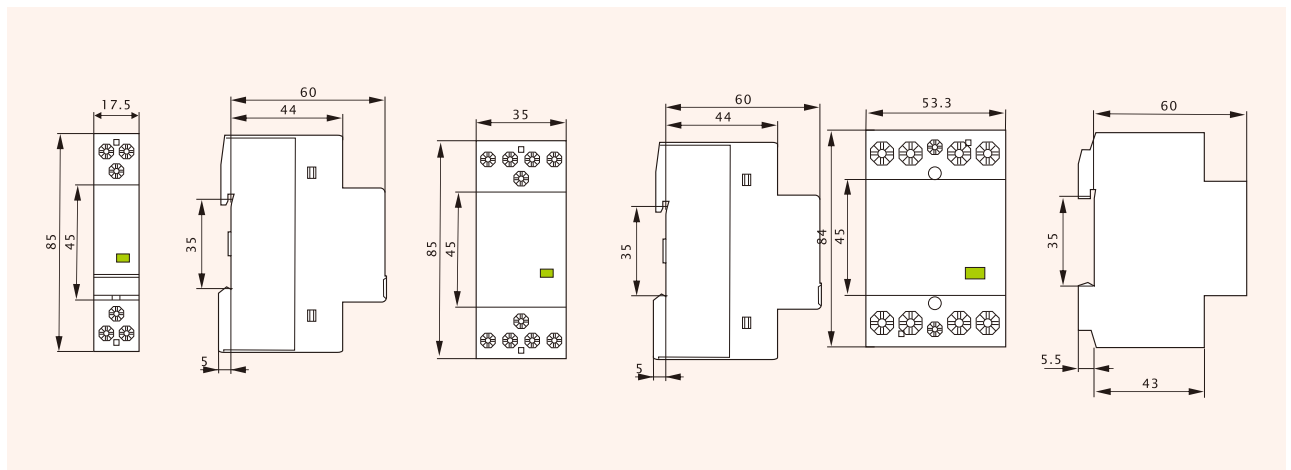
### Function and Feature

Contactors are electromechanically controlled switches used to control single or multi-phase (high) power loads while the control itself can be (very) low power

### Technical Data

- Rated current (I<sub>n</sub>): 20, 25, 40, 63A
- Rated operational voltage (U<sub>e</sub>): 230/400V
- Control voltage (U<sub>c</sub>): 24/48/110/230VAC
- Number of module: 1M, 2M, 3M
- Rated frequency: 50/60Hz
- Utilization category: AC1, AC3, AC7a, AC7b, AC5b
- Electrical endurance: 150,000 cycles (AC1, AC7a); 150,000 cycles (AC3, AC7b)
- Mechanical endurance: 1,000,000 cycles
- Rated insulation voltage (U<sub>i</sub>): 500VAC
- Rated impulse withstand voltage (U<sub>imp</sub>): 4KV
- Terminals: Pillar type
- Cable termination: 16/25mm<sup>2</sup>
- Torque of screw: 1.2/2Nm
- IP degree: IP20
- Standards: IEC/EN 61095, IEC/EN 60947-4-1

### Dimensions (mm)



## SGC1 Modular Contactor

Catalog No.

CTN Size:46.5\* 24\* 17.5cm



Model	Description	QTY/Box	QTY/CTN
SGC1-20-24/20	20A 24V 2NO	12	120
SGC1-20-48/20	20A 48V 2NO	12	120
SGC1-20-110/20	20A 110V 2NO	12	120
SGC1-20-230/20	20A 230V 2NO	12	120
SGC1-20-24/02	20A 24V 2NC	12	120
SGC1-20-48/02	20A 48V 2NC	12	120
SGC1-20-110/02	20A 110V 2NC	12	120
SGC1-20-230/02	20A 230V 2NC	12	120
SGC1-20-24/11	20A 24V 1NO+1NC	12	120
SGC1-20-48/11	20A 48V 1NO+1NC	12	120
SGC1-20-110/11	20A 110V 1NO+1NC	12	120
SGC1-20-230/11	20A 230V 1NO+1NC	12	120



