State High-tech Enterprise
State Exemption Products
Shanghai Famous Brand

国家高新技术企业 State High-tech Enterprise
国家免检产品 State exemption Products
上海名牌 Shanghai Famous Brand

SM40

SM40 series thermo-magnetic MCCB
SM40L series residual current MCCB
SM40E1 series intelligent adjustable MCCB
SM40E2 series communication-able intelligent MCCB

- Full Varieties of specs and models, multiple functions with isolating, intelligent, communication-able types, compact size, high breaking capacity.
- Same installation dimensions of types of thermo-magnetic、residual current、intelligent MCCB.
- Same dimensions of installation and same frame grade from Sm30 series to SM40 series. Convenient for the further renewal and renovation

SHANGHAI HUATONG ELECTRICITY CO.,LTD

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Brief Introduction

SHANGHAI HUATONG ELECTRICITY CO.,LTD

Shanghai Huatong Electricity Co., Ltd was founded in 1982. It is a key state high and new-tech enterprise whose core business is engaged in manufacturing and distributing high and low voltage electric apparatuses and complete sets of switchgear equipment. Most of our products are well known in the industry, such as ZW1 series Intelligent Air Circuit Breaker, SM40 series Moulded Case Circuit Breaker and SQ40 series Auto-transfer Switch are highly demanded by our customers and also are highly paid close attention to by our fellow competitor due to our infinite creative renovation in technology.

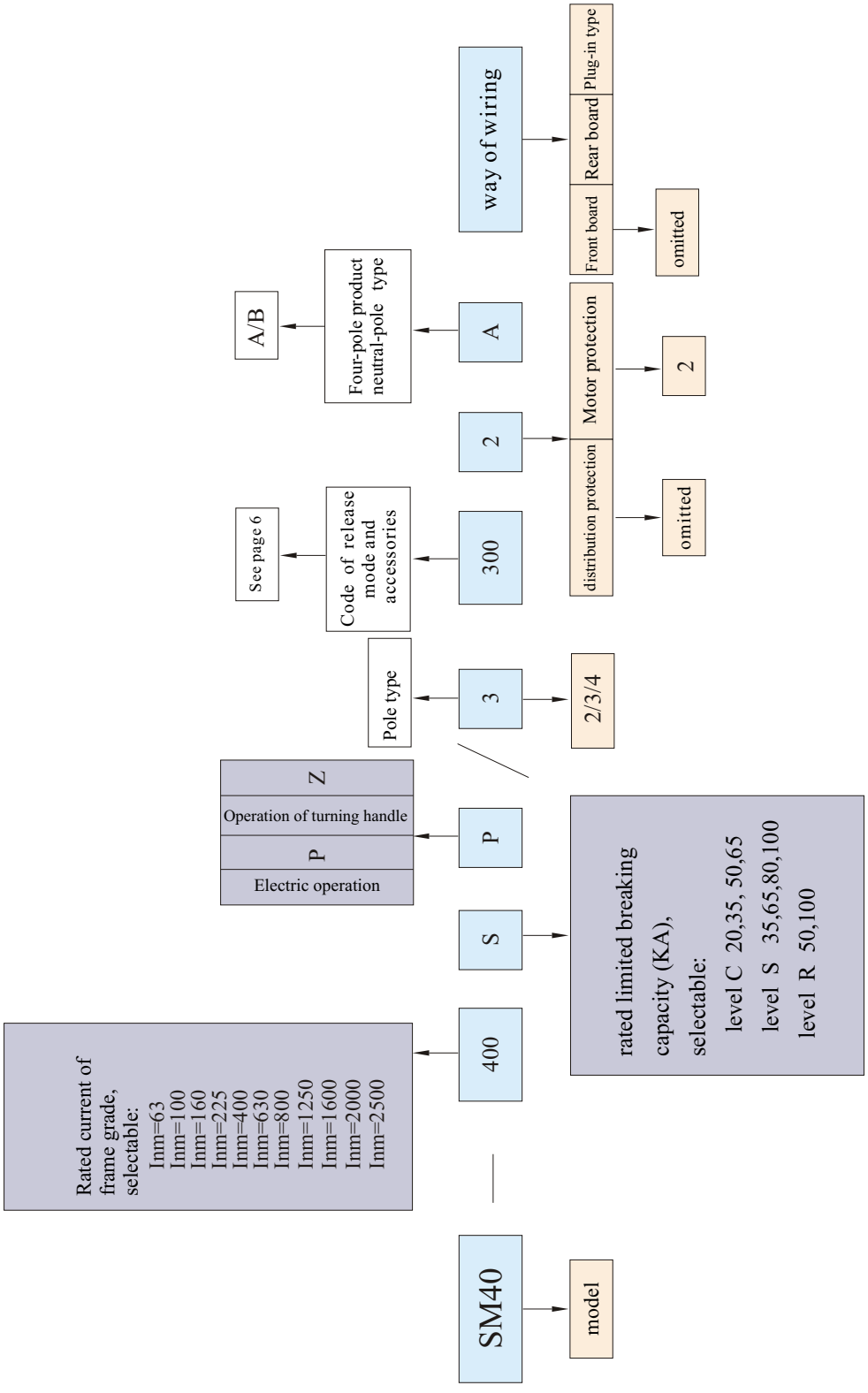
We have been equipped with advanced soft-hardware products exploitation and research centre, machining centre, verifying-centre, moulded-case centre, sales transaction centre, cooperation with pressing-punch workshop, spot-welding workshop, fitting-on workshop, debug workshop, and package workshop. Meanwhile, we have fetched in modern robot auto-welding station, boring mill station, large scale laser cutting station, three dimensional coordinate admeasuring apparatus, other auto-check precise equipments. We pay high attention to our material quality from the very beginning, with strict supervision in components machining until final-end product to make our products' process and design meet and exceed to the international standardization.

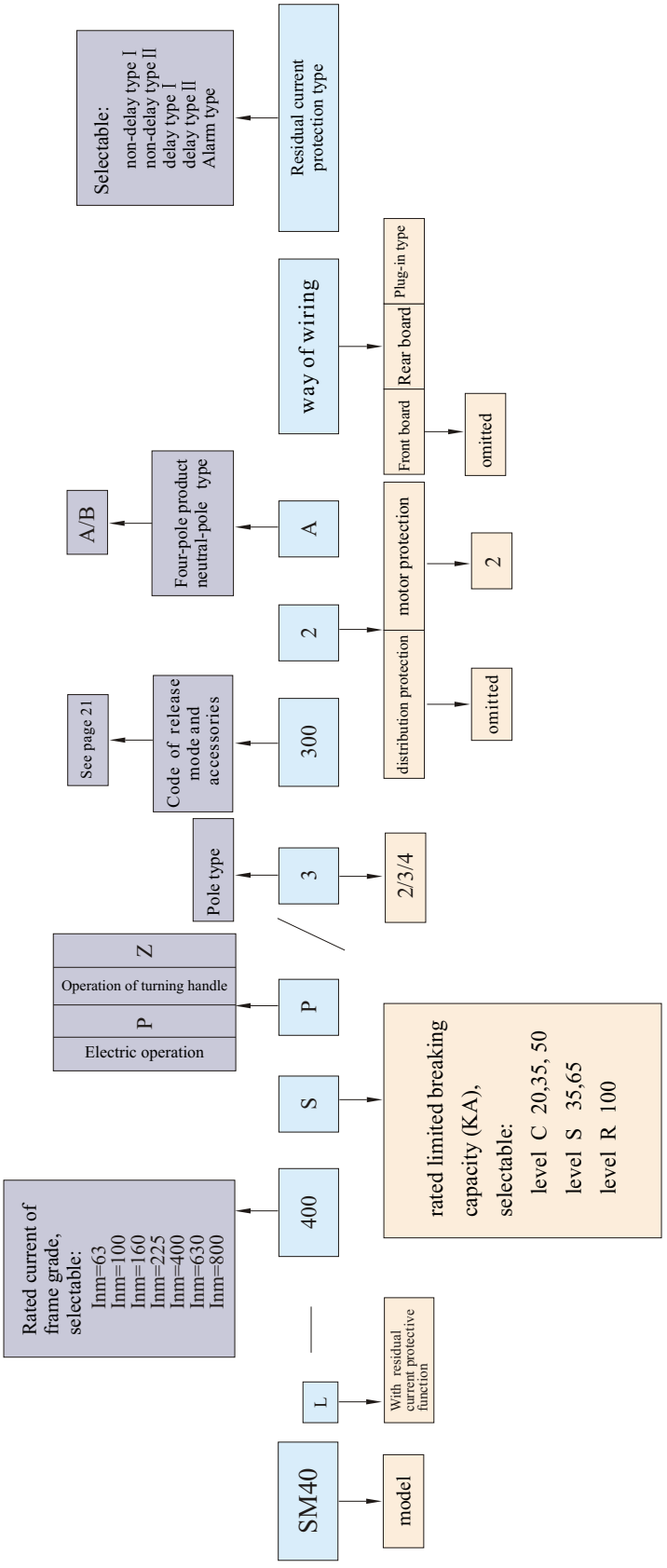
We mainly produce and distribute products including Moulded-case Circuit-breaker, Intelligent Air Circuit-breaker, Automatic Transfer Switch, Terminal Apparatus, Load-isolation Switch, AC Motor Soft-starter, Outdoor High-voltage Vacuum Circuit-breaker, Outdoor High-voltage Vacuum Isolating Load Switch, Outdoor AC High-voltage Vacuum Circuit-breaker, High and Low-voltage complete sets equipments, DC power supply cabinet and so on. All these products have obtained CCC certificates issued by China Quality Centre .All products are insured against product liability with PICC. And all of them have been used widely in national defence, traffic hinge, electric power or plants, communication and finance field, medical treatment and sanitation system, education industry, administration, hotel and restaurant, commerce net, house project, and other synthesis engineering. The quantity of our product and sales has continuously been occupying the front of the industry related since many years ago. Furthermore, the quality of our products and our services are both highly appraised by our national and oversea customers.

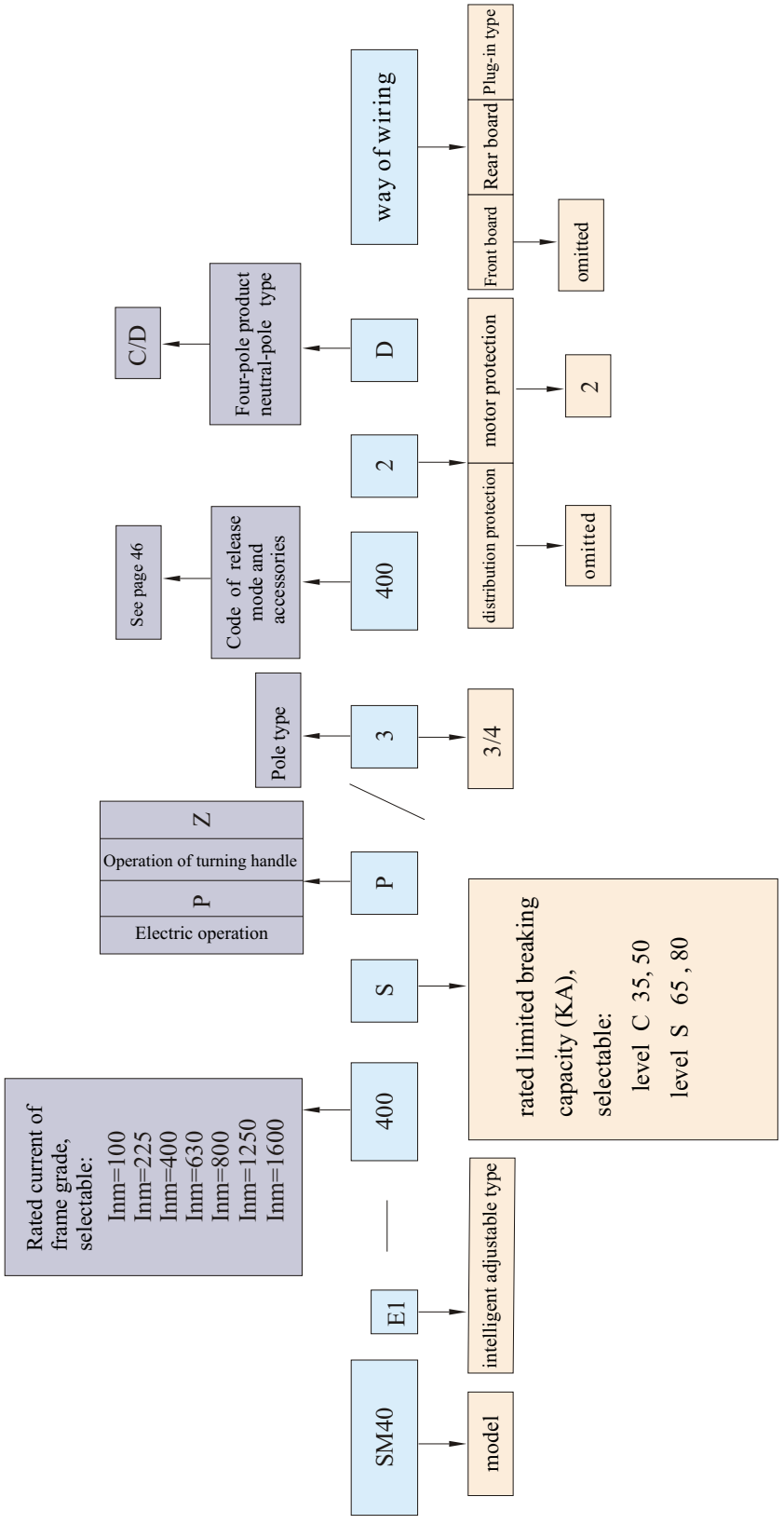
Totally with around 500 employee, among them around 40% are high educated from national famous university and now so many of them are super engineer in their position. We have always been seeking persons with ability for we believe "No talents No development" simultaneously ,We have been striving to keep great faith in our customers for we believe in "Customer is god" We have also been pursuing our brand connotation "Rooting in china, Erecting in East, Open up to the world, Developing with five continents!" Sustainability is integral to all aspects of our business. We strive to balance economic, environmental, and social objectives and integrate them into our daily business decisions to create more value to all our stakeholders. Our mission is to become a well-known global company that specializes best in electrical intelligence with innovative solutions and services.

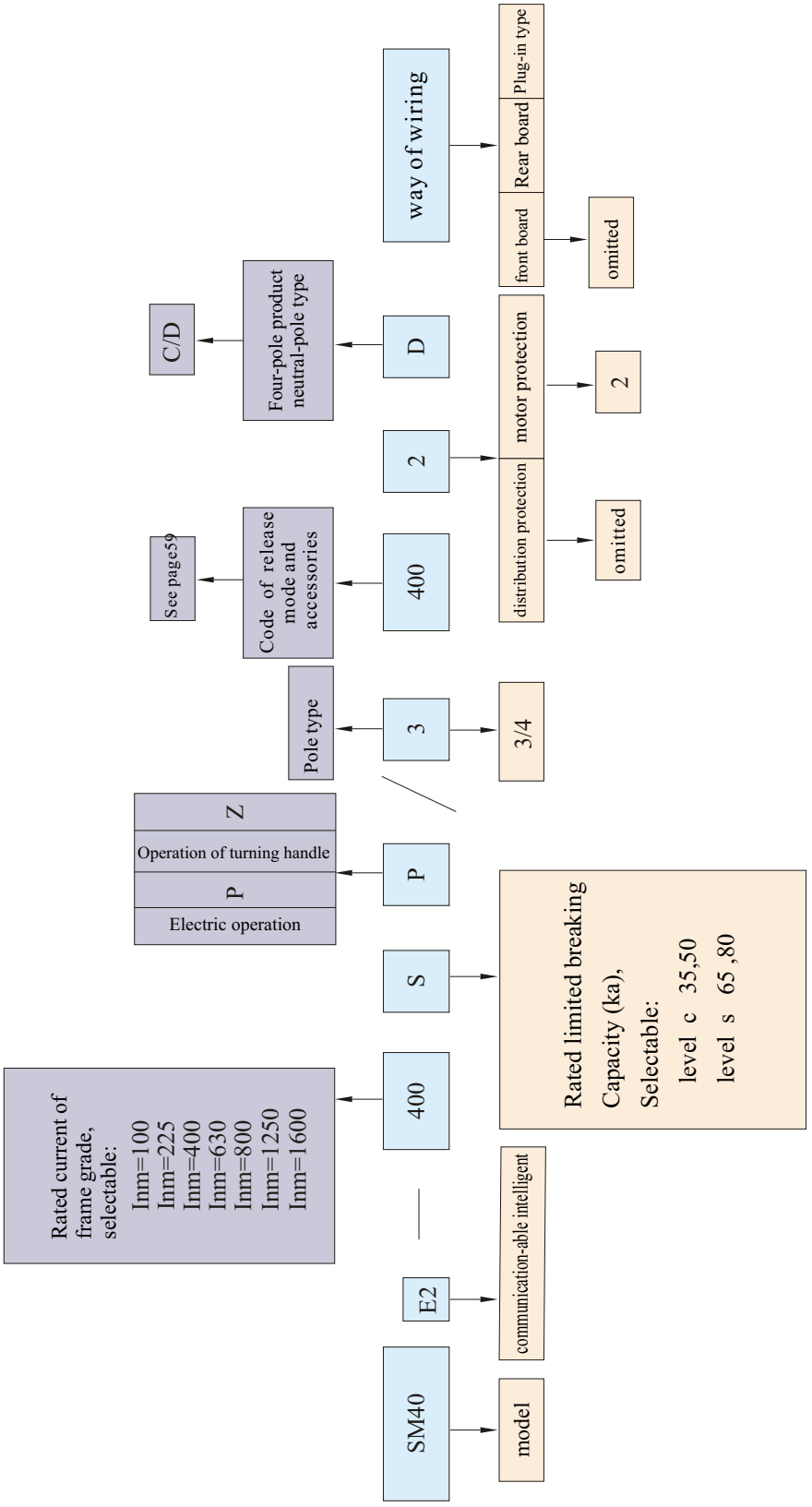
SHANGHAI HUATONG ELECTRICITY CO., LTD.

Catalogue


SM40
model
Rated current of frame grade, selectable:
Inm=63
Inm=100
Inm=160
Inm=225
Inm=400
Inm=630
Inm=800
Inm=1250
Inm=1600
Inm=2000
Inm=2500
400
S
rated limited breaking capacity (KA), selectable:
level C 20,35, 50,65
level S 35,65,80,100
level R 50,100
P
Z
Operation of turning handle
P
Electric operation
3
2/3/4
Pole type
300
Code of release mode and accessories
See page 6
2
distribution protection
omitted
Motor protection
2
A
Four-pole product neutral-pole type
A/B
way of wiring
Front board
Rear board
Plug-in type
omitted


SM40
model
L
With residual current protective function
Rated current of frame grade, selectable:
Inm=63
Inm=100
Inm=160
Inm=225
Inm=400
Inm=630
Inm=800
400
S
rated limited breaking capacity (KA), selectable:
level C 20,35, 50
level S 35,65
level R 100
P
Z
Operation of turning handle
P
Electric operation
Pole type
3
2/3/4
300
Code of release mode and accessories
See page 21
2
distribution protection
omitted
motor protection
2
A
Four-pole product neutral-pole type
A/B
way of wiring
Front board
Rear board
Plug-in type
omitted
Residual current protection type
Selectable:
non-delay type I
non-delay type II
delay type I
delay type II
Alarm type


SM40
E1
400
S
P
3
400
2
D
C/D
Four-pole product neutral-pole type
See page 46
Code of release mode and accessories
Pole type
3/4
distribution protection
motor protection
omitted
2
Front board
Rear board
Plug-in type
omitted
way of wiring
model
intelligent adjustable type
Rated current of frame grade, selectable:
Inm=100
Inm=225
Inm=400
Inm=630
Inm=800
Inm=1250
Inm=1600
rated limited breaking capacity (KA), selectable:
level C 35, 50
level S 65 , 80
Electric operation
P
Operation of turning handle
Z


SM40
model
E2
communication-able intelligent
400
Rated current of frame grade, selectable:
Inm=100
Inm=225
Inm=400
Inm=630
Inm=800
Inm=1250
Inm=1600
S
Rated limited breaking Capacity (ka), Selectable:
level c 35,50
level s 65 ,80
P
Electric operation
P
Operation of turning handle
Z
3
3/4
Pole type
400
Code of release mode and accessories
See page59
2
distribution protection
omitted
motor protection
2
D
Four-pole product neutral-pole type
C/D
way of wiring
front board
omitted
Rear board
Plug-in type

Suitable range and main characteristic

- SM40 series thermo-magnetic MCCB (" breaker" for short hereafter), one of the SM40 series products, is a new-style one developed by this factory be means of the international advanced know-how of design and manufacture theory, and suitable for the non-frequent conversion in the circuit of AC 50Hz, rated insulating voltage 800V, rated working voltage below 690V and rated working current up to 2500A and the non-frequent starting of motors. The breakers have overload , short-circuit and under voltage protection devices so as to protect the circuit and the power equipment against damage.
- Of a compact structure, small volume, high breaking capacity, full varieties of both internal and external accessories etc.
- Of the isolation function, the related symbol of which is: 

Conformed standards

The following standards are executed with this series breaker:
IEC60947-1， GB/t14048.1 <General rules>
IEC60947-2，GB 14048.2-2001<Low-voltage circuit-breaker>
IEC60947-4， GB14048.4 <contacts and motors' starters>>
IEC60947-5-1,GB14048.5<Electric appliances with electro-mechanical control circuits>

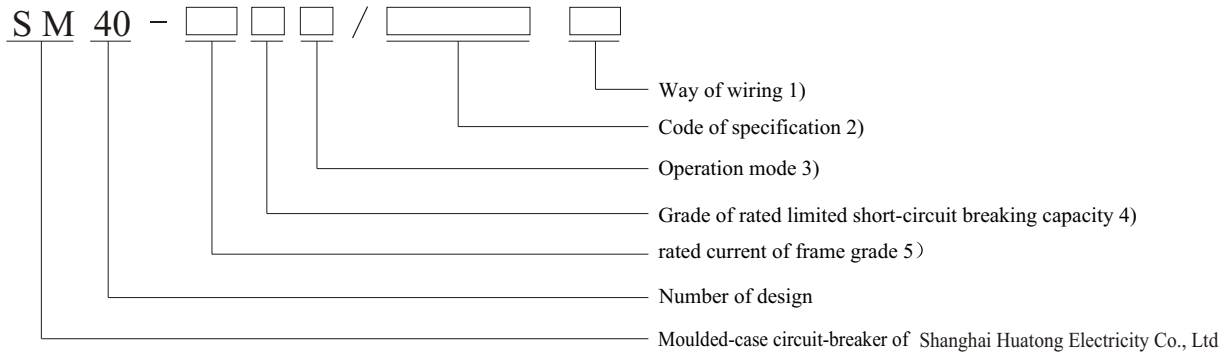
Suitable working environment

- The elevation at the installation place not over 2000m.
- Ambient air temperature -5～+40 ℃, and the average value during 24h not over 35 ℃.
- The RH not over 50% at the maximum temperature +40 C; can be higher at a lower temperature, the average lowest temperature in the most humidity month not over +25 C, the average maximum RH of the said month not over 90%, and the condensed dewdrops produced on the product surface due to temperature variation should be taken into consideration.
- Pollution grade: 3
- As of the installation grade, III for the breakers' main circuit, II for the control and auxiliary circuits.

Installation mode

This series breaker can be installed either vertically or horizontally.

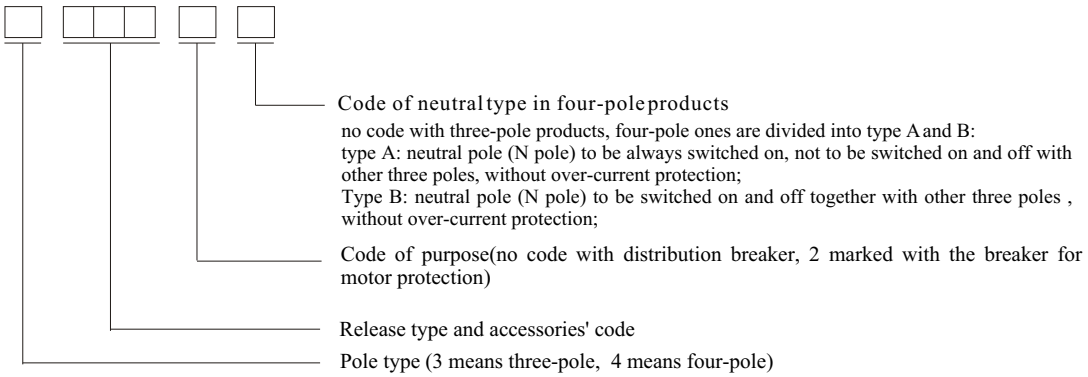
Model and meaning



Note:

1) Divided into front-board, rear-board and plug-in type wirings (the front-board one may not be noted)

2) Code of specification (consists of 6 bits)



3) Operation mode: no code with direct operation of handle, Z for turning handle operation, P for electric operation;

4) Divided into type: C, S ,R level;

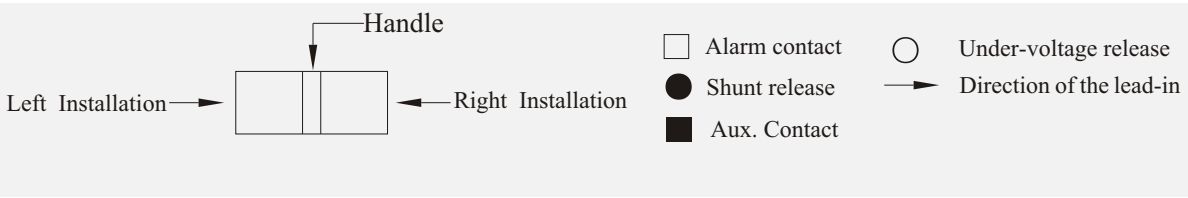
5) Divided into 63A, 100A, 160A, 225A, 400A、630A、800A 、1250A、1600A、2000A、2500A.