Model	Description	QTY/Box	QTY/CTN
SGC1-25-24/40	25A 24V 4NO	6	60
SGC1-25-48/40	25A 48V 4NO	6	60
SGC1-25-110/40	25A 110V 4NO	6	60
SGC1-25-230/40	25A 230V 4NO	6	60
SGC1-25-24/04	25A 24V 4NC	6	60
SGC1-25-48/04	25A 48V 4NC	6	60
SGC1-25-110/04	25A 110V 4NC	6	60
SGC1-25-230/04	25A 230V 4NC	6	60
SGC1-25-24/22	25A 24V 2NO+2NC	6	60
SGC1-25-48/22	25A 48V 2NO+2NC	6	60
SGC1-25-110/22	25A 110V 2NO+2NC	6	60
SGC1-25-230/22	25A 230V 2NO+2NC	6	60
SGC1-25-24/31	25A 24V 3NO+1NC	6	60
SGC1-25-48/31	25A 48V 3NO+1NC	6	60
SGC1-25-110/31	25A 110V 3NO+1NC	6	60
SGC1-25-230/31	25A 230V 3NO+1NC	6	60



Model	Description	QTY/Box	QTY/CTN
SGC1-63-24/40	63A 24V 4NO	4	40
SGC1-63-48/40	63A 48V 4NO	4	40
SGC1-63-110/40	63A 110V 4NO	4	40
SGC1-63-230/40	63A 230V 4NO	4	40
SGC1-63-24/04	63A 24V 4NC	4	40
SGC1-63-48/04	63A 48V 4NC	4	40
SGC1-63-110/04	63A 110V 4NC	4	40
SGC1-63-230/04	63A 230V 4NC	4	40
SGC1-63-24/22	63A 24V 2NO+2NC	4	40
SGC1-63-48/22	63A 48V 2NO+2NC	4	40
SGC1-63-110/22	63A 110V 2NO+2NC	4	40
SGC1-63-230/22	63A 230V 2NO+2NC	4	40
SGC1-63-24/31	63A 24V 3NO+1NC	4	40
SGC1-63-48/31	63A 48V 3NO+1NC	4	40
SGC1-63-110/31	63A 110V 3NO+1NC	4	40
SGC1-63-230/31	63A 230V 3NO+1NC	4	40

## AUFS

IEC/EN 60947-3



### Applications



### Approval / Marking



### Technical Data

Rated thermal current:32A

Rated voltage(Un):230/240V,400/415V

Rated frequency:50/60Hz

Poles number: 1P, 1P+N(1 Mod),2P,3P,4P

Rated insulation voltage:600V

Suitable fuse link:8.5X31 mm,10X38mm

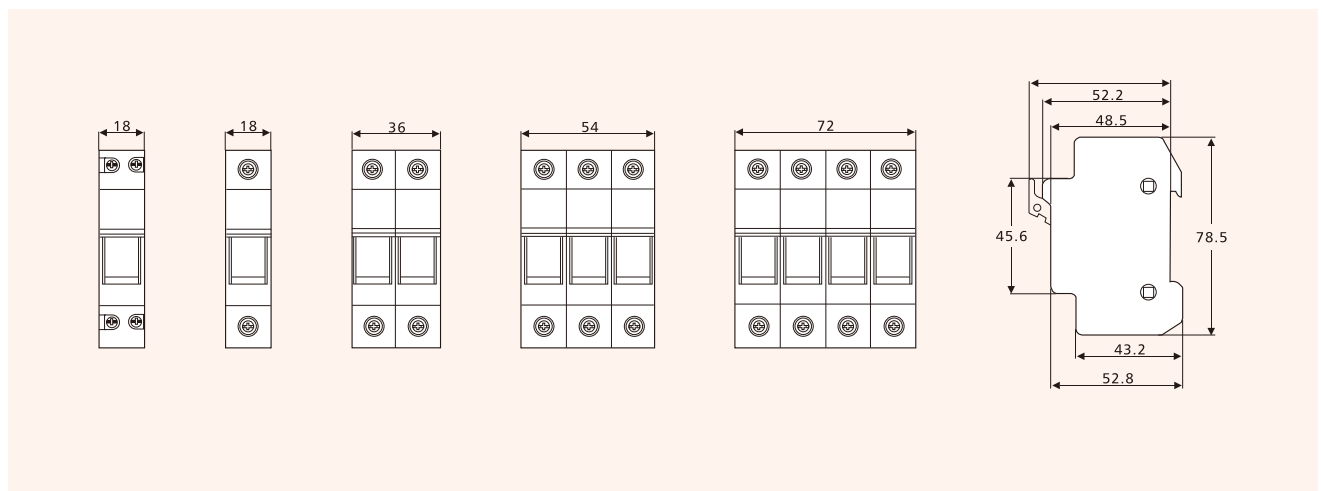
Standards:IEC/EN 60947-3

### Catalog No.

CTN Size:46.5\* 24\* 17.5cm

Model	Code	QTY/Box	QTY/CTN
AUFS 1P	190321	12	120
AUFS 1P+N	190325	12	120
AUFS 2P	190322	6	60
AUFS 3P	190323	4	40
AUFS 4P	190324	3	30
AUFS-L 1P With LED	191321	12	120
AUFS-L 1P+N With LED	191325	12	120
AUFS-L 2P With LED	191322	6	60
AUFS-L 3P With LED	191323	4	40
AUFS-L 4P With LED	191324	3	30