Release's mode and accessories' code

Code / Accessories name / Release mode	Without access.	Shunt release	Aux.Contact	Under-voltage release	Aux.Contact Shunt release	two groups of auxiliary contact	Under-voltage release Aux.Contact
Magnetic release	200	210	220	230	240	260	270
dual release	300	310	320	330	340	360	370

Code / Accessories name / Release mode	Alarm contact	Alarm contact Shunt release	Alarm contact Aux.Contact	Alarm contact Under-voltage release	Alarm contact Aux.Contact Shunt release	Alarm contact two groups of auxiliary contact	Alarm contact Under-voltage release Aux.Contact
Magnetic release	208	218	228	238	248	268	278
dual release	308	318	328	338	348	368	378

Accessories Assembled Inside



Access. code	Access.name (Model / Pole type)	SM40-63		SM40-100 SM40-225(160)		SM40-400		SM40-800(630)	
		3	4	3	4	3	4	3	4
208、308	Alarm contact □								
210、310	Shunt release ●								
220、320	Aux. Contact ■								
230、330	Under-voltage release ○								
240、340	Shunt release Aux. Contact								
260、360	two groups of auxiliary contact								
270、370	Aux. Contact Under-voltage release								
218、318	Shunt release Alarm contact								
228、328	Aux. Contact Alarm contact								
238、338	Alarm contact Under-voltage release								
248、348	Shunt release Alarm contact Aux. Contact								
268、368	two groups of auxiliary contact Alarm contact								
278、378	Under-voltage release Alarm contact Aux. Contact								

Note: to SM40-400, SM40-800

248, 348, 278, 378: their aux contacts are ONE PAIR CONTACTS (I.E. ONE NORMALLY OPEN, ONE NORMALLY CLOSE)

268, 368: their aux contacts are THREE PAIR CONTACTS (I.E THREE NORMALLY OPEN, THREE NORMALLY CLOSE)

The thermo-magnetic protective feature for power distribution

- protective feature of the breaker for distribution

Release rated current (A)	Characteristic of inverse-time limit motion (Ambient temperature+40℃)		Inst.action current (A)
	1.05In(cold state) No motion time（h）	1.30In(hot state) Motion time（h）	
In ≤ 63	1	1	10In ± 20%
63 < In ≤ 225	2	2	
225 < In ≤ 800	2	2	5In ± 20% 7In ± 20% 10In ± 20%

- protective feature of the breaker for motor-protection

Release rated current (A)	Characteristic of inverse-time limit motion (Ambient temperature+40℃)				Inst.action current (A)
	1.0In(cold state) No motion time（h）	1.20In(hot state) Motion time（h）	1.50In(cold state) Motion time（h）	7.2In(cold state) Motion time（h）	
In≤100	2	2	2min	2s＜Tp ≤10s	12In ± 20%
225＜In≤400			4min	4s ＜Tp≤20s	

Power loss of breaker

Model of breaker	Rated current (A)	Power loss (three-pole)	
		Front & rear board wiring(w)	Plug-in type wiring(W)
SM40-63（C 、 S 、 R）	63	20	24
SM40-100（C 、 S 、 R）	100	33	38
SM40-160（C 、 S 、 R）	160	43	51
SM40-225（C 、 S 、 R）	225	58	66
SM40-400（C 、 S 、 R）	400	105	118
SM40-630（C 、 S 、 R）	630	168	187
SM40-800（C 、 S 、 R）	800	248	268
SM40-1250（C 、 S）	1250	298	324
SM40-1600（C 、 S）	1600	350	389
SM40-2000（C 、 S）	2000	387	421
SM40-2500（C 、 S）	2500	453	489

Experimental current and cross-section area of conductor

Conductor's cross-section area for temperature rise test and related experimental current

Rated current (A)	6	10	16 20	32	40 50	63	80	100	125 140	160	180 200 225	250	315 350	400
Cross-section area(mm^2)	1	1.5	2.5	6	10	16	25	35	50	70	95	120	185	240

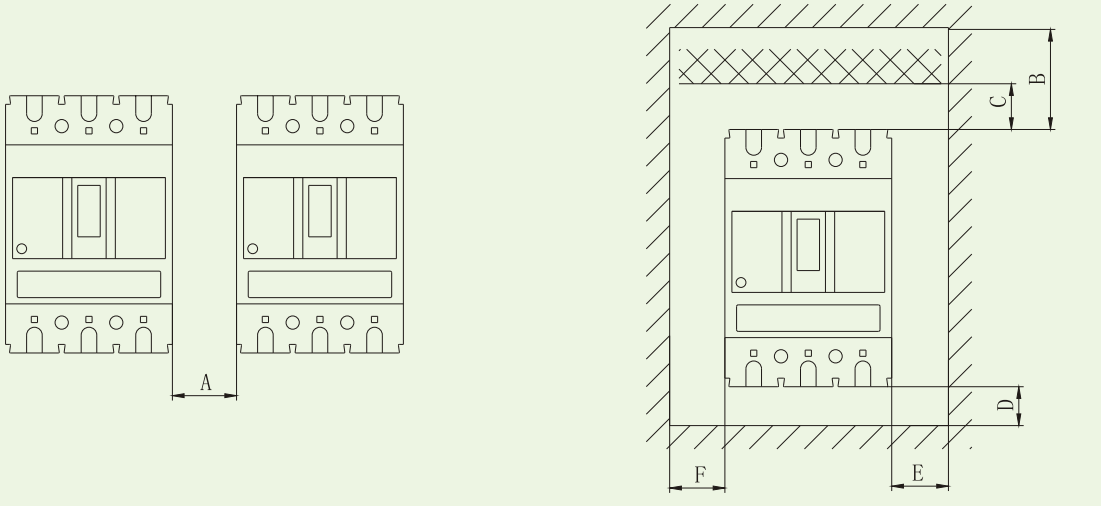
Rated current (A)	Copper conductor		Copper bar	
	Pcs	Cross-section area of each(mm^2)	Pcs	Cross-section area of each(mm^2)
500	2	150	2	30 × 5
630	2	185	2	40 × 5
700	2	240	2	50 × 5
800	2	240	2	50 × 5
1250(1600) (Frame current)			2	≤ 1000A 60 × 5
				> 1000A 80 × 5
2000(2500) (Frame current)			2	≤ 1600A 100 × 5
			3	> 1600A 100 × 5

The reduced capacity coefficient of the rated working current affected by ambient temperature

Reduced Capacity coefficient / Temp / Model of breaker	+40 ℃	+45 ℃	+50 ℃	+55 ℃	+60 ℃
SM40-63(C 、 S 、 R)	1.0In	0.95In	0.86In	0.78In	0.69In
SM40-100(C 、 S 、 R)	1.0In	0.92In	0.88In	0.80In	0.71In
SM40-160(C 、 S 、 R)	1.0In	0.95In	0.90In	0.88In	0.74In
SM40-225(C 、 S 、 R)	1.0In	0.93In	0.88In	0.85In	0.70In
SM40-400(C 、 S 、 R)	1.0In	0.91In	0.83In	0.76In	0.69In
SM40-630(C 、 S 、 R)	1.0In	0.90In	0.84In	0.78In	0.72In
SM40-800(C 、 S 、 R)	1.0In	0.84In	0.78In	0.73In	0.71In
SM40-1250(C 、 S)	1.0In	0.81In	0.74In	0.70In	0.68In
SM40-1600(C 、 S)	1.0In	0.79In	0.71In	0.68In	0.64In
SM40-2000(C 、 S)	1.0In	0.78In	0.70In	0.66In	0.62In
SM40-2500(C 、 S)	1.0In	0.67In	0.67In	0.64In	0.59In

Safe distance of breaker

Some distance should be kept between the breaker and the ceiling、 the ground and the side of a room according to the standard requirement of it.



Model of breaker	Safe distance（mm）					
	A	B To metal	C To insulator	D	E	F
SM40-63(C 、 S 、 R)	0	50	25	20	20	20
SM40-100(C 、 S 、 R)	0	50	25	20	20	20
SM40-160(C 、 S 、 R)	0	50	30	20	20	20
SM40-225(C 、 S 、 R)	0	100	25	20	25	25
SM40-400(C 、 S 、 R)	0	100	25	20	25	25
SM40-630(C 、 S 、 R)	0	100	30	20	25	25
SM40-800(C 、 S 、 R)	0	100	30	20	25	25
SM40-1250 、 1600(C 、 S)	0	120	40	40	45	45
SM40-2000 、 2500(C 、 S)	0	120	40	40	45	45

Utilization and maintenance:

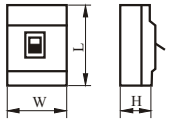
- The rated voltage, current and short-circuit breaking capacity of the breaker should accord with the feature of electric system. Users are not allowed to open the cover to adjust at wish the protective characteristic of overload long-delay and inst short-circuit.The rectifying temperature is +40℃ from ex-works.

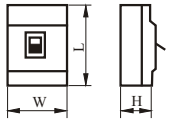
- Installation and wiring should be done upon the marks on the power side (e.g.1,3,5) and on the load side (e.g.2,4,6) of the breaker. No counter-wiring is allowed, if it has to be done please reduce normally the capacity 20%～30% to avoid any damage to the breaker.

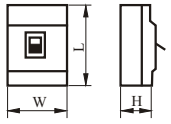
- The breaker equipped with an under-voltage release should be firstly electrified and then the breaker can be re-buckled again or switched-on ,otherwise it would be damaged.

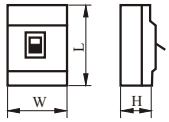
- Three places available for the handle of the breaker separately means switching-on, switching-off and tripping. And when it is in the place of tripping, pull it backwards to have it re-buckled before switching-on.

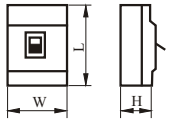
- Under the situation of the proper use of our products according to the rules we provided , we are fully responsible for replacement or repair of any quality-problem products with intact seal within 18 months from the date of ex-works delivery.(Compliant to domestic users)

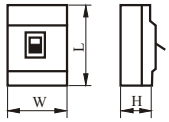
Rated current of frame grade Inm(A)		63					
Model		SM40-63C	SM40-63C		SM40-63S		SM40-63R
Appearance							
Rated current In(A)		6、10、16、20、25、32、40、50、63					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui（V）		AC800					
Rated working voltage Ue （V）		AC400					
Rated impulse withstand voltage Uimp （V）		8000					
Arcover distance （mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC690V						10
	AC400V	20	20		35		50
	DC250V						
Rated operating short-circuit breaking capacity Ics(kA)	AC690V						5
	AC400V	15	15		25		35
	DC250V						
Maximum expected maintaining value		40000					
Experimental life (With load\No load\Sum)		6000 ＼ 8500 ＼ 14500					
External dimensions (mm) 	W	76	76	101	76	101	76
	L	135					
	H	78.5					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release	☆	☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

Rated current of frame grade Inm(A)		100					
Model		SM40-100C	SM40-100C		SM40-100S		SM40-100R
Appearance							
Rated current In(A)		10、16、20、25、32、40、50、63、80、100					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400,AC690					
Rated impulse withstand voltage Uimp (V)		8000					
Arcover distance (mm)		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC690V		8		25		35
	AC400V	35	35		65		100
	DC250V						
Rated operating short-circuit breaking capacity Ics(kA)	AC690V		4		12		18
	AC400V	25	25		50		75
	DC250V						
Maximum expected maintaining value		40000					
Experimental life (With load\No load\Sum)		6000＼8500＼14500					
Overall dimensions (mm) 	W	90	90	120	90	120	90
	L	155					215
	H	80					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

Rated current of frame grade Inm(A)		160					
Model		SM40-160C	SM40-160C		SM40-160S		SM40-160R
Appearance							
Rated current In(A)		100、125、140、160					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui（V）		AC800					
Rated working voltage Ue （V）		AC400,AC690					
Rated impulse withstand voltage Uimp （V）		8000					
Arcover distance （mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC690V		8		25		35
	AC400V	35	35		65		100
	DC250V						
Rated operating short-circuit breaking capacity Ics(kA)	AC690V		4		12		18
	AC400V	25	25		50		75
	DC250V						
Maximum expected maintaining value		30000					
Experimental life (With load\No load\Sum)		3000 ＼ 7000 ＼ 10000					
External dimensions (mm) 	W	107	107	142	107	142	107
	L	165					240
	H	91.5					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

Rated current of frame grade Inm(A)		225						
Model		SM40-225C	SM40-225C		SM40-225S		SM40-225R	
Appearance								
Rated current In(A)		100、125、140、160、180、200、225						
Pole type		2	3	4	3	4	3	
Rated insulating voltage Ui (V)		AC800						
Rated working voltage Ue (V)		AC400,AC690						
Rated impulse withstand voltage Uimp (V)		8000						
Arcover distance (mm)		0						
Rated limited short-circuit breaking capacity Icu(kA)	AC690V		8		25		35	
	AC400V	35	35		65		100	
	DC250V							
Rated operating short-circuit breaking capacity Ics(kA)	AC690V		4		12		18	
	AC400V	25	25		50		75	
	DC250V							
Maximum expected maintaining value		30000						
Experimental life (With load\No load\Sum)		3000＼7000＼10000						
Overall dimensions (mm) 	W	107	107	142	107	142	107	
	L	165					240	
	H	91.5						
Way of wiring	Front-board	☆	☆		☆		☆	
	rear-board	☆	☆		☆		☆	
	Insert type		☆		☆		☆	
Accessories	Shunt release		☆		☆		☆	
	Under-voltage release		☆		☆		☆	
	Aux.contact	☆	☆		☆		☆	
	Alarm contact		☆		☆		☆	
	Rotary manual operation mechanism		☆		☆		☆	
	Electric operation mechanism		☆		☆		☆	

Rated current of frame grade Inm(A)		400						630	
Model		SM40-400C		SM40-400S		SM40-400R		SM40-630C	
Appearance									
Rated current In(A)		200、250、315、350、400						400、500、630	
Pole type		3	4	3	4	3	4	3	4
Rated insulating voltage Ui（V）		AC800							
Rated working voltage Ue （V）		AC400,AC690							
Rated impulse withstand voltage Uimp （V）		8000							
Arcover distance （mm）		0							
Rated limited short-circuit breaking capacity Icu(kA)	AC690V	10		25		35		10	
	AC400V	50		65		100		50	
	DC250V								
Rated operating short-circuit breaking capacity Ics(kA)	AC690V	5		12		18		5	
	AC400V	35		50		75		35	
	DC250V								
Maximum expected maintaining value		15000						15000	
Experimental life (With load\No load\Sum)		2000 ＼ 4000 ＼ 6000						1500＼4000＼5500	
Overall dimensions (mm) 	W	150	198	150	198	150	198	210	280
	L	257						280	
	H	106						115	
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Insert type	☆		☆		☆		☆	
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	

Rated current of frame grade Inm(A)		630				800			
Model		SM40-630S		SM40-630R		SM40-800S		SM40-800R	
Appearance									
Rated current In(A)		400、500、630				700、800			
Pole type		3	4	3	4	3	4	3	4
Rated insulating voltage Ui (V)		AC800							
Rated working voltage Ue (V)		AC400，AC690							
Rated impulse withstand voltage Uimp (V)		8000							
Arcover distance (mm)		0							
Rated limited short-circuit breaking capacity Icu(kA)	AC690V	25		35		25		35	
	AC400V	65		100		65		100	
	DC250V	12		18		12		18	
Rated operating short-circuit breaking capacity Ics(kA)	AC690V								
	AC400V	50		75		50		75	
	DC250V								
Maximum expected maintaining value		15000				15000			
Experimental life (With load\No load\Sum)		1500＼4000＼5500				1000＼2500＼3500			
Overall dimensions (mm) 	W	210	280	210	280	210	280	210	280
	L	280				280			
	H	115				115			
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Insert type	☆		☆		☆		☆	
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	

Rated current of frame grade Inm(A)		1250				1600			
Model		SM40-1250C		SM40-1250S		SM40-1600C		SM40-1600S	
Appearance									
Rated current In(A)		800、1000、1250				1400、1600			
Pole type		3	4	3	4	3	4	3	4
Rated insulating voltage Ui（V）		AC800							
Rated working voltage Ue （V）		AC400、AC690							
Rated impulse withstand voltage Uimp （V）		8000							
Arcover distance （mm）		≯120							
Rated limited short-circuit breaking capacity Icu(kA)	AC690V	20		25		20		25	
	AC400V	65		80		65		80	
	DC250V								
Rated operating short-circuit breaking capacity Ics(kA)	AC690V	18		20		18		20	
	AC400V	50		60		50		60	
	DC250V								
Maximum expected maintaining value		10000							
Experimental life (With load\No load\Sum)		500 ＼ 2500 ＼ 3000							
Overall dimensions (mm)	W	210	280	210	280	210	280	210	280
	L	330				330			
	H	152				152			
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Insert type								
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	

Rated current of frame grade Inm(A)		2000		2500	
Model		SM40-2000C	SM40-2000S	SM40-2500C	SM40-2500S
Appearance					
Rated current In(A)		1000、1250、1400、1600、1800、2000		2200、2500	
Pole type		3		3	
Rated insulating voltage Ui（V）		AC800			
Rated working voltage Ue （V）		AC400、AC690			
Rated impulse withstand voltage Uimp （V）		8000			
Arcover distance （mm）		≥150			
Rated limited short-circuit breaking capacity Icu(kA)	AC690V	25	35	25	35
	AC400V	65	100	65	100
	DC250V				
Rated operating short-circuit breaking capacity Ics(kA)	AC690V	20	35	20	30
	AC400V	50	75	50	75
	DC250V				
Maximum expected maintaining value		8000			
Experimental life (With load\No load\Sum)		500 \ 2500 \ 3000			
Overall dimensions （mm）	W	393			
	L	330			
	H	247.5			
Way of wiring	Front-board	☆	☆	☆	☆
	Rear-board	☆	☆	☆	☆
	Insert type				
Accessories	Shunt release	☆	☆	☆	☆
	Under-voltage release	☆	☆	☆	☆
	Aux.contact	☆	☆	☆	☆
	Alarm contact	☆	☆	☆	☆
	Rotary manual operation mechanism				
	Electric operation mechanism	☆	☆	☆	☆

Suitable range and main characteristic

- SM40L series moulded-case circuit-breaker with residual current protection(“breaker” for short hereafter) is one of the SM40 series products and a new one developed with the advanced abroad know-how on both design and manufacture .with a rated insulating voltage 800V, and suitable for the non-frequent conversion in the circuit of AC 50Hz, rated working voltage below 400V and rated working current up to 800A and the non-frequent starting of motors. it feature the overload, short-circuit and under-voltage protections to protect both lines and power equipments against damage and also against both electric impulse (I n<=30mA) and equipment leak, as well as prevent the fire danger caused by the fault-ground due to insulation damages of equipment
- Of a compact structure, small volume, high breaking capacity, full varieties of both internal and external accessories etc.
- Of the isolation function, the related symbol of which is: 
- This series circuit-breaker is available with full varieties of the residual current protection, including the delay, non-delay and leakage warning types.
- Both appearance and installation dimension of this series breaker are identical to those of Sm40 series moulded-case circuit-breaker, resulting in a good interchange ability in installation.

Conformed standards

The following standards are executed with this series breaker:
IEC60947-1，GB/t14048.1 <General rules>
IEC60947-2，GB 14048.2-2001<Low-voltage circuit-breaker>
and excursus B 《 Residual current operated circuit-breakers》
IEC60947-4,GB14048.4 <contacts and motors' starters>>
IEC60947-5-1,GB 14048.5<Electric appliances with electro-mechanical control circuits>

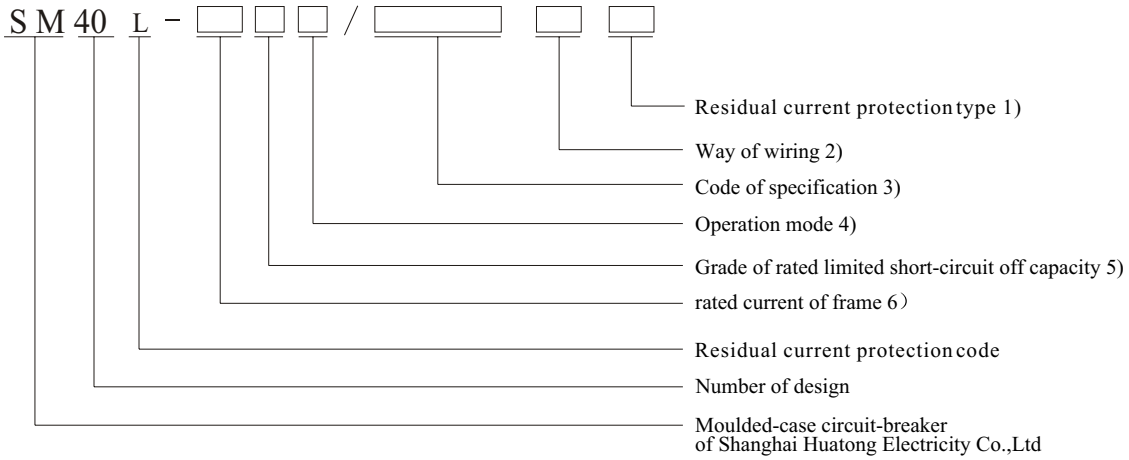
Suitable working environment

- The elevation at the installation place not over 2000m.
- Ambient air temperature -5～+40 ℃, and the average value during 24h not over 35 ℃.
- The RH not over 50% at the maximum temperature +40 C; can be higher at a lower temperature, the average lowest temperature in the most humidity month not over +25 C, the average maximum RH of the said month not over 90%, and the condensed dewdrops produced on the product surface due to temperature variation should be taken into consideration.
- Pollution grade: 3
- As of the installation grade, III for the breakers' main circuit, II for the control and auxiliary circuits.

Installation mode

This series breaker can be installed either vertically or horizontally.

Model and meaning

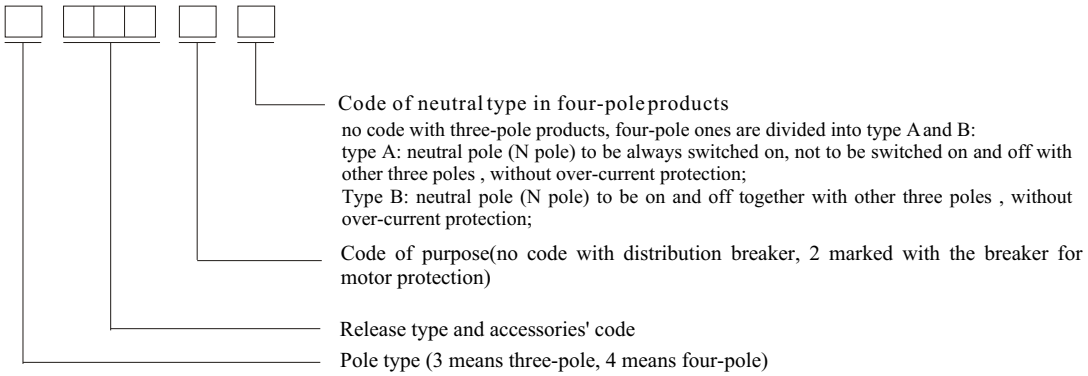


Note:

1) Residual current protection type divided into:
Non-delay type Ⅰ、non-delay type Ⅱ、delay type Ⅰ、delay type Ⅱ、alarm type;

2) Divided into front-board, rear-board and plug-in type wirings (the front-board one may not be noted) ;

3) Code of specification (consists of 6 bits)



4) Operation mode: no code with direct operation of handle, Z for turning handle operation, P for electric operation;

5) Divided into type: C, S ,R level;

6) Divided into 63A, 100A, 160A, 225A, 400A、630A、800A .

Release's mode and accessories'code

Code / Accessories name / Release mode	Without access.	Shunt release	Aux.Contact	Under-voltage release	Alarm contact	Alarm contact Aux.Contact	Aux.Contact Shunt release
Magnetic release	200	210	220	230	208	228	240
Dual release	300	310	320	330	308	328	340

Accessories Assembled Inside

Access. code	Access.name	SM40L-63		SM40L-100 SM40L-225(160)		SM40L-400		SM40L-800(630)	
	Model / Pole type	3	4	3	4	3	4	3	4
208 、308	Alarm contact								
210 、310	Shunt release								
220 、320	Aux. Contact								
230 、330	Under-voltage release								
240 、340	Shunt release Aux. Contact								
228 、328	Aux. Contact Alarm contact								

Note:When shunting plus auxiliary, the shunting can't be connected with the power, utilization see note 二1-102.

Residual current protection type

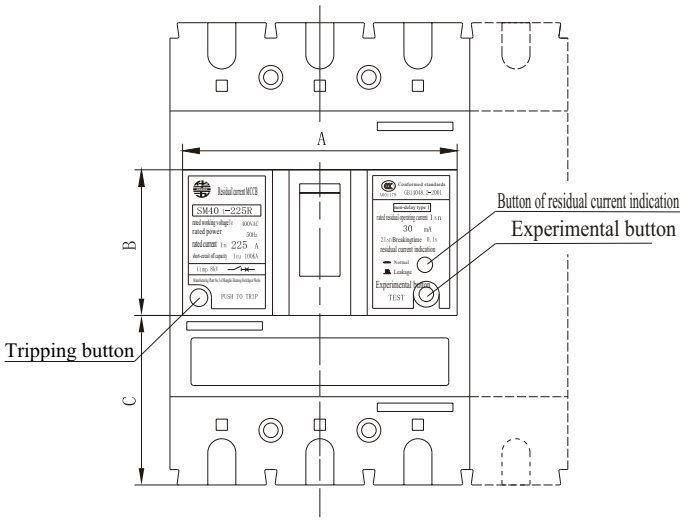
- non-delay type —— non-delay type Ⅰ、non-delay type Ⅱ
  - non-delay type Ⅰ: rated residual motion current $I\Delta n$ un-adjustable;
  - non-delay type Ⅱ: Rated residual motion current $I\Delta n$ adjustable;
- delay type —— delay type Ⅰ、delay type Ⅱ
  - delay type Ⅰ: rated residual motion current, $I\Delta n$ Un-adjustable Delay time Δt Un-adjustable
  - delay type Ⅱ: rated residual motion current; $I\Delta n$ Un-adjustable Delay time Δt Adjustable
- alarm type —— When the residual current reaches the value of rated, the breaker will output alarm instead of tripping.(Relay will be in operation-----N.C contact will be off, N.O one will change to "close"). Users can wire with a lamp or buzzer to display the leakage in their offices so as easy and convenient to examine and repair in time.

Residual current protection Characteristic of motion

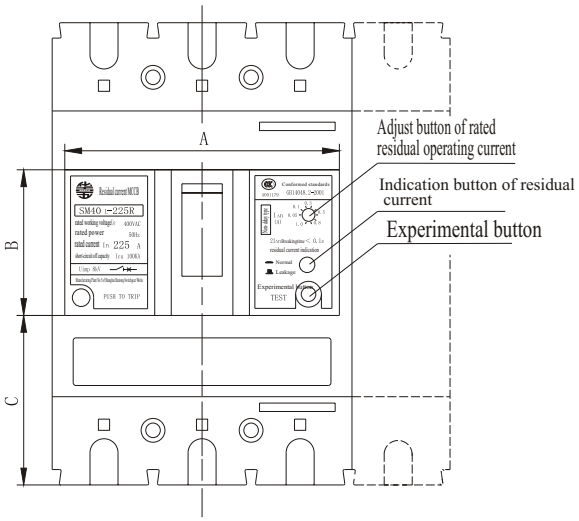
Residual current		$I\Delta n$	$2I\Delta n$	$5I\Delta n$	$10I\Delta n$
non-delay type	Max.breaking time (s)	0.2	0.1	0.04	0.04
delay type	Max.breaking time (s)	0.5/1.15/2.15	0.35/1/2	0.25/0.9/2	0.25/0.9/2
	Limit non-operating time (s)		0.1/0.5/1		

Breaker Panel Seat

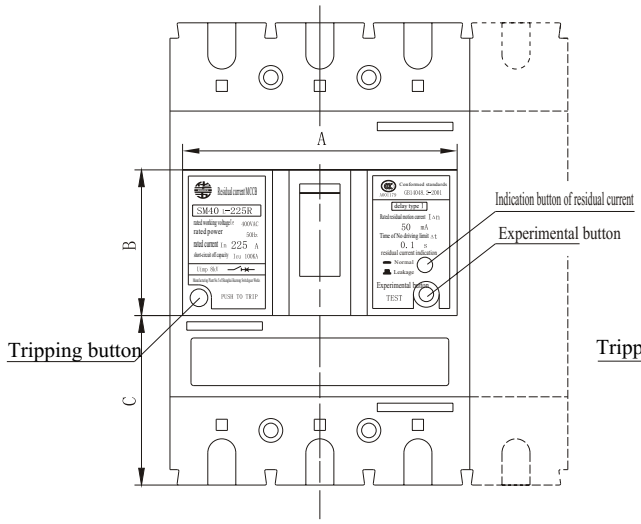
Non-delay type Ⅰ



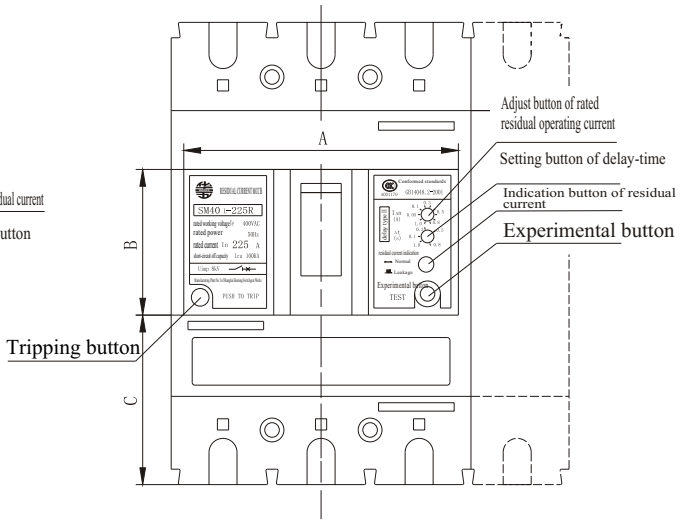
Non-delay type Ⅱ



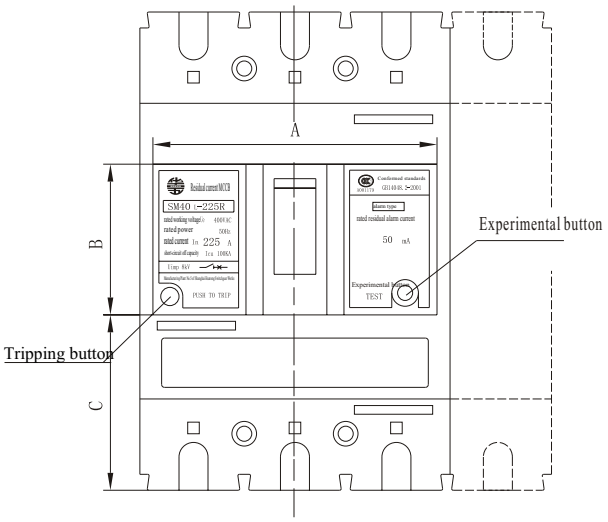
delay type Ⅰ



delay type Ⅱ



alarm type



Model of breaker	A	B	C
SM40L-63(C 、 S 、 R)	68	50	43
SM40L-100(C 、 S)	84	51	51.5
SM40L-100(R)	84	51	111.5
SM40L-160(C 、 S)	98	52	60.5
SM40L-160(R)	98	52	135.5
SM40L-225(C 、 S)	98	52	60.5
SM40L-225(R)	98	52	135.5
SM40L-400(C 、 S 、 R)	142	97.5	82
SM40L-630(C 、 S 、 R)	210	99.5	98.5
SM40L-800(C 、 S 、 R)	210	99.5	98.5

◆ The thermo-magnetic protective feature for power distribution

● protective feature of the breaker for distribution

Release rated current (A)	Characteristic of inverse-time limit motion (Ambient temperature+40℃)		Instantaneous motion current (A)
	1.05In(cold state) No motion time（h）	1.30In(hot state) motion time（h）	
In ≤ 63	1	1	10In ± 20%
63 < In ≤ 225	2	2	
225 < In ≤ 800	2	2	5In ± 20% 10In ± 20%

protective feature of the breaker for motor-protection

Rated current of release (A)	Characteristic of inverse-time limit motion (Ambient temperature+40℃)				Instantaneous motion current (A)
	1.0In(cold state) No motion time(h)	1.20In(hot state) Motion time(h)	1.50In(cold state) Motion time(h)	7.2In(cold state) Motion time(h)	
In≤100	2	2	2min	2s<Tp≤10s	12In ± 20%
225<In≤400			4min	4s<Tp≤20s	

Power loss of breaker

Model of breaker	Rated current (A)	Power loss (three-pole)	
		front & rear board wiring(W)	Plug-in type wiring(W)
SM40L-63 (C、S、R)	63	20	24
SM40L-100 (C、S、R)	100	33	38
SM40L-160 (C、S、R)	160	43	51
SM40L-225 (C、S、R)	225	58	66
SM40L-400 (C、S、R)	400	105	118
SM40L-630 (C、S、R)	630	168	187
SM40L-800 (C、S、R)	800	248	268

Experimental current and cross-section area of conductor

Conductor's cross-section area for temperature rise test and related experimental current

Rated current (A)	6	10	16 20	32	40 50	63	80	100	125 140	160	180 200 225	250	315 350	400
Cross-section area (Mm)	1	1.5	2.5	6	10	16	25	35	50	70	95	120	185	240

Rated current (A)	Copper conductor		Copper bar	
	Pcs	Cross-section area of each(mm^2)	Pcs	Copper-bar's cross-section area of each (mm^2)
500	2	150	2	30 × 5
630	2	185	2	40 × 5
700	2	240	2	50 × 5
800	2	240	2	50 × 5

Thermo-release reduced capacity coefficient of rated working current affected by ambient temperature.

Reduced capacity coefficient / Temp / Model of breaker	+40 ℃	+45 ℃	+50 ℃	+55 ℃	+60 ℃
SM40L-63(C 、 S 、 R)	1.0In	0.95In	0.86In	0.78In	0.69In
SM40L-100(C 、 S 、 R)	1.0In	0.92In	0.88In	0.80In	0.71In
SM40L-160(C 、 S 、 R)	1.0In	0.95In	0.90In	0.88In	0.74In
SM40L-225(C 、 S 、 R)	1.0In	0.93In	0.88In	0.85In	0.70In
SM40L-400(C 、 S 、 R)	1.0In	0.91In	0.83In	0.76In	0.69In
SM40L-630(C 、 S 、 R)	1.0In	0.90In	0.84In	0.78In	0.72In
SM40L-800(C 、 S 、 R)	1.0In	0.84In	0.78In	0.73In	0.71In

Safe distance of breaker

Some distance should be kept between the breaker and the ceiling, the ground and the side of a room according to the standard requirement of it.

Utilization and mainterance:

- The rated voltage, current and short-circuit breaking capacity of the breaker should accord with the feature of electric system. Users are not allowed to open the cover to adjust at wish the protective function of overload long-delay and Inst short-circuit calibrated by the manufacturer .The rectifying temperature is +40℃ from ex-works.

- The breaker using for direct-contact protection (i.e:person protection) must be non-delay-time type with rated residual operating current (I Δ n) 30mA
  The one using for indirect-contact protection (ie: fire-prevention or insulation damage protection) can be either non-delay-time or delay-time type .

- Three places available for the handle of the breaker separately means switching-on, switching-off and tripping. And when it is in the place of tripping , pull it backwards to have it re-buckled before switching-on.

- The rated residual operating current value of breakers should adjust to fourfold of normal leakage value or estimate it with formula below.

- rated residual operating current= $\frac{In(A)}{1000}$ A

- Wiring of the breaker must be in line with such as: the power cable is connected to terminals 1, 3, 5 and the load lines to terminals 2, 4, 6. If into the line inversely, as the result the electronics circuit will be damaged .

- The load can’ t wire with the neutral line when the three-pole breaker makes or breaks the three- phase’ load in case of some malfunction happens.

- For the breaker of four poles , N pole on the side of load is not allowed to wire with a PEN or PE line , otherwise the breaker will act in wrong way.

- Both voltage withstanding and dielectric resistance tests can be done only by removing electronic components inside of the breaker.

- The dielectric resistance of the motors and other electric equipment for install the breaker can not be less than 0.5M ohm in normal operation.

- After the breaker's breaking, if indication button protrude outside, it means leak work out, must get rid of problem then break can switch-on again.

- After electrify to main circuit, for non-delay break, if touch the “examine button”, it should release immediately; However, for delay break, if touch “examine button”, it should keeps the adjusted delay time before tripping.

- The breaker fitted with an under-voltage release should be first electrified and then the breaker can be bunkled again or switched-on ,otherwise it would be made damaged.

- Under the situation of the proper use of our products according to the rules we provided , we are fully responsible for replacement or repair of any quality-problem products with intact seal within 18 months from the date of ex-works delivery.(Compliant to domestic users)

Rated current of frame grade Inm（A）		63					
Model		SM40L-63C		SM40L-63C		SM40L-63S	
Appearance							
Rated current In（A）		6、10、16、20、25、32、40、50、63					
Pole type		2		3	4	3	4
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400					
Rated impulse withstand voltage Uimp （V）		8000					
Arcover distance （mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35		20		35	
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25		15		25	
Rated residual motion current IΔn（mA）		Non-adjustable：50、100、300、500　　Adjustable：————					
Maxium breaking time（s）(when IΔ=2IΔn)		＜0.1					
Rated residual non-motion current IΔno(mA)		$\frac{1}{2}$ IΔn					
Rated residual short-circuit making/breaking capacity IΔm(kA)		$\frac{1}{4}$ Icu					
Maximum expected maintaining value		40000					
Experimental life (With load\No load\Sum)		6000 ＼8500＼ 14500					
Overall dimensions（mm）	W	76	76	76	101	76	101
	L	135					
	H	78.5					
Way of wiring	Front-board	☆		☆		☆	
	rear-board	☆		☆		☆	
	Insert type			☆		☆	
Accessories	Shunt release	☆		☆		☆	
	Under-voltage release			☆		☆	
	Aux.contact	☆		☆		☆	
	Alarm contact			☆		☆	
	Rotary manual operation mechanism			☆		☆	
	Electric operation mechanism			☆		☆	

Rated current of frame grade Inm（A）		100				
Model		SM40L-100C	SM40L-100C		SM40L-100S	SM40L-100R
Appearance						
Rated current In（A）		10、16、20、25、32、40、50、63、80、100				
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800				
Rated working voltage Ue (V)		AC400				
Rated impulse withstand voltage Uimp （V）		8000				
Arcover distance（mm）		0				
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35	35		65	100
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25	25		50	75
Rated residual motion current I△n（mA）		Non-adjustable：50、100、300、500 Adjustable：50/100/300/500/1000				
Maxium breaking time（s）（when I△=2I△n)		<0.1				
Rated residual non-motion current I△no(mA)		$\frac{1}{2}$I△n				
Rated residual short-circuit making/breaking capacity I△m(kA)		$\frac{1}{4}$Icu				
Maximum expected maintaining value		40000				
Experimental life (With load\No load\Sum)		6000 ＼ 8500 ＼ 14500				
Overall dimensions （mm）	W	90	90	120	90	120	90
	L	155				215
	H	80				
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

Rated current of frame grade Inm（A）		160					
Model		SM40L-160C	SM40L-160C		SM40L-160S		SM40L-160R
Appearance							
Rated current In（A）		100、125、140、160					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400					
Rated impulse withstand voltage Uimp （V）		8000					
Arcover distance （mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35	35		65		100
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25	25		50		75
Rated residual motion current I∆n（mA）		Non-adjustable：50、100、300、500 Adjustable：50/100/300/500/1000					
Maxium breaking time（s） (when I∆=2I∆n)		<0.1					
Rated residual non-motion current I∆no(mA)		$\frac{1}{2}$I∆n					
Rated residual short-circuit making/breaking capacity I∆m(kA)		$\frac{1}{4}$Icu					
Maximum expected maintaining value		30000					
Experimental life (With load\No load\Sum)		3000 ＼ 7000 ＼ 10000					
Overall dimensions （mm）	W	107	107	142	107	142	107
	L	165					240
	H	91.5					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

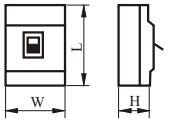
Rated current of frame grade Inm（A）		225					
Model		SM40L-225C	SM40L-225C		SM40L-225S		SM40L-225R
Appearance							
Rated current In（A）		100、125、140、160、180、200、225					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400					
Rated impulse withstand voltage Uimp（V）		8000					
Arcover distance（mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35	35		65		100
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25	25		50		75
Rated residual motion current I△n（mA）		Non-adjustable：50、100、300、500 Adjustable：50/100/300/500/1000					
Maxium breaking time（s） (when I△=2I△n)		＜0.1					
Rated residual non-motion current I△no(mA)		$\frac{1}{2}$ I△n					
Rated residual short-circuit making/breaking capacity I△m(kA)		$\frac{1}{4}$ Icu					
Maximum expected maintaining value		30000					
Experimental life (With load\No load\Sum)		3000 ＼ 7000 ＼ 10000					
Overall dimensions（mm）	W	107	107	142	107	142	107
	L	165					240
	H	91.5					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

Rated current of frame grade Inm（A）		400						630	
Model		SM40L-400C		SM40L-400S		SM40L-400R		SM40L-630C	
Appearance									
Rated current In（A）		200、250、315、400						400、500、630	
Pole type		3	4	3	4	3	4	3	4
Rated insulating voltage Ui (V)		AC800							
Rated working voltage Ue (V)		AC400							
Rated impulse withstand voltage Uimp（V）		8000							
Arcover distance （mm）		0							
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	50		65		100		50	
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	35		50		75		35	
Rated residual motion current I∆n（mA）		Non-adjustable：100、300、500、1000 Adjustable：100/300/500/1000							
Maxium breaking time（s） (when I∆=2I∆n)		<0.1							
Rated residual non-motion current I∆no(mA)		$\frac{1}{2}$I∆n							
Rated residual short-circuit making/breaking capacity I∆m(kA)		$\frac{1}{4}$Icu							
Maximum expected maintaining value		15000						15000	
Experimental life (With load\No load\Sum)		2000＼4000＼6000						1500＼4000＼5500	
Overall dimensions （mm）	W	150	198	150	198	150	198	210	280
	L	257						280	
	H	106						115	
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Insert type	☆		☆		☆		☆	
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	

Rated current of frame grade Inm（A）		630				800			
Model		SM40L-630S		SM40L-630R		SM40L-800S		SM40L-800R	
Appearance									
Rated current In（A）		400、500、630				700、800			
Pole type		3	4	3	4	3	4	3	4
Rated insulating voltage Ui (V)		AC800							
Rated working voltage Ue (V)		AC400							
Rated impulse withstand voltage Uimp （V）		8000							
Arcover distance（mm）		0							
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	65		100		65		100	
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	50		75		50		75	
Rated residual motion current IΔn（mA）		Non-adjustable：100、300、500、1000 Adjustable：100/300/500/1000							
Maxium breaking time（s）(when IΔ=2IΔn)		<0.1							
Rated residual non-motion current IΔno(mA)		$\frac{1}{2}$ IΔn							
Rated residual short-circuit making/breaking capacity IΔm(kA)		$\frac{1}{4}$ Icu							
Maximum expected maintaining value		15000				15000			
Experimental life (With load\No load\Sum)		1500 ＼ 4000 ＼ 5500				1000＼2500＼ 3500			
Overall dimensions（mm）	W	210	280	210	280	210	280	210	280
	L	280						280	
	H	115						115	
Way of wiring	Front-board	☆		☆		☆		☆	
	Rear-board	☆		☆		☆		☆	
	Insert type	☆		☆		☆		☆	
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	

Rated current of frame grade Inm（A）		100					
Model		SM40L-100	SM40L-100C		SM40L-100S		SM40L-100R
Appearance							
Rated current In（A）		10、16、20、25、32、40、50、63、80、100					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400					
Rated impulse withstand voltage Uimp （V）		8000					
Arcover distance（mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35	35		65		100
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25	25		50		75
Rated residual motion current I∆n（mA）		Non-adjustable：50、100、300、500、1000； Adjustable： 50/100/300/500/1000					
Maxium breaking time（s） (when I∆=2I∆n)		Non-adjustable：0.1、0.5、1.0； Adjustable： 0.1/0.5/1.0					
Rated residual non-motion current I∆no(mA)		$\frac{1}{2}$I∆n					
Rated residual short-circuit making/breaking capacity I∆m(kA)		$\frac{1}{4}$Icu					
Maximum expected maintaining value		40000					
Experimental life (With load\No load\Sum)		6000 \ 8500 \ 14500					
Overall dimensions （mm）	W	90	90	120	90	120	90
	L	155					215
	H	80					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

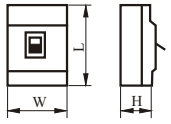
Rated current of frame grade Inm（A）		160					
Model		SM40L-160	SM40L-160C		SM40L-160S		SM40L-160R
Appearance							
Rated current In（A）		100、125、140、160					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400					
Rated impulse withstand voltage Uimp （V）		8000					
Arcover distance（mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35	35		65		100
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25	25		50		75
Rated residual motion current IΔn（mA）		Non-adjustable：50、100、300、500、1000 Adjustable：50/100/300/500/1000					
Maxium breaking time（s）(when IΔ=2IΔn)		Non-adjustable：0.1、0.5、1.0; Adjustable：0.1/0.5/1.0					
Rated residual non-motion current IΔno(mA)		$\frac{1}{2}$IΔn					
Rated residual short-circuit making/breaking capacity IΔm(kA)		$\frac{1}{4}$Icu					
Maximum expected maintaining value		30000					
Experimental life (With load\No load\Sum)		3000＼7000＼10000					
Overall dimensions （mm）	W	107	107	142	107	142	107
	L	165					240
	H	91.5					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

Rated current of frame grade Inm（A）		225					
Model		SM40L-225	SM40L-225C		SM40L-225S		SM40L-225R
Appearance							
Rated current In（A）		100、125、140、160、180、200、225					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400					
Rated impulse withstand voltage Uimp （V）		8000					
Arcover distance（mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35	35		65		100
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25	25		50		75
Rated residual motion current I∆n（mA）		Non-adjustable：50、100、300、500、1000　Adjustable：50/100/300/500/1000					
Maxium breaking time （s） (whenI∆=2I∆n)		Non-adjustable：0.1、0.5、1.0；　Adjustable：0.1/0.5/1.0					
Rated residual non-motion current I∆no(mA)		$\frac{1}{2}$I∆n					
Rated residual short-circuit making/breaking capacity I∆m(kA)		$\frac{1}{4}$Icu					
Maximum expected maintaining value		30000					
Experimental life (With load\No load\Sum)		3000＼7000＼10000					
Overall dimensions （mm） 	W	107	107	142	107	142	107
	L	165					240
	H	91.5					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

Rated current of frame grade Inm（A）		400						630	
Model		SM40L-400		SM40L-400S		SM40L-400R		SM40L-630C	
Appearance									
Rated current In（A）		200、250、315、350、400						400、500、630	
Pole type		3	4	3	4	3	4	3	4
Rated insulating voltage Ui (V)		AC800							
Rated working voltage Ue (V)		AC400							
Rated impulse withstand voltage Uimp（V）		8000							
Arcover distance（mm）		0							
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	50		65		100		50	
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	35		50		75		35	
Rated residual motion current I∆n（mA）		Non-adjustable：100、300、500、1000 Adjustable：100/300/500/1000							
Maxium breaking time（s）(whenI∆=2I∆n)		Non-adjustable：0.1、0.5、1.0； Adjustable：0.1/0.5/1.0							
Rated residual non-motion current I∆no(mA)		$\frac{1}{2}$I∆n							
Rated residual short-circuit making/breaking capacity I∆m(kA)		$\frac{1}{4}$Icu							
Maximum expected maintaining value		15000						15000	
Experimental life (With load\No load\Sum)		2000 \ 4000 \ 6000						1500\4000\5500	
Overall dimensions（mm）	W	150	198	150	198	150	198	210	280
	L	257						280	
	H	106						115	
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Insert type	☆		☆		☆		☆	
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	

Rated current of frame grade Inm（A）		630				800			
Model		SM40L-630S		SM40L-630R		SM40L-800S		SM40L-800R	
Appearance									
Rated current In（A）		400、500、630				700、800			
Pole type		3	4	3	4	3	4	3	4
Rated insulating voltage Ui (V)		AC800							
Rated working voltage Ue (V)		AC400							
Rated impulse withstand voltage Uimp （V）		8000							
Arcover distance （mm）		0							
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	65		100		65		100	
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	50		75		50		75	
Rated residual motion current I△n（mA）		Non-adjustable：100、300、500、1000　Adjustable：100/300/500/1000							
Maxium breaking time（s）(when I△=2I△n)		Non-adjustable：0.1、0.5、1.0；　Adjustable：0.1/0.5/1.0							
Rated residual non-motion current I△no(mA)		$\frac{1}{2}$ I△n							
Rated residual short-circuit making/breaking capacity I△m(kA)		$\frac{1}{4}$ Icu							
Maximum expected maintaining value		15000				15000			
Experimental life (With load\No load\Sum)		1500\4000\5500				1000\2500\3500			
Overall dimensions （mm）	W	210	280	210	280	210	280	210	280
	L	280				280			
	H	115				115			
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Insert type	☆		☆		☆		☆	
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	

Rated current of frame grade Inm（A）		100					
Model		SM40L-100	SM40L-100C		SM40L-100S		SM40L-100R
Appearance							
Rated current In（A）		40、50、63、80、100					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400					
Rated impulse withstand voltage Uimp（V）		8000					
Arcover distance（mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35	35		65		100
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25	25		50		75
Rated residual motion current I△n（mA）		50、100、300、500、1000					
Maxium breaking time（s） (when I△=2I△n)		＜0.1					
Rated residual non-motion current I△no(mA)		$\frac{1}{2}$I△n					
Rated residual short-circuit making/breaking capacity I△m(kA)		$\frac{1}{4}$Icu					
Maximum expected maintaining value		40000					
Experimental life (With load\No load\Sum)		6000 \ 8500 \ 14500					
Overall dimensions （mm）	W	90	90	120	90	120	90
	L	155					215
	H	80					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

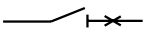
Rated current of frame grade Inm（A）		160					
Model		SM40L-160	SM40L-160C		SM40L-160S		SM40L-160R
Appearance							
Rated current In（A）		100、125、140、160					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400					
Rated impulse withstand voltage Uimp （V）		8000					
Arcover distance（mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35	35		65		100
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25	25		50		75
Rated residual motion current I∆n（mA）		50、100、300、500、1000					
Maxium breaking time（s）(whenI∆=2I∆n)		<0.1					
Rated residual non-motion current I∆no(mA)		$\frac{1}{2}$I∆n					
Rated residual short-circuit making/breaking capacity I∆m(kA)		$\frac{1}{4}$Icu					
Maximum expected maintaining value		30000					
Experimental life (With load\No load\Sum)		3000\ 7000 \ 10000					
Overall dimensions （mm） 	W	107	107	142	107	142	107
	L	165					240
	H	91.5					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release		☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

Rated current of frame grade Inm（A）		225					
Model		SM40L-225	SM40L-225C		SM40L-225S		SM40L-225R
Appearance							
Rated current In（A）		100、125、140、160、180、200、225					
Pole type		2	3	4	3	4	3
Rated insulating voltage Ui (V)		AC800					
Rated working voltage Ue (V)		AC400					
Rated impulse withstand voltage Uimp（V）		8000					
Arcover distance（mm）		0					
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	35	35		65		100
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	25	25		50		75
Rated residual motion current IΔn（mA）		50、100、300、500、1000					
Maxium breaking time（s） (whenIΔ=2IΔn)		<0.1					
Rated residual non-motion current IΔno(mA)		$\frac{1}{2}$IΔn					
Rated residual short-circuit making/breaking capacity IΔm(kA)		$\frac{1}{4}$Icu					
Maximum expected maintaining value		30000					
Experimental life (With load\No load\Sum)		3000 \ 7000 \ 10000					
Overall dimensions（mm）	W	107	107	142	107	142	107
	L	165					240
	H	91.5					
Way of wiring	Front-board	☆	☆		☆		☆
	rear-board	☆	☆		☆		☆
	Insert type		☆		☆		☆
Accessories	Shunt release	☆	☆		☆		☆
	Under-voltage release		☆		☆		☆
	Aux.contact	☆	☆		☆		☆
	Alarm contact		☆		☆		☆
	Rotary manual operation mechanism		☆		☆		☆
	Electric operation mechanism		☆		☆		☆

Rated current of frame grade Inm（A）		400						630	
Model		SM40L-400C		SM40L-400S		SM40L-400R		SM40L-630C	
Appearance									
Rated current In（A）		200、250、315、350、400						400、500、630	
Pole type		3	4	3	4	3	4	3	4
Rated insulating voltage Ui (V)		AC800							
Rated working voltage Ue (V)		AC400							
Rated impulse withstand voltage Uimp（V）		8000							
Arcover distance（mm）		0							
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	50		65		100		50	
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	35		50		75		35	
Rated residual motion current I△n（mA）		100、300、500、1000							
Maxium breaking time（s） (when I△=2I△n)		＜0.1							
Rated residual non-motion current I△no(mA)		$\frac{1}{2}$I△n							
Rated residual short-circuit making/breaking capacity I△m(kA)		$\frac{1}{4}$Icu							
Maximum expected maintaining value		15000						15000	
Experimental life (With load\No load\Sum)		2000 \ 4000 \ 6000						1500\4000\5500	
Overall dimensions（mm）	W	150	198	150	198	150	198	210	280
	L	257						240	
	H	106						115	
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Insert type	☆		☆		☆		☆	
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	

Rated current of frame grade Inm（A）		630				800			
Model		SM40L-630S		SM40L-630R		SM40L-800S		SM40L-800R	
Appearance									
Rated current In（A）		400、500、630				700、800			
Pole type		3	4	3	4	3	4	3	4
Rated insulating voltage Ui (V)		AC800							
Rated working voltage Ue (V)		AC400							
Rated impulse withstand voltage Uimp（V）		8000							
Arcover distance（mm）		0							
Rated limited short-circuit breaking capacity Icu(kA)	AC400V	65		100		65		100	
Rated Operating short-circuit breaking capacity Ics(kA)	AC400V	50		75		50		75	
Rated residual motion current I△n（mA）		100、300、500、1000							
Maxium breaking time（s） (whenI△=2I△n)		＜0.1							
Rated residual non-motion current I△no(mA)		$\frac{1}{2}$I△n							
Rated residual short-circuit making/breaking capacity I△m(kA)		$\frac{1}{4}$Icu							
Maximum expected maintaining value		15000				15000			
Experimental life (With load\No load\Sum)		1500 \ 4000 \ 5500				1000 \ 2500 \ 3500			
Overall dimensions（mm）	W	210	280	210	280	210	280	210	280
	L	280				280			
	H	115				115			
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Insert type	☆		☆		☆		☆	
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	

Suitable range and main characteristic

- SM40E1 series intelligent adjustable moulded-case circuit-breaker (“IAMCCB” for short hereafter), is one of the SM40 series products and a new-style one-developed by this factory be means of the international advanced know-how of design and manufacture theory and suitable for the non-frequent conversion in the circuit of AC 50Hz, rated insulating voltage 800V, rated working voltage 400V and below, and rated working current up to 1600A and the non-frequent starting of motors. The breaker functions overload long-delay inverse-time limit, short-circuit short-delay inverse-time limit, short-circuit short-delay definite-time limit, short-circuit instantaneous and under-voltage protections so as able to protect lines and power equipments against damages.
- Of a compact structure, small volume, high breaking capacity, short fly-arc, full varieties of both internal and external accessories etc. The parameters of the protective functions can be adjusted with a coding switch easily and visibly. Users can also form the necessary protective characteristic through self set-up so as to get selected protections to reach more reasonable distribution of both upper and lower stages of the breaker used in the network.
- Of Operating Indications of current photo-column, pre-alarm, overload etc. .
- Of the self-diagnosis function for the intelligent controller.
- Of the release test function for the intelligent controller.
- The mutual inductor inside of it can provide an auto-power supply, with which the long-delay, short-delay instantaneous protective characteristic can be reliably realized when three-phase is bigger than 0.2In or single-phase than 0.4In.
- Thermal memory function.
- Grounding protection function. (with four-pole products)
- Monitoring function of the temperature inside of the breaker.
- Of the isolation function, the related symbol of which is: 
- Both appearance and installation dimension of this series breaker are identical to those of SM40 series moulded-case circuit-breaker, resulting in a good inter-change ability in installation.

Conformed standards

The following standards are executed with this series breaker:
IEC60947-1，GB/t14048.1 <General rules>
IEC60947-2，GB14048.2-2001<Low-voltage circuit-breaker>and Appendix F <Additional requirements to the breakers with the electronic over-current protection>
IEC60947-4,GB14048.4 <contacts and motor starters>>
IEC60947-5-1,GB 14048.5<Electric appliances with electromechanical control circuits>

Suitable working environment

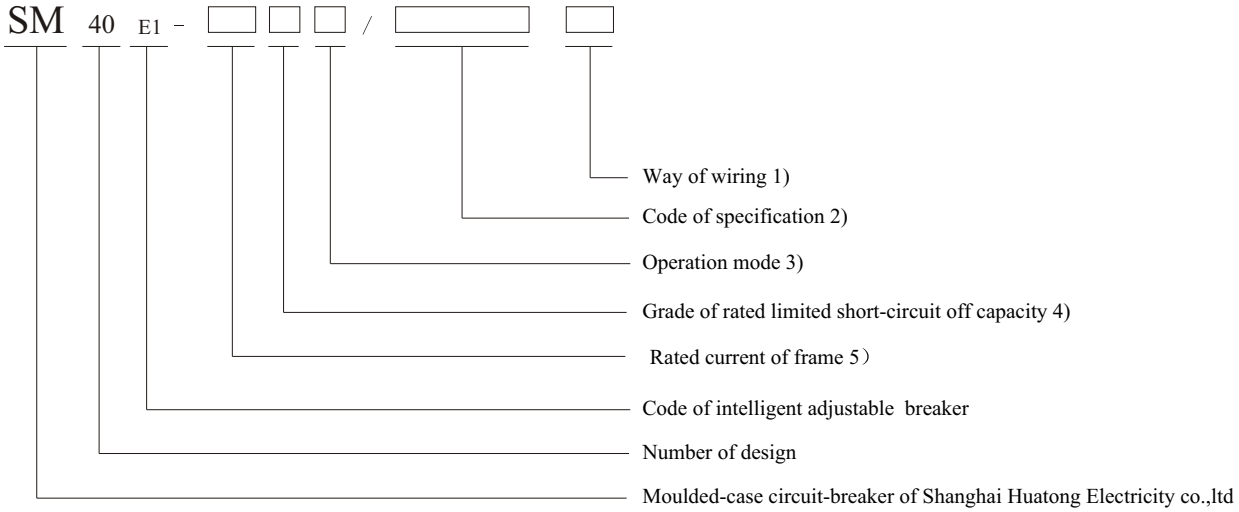
- The elevation at the installation place not over 2000m.
- Ambient air temperature -5～+40 ℃, and the average value during 24h not over 35 ℃.
- The RH not over 50% at the maximum temperature +40 C; can be higher at a lower temperature, the average lowest temperature in the most humidity month not over +25 C, the average maximum RH of the said month not over 90%, and the condensed dewdrops produced on the product surface due to temperature variation should be taken into consideration.