### Dimensions(mm)



## ME

### Technical Data

Protection Degree:IP30

Material:ABS

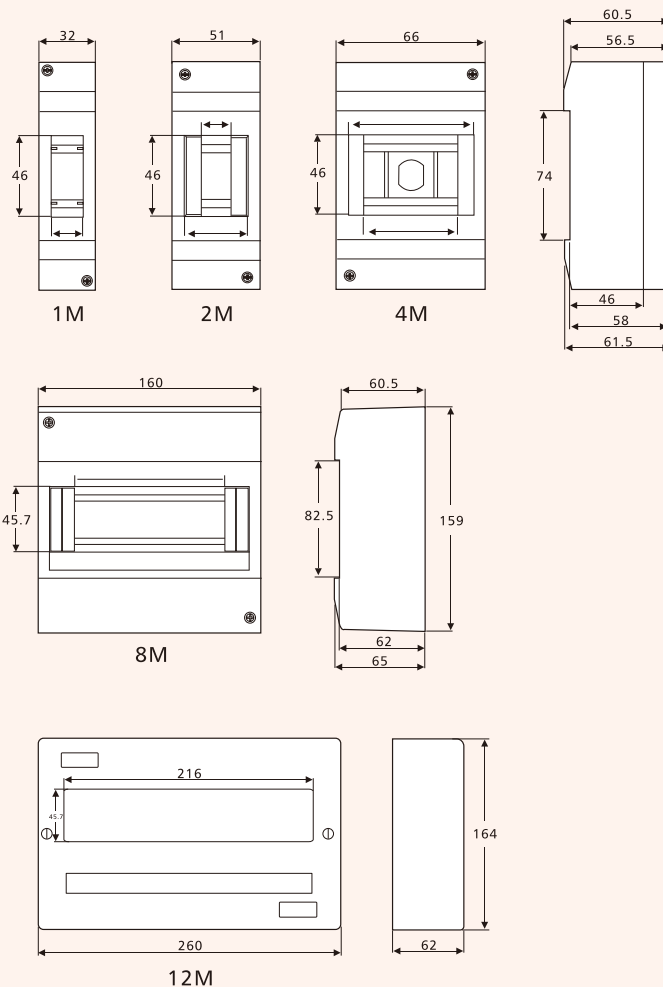
Mounting:Surface mounting

Modules number:1,2,4,8,12,18

### Catalog No.

Model	Code	QTY/Box	QTY/CTN	CNT Size
ME -1M	250001	1	200	71X29X36.5cm
ME -2M	250002	1	200	72X28.5X54.5cm
ME -4M	250004	1	100	73X29X45.5cm
ME -6M	250006	1	50	84X26.5X38cm
ME -8M	250008	1	50	85X34X37.5cm
ME -12M	250012	1	20	54.5X35.5X36cm
ME -18M	250018	1	20	76.5X35.5X36cm

### Dimension(mm):



### Technical Data

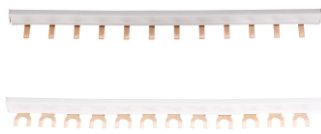
Rated Voltage:415V

Current Rating:63A

Busbar Cross Section:16mm<sup>2</sup>Cu

Standard Length:1m

### Catalog NO.



For single pole device

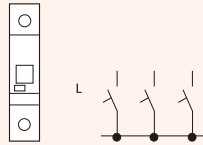
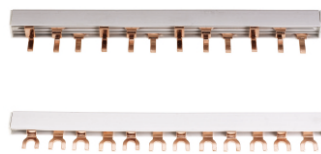
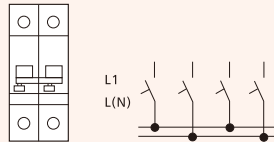


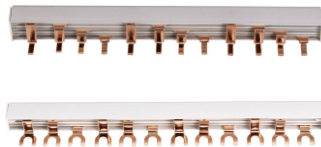
Diagram	Type	Designation	Code
	Pin Busbar	32A SP	1410321
	Pin Busbar	63A SP	1410631
	Pin Busbar	80A SP	1410801
	Pin Busbar	100A SP	1411001
	Fork Busbar	32A SP	1420321
	Fork Busbar	63A SP	1420631
	Fork Busbar	80A SP	1420801
	Fork Busbar	100A SP	1421001