- Pollution grade: 3
- As of the installation grade, III for the breakers' main circuit, II for the control and auxiliary circuits.

Installation mode

This series breaker can be installed either vertically or horizontally.

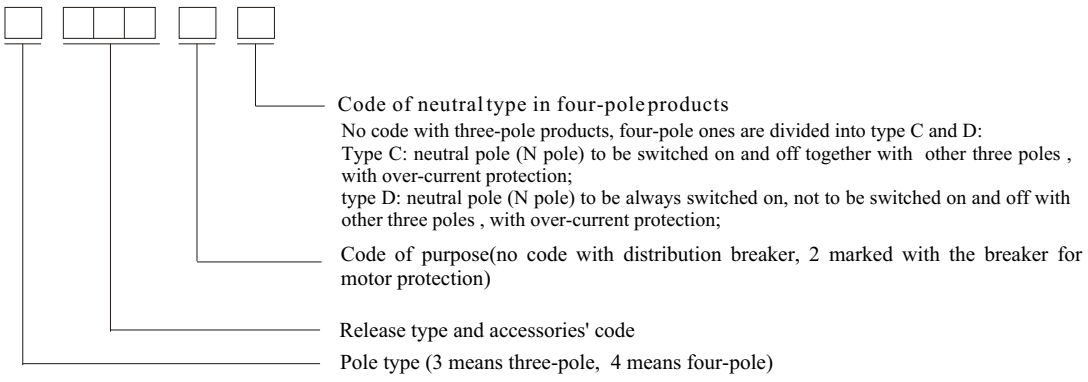
Model and meaning



Note:

1) Divided into front-board, rear-board and plug-in type wiring (the front-board one may not be noted)

2) Code of specification (consists of 6 bits)



3) Operation mode: no code with direct operation of handle, Z for turning handle operation, P for electric operation;

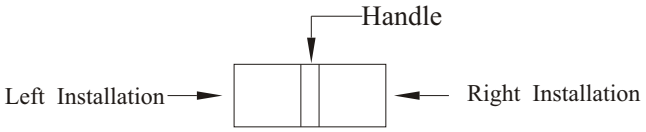
4) Divided into type: C, S ,R level;

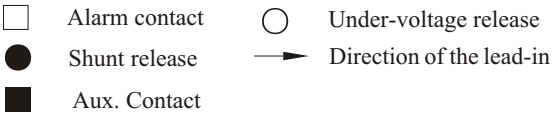
5) Divided into 100A, 225A, 400A, 630A, 800A,1250A,1600A.

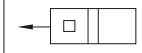
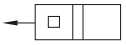
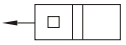
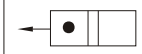
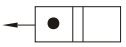
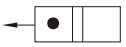
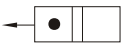
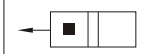
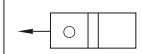
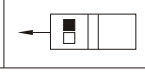
Release's mode and accessories' code

Accessories name / Code / Release mode	No access.	Shunt release	Aux.Contact	Under-voltage release	Alarm contact	Alarm contact Aux. Contact
Intelligent release	400	410	420	430	408	428

Accessories Assembled Inside





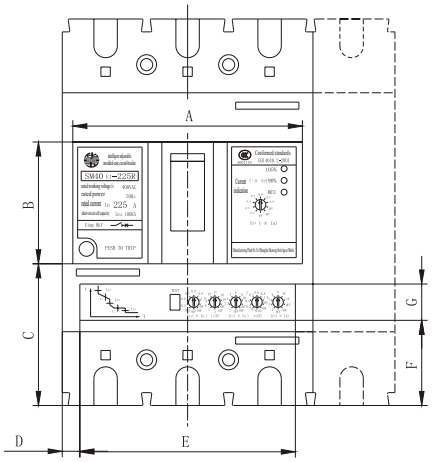
Access. code	Access.name	Model / Pole type: SM40E1-100		SM40E1-225		SM40E1-400		SM40E1-800(630)	
		3	4	3	4	3	4	3	4
408	Alarm contact								
410	Shunt release								
420	Aux. Contact								
430	Under-voltage release								
428	Alarm contact Aux. Contact								

Safe distance of breaker

Keeping standard safe distance between the breaker and the ceiling is necessary to meet the same requirment of SM40 series of MCCB.

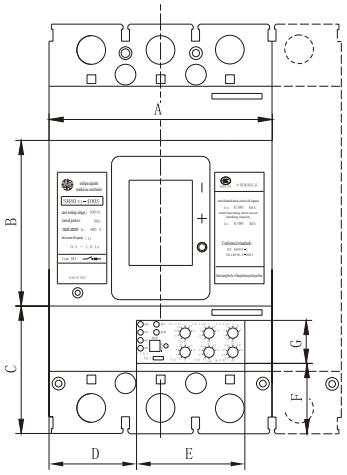
Breaker Panel Seat

- SM40E1-100 、 SM40E1-225



Model of breaker	A	B	C	D	E	F	G
SM40E1-100 (C 、 S)	84	51	51.5	5.5	79	26.5	18
SM40E1-100 (R)	84	51	111.5	5.5	79	86.5	18
SM40E1-225 (C 、 S)	98	52	60.5	7	93	35	18
SM40E1-225 (R)	98	52	135.5	7	93	110	18

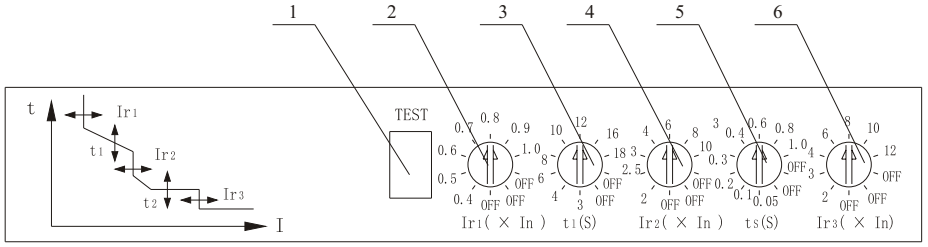
- SM40E1-400 、 SM40E1-630 、 SM40 E1-800



Model of breaker	A	B	C	D	E	F	G
SM40E1-400 (C 、S)	140	104	80	54	73	43	29
SM40E1-630 (C 、S)	210	105	87.5	123.5	73	39	29
SM40E1-1250 (C 、S)	210	100	120	117.5	73	31.3	29
SM40E1-1600 (C 、S)	210	100	120	117.5	73	31.3	29

Adjustable panel of intelligent release

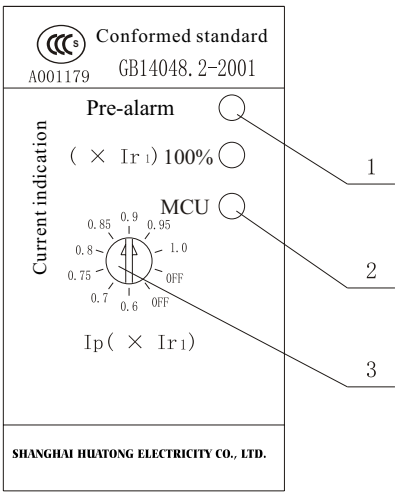
- SM40E1-100, SM40E1-225 (lower position, three-pole, four-pole)



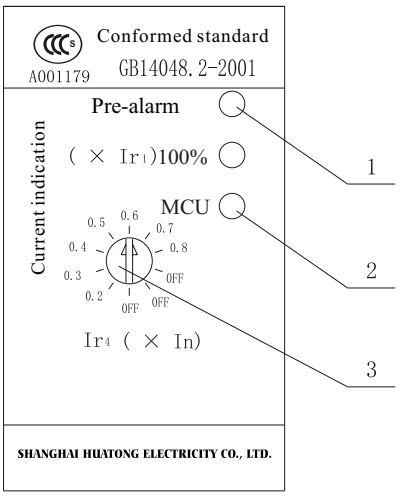
Note:
1）Experimental socket for release function of intelligent controller
2）Coding switch for setting long-delay setting current Ir1
3）Coding switch for setting long-delay motion time t1
4）Coding switch for setting short-circuit short-delay setting current Ir2
5）Coding switch for setting short-circuit short-delay motion time ts
6）Coding switch for setting short-circuit instantaneous setting current Ir3

- SM40E1-100 、 SM40E1-225(right position)

Three-pole



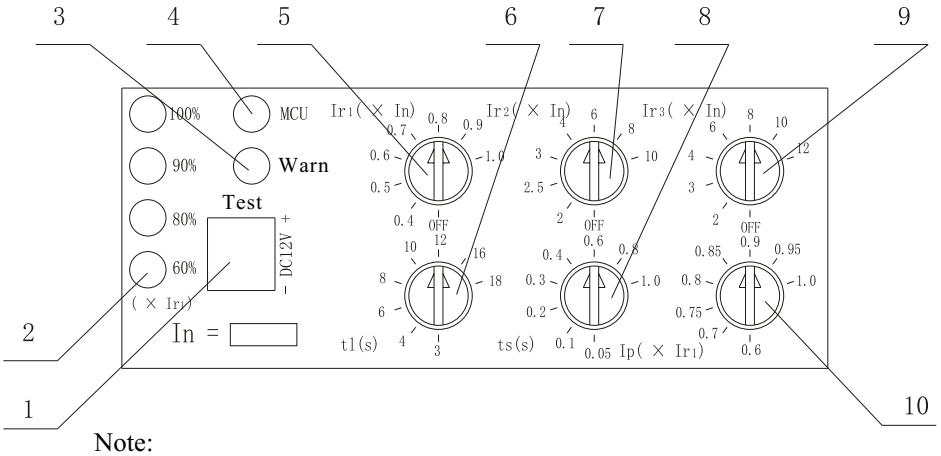
Four-pole



Note:
1）Load indication of operating current;
2）Power and self-diagnosis indication;
3）Coding switch for setting overload pre-alarm current Ip.

Note:
1）Load indication of operating current;
2）Power and self-diagnosis indication;
3）Coding switch for setting grounding protection setting current Ir4; (For four-pole breaker, the overload pre-alarm current Ip has been fixed as 0.9Ir1 and can not be rectified.)

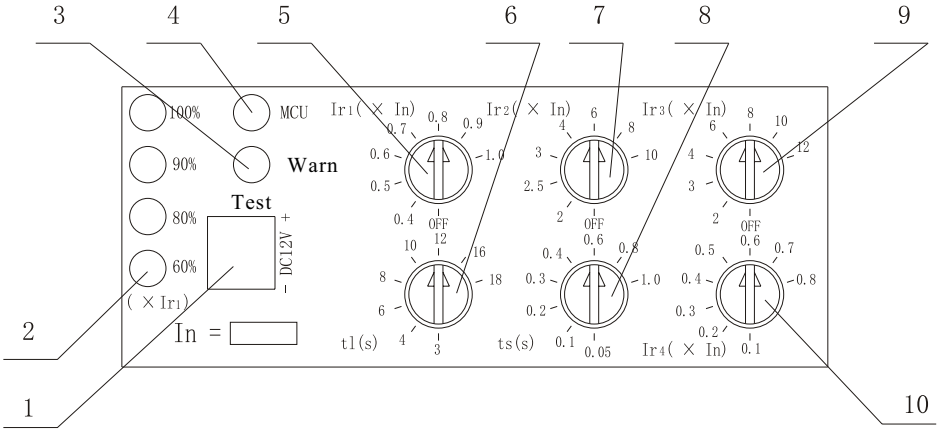
- SM40E1-400, SM40E1-630, SM40E1-800、SM40E1-1250、SM40E1-1600 (three-pole)



Note:

1）Experimental socket for release function of intelligent controller
2）Load indication of Operating current
3）Overload alarm lamp
4）Power and self-diagnosis indication
5）Coding switch for setting long-delay setting current Ir1
6）Coding switch for setting long-delay motion time t1
7）Coding switch for setting short-circuit short-delay setting current Ir2
8）Coding switch for setting short-circuit short-delay motion time ts
9）Coding switch for setting short-circuit instantaneous setting current Ir3
10）Coding switch for setting overload pre-alarm current Ip

- SM40E1-400, SM40E1-630, SM40E1-800、SM40E1-1250、SM40E1-1600 (four-pole)



Note:

1 Experimental socket for release function of intelligent controller
2 Load indication of Operating current
3 Overload alarm lamp
4 Power and self-diagnosis indication
5 Coding switch for setting long-delay setting current Ir1
6 Coding switch for setting long-delay motion time t1
7 Coding switch for setting short-circuit short-delay setting current Ir2
8 Coding switch for setting short-circuit short-delay motion time ts
9 Coding switch for setting short-circuit instantaneous setting current Ir3
10 Coding switch for setting grounding protection setting current Ir4 (For four-pole breaker,

Protective characteristic of intelligent breaker

- Characteristic of long-delay over-current protective inverse-time limit motion

Setting current Ir_1=(0.4-0.5-0.6-0.7-0.8-0.9-1.0) In									
Current	Motion time								
1.05 Ir_1	No motion within 2h								
1.3 Ir_1	<2h motion								
6Ir_1	Setting time t_1(s)	3	4	6	8	10	12	16	18
Motion time conforms with $I^2T_L=(6Ir_1)^2t_1$; Error of motion value is ±10%, error of motion time is ±10%									

- Characteristic of short-delay over-current protective motion

Setting current Ir_2=(2-2.5-3-4-6-8-10) In									
Current	Motion time								
Ir_2 I 8 Ir_1	inverse-time limit		$I^2Ts=(8Ir_1)^2ts$						
I Ir_2 and I 8Ir_1	Fixed-time limit	Setting time t (s)	0.06	0.1	0.2	0.3	0.4	0.6	0.8	1.0
		Accuracy	5%							

- Characteristic of short-circuit current protective motion (instantaneous)

Setting current Ir_3=(2-3-4-6-8-10-12) In		
Characteristic of motion	Motion current	no motion at I 0.85Ir_3 motion between I 1.15Ir_3
	Motion time	<0.02s

- Characteristic of grounding protection (suitable for four-pole only)

Setting current Ir_4=(0.1-0.2-0.3-0.4-0.5-0.6-0.7-0.8) In		
Characteristic of motion	Motion current	motion between 0.5 Ir_4~ 1.0Ir_4
	Motion time	0.4s

● Characteristic of overload pre-alarm

Setting current	Ip =(0.6-0.7-0.75-0.8-0.85-0.9-0.95-1.0) × Ir1
Characteristic of motion	Alarm between 0.9Ip ~ 1.1Ip
Note: The overload pre-alarm current Ip can be adjusted with three-pole breaker and can not with four-pole one, which has been fixed as 0.9Ir1.	

Power loss of breaker

Model of breaker	Rated current (A)	Power loss (three-pole)	
		front & rear-board wiring (W)	Insert wiring (W)
SM40E1-100 (C S R)	100	33	38
SM40E1-225 (C S R)	225	58	66
SM40E1-400 (C S)	400	105	118
SM40E1-630 (C S)	630	168	187
SM40E1-800 (C S)	800	248	268
SM40E1-1250(C, S)	1250	298	324
SM40E1-1600(C, S)	1600	350	389

Experimental current and cross-section area of conductor

Conductor's cross-section area for temperature rise test and related experimental current

Frame current (A)	Rated current (A)	Minimum cross-section area of conductor to be connected (or copper-bar's cross-section area) (mm^2)
100	100	35
225	225	95
400	400	240

Frame current (A)	Rated current (A)	Copper conductor		Copper bar	
		Sum	Each conductor's cross-section area (mm^2)	Sum	Each copper bar's cross-section area (mm^2)
630	630	2	185	2	40 5
800	800	2	240	2	50 5
1250(1600)				2	≤ 1000A 60 × 5
					> 1000A 80 × 5

Normal Operating and maintenance

- Before using the product pls read the "Operation instructions" carefully to understand the application methods including its characteristic and operational performance.
- To install and adjust, please pay attention to the protection of the controller against a heavy impulse or scrape and do not open its cover at will so as to prevent the set parameters from being changed or the components on the panel from damage. Designate some special persons to check before using it if the parameters are correct and the controller is in the status of normal Operating, and during Operating check the loading condition by means of viewing the photo-column indication so as to take treatment in time.
- To set the protective parameters, use a proper small screwdriver to turn the coding switch and take care of the small knob.
- To set the protective parameters, do not have them crossed with each other and arrange them such: Ir1<Ir2<Ir3.
- Wiring of the breaker must be in line with as follows: the power cable connected to terminals 1, 3, 5 and the load lines connected to terminals 2, 4, 6. No counter-wiring is allowed.
- For the breaker equipped with an under-voltage release, the release must be turned on first, then the breaker to be re-buckled and switched-on, or it would be damaged!
- Under the situation of the proper use of our products according to the rules we provided , we are fully responsible for replacement or repair of any quality-problem products with intact seal within 18 months from the date of ex-works delivery.(Compliant to domestic users)

Regular setting table of protective characteristic

For the setting values of the protective characteristic at ex-works, users have to note them according to the "Ordering standard" and in case of no special requirements from users, they will be allocated according to the following "Regular setting table of protective characteristic at ex-works".

Regular setting table of protective parameters at ex-works

Protective characteristic			Remark
Overload long-delay	Setting current Ir_1	1.0 In	
	Setting time t_1	18 s	When I=6 Ir1
Short-circuit short-delay	Setting current Ir_2	6 In	
	Setting time t_s	0.06 s	When I>Ir2 and I≥8Ir1
Short-circuit instantaneous	Setting current Ir_3	10 In	
Grounding protection	Setting current Ir_4	0.6 In	Available with 4-pole products only
	Setting time	0.4 s	
Pre-alarm	Setting current Ip	0.9 Ir_1	delay by 0.4s

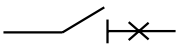
Rated current of frame grade Inm(A)		100					225	
Model		SM40E1-100C		SM40E1-100S		SM40E1-100R	SM40E1-225C	
Appearance								
Release rated current In(A)		32、100					225	
Setting rated current Ir1(A)		(0.4/0.5/0.6/0.7/0.8/0.9/1.0)×In Adjustable					(0.4/0.5/0.6/0.7/0.8/0.9/1.0)×In Adjustable	
Pole type		3	4	3	4	3	3	4
Rated insulation voltage Ui(V)		AC800						
Rated working voltage Ue(V)		AC400						
Rated impulse withstand voltage Uimp(V)		8000						
Arcover distance		0						
Rated limited short-circuit breaking capacity Icu(KA)	AC400V	35		65		100	35	
Rated Operating short-circuit breaking capacity Icu(KA)	AC400V	25		50		75	25	
Rated short-time withstand current ICW(KA)/1s		2					3	
Maximum expected maintaining value		40000					30000	
Experimental life (With load\No load\Sum)		6000 \ 8500 \ 14500					3000\7000\10000	
Overall dimensions (mm)	W	90	120	90	120	90	107	142
	L	155				215	165	
	H	80					91.5	
Way of wiring	Front-board	☆		☆		☆	☆	
	rear-board	☆		☆		☆	☆	
	Plug-in type	☆		☆		☆	☆	
Accessories	Shunt release	☆		☆		☆	☆	
	Under-voltage release	☆		☆		☆	☆	
	Aux.contact	☆		☆		☆	☆	
	Alarm contact	☆		☆		☆	☆	
	Rotary manual operation mechanism	☆		☆		☆	☆	
	Electric operation mechanism	☆		☆		☆	☆	
	Power module of experimental	☆		☆		☆	☆	

Rated current of frame grade Inm(A)		225			400			
Model		SM40E1-225S		SM40E1-225R	SM40E1-400C		SM40E1-400S	
Appearance								
Release rated current In(A)		225			400			
Setting rated current Ir1(A)		(0.4/0.5/0.6/0.7/0.8/0.9/1.0)×In Adjustable			(0.4/0.5/0.6/ 0.7/0.8/0.9/ 1.0)×In Adjustable			
Pole type		3	4	3	3	4	3	4
Rated insulation voltage Ui(V)		AC800						
Rated working voltage Ue(V)		AC400						
Rated impulse withstand voltage Uimp(V)		8000						
Arcover distance		0						
Rated limited short-circuit breaking capacity Icu(KA)	AC400V	65		100	50		65	
Rated Operating short-circuit breaking capacity Icu(KA)	AC400V	50		75	35		50	
Rated short-time withstand current ICW(KA)/1s		3			5			
Maximum expected maintaining value		30000			15000			
Experimental life (With load\No load\Sum)		3000/7000/10000			2000\4000\6000			
Overall dimensions (mm)	W	107	142	107	140	184	140	184
	L	165		240	257			
	H	91.5			103			
Way of wiring	Front-board	☆		☆	☆		☆	
	Rear-board	☆		☆	☆		☆	
	Plug-in type	☆		☆	☆		☆	
Accessories	Shunt release	☆		☆	☆		☆	
	Under-voltage release	☆		☆	☆		☆	
	Aux.contact	☆		☆	☆		☆	
	Alarm contact	☆		☆	☆		☆	
	Rotary manual operation mechanism	☆		☆	☆		☆	
	Electric operation mechanism	☆		☆	☆		☆	
	Power module of experimental	☆		☆	☆		☆	

Rated current of frame grade Inm(A)		630				800			
Model		SM40E1-630C		SM40E1-630S		SM40E1-800C		SM40E1-800S	
Appearance									
Release rated current In(A)		630				800			
Setting rated current Ir1(A)		(0.4/0.5/0.6/0.7/0.8/0.9/1.0)×In Adjustable				(0.4/0.5/0.6/ 0.7/0.8/0.9/ 1.0)×In Adjustable			
Pole type		3	4	3	4	3	4	3	4
Rated insulation voltage Ui(V)		AC800							
Rated working voltage Ue(V)		AC400							
Rated impulse withstand voltage Uimp(V)		8000							
Arcover distance		0							
Rated limited short-circuit breaking capacity Icu(KA)	AC400V	50		65		50		65	
Rated Operating short-circuit breaking capacity Icu(KA)	AC400V	35		50		35		50	
Rated short-time withstand current ICW(KA)/1s		8				10			
Maximum expected maintaining value		15000				15000			
Experimental life (With load\No load\Sum)		1500 \ 4000 \ 5500				1000 \ 2500 \ 3500			
Overall dimensions (mm)	W	210	280	210	280	210	280	210	280
	L	275				275			
	H	103				103			
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Plug-in type	☆		☆		☆		☆	
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	
	Power module of experimental	☆		☆		☆		☆	

Rated current of frame grade Inm(A)		1250				1600			
Model		SM40E1-1250C		SM40E1-1250S		SM40E1-1600C		SM40E1-1600S	
Appearance									
Release rated current In(A)		1250				1600			
Setting rated current Ir1(A)		(0.4/0.5/0.6/0.7/0.8/0.9/1.0)×In Adjustable				(0.4/0.5/0.6/0.7/0.8/0.9/1.0)×In Adjustable			
Pole type		3	4	3	4	3	4	3	4
Rated insulation voltage Ui(V)		AC800							
Rated working voltage Ue(V)		AC400							
Rated impulse withstand voltage Uimp(V)		8000							
Arcover distance		≥120							
Rated limited short-circuit breaking capacity Icu(KA)	AC400V	65		80		65		80	
Rated Operating short-circuit breaking capacity Icu(KA)	AC400V	50		60		50		60	
Rated short-time withstand current ICW(KA)/1s		15							
Maximum expected maintaining value		10000							
Experimental life (With load\No load\Sum)		500 \ 2500 \ 3000							
Overall dimensions (mm)	W	210	280	210	280	210	280	210	280
	L	330				330			
	H	152				152			
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Plug-in type								
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	
	Power module of experimental	☆		☆		☆		☆	

Suitable range and main functions and characteristic

- SM40E2 series CIMCCB (“breaker” for short hereafter), one of the SM40 series products, is a new-style one developed by this factory be means of the international advanced know-how of design and manufacture theory. And suitable for the non-frequent conversion in the circuit of AC 50Hz, rated insulating voltage 800V, rated working voltage below 400V and rated working current up to1600A and the non-frequent starting of motors.
- Of the all characteristic and the protective functions of SM40E1 series.
- It is equipped with communication interfaces, so it has the communication function of site bus and can be linked with a computer for communication and realize remote control, remote measurement, remote adjustment, and remote communication.
  ------Remote measurement: working parameters, load′ s current, failure parameters etc. of the electric network
  ------Remote communication: protective parameters, characteristic of tripping, rated current etc. of the breaker
  ------Remote adjustment: remotely adjusting the protective parameters, characteristic of tripping, rated current etc. of the breaker by a computer
  ------Remote control: remotely controlling the breaker to be switched-on or switched off.
- Can be connected to a portable programmer so as to set up the breaker's protective parameters and inquire the last failure etc.
- Can be connected to a display module so as to monitor the breaker's load current and information of various current failures etc.
- Can be connected to an intelligent control module to transfer signals of the photo-isolated contact, including signals of the overload pre-alarm, release alarm, ground-fault alarm, breaker′ s making and breaking.
- Of the isolation function, the related symbol of which is: 

Conformed standards

The following standards are executed with this series breaker:
IEC60947-1，GB/t14048.1 <General rules>
IEC60947-2，GB 14048.2-2001 <Low-voltage circuit-breaker> and Appendix F <Additional requirements to the breakers with the electronic over-current protection>
IEC60947-4，GB 14048.4 <contacts and motors' starters>
IEC60947-5-1,GB 14048.5 <Electric appliances with electromechanical control circuits>

Suitable working environment

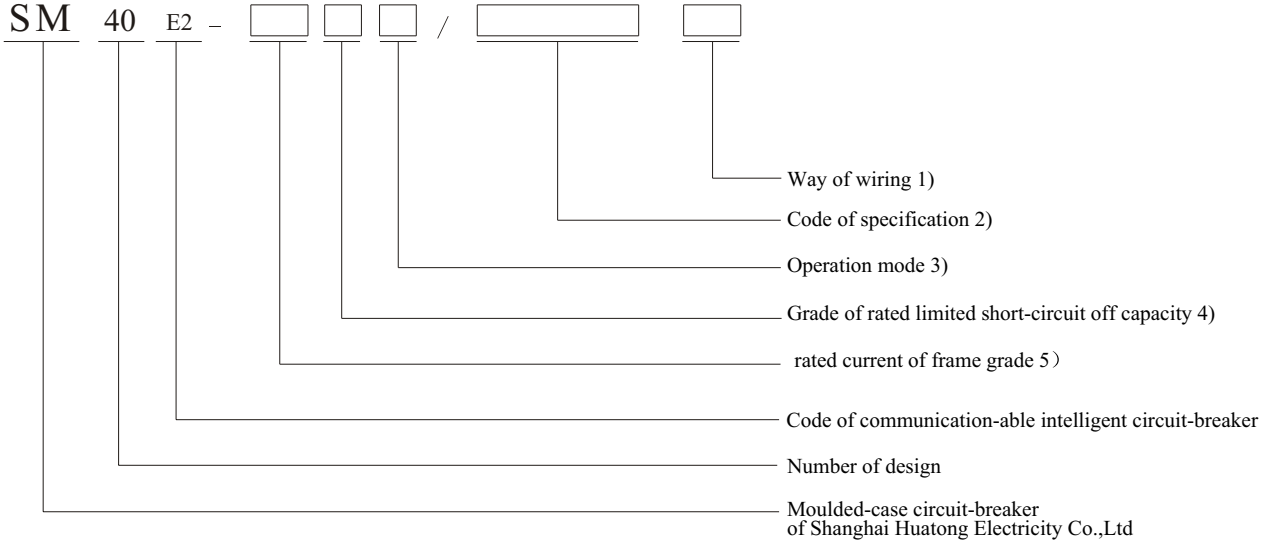
- The elevation at the installation place not over 2000m.
- Ambient air temperature -5℃～+40 ℃, and the average value during 24h not over 35 ℃
- The RH not over 50% at the maximum temperature +40 ℃; can be higher at a lower temperature, the average lowest temperature in the most humidity month not over +25 ℃, the average maximum RH of the said month not over 90%, and the condensed dewdrops produced on the product surface due to temperature variation should be taken into consideration.

- Pollution grade: 3
- As of the installation grade, III for the breakers' main circuit, II for the control and auxiliary circuits.

Installation mode

This series breaker can be installed either vertically or horizontally.

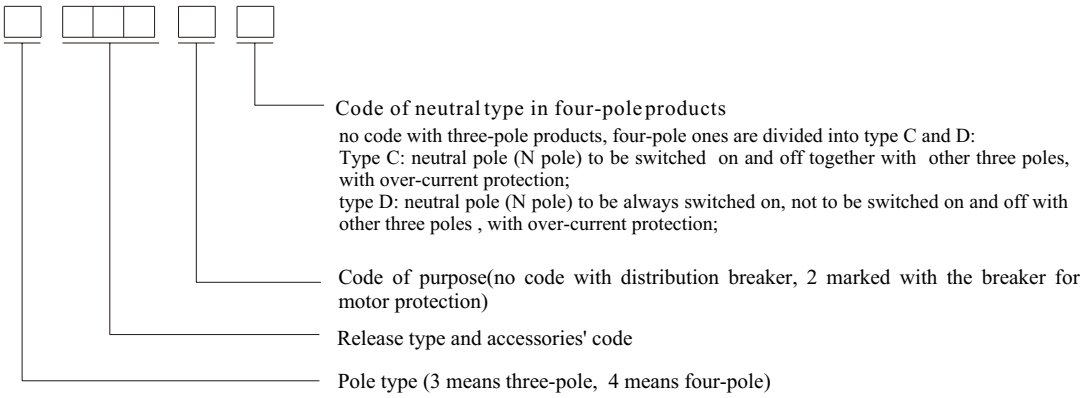
Model and meaning



Note:

1) Divided into front-board, rear-board and plug-in type wirings (the front-board one may not be noted)

2) Code of specification (consists of 6 bits)



3) Operation mode: no code with direct operation of handle, Z for turning handle operation, P for electric operation

4) Divided into type C ,S, R

5) Divided into 100A, 225A, 400A, 630A, 800A,1250A,1600A.

Release's mode and accessories'code

Accessories name / Code / Release mode	No access.	Shunt release	Aux.Contact	Under-voltage release	Alarm contact	Alarm contact Aux. Contact
Intelligent release	400	410	420	430	408	428

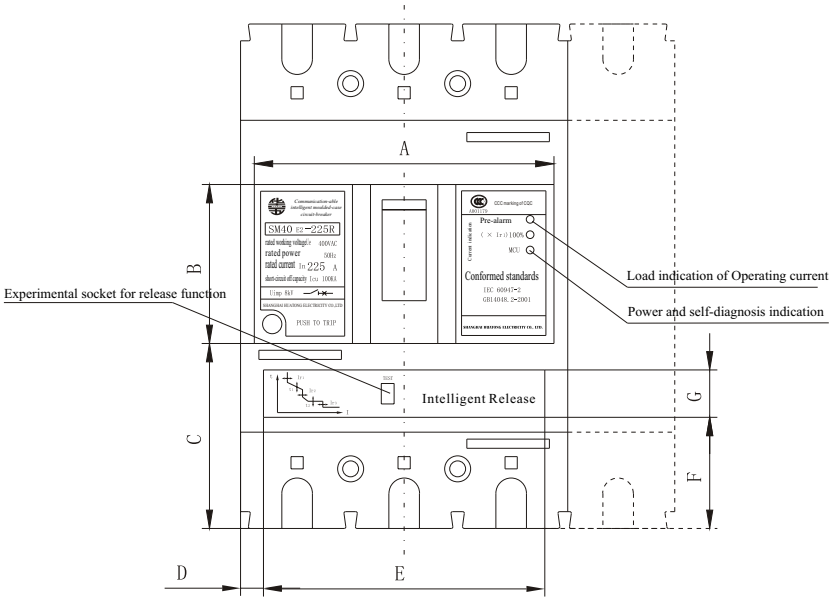
◆ Accessories Assembled Inside

Access. code	Access.name	Model / Pole type	SM40E2-100		SM40E2-225		SM40E2-400		SM40E2-800(630)	
			3	4	3	4	3	4	3	4
408	Alarm contact		◻		◻		◻		◻	
410	Shunt release		●		●		●		●	
420	Aux. Contact		■		■		■		■	
430	Under-voltage release		○		○					
428	Alarm contact Aux. Contact		■◻		■◻		■◻		■◻	

Note:
the above-mentioned allocation of the internal accessories will become invalid when the breaker needs to be connected to the intelligent control module for the output of various photo-isolated and contact signals.

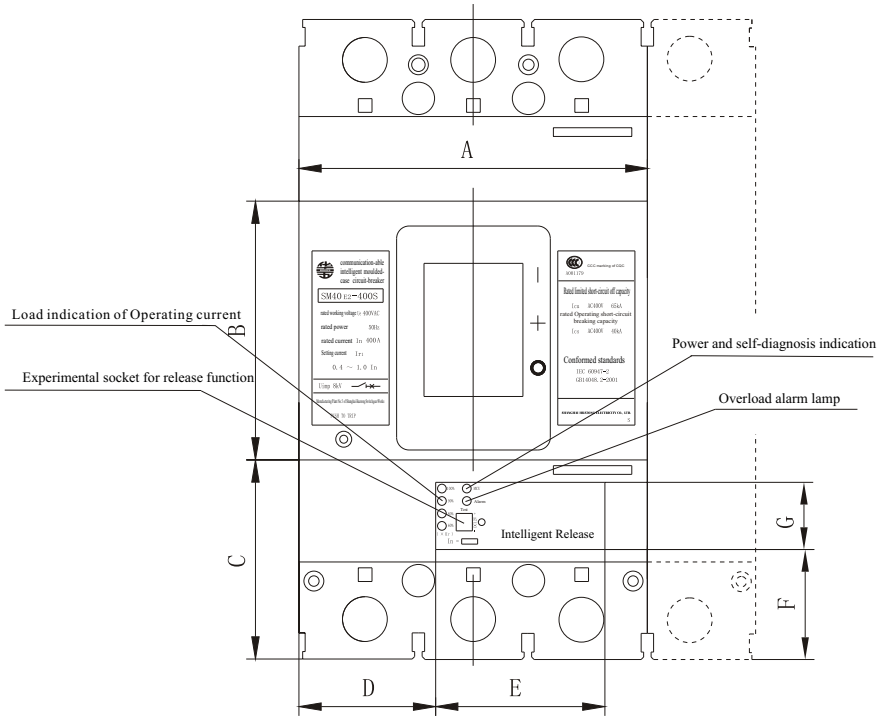
Breaker panel seat

- SM40E2-100 、 SM40E2-225



Model of breaker	A	B	C
SM40E2-100(C 、S)	84	51	51.5
SM40E2-100(R)	84	51	111.5
SM40E2-225(C 、S)	98	52	60.5
SM40E2-225(R)	98	52	135.5

- SM40E2-400 、 SM40E2-630 、 SM40E2-800 、 SM40E2-1250 、 SM40E2-1600



Model of breaker	A	B	C
SM40E2-400(C 、 S)	140	104	80
SM40E2-630(C 、 S)	210	105	87.5
SM40E2-800(C 、 S)	210	105	87.5
SM40E2-1250(C 、 S)	210	100	120
SM40E2-1600(C 、 S)	210	100	120

Protective characteristic of intelligent breaker

- The various protective characteristic of SM40E2 series CIMCCB are rectified according either the "Regular setting table of protective characteristic at ex-works" or the requirements from users at order. To do it, users may use ST portable programmer on the site or use a computer to "remotely adjust" after the communication-group network.

- Characteristic of long-delay over-current protective inverse-time limit motion

Setting current 1 Ir = (0.4 1.0) In +off (minimum step 1A)		
Current	Motion time	
1.05 Ir 1	No motion within 2h	
1.3 Ir 1	<2h motion	
6Ir 1	Setting time t1 (s)	3~18s (minimum step 1s)
Thermal memory (30min, removable at power-cut)		On/Off

Motion time conforms with $I^2T_1=(6Ir)^2 lt$

☆ Error of motion value is ±10%, error of motion time is ±10%

- **Characteristic of short-delay over-current protective motion**

Setting current Ir2= (2 10) In +off (minimum step 1A)				
Current		Motion time		
I^2t OFF	Below 1.5Ir^2	definite-time limit	Setting time ts (s)	0.05s 1s minimum step0.05s
			Accuracy	15%
I^2t ON	Ir 2 I 8 Ir 1	inverse-time limit		$I^2Ts=(8Irl)^2tS$
	I Ir 2 and I 8 Ir 1	definite-time limit	Setting time ts (s)	0.05s 1s minimum step0.05s
			Accuracy	15%
Thermalmemory (15min, removable at power-cut)		On/Off		

I^2t OFF —— Short-circuit short-delay is the definite-time limit protection;

I^2t ON —— Short-circuit short-delay is the definite-time limit protection switched from inverse-time limit.

● Characteristic of short-circuit current protective motion (instantaneous)

Setting current Ir_3=(2 ～ 12) × In+off (minimum step 1A)		
Characteristic of motion	Motion current	I ≤ 0.85Ir_3 no motion I ≥ 1.15Ir_3 motion
	Motion time	less than 0.02s

● Characteristic of grounding protection suitable for four-pole only)

Setting current Ir =(0.1 ～ 0.8) × In+off (minimum step 1A)		
Characteristic of motion	Motion current	motion between 0.5Ir_4~1.0Ir_4
	Motion time	0.1 ~ 0.8s + alarm (minimum step 0.1s)

● Characteristic of overload alarm

Setting current Ip_1 =(0.6 ～ 1.0) × Ir (minimum step 1A)	
Characteristic of motion	alarm between 0.9Ip ~ 1.1Ip
pre-alarm delay time	0.1s 1.0s (minimum step 0.1s)

● For the setting values of the protective characteristic at ex-works, users have to note them according to the “ Ordering standard” and, in case of no special requirements from users, they will be allocated according to the following “Regular setting table of protective characteristic at ex-works”.

Regular setting table of protective parameters at ex-works

Protective characteristic			Remark
Overload long-delay	Setting current Ir_1	1.0 In	
	Setting time t_1	18 s	at I=6 Ir1
Short-circuit short-delay	Setting current Ir_2	6 In	I t^2OFF 1.5Ir_2
	Setting time t_S	0.06 s	
Short-circuit instantaneous	Setting current Ir_3	10 In	
Grounding protection	Setting current Ir_4	0.6 In	Available with 4-pole products only
	Setting time	0.4 s	
Pre-alarm	Setting current Ip	0.9 Ir_1	
	Setting time	0.4 s	

intelligent break' communication interface and exterior module match use

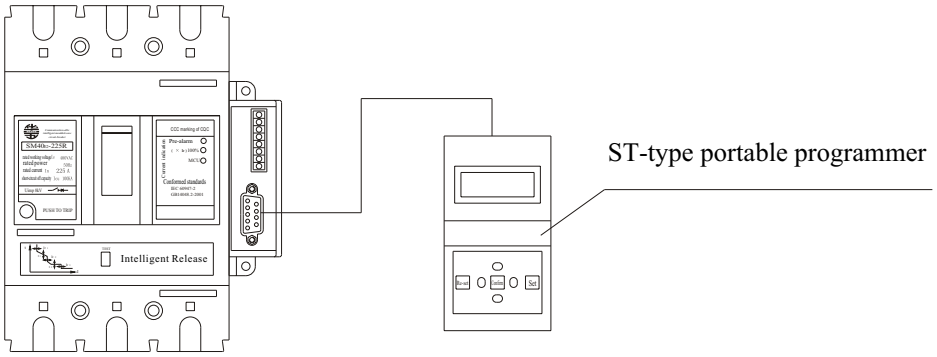
- SM40E2 series CIMCCB has communication interface conformity with the stipulations of MODBUS .

☆ When SM40E2 series communication-able intelligent MCCB is used in alone instead of in net group, the portable programmer can rectify the protective characteristic of the breaker through the communication interface, and also can monitor the Operating electric current with the fault information by using the communication interface to connect with a ST-CM display module.

☆ When SM40E2 series CIMCCB is used in net group, it can be directly connected to the locale bus . If the locale bus is with different protocol, it also can be connected to it by using a ST-DP protocol-switch module to switch the one of MODBUS.

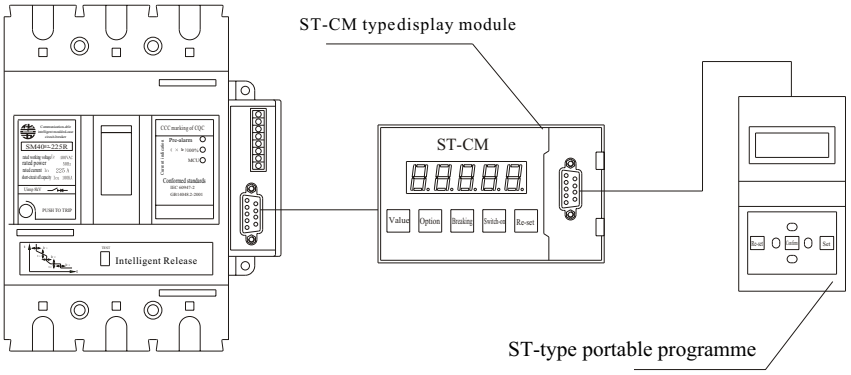
- If SM40E2 series CIMCCB use by alone.

  To set the protective parameter of the breaker, the professional must follow the connection mode indiacated below with a portable programmer to operate according to the norms.



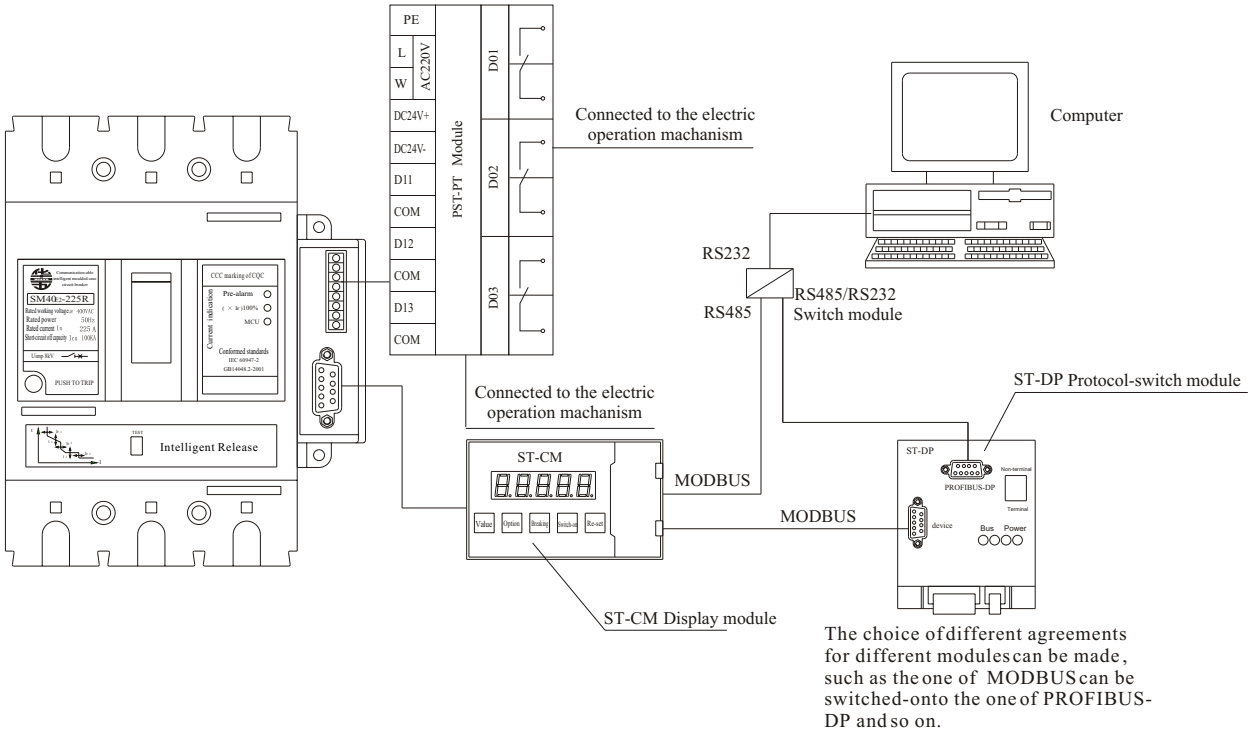
- If SM40E2 series CIMCCBand ST-CM type display module is in match use.

  On normal working way, display module can stakeout the electric current circulation and the fault information. To set the protective parameter of the breaker, the professional must follow the connection mode indiacated below with a portable programmer to operate according to the norms.



- Communication-group network of SM40E2 series CIMCCB.

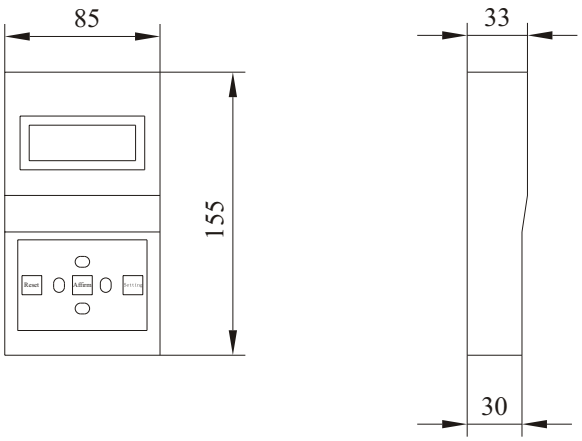
The network linking of communication may refers to the chart program listed below. And the choice of different agreements for different modules can be made , such as the one of MODBUS can be switched-onto the one of PROFIBUS-DP



Externally allocated modules of intelligent breaker (optional)

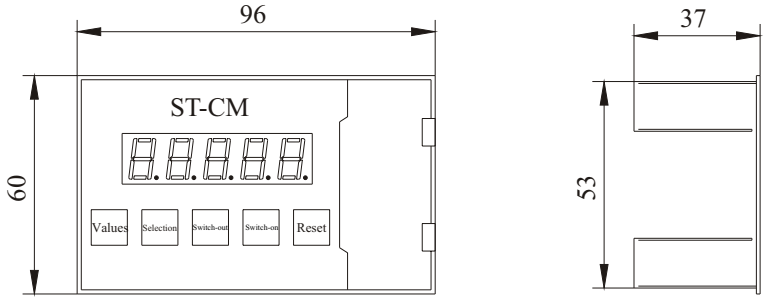
- ST-type portable programmer

ST type portable programmer can be on site operation or set up the program parameter of the breaker to auto-search the equipment , to monitor the power, to indicate the status of communication, to auto-break the remote communication , to confirm the work limits of authority and so on.

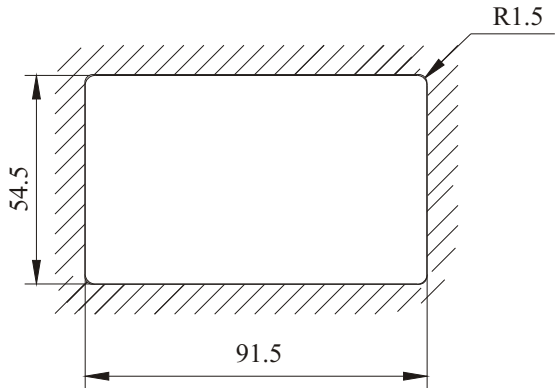


● ST-CM type display module

Mountable on the door of a small chamber in a cabinet, just as a panel; Used for the switch-over among the intelligent breaker, the portable programmer and the remote communication interface and for monitoring the parameters Operating on the site and for providing the intelligent breaker with an auxiliary working power. (see figure 9)

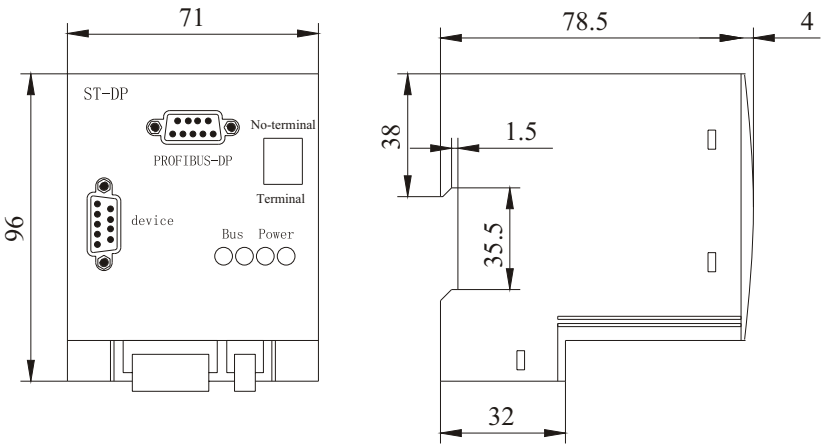


Drill size for panel installation



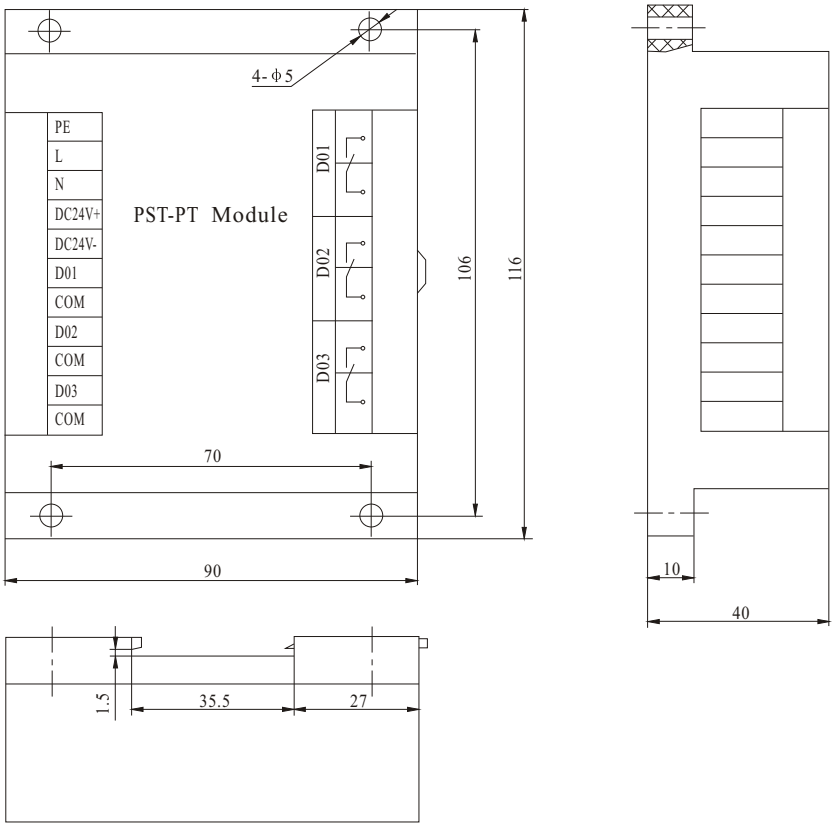
● ST-DP communication agreement module

With this module, multiple special or general agreement products can be connected to the corresponding site buses after being switched over.



- FST-PT control module

FST-PT control module is installed with lead-rail standard and can supply DC power for ST-CM . Meanwhile, it can be made a spot Experimental of the release of the intelligent breaker. The intelligent control module input with photo-isolated signals while the various signals of alarm and the one of the breaker's on-off output with contact signals.



Power loss of breaker

Refer to the power loss table of SM40E1 series intelligent adjustable moulded-case circuit-breaker

Experimental current and cross-section area of conductor

Refer to the table of conductor's cross-section area of SM40E1 series

Safe distance of breaker

Some distance should be kept between the breaker and the ceiling, the ground and the side of a room according to the standard requirement of it.

Interpretation of technical performance

- Characteristic of thermal memory

  Repeated overload may cause the conductor heated. The controller will be of the thermal effect analogous to the characteristic of a double-metal sheet after the delay motion due to overload, short-delay etc. failures, making the overload energy released and ended in 30min and the short-delay one in 15min. In case of an overload, short-delay etc. failure with the breaker closed again during the period of which, the time of delay motion will become shorter to carry out a proper protection for the line or equipment. The accumulated thermal effect can be removed through once reset after the controller is cut off (This characteristic maybe cut off upon required). Both pre-warn and load monitor are jointed with the overload protective characteristic and the thermal memory function is cut off at ex-works, in general.

- Characteristic of short-delay inverse-time limit

  For SM40E2 intelligent breaker, there are two modes of short-delay for choice. One is definite-time limit protection, when the failure current is bigger than the setting value, motion is delayed per the definite delay value and the delay time has nothing to do with the current value; the other is inverse-time limit + definite-time limit protection, at the current of lower times (i.e. I>Ir2 and I<=8Ir1), the inverse-time limit protection acts and the delay motion time is related to the failure current value, the bigger the current value, the shorter the delay time. At the current of higher times (i.e. I>Ir2 and I>8It1), the controller will automatically be switched over to the definite-time limit protection. For the controller of the thermal memory characteristic, the thermal effect is accumulated and it is set to be the definite-time limit characteristic, in general.

- Self-diagnosis of controller

  This function is used for both check and protection to the chip of the single-sheet computer of its own during its work. When the humidity of the internal environment of the controller is over 80 ℃ + 5 ℃, MCU luminous diode flashes; and when an abnormality occurs with the computer during work, MCU luminous diode flashes or goes out.

- Fault inspeciton

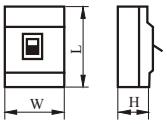
  The breaker, after being cut off due to a failure, still has the failure memory function if provided with an auxiliary power.. Press the “Check” key on the programmer after re-electrify it again, the cause of the last failure will be shown. The last failure memory will be replaced by a new one when it takes place again.

  Note: the auxiliary power must be connected for the failure memory.