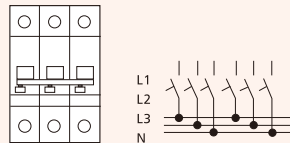
For 2-pole device



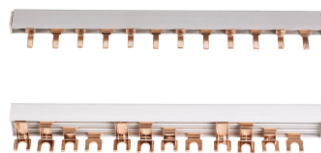
	Pin Busbar	32A DP	1410322
	Pin Busbar	63A DP	1410632
	Pin Busbar	80A DP	1410802
	Pin Busbar	100A DP	1411002
	Fork Busbar	32A DP	1420322
	Fork Busbar	63A DP	1420632
	Fork Busbar	80A DP	1420802
	Fork Busbar	100A DP	1421002



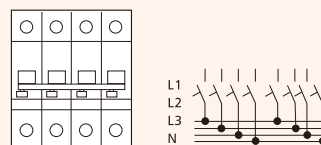
For 3-pole device



	Pin Busbar	32A TP	1410323
	Pin Busbar	63A TP	1410633
	Pin Busbar	80A TP	1410803
	Pin Busbar	100A TP	1411003
	Fork Busbar	32A TP	1420323
	Fork Busbar	63A TP	1420633
	Fork Busbar	80A TP	1420803
	Fork Busbar	100A TP	1421003



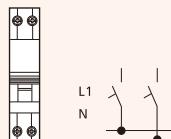
For 4-pole device



	Pin Busbar	32A FP	1410324
	Pin Busbar	63A FP	1410634
	Pin Busbar	80A FP	1410804
	Pin Busbar	100A FP	1411004
	Fork Busbar	32A FP	1420324
	Fork Busbar	63A FP	1420634
	Fork Busbar	80A FP	1420804
	Fork Busbar	100A FP	1421004



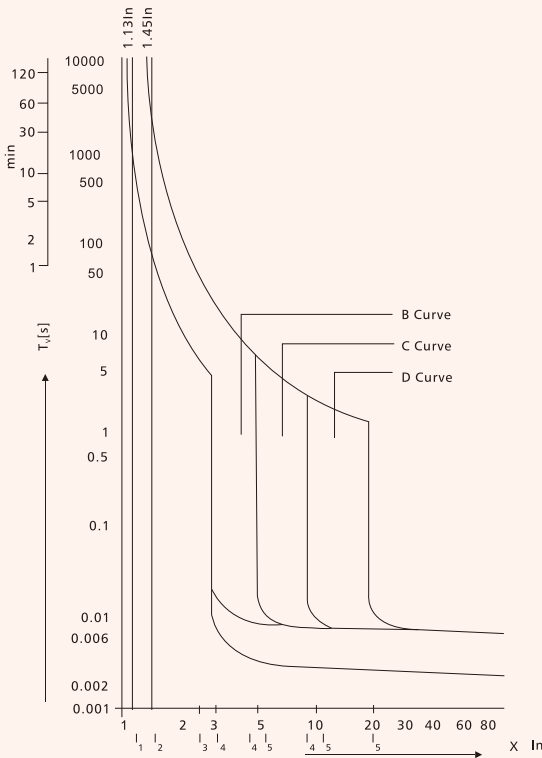
For 1P+N device (MCB AUB1N)



Pin Busbar	32A	1P+N	1410325
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# MCB Characteristics

## Characteristics Curves



As per IEC60898	Thermal Tripping		Magnetic Tripping			
	No tripping current	Tripping current $I_2$	Time Limits $t$	Hold current $I_4$	Trip current $I_5$	Time Limits $t$
B Curve	$1.13 \times I_n$	$1.45 \times I_n$	$\geq 1h$ $< 1h$	$3 \times I_n$ $5 \times I_n$	$\geq 0.1s$ $< 0.1s$	
C Curve	$1.13 \times I_n$	$1.45 \times I_n$	$\geq 1h$ $< 1h$	$5 \times I_n$ $10 \times I_n$	$\geq 0.1s$ $< 0.1s$	
D Curve	$1.13 \times I_n$	$1.45 \times I_n$	$\geq 1h$ $< 1h$	$10 \times I_n$ $20 \times I_n$	$\geq 0.1s$ $< 0.1s$	
$I_3 = 2.55 \times I_n$		$1s < t < 60s$ for $I_n \leq 32A$ $1s < t < 120s$ for $I_n > 32A$				

## Tripping characteristics

### 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  $(3-5)I_n$

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

“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  $(10-20)I_n$

## Current limiting design