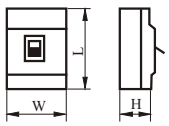
Normal Operating and maintenance

- Front use, please read this “Operation instructions” carefully to get to know the product characteristic and performance and the way of use.
- To install and adjust, please pay attention to the protection of the controller against a heavy impulse or scrape and do not open its cover at will so as to prevent the set parameters from being changed or the components on the panel from damage. Front starting, designate some special persons to check if the parameters are co and the controller is in the status of normal run and, during Operating, check the loading condition by means of viewing the photo-column indication so as to take treatment in time. To set the protective parameters, use a proper small screwdriver to turn the coding switch and care of the small knob.
- To set the protective parameters, do not have them crossed with each other and arrange them such: $Ir_1<Ir_2<Ir_3$.
- Wiring of the breaker must be in line with such as: the power cable is connected to terminals 1, 3, 5 and the load lines to terminals 2, 4, 6. No counter-wiring is allowed
- Under the situation of the proper use of our products according to the rules we provided , we are fully responsible for replacement or repair of any quality-problem products with intact seal within 18 months from the date of ex-works delivery.(Compliant to domestic users)

Rated current of frame grade Inm(A)		100					225	
Model		SM40E2-100C		SM40E2-100S		SM40E2-100R	SM40E2-225C	
Appearance								
Release rated current In(A)		100					225	
Setting rated current Ir1(A)		(0.4～1.0)×In +OFF minimum step unit1A					(0.4～1.0)×In +OFF minimum step unit1A	
Pole type		3	4	3	4	3	3	4
Rated insulation voltage Ui(V)		AC800						
Rated working voltage Ue(V)		AC400						
Rated impulse withstand voltage Uimp(V)		8000						
Arcover distance		0						
Rated limited short-circuit breaking capacity Icu(KA)	AC400V	35		65		100	35	
Rated operating short-circuit breaking capacity Icu(KA)	AC400V	25		50		75	25	
Rated short-time withstand current ICW(KA)/1s		2					3	
Maximum expected maintaining value		40000					30000	
Experimental life (With load\No load\Sum)		6000\8500\14500					3000\7000\10000	
Overall dimensions (mm)	W	90	120	90	120	90	107	142
	L	155				215	165	
	H	80					91.5	
Way of wiring	Front-board	☆		☆		☆	☆	
	rear-board	☆		☆		☆	☆	
	Plug-in type	☆		☆		☆	☆	
Accessories	Electric operation mechanism	☆		☆		☆	☆	
	Rotary manual operation mechanism	☆		☆		☆	☆	
	ST-CM display	☆		☆		☆	☆	
	ST portable programmer	☆		☆		☆	☆	
	ST-200 intelligent control module	☆		☆		☆	☆	
	ST-DP communication protocol module	☆		☆		☆	☆	
	Power Module of Experiment	☆		☆		☆	☆	

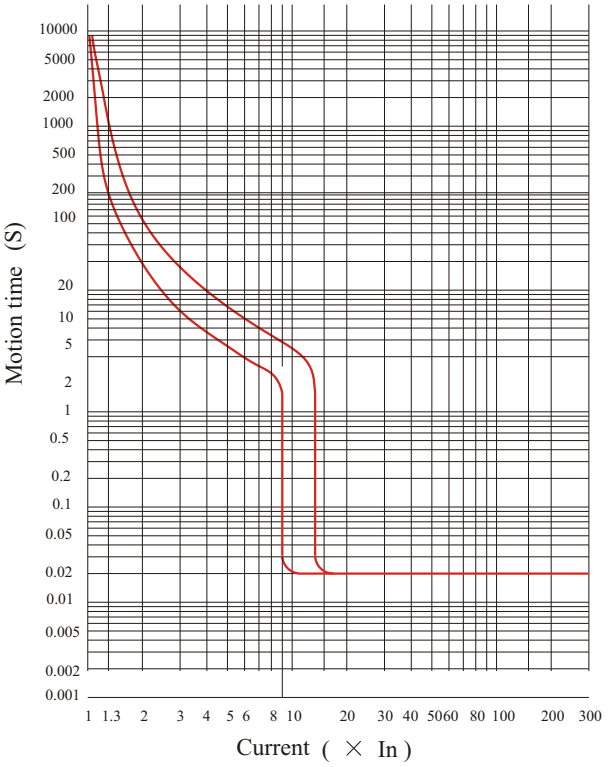
Rated current of frame grade Inm(A)		225			400			
Model		SM40E2-225S		SM40E2-225R	SM40E2-400C		SM40E2-400S	
Appearance								
Release rated current In(A)		225			400			
Setting rated current Ir1(A)		(0.4～1.0)×In +OFF minimum step unit1A			(0.4～1.0)×In +OFF minimum step unit1A			
Pole type		3	4	3	3	4	3	4
Rated insulation voltage Ui(V)		AC800						
Rated working voltage Ue(V)		AC400						
Rated impulse withstand voltage Uimp(V)		8000						
Arcover distance		0						
Rated limited short-circuit breaking capacity Icu(KA)	AC400V	65		100	50		65	
Rated Operating short-circuit breaking capacity Icu(KA)	AC400V	50		75	35		50	
Rated short-time withstand current ICW(KA)/1s		3			5			
Maximum expected maintaining value		30000			15000			
Experimental life (With load\No load\Sum)		3000\7000\10000			2000\4000\6000			
Overall dimensions (mm) 	W	107	142	107	140	184	140	184
	L	165		240	257			
	H	91.5			103			
Way of wiring	Front-board	☆		☆	☆		☆	
	rear-board	☆		☆	☆		☆	
	Plug-in type	☆		☆	☆		☆	
Accessories	Electric operation mechanism	☆		☆	☆		☆	
	Rotary manual operation mechanism	☆		☆	☆		☆	
	ST-CM display	☆		☆	☆		☆	
	ST portable programmer	☆		☆	☆		☆	
	ST-200 intelligent control module	☆		☆	☆		☆	
	ST-DP communication protocol module	☆		☆	☆		☆	
	Power Module of Experiment	☆		☆	☆		☆	

Rated current of frame grade Inm(A)		630				800			
Model		SM40E2-630C		SM40E2-630S		SM40E2-800C		SM40E2-800S	
Appearance									
Release rated current In(A)		630				800			
Setting rated current Ir1(A)		(0.4～1.0)×In +OFF minimum step unit1A				(0.4～1.0)×In +OFF minimum step unit1A			
Pole type		3	4	3	4	3	4	3	4
Rated insulation voltage Ui(V)		AC800							
Rated working voltage Ue(V)		AC400							
Rated impulse withstand voltage Uimp(V)		8000							
Arcover distance		0							
Rated limited short-circuit breaking capacity Icu(KA)	AC400V	50		65		50		65	
Rated Operating short-circuit breaking capacity Icu(KA)	AC400V	35		50		35		50	
Rated short-time withstand current ICW(KA)/1s		8				10			
Maximum expected maintaining value		15000				15000			
Experimental life (With load\No load\Sum)		1500\4000\5500				1000\2500\3500			
Overall dimensions (mm)	W	210	280	210	280	210	280	210	280
	L	275				275			
	H	103				103			
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Plug-in type	☆		☆		☆		☆	
Accessories	Electric operation mechanism	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	ST-CM display	☆		☆		☆		☆	
	ST portable programmer	☆		☆		☆		☆	
	ST-200 intelligent control module	☆		☆		☆		☆	
	ST-DP communication protocol module	☆		☆		☆		☆	
	Power Module of Experiment	☆		☆		☆		☆	

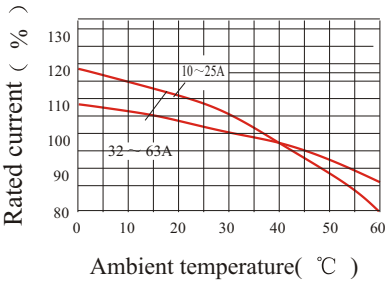
Rated current of frame grade Inm(A)		1250				1600			
Model		SM40E2-1250C		SM40E2-1250S		SM40E2-1600C		SM40E2-1600S	
Appearance									
Release rated current In(A)		1250				1600			
Setting rated current Ir1(A)		(0.4～1.0)×In +OFF minimum step unit 1A				(0.4～1.0)×In +OFF minimum step unit1A			
Pole type		3	4	3	4	3	4	3	4
Rated insulation voltage Ui(V)		AC800							
Rated working voltage Ue(V)		AC400							
Rated impulse withstand voltage Uimp(V)		8000							
Arcover distance		≥120							
Rated limited short-circuit breaking capacity Icu(KA)	AC400V	65		80		65		80	
Rated Operating short-circuit breaking capacity Icu(KA)	AC400V	50		60		50		60	
Rated short-time withstand current ICW(KA)/1s		15							
Maximum expected maintaining value		10000							
Experimental life (With load\No load\Sum)		500\2500\3000							
Overall dimensions (mm) 	W	210	280	210	280	210	280	210	280
	L	330				330			
	H	152				152			
Way of wiring	Front-board	☆		☆		☆		☆	
	rear-board	☆		☆		☆		☆	
	Plug-in type								
Accessories	Shunt release	☆		☆		☆		☆	
	Under-voltage release	☆		☆		☆		☆	
	Aux.contact	☆		☆		☆		☆	
	Alarm contact	☆		☆		☆		☆	
	Rotary manual operation mechanism	☆		☆		☆		☆	
	Electric operation mechanism	☆		☆		☆		☆	
	Power Module of Experiment	☆		☆		☆		☆	

SM40-63C 、 SM40-63S 、 SM40-63R

Curve of Time/ electricity characteristic

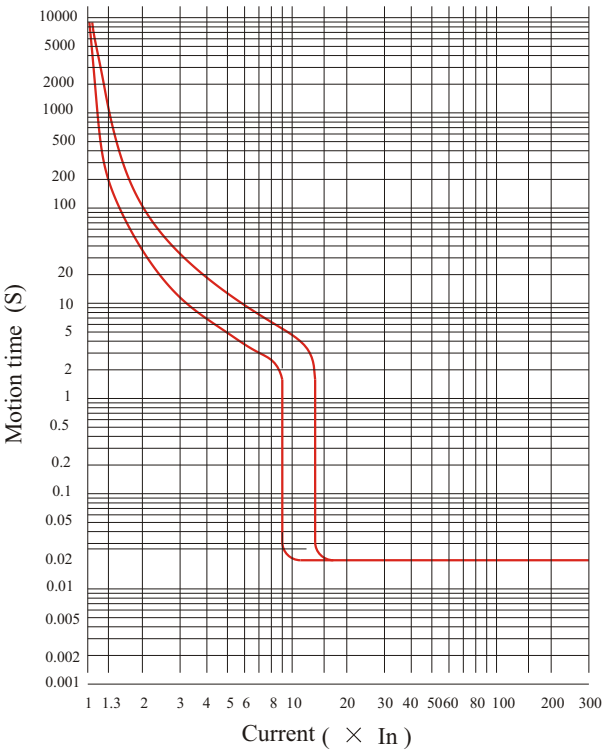


Curve of temperature compensate

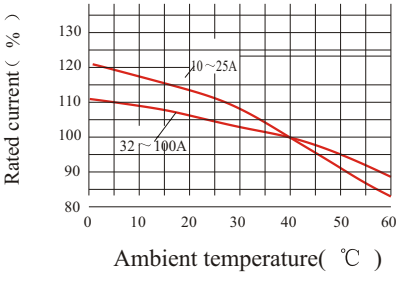


SM40-100C 、 SM40-100S 、 SM40-100R

Curve of Time/ electricity characteristic

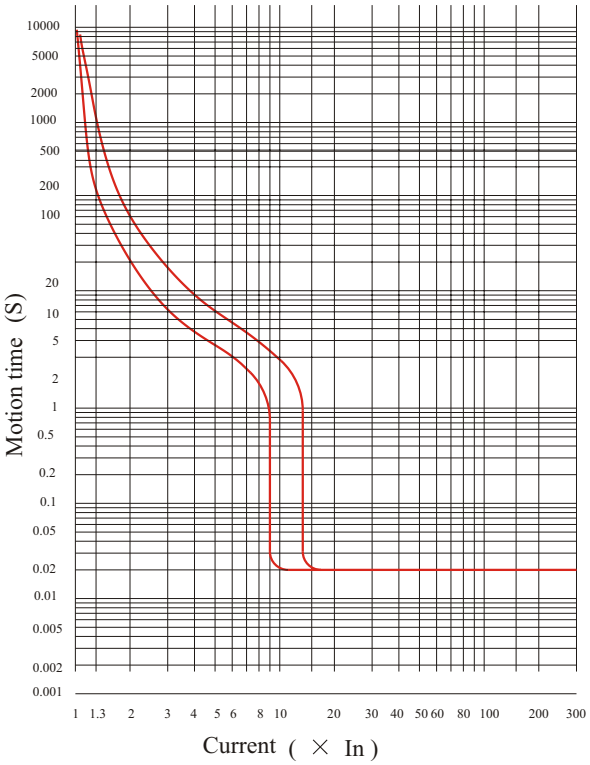


Curve of temperature compensate

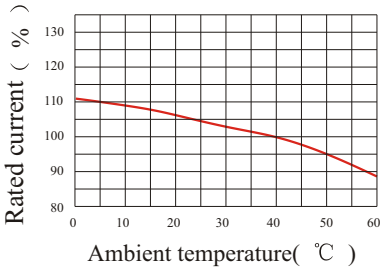


SM40-160C 、 SM40-160S 、 SM40-160R
SM40-225C 、 SM40-225S 、 SM40-225R

Curve of Time/ electricity characteristic

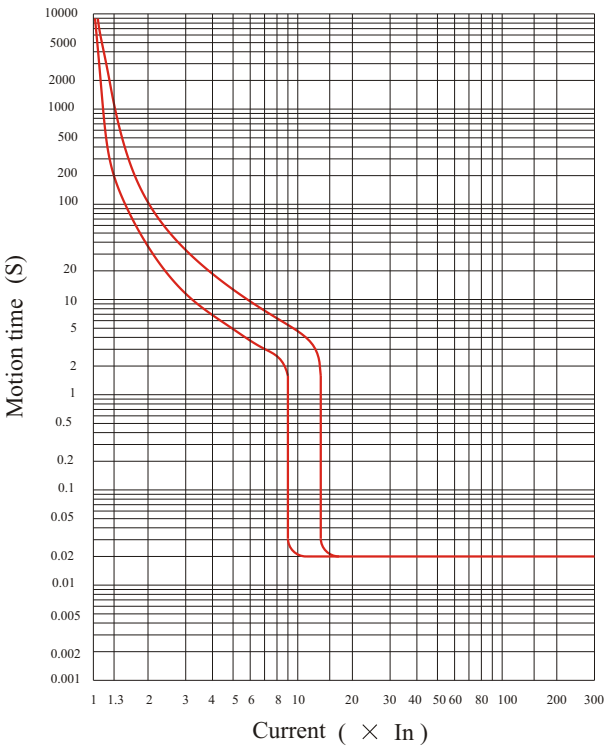


Curve of temperature compensate

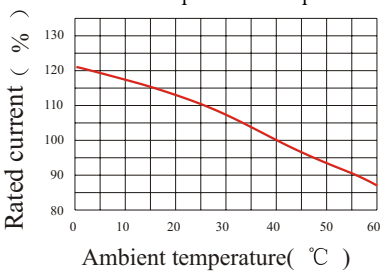


SM40-400C 、 SM40-400S 、 SM40-400R

Curve of Time/ electricity characteristic

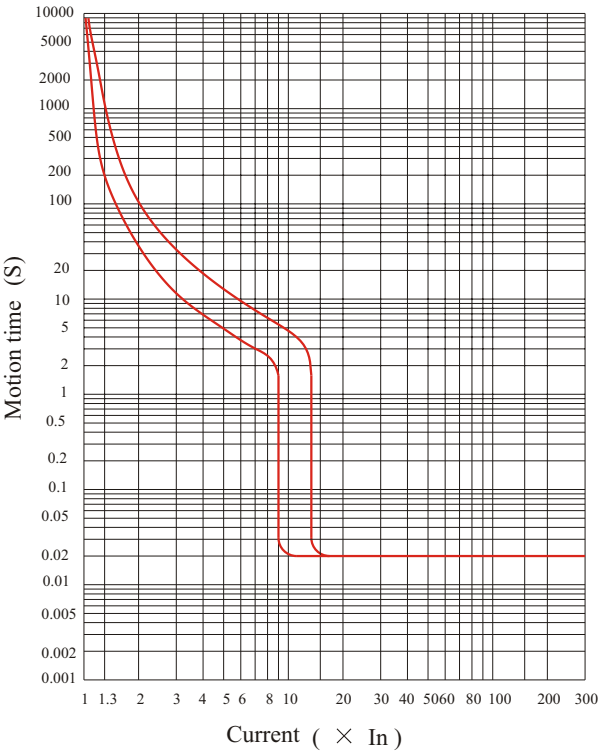


Curve of temperature compensate

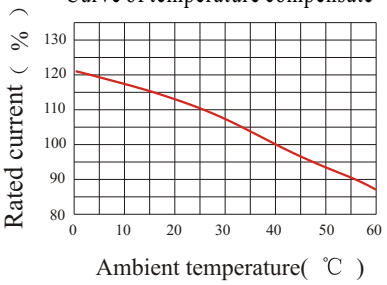


SM40-630C 、 SM40-630S 、 SM40-630R

Curve of Time/ electricity characteristic

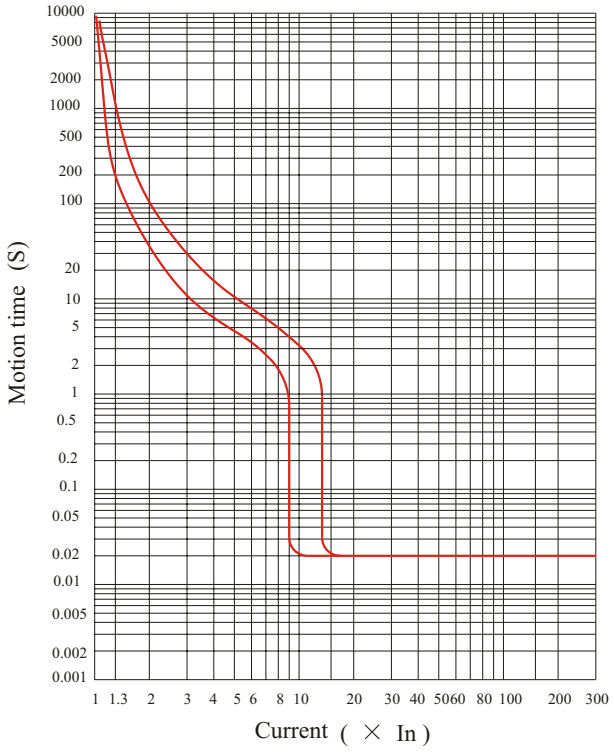


Curve of temperature compensate

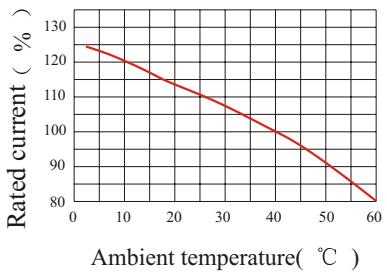


SM40-800C 、 SM40-800S 、 SM40-800R

Curve of Time/ electricity characteristic

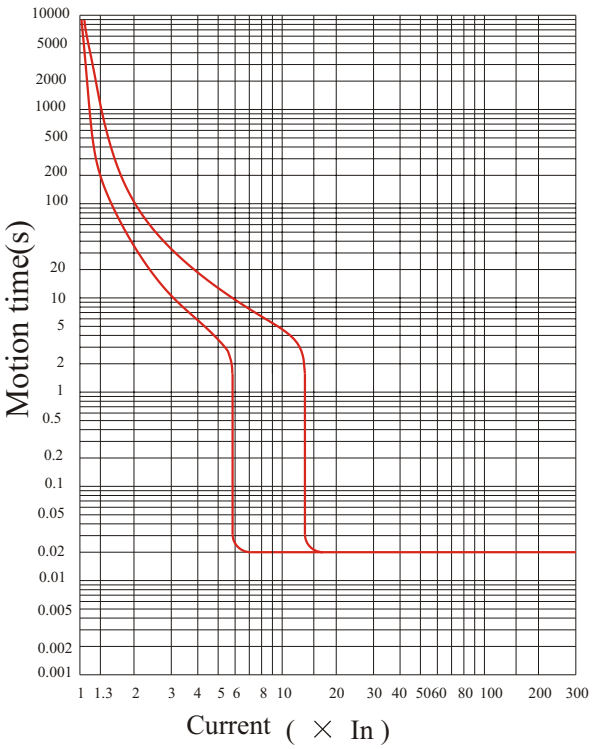


Curve of temperature compensate

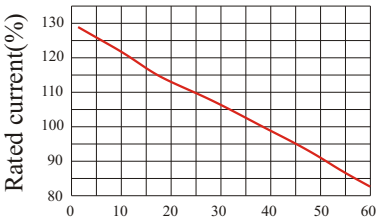


● SM40-1250C 、 SM40-1250S
SM40-1600C 、 SM40-1600S

Curve of the time/electricity characteristic

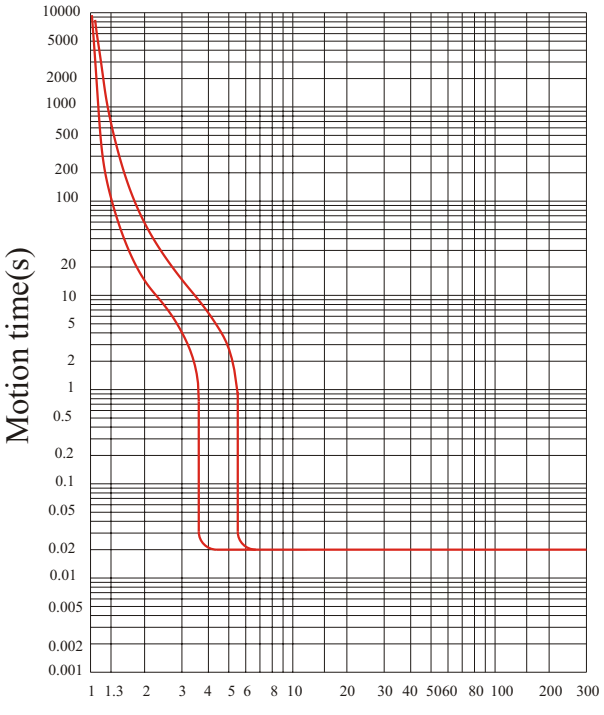


Curve of the temperature compensation

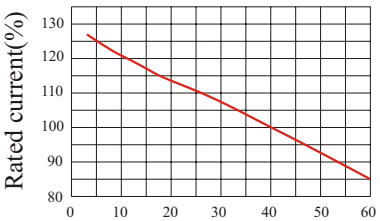


● SM40-2000C 、 SM40-2000S
SM40-2500C 、 SM40-2500S

Curve of the time/electricity characteristic

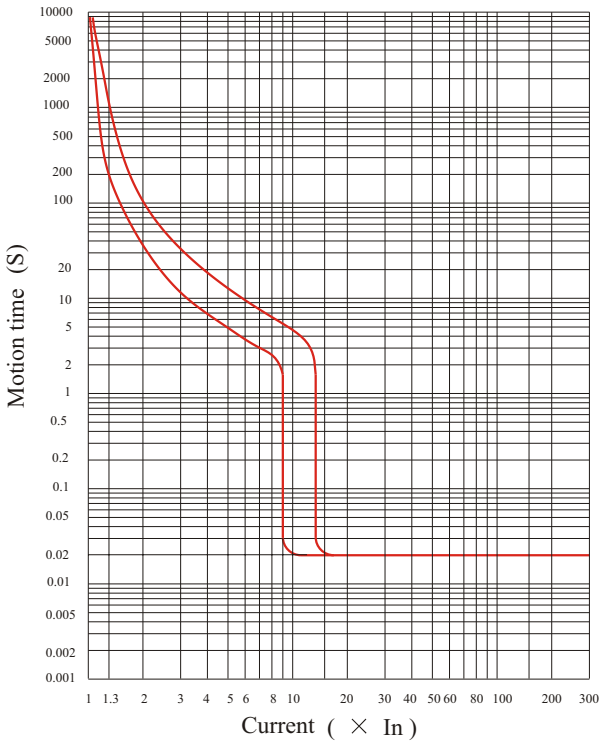


Curve of the temperature compensation

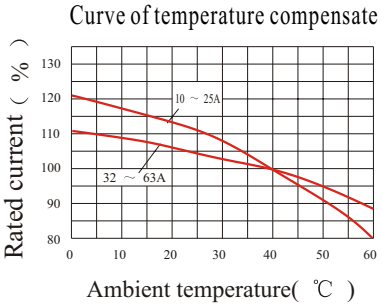


SM40L -63C 、 SM40L -63S

Curve of Time/ electricity characteristic

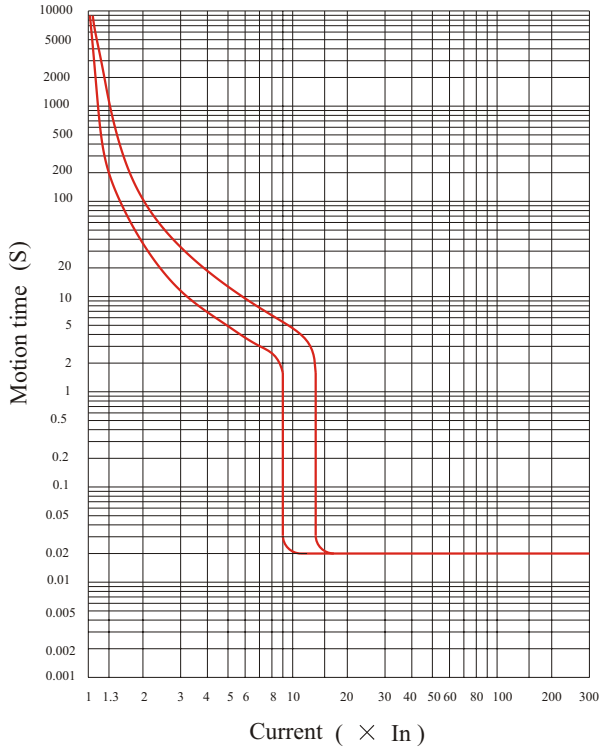


Curve of temperature compensate

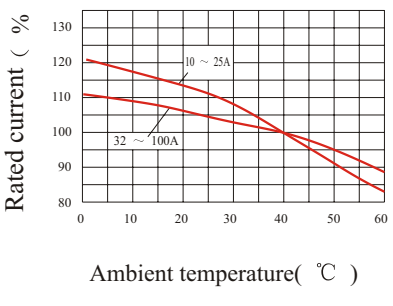


SM40L-100C 、 SM40L-100S 、 SM40L-100R

Curve of Time/ electricity characteristic

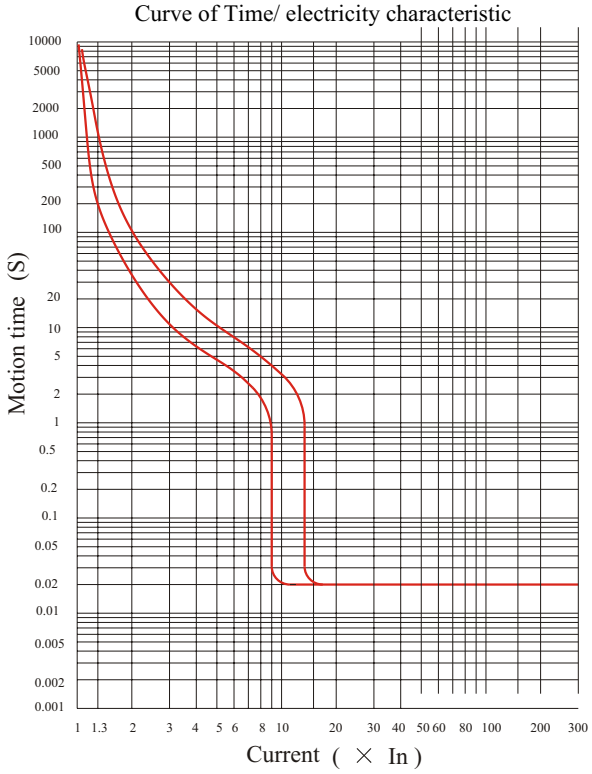


Curve of temperature compensate

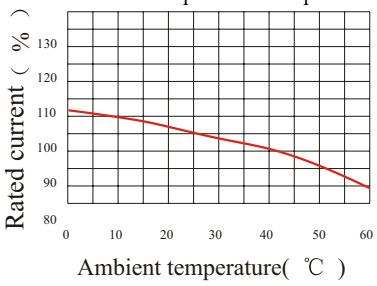


SM40L-160C 、 SM40L-160S 、 SM40L-160R
SM40L-225C 、 SM40L-225S 、 SM40L-225R

Curve of Time/ electricity characteristic

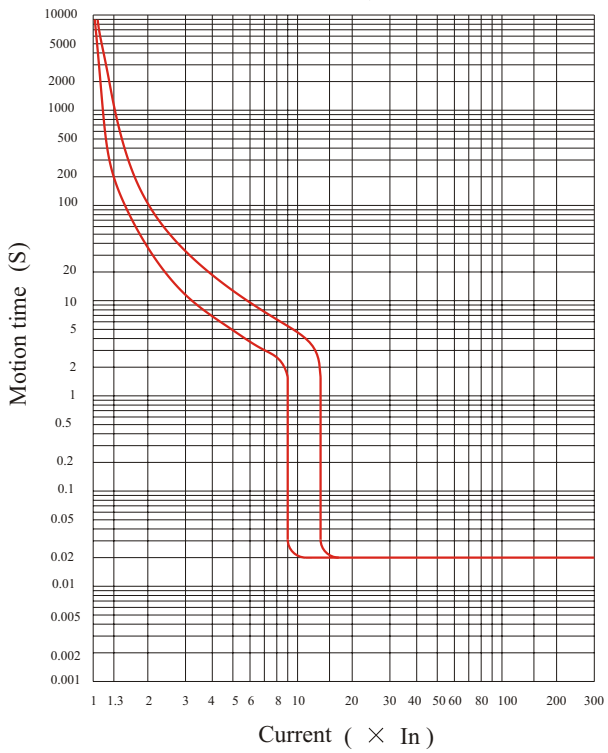


Curve of temperature compensate

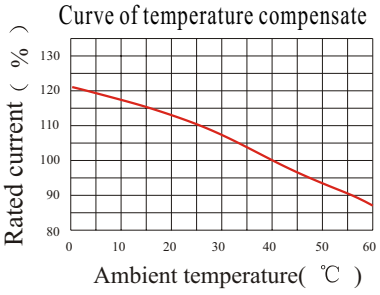


SM40L-400C 、 SM40L-400S 、 SM40L-400R

Curve of Time/ electricity characteristic

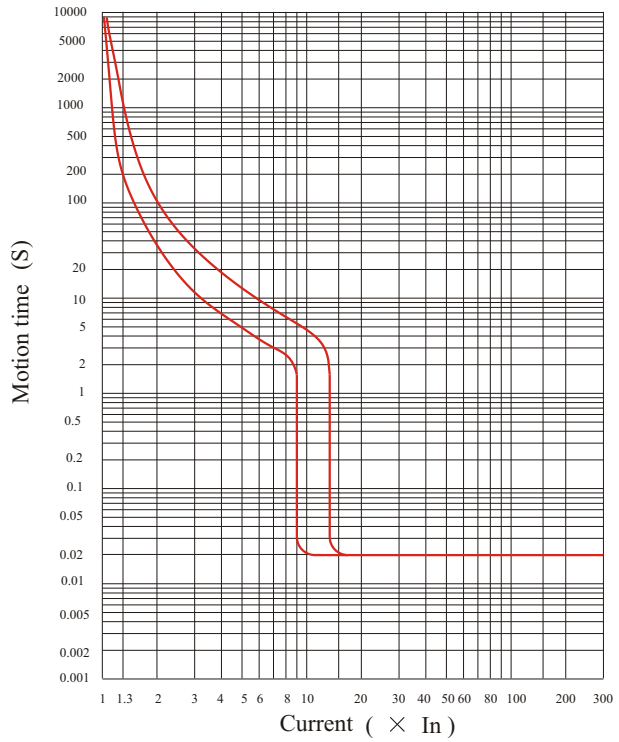


Curve of temperature compensate

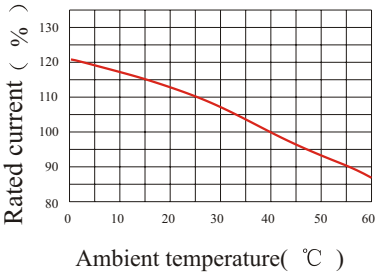


SM40L -630C 、 SM40L-630S 、 SM40L-630R

Curve of Time/ electricity characteristic

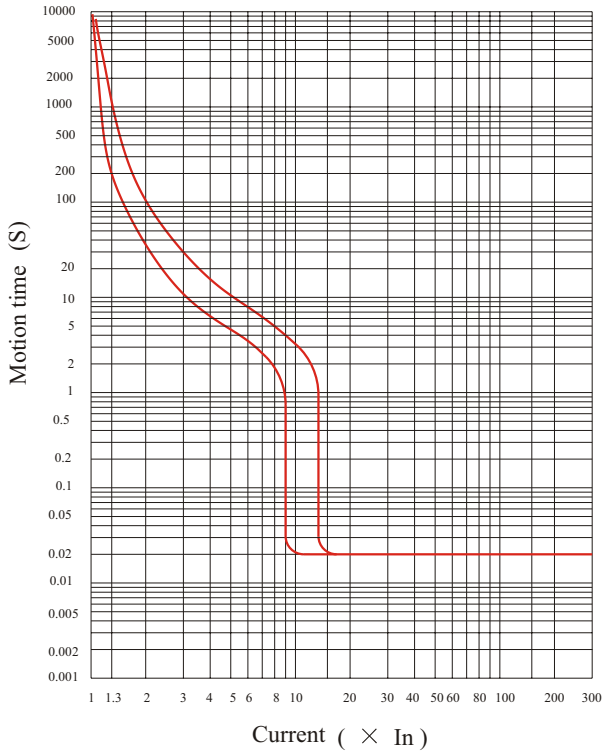


Curve of temperature compensate

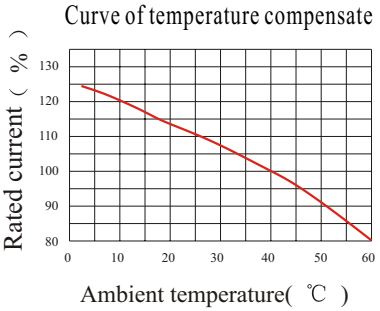


SM40L-800C 、 SM40L-800S 、 SM40L-800R

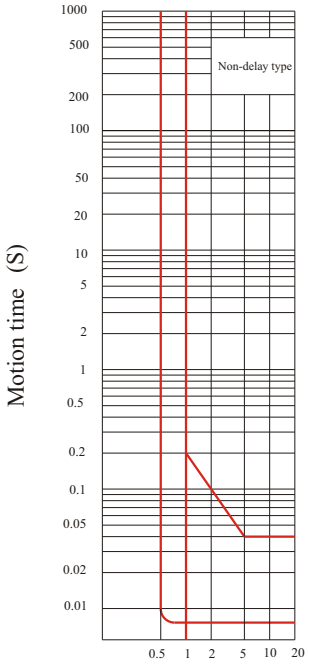
Curve of Time/ electricity characteristic

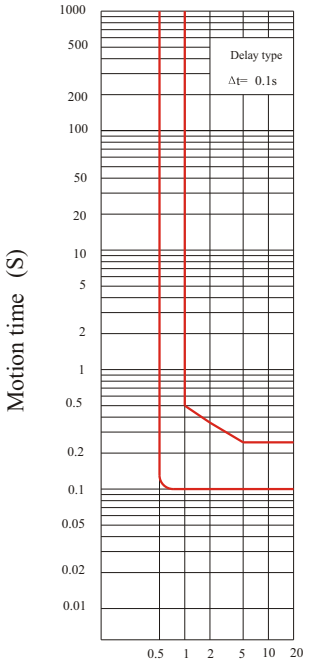


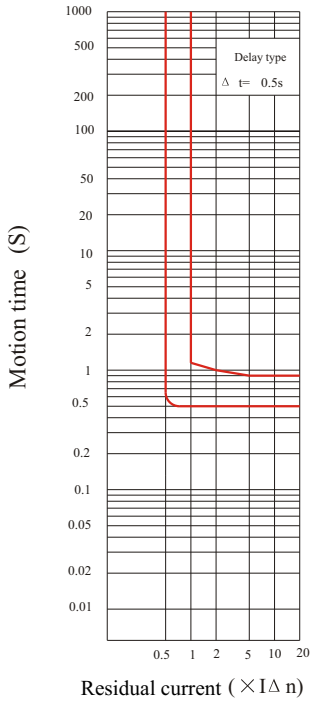
Curve of temperature compensate

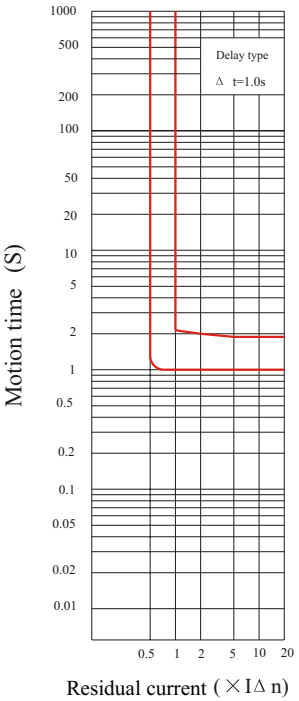


Curve of residual electricity protect action characteristic (IΔn=30 ～ 1000mA)

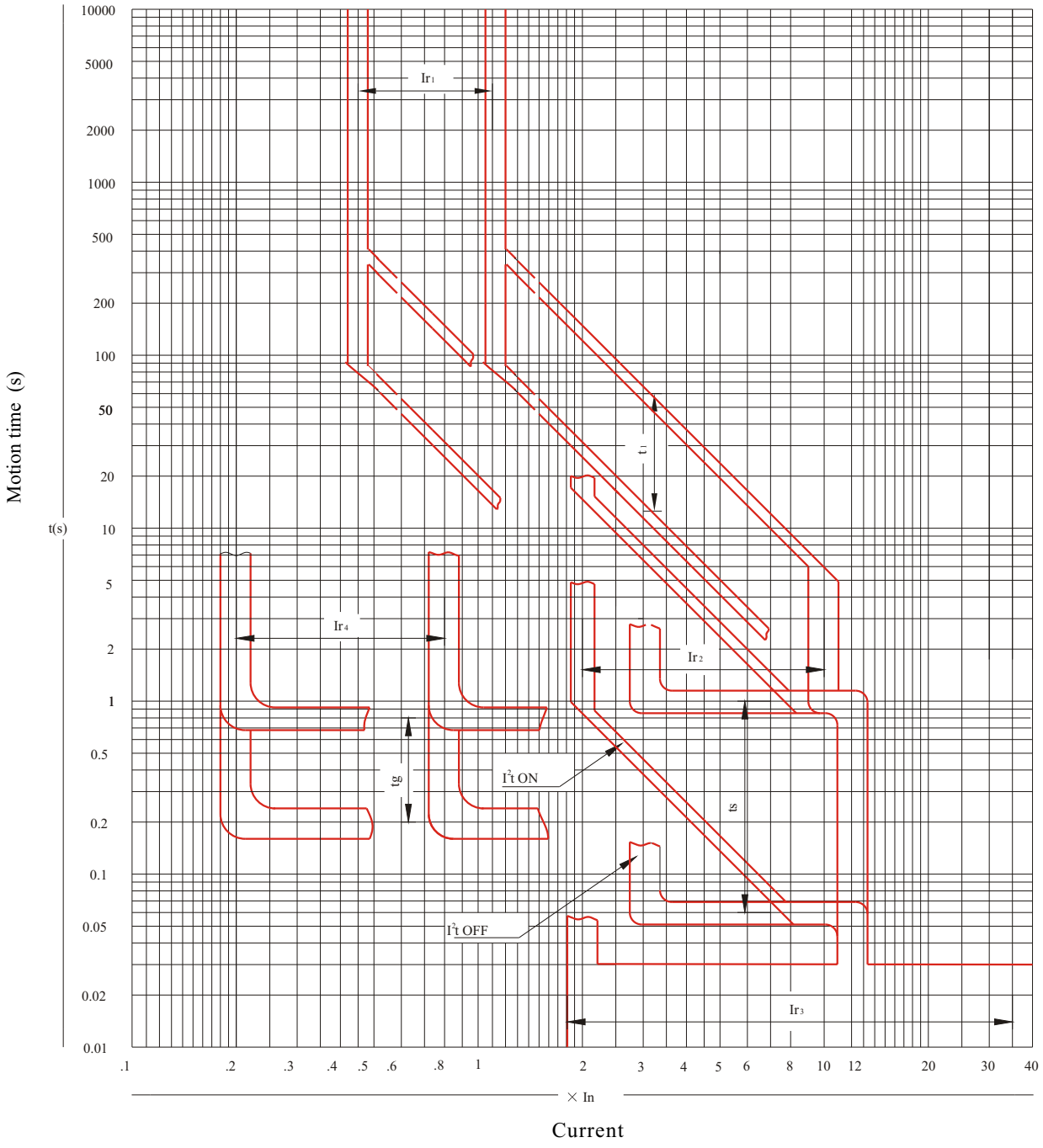




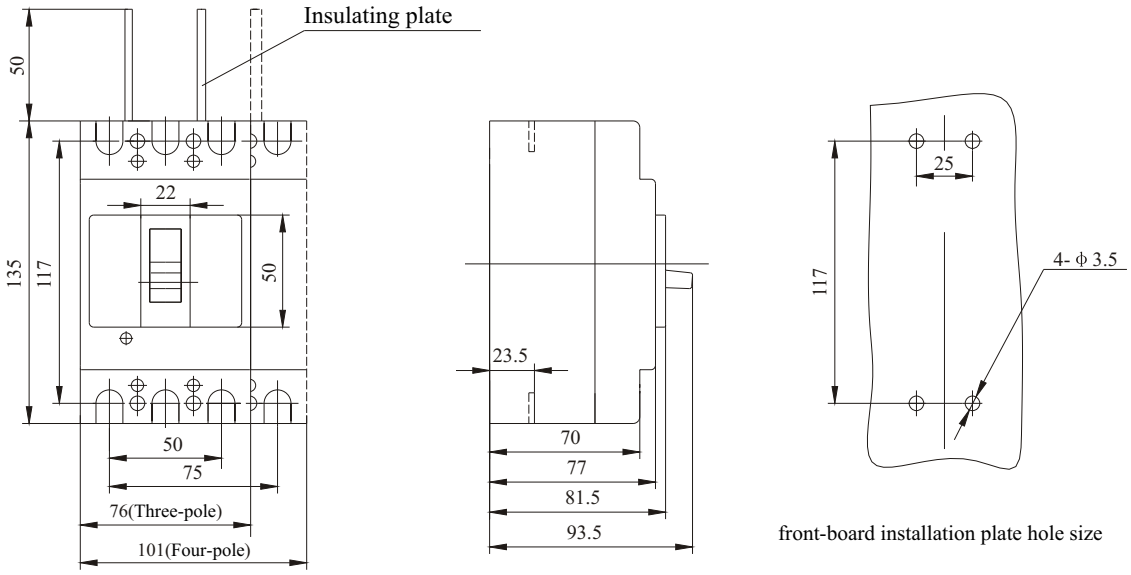




● Property curve of over-current protection（ SM40E1-100 ～ 1600 ， SM40E2-100 ～ 1600 ）

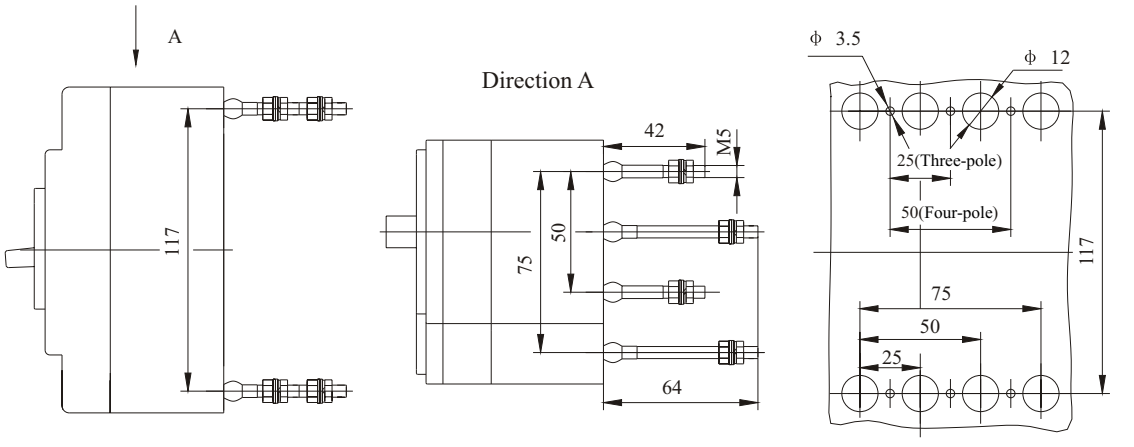


◆ SM40-63(C 、 S 、 R) 、 SM40L-63(C 、 S 、 R)
front-board(Three-pole、Four-pole)



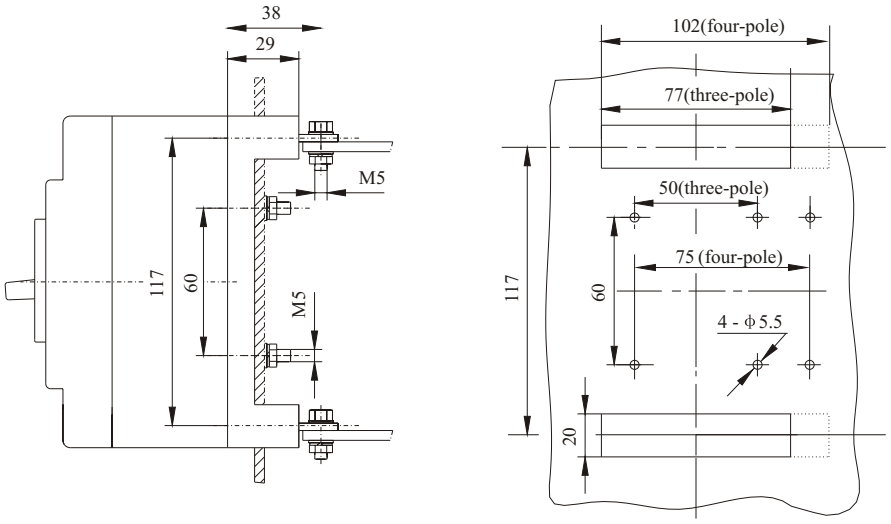
front-board installation plate hole size

◆ SM40-63(C 、 S 、 R) 、 SM40L-63(C 、 S 、 R)
rear-board wiring(Three-pole、Four-pole)



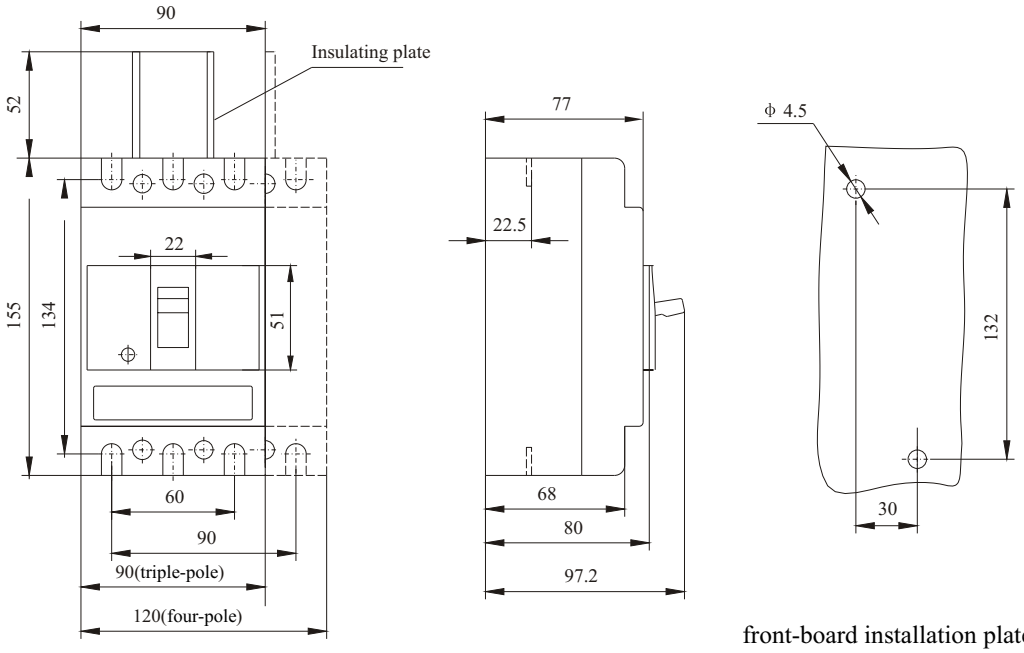
rear-board installation plate hole size

◆ SM40-63(C 、 S 、 R) 、 SM40L-63(C 、 S 、 R) and plug-in type wirings (Three-pole、four-pole)



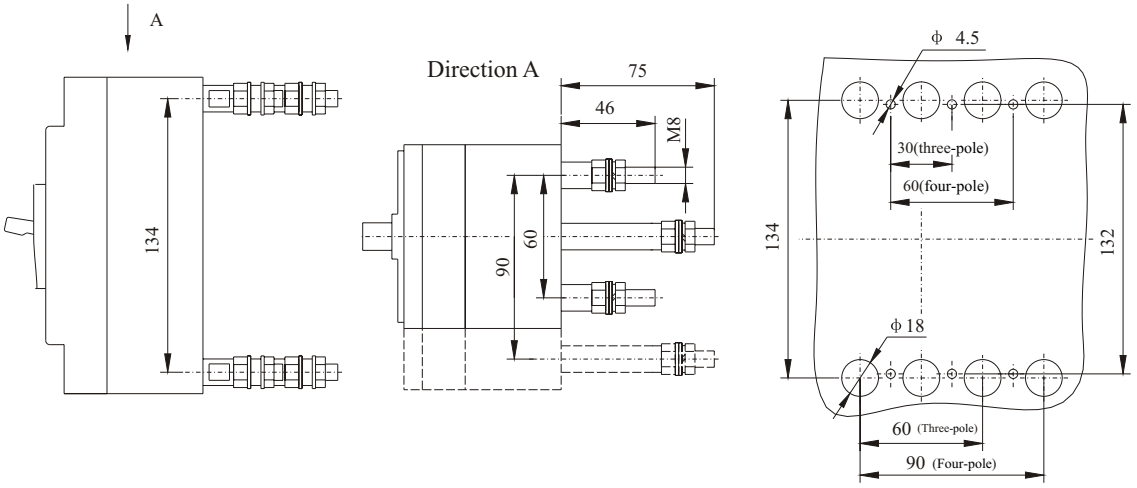
Plug-in typeinstallation plate hole size

◆ SM40-100(C、S）、SM40L-100（C、S） SM40E1-100(C 、 S) 、 SM40E2-100(C 、 S) front-board(triple-pole 、four-pole)



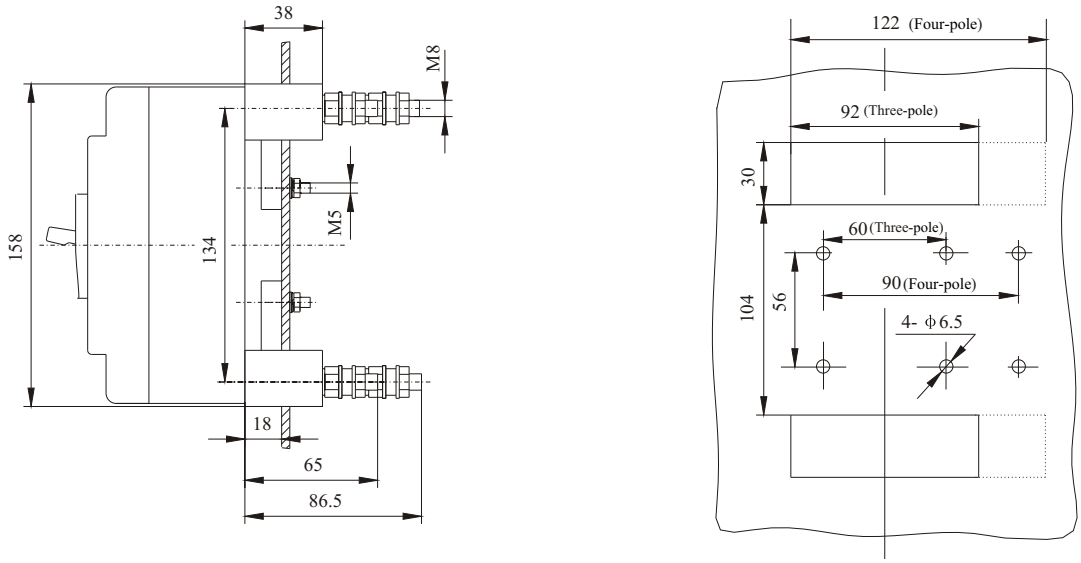
front-board installation plate hole size

◆ SM40-100(C 、 S) 、 SM40L-100(C 、 S) SM40E1-100(C 、 S) 、 SM40E2-100(C 、 S) Rear-board(triple-pole 、 four-pole)



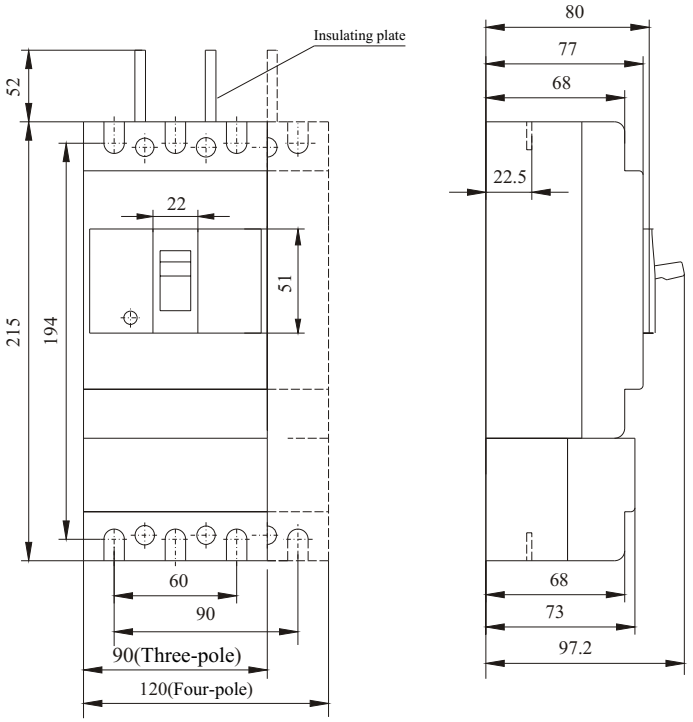
Rear-board installation plate hole size

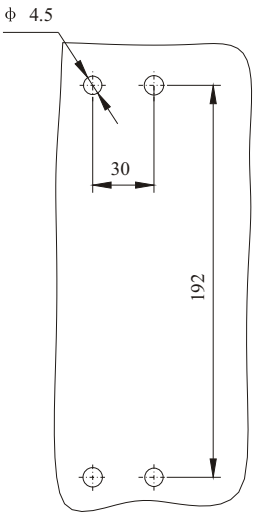
◆ SM40-100(C 、 S) 、 SM40L-100(C 、 S) 、 SM40E1-100(C 、 S) 、 SM40E2-100(C 、 S) 、 plug-in type wirings(three-pole, four-pole)



plug-in type wirings installation plate hole size

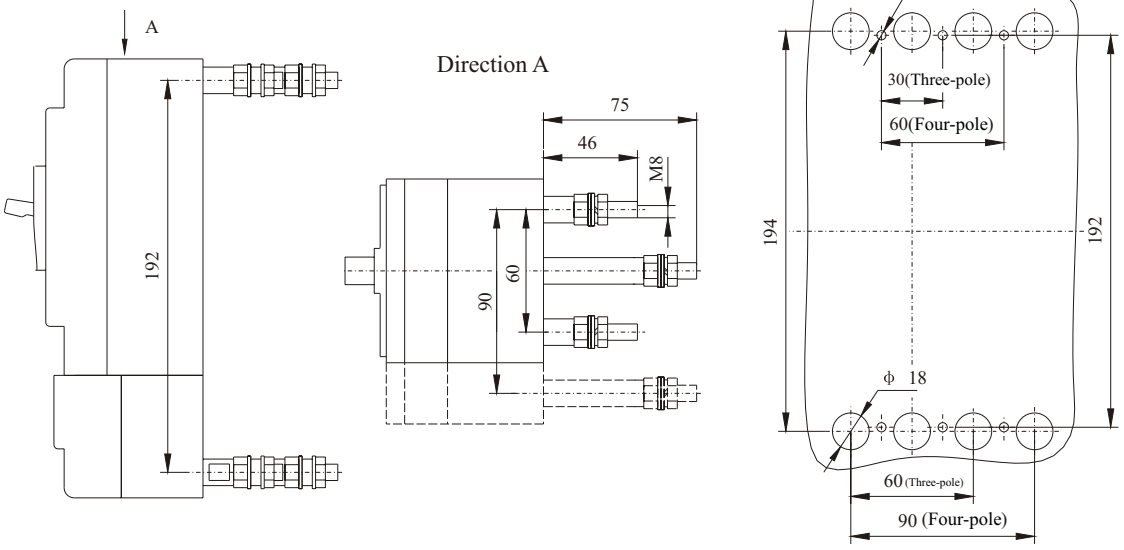
SM40-100(R) 、 SM40L-100(R)
SM40E1-100(R) 、 SM40E2-100(R)
front-board(Three-pole 、Four-pole）





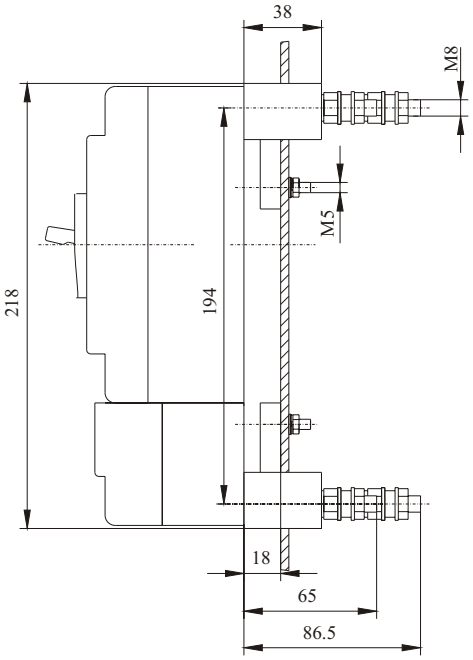
front-board installation plate hole size

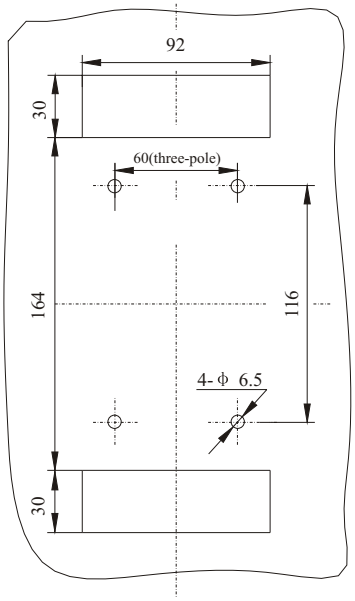
SM40-100(R) 、 SM40L -100(R) 、
SM40E1-100(R) 、 SM40E2-100(R)
Rear-board(Three-pole 、Four-pole）



Rear-board installation plate hole size

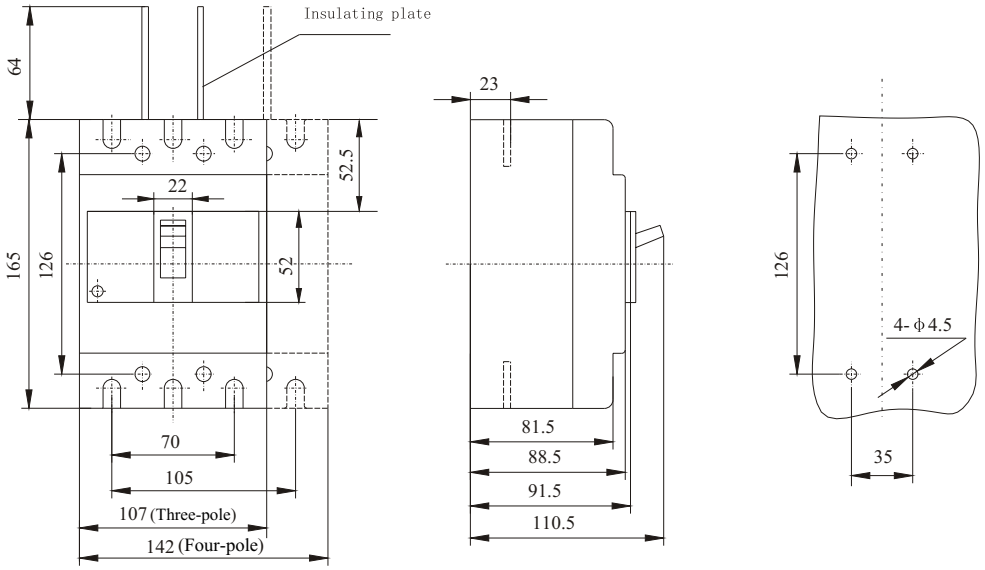
◆ SM40-100(R) 、 SM40L-100(R)
SM40E1-100(R) 、 SM40E2-100(R)
Plug-in type (three-pole)



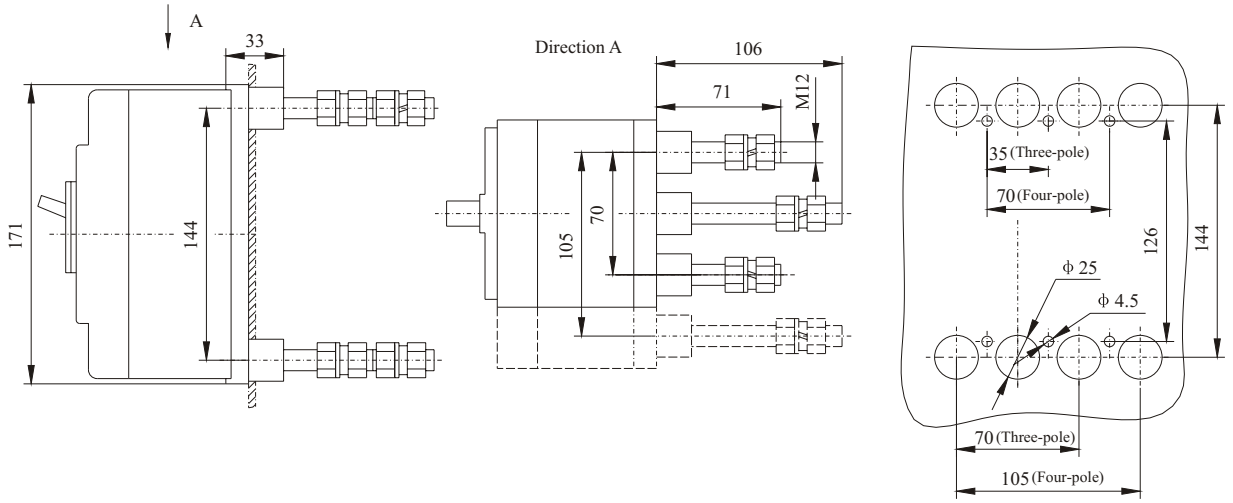


Plug-in type installation plate hole size

◆ SM40-225(160)(C 、 S) 、 SM40L-225(160)(C 、 S)
SM40E1-225(160)(C 、 S) 、 SM40E2-225(160)(C 、 S)
front-board (three-pole, four-pole)

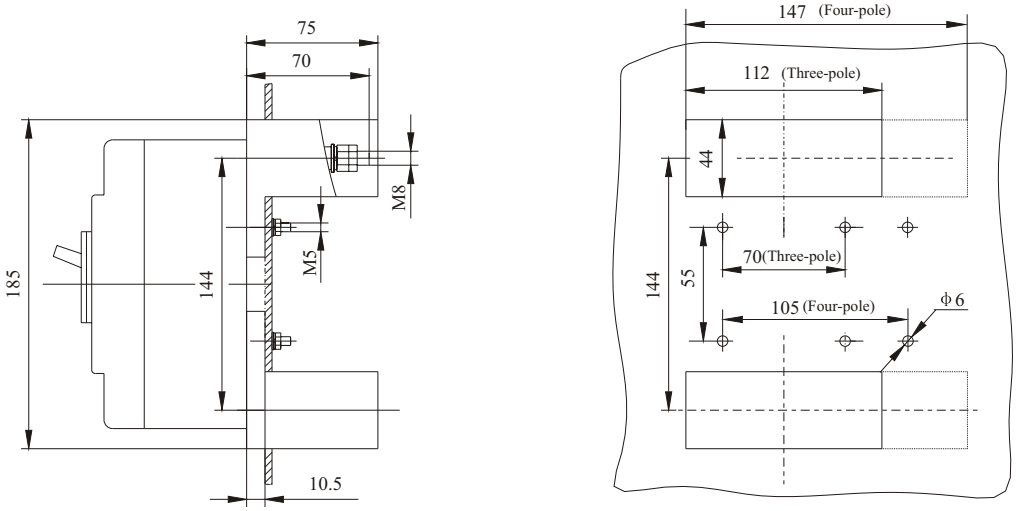


◆ SM40-225(160)(C 、 S) 、 SM40L-225(160)(C 、 S)
SM40E1-225(160)(C 、 S) 、 SM40E2-225(160)(C 、 S)
Rear-board (three-pole, four-pole)



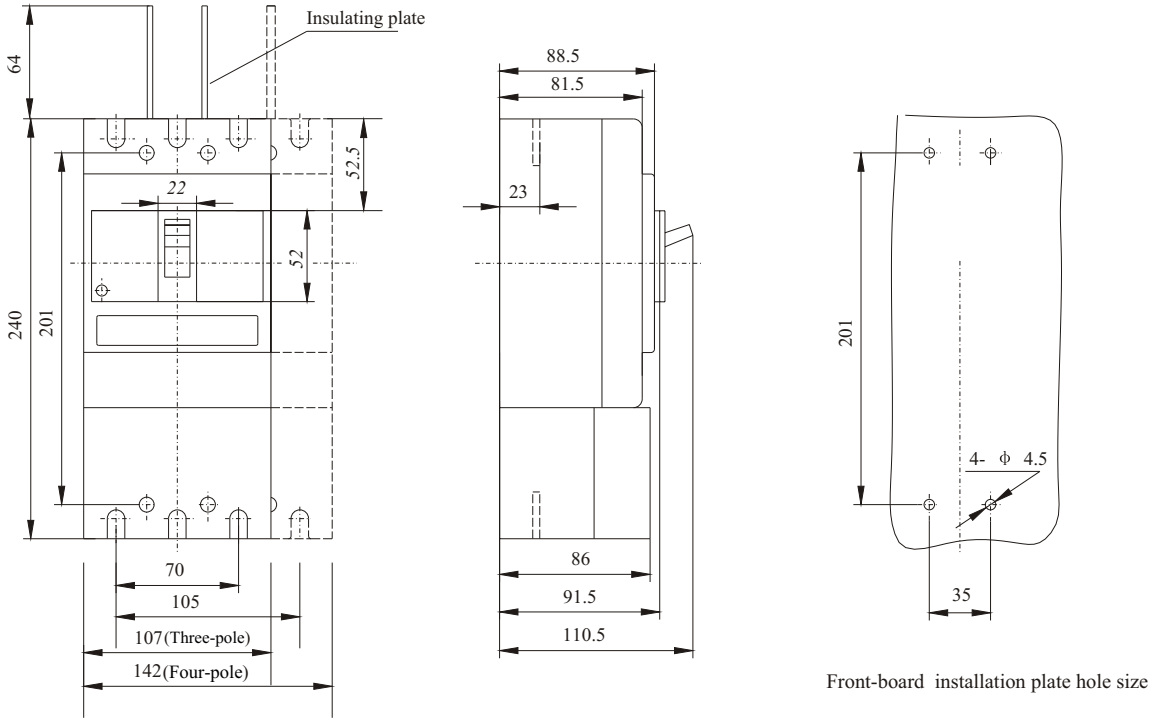
Rear-board installation plate hole size

◆ SM40-225(160)(C 、 S) 、 SM40L-225(160)(C 、 S)
SM40E1-225(160)(C 、 S) 、 SM40E2 -225(160)(C 、 S)
Plug-in type (three-pole, four-pole)



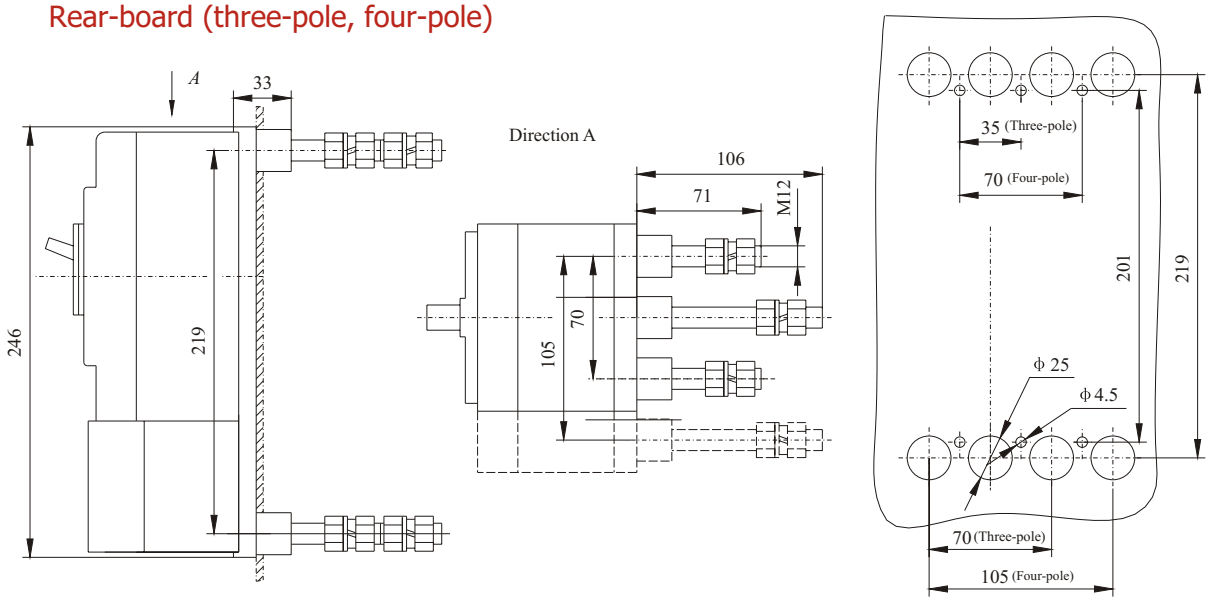
Plug-in type installation plate hole size

SM40-225(160)(R) 、 SM40L-225(160)(R)
SM40E1-225(160)(R) 、 SM40E2-225(160)(R)
Front-board (three-pole, four-pole)



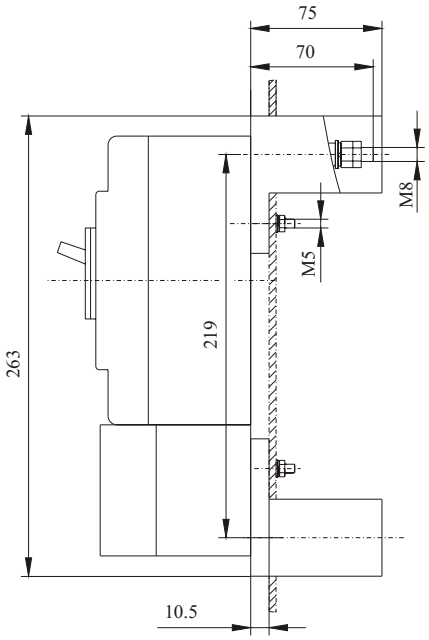
Front-board installation plate hole size

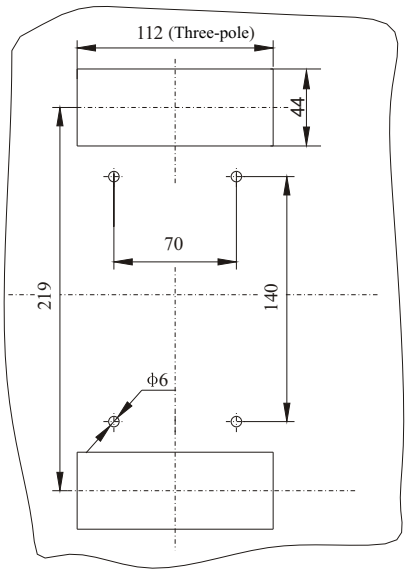
SM40-225(160)(R) 、 SM40L -225(160)(R)
SM40E1-225(160)(R) 、 SM40E2-225(160)(R)
Rear-board (three-pole, four-pole)



Rear-board installation plate hole size

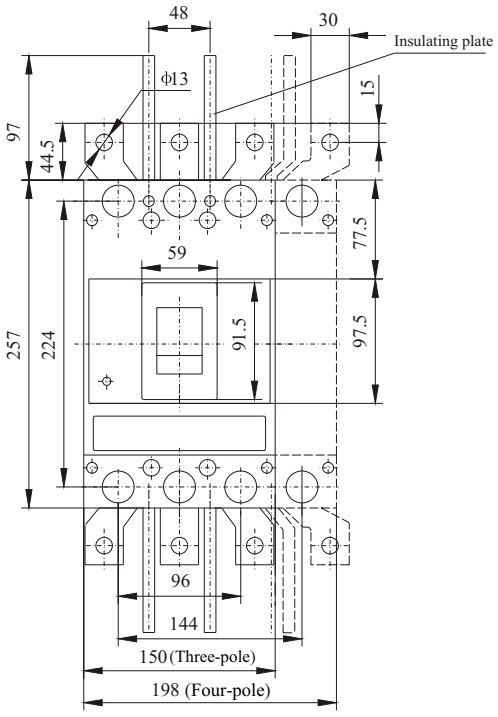
SM40-225(160)(R) 、 SM40L-225(160)(R)
SM40E1-225(160)(R) 、 SM40E2-225(160)(R)
Plug-in type (three-pole)

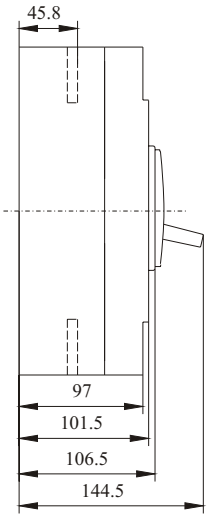


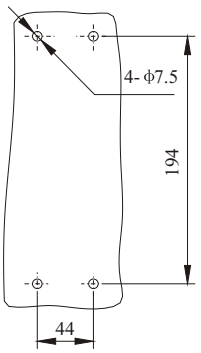


Plug-in type installation plate hole size

SM40-400(C 、 S 、 R) 、 SM40L-400(C 、 S 、 R)
Front-board (three-pole, four-pole)

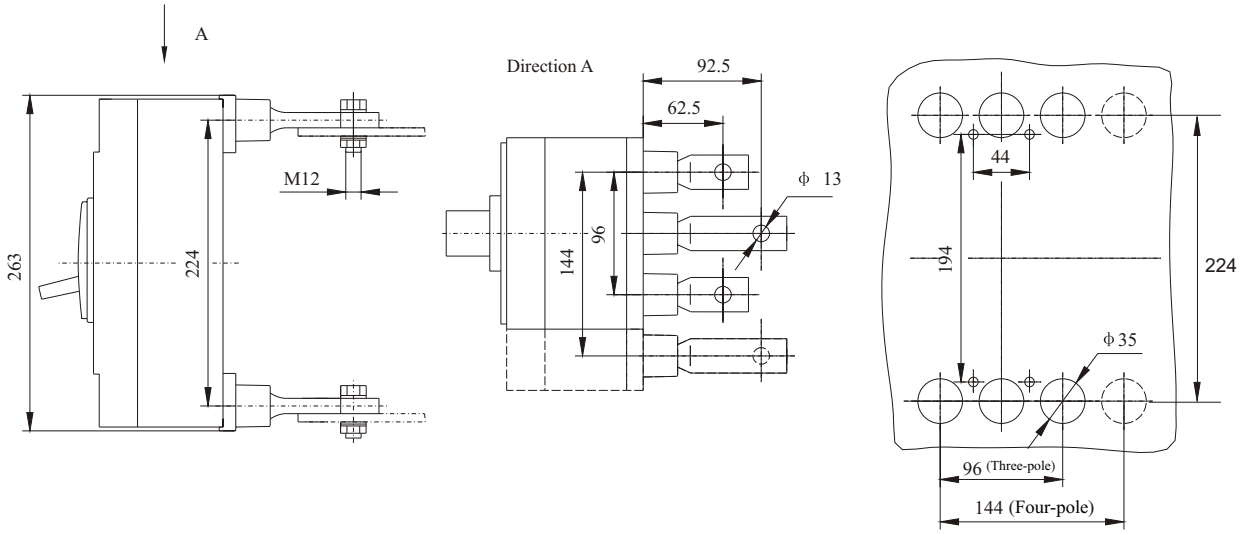






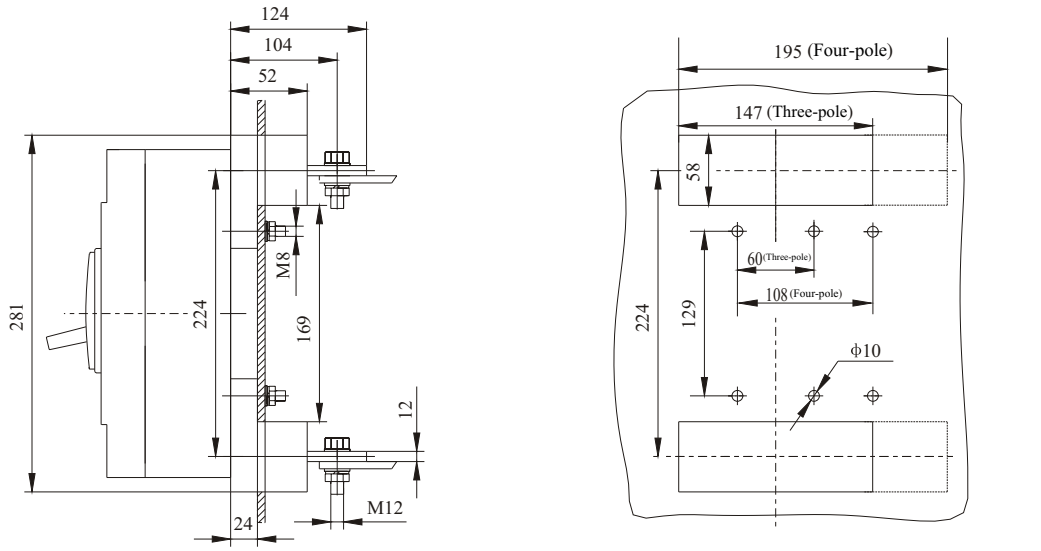
Front-board installation plate hole size

SM40-400(C 、 S 、 R) 、 SM40L-400(C 、 S 、 R)
Rear-board (three-pole, four-pole)



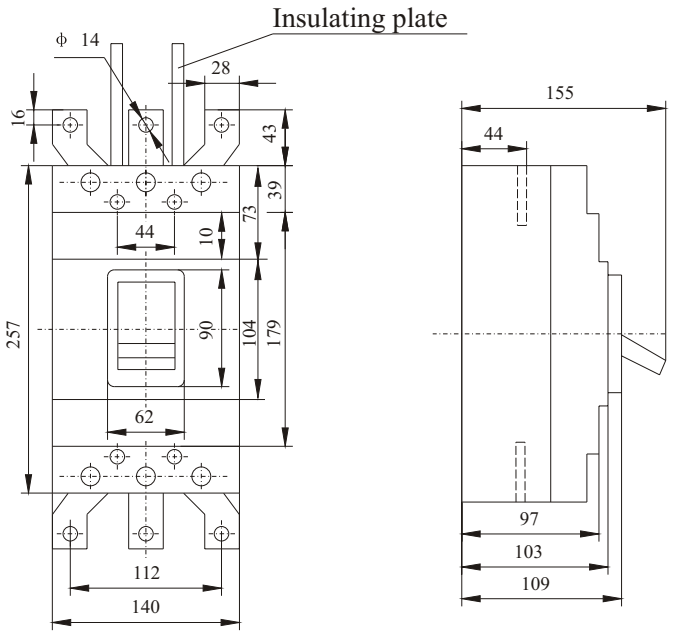
Rear-board installation plate hole size

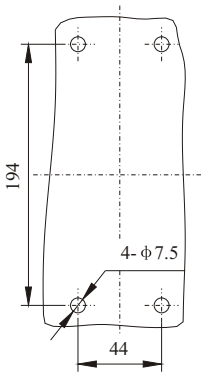
SM40-400(C 、 S 、 R) 、SM40L-400(C 、 S 、 R)
Plug-in type (three-pole, four-pole)



Plug-in type installation plate hole size

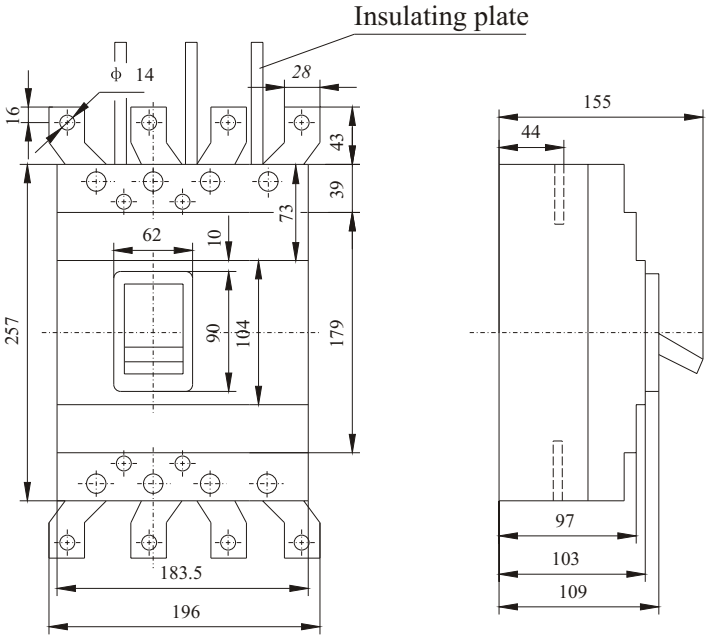
SM40E1-400(C 、 S) 、 SM40E2-400(C 、 S)
Front-board (three-pole)

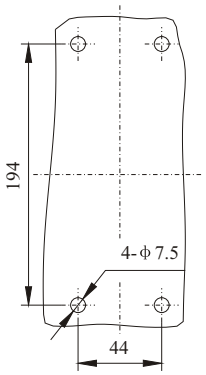




Front-board installation plate hole size

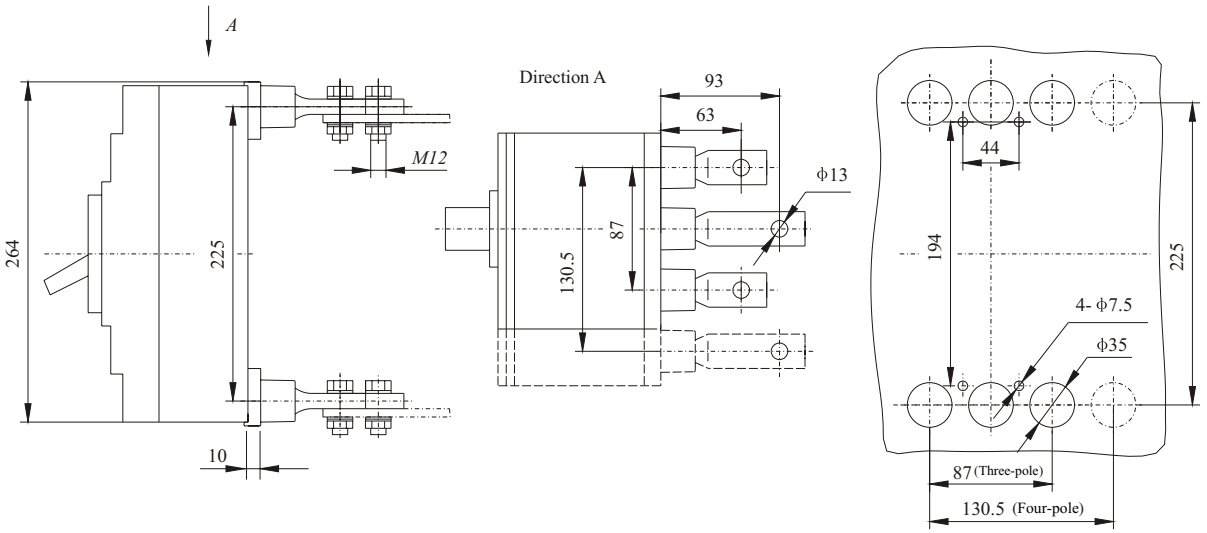
SM40E1-400(C 、 S) 、 SM40E2-400(C 、 S)
Front-board (four-pole)





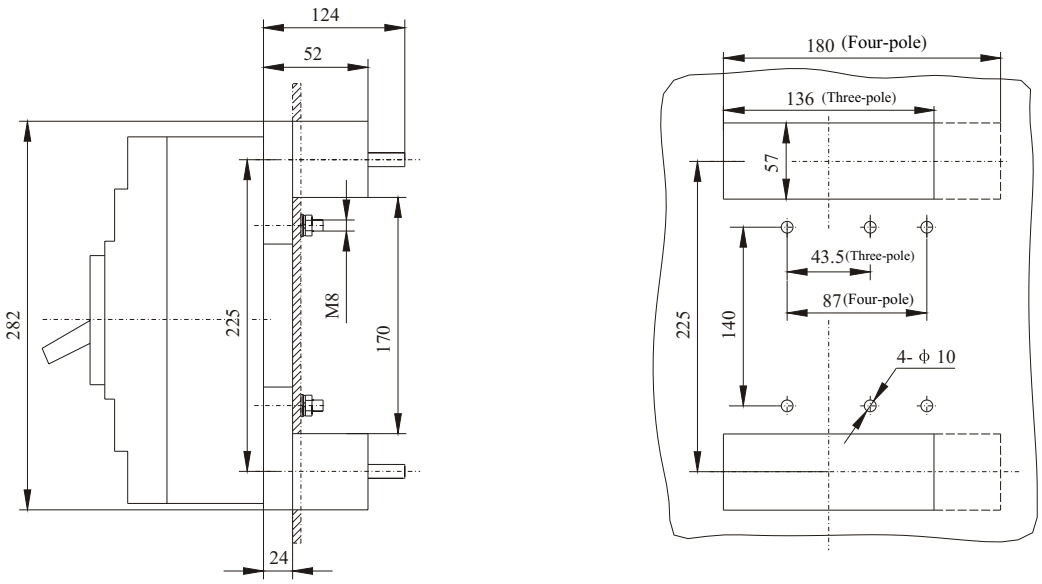
Front-board installation plate hole size

◆ SM40E1-400(C 、 S) 、 SM40E2-400(C 、 S)
Rear-board (three-pole, four-pole)



Rear-board installation plate hole size

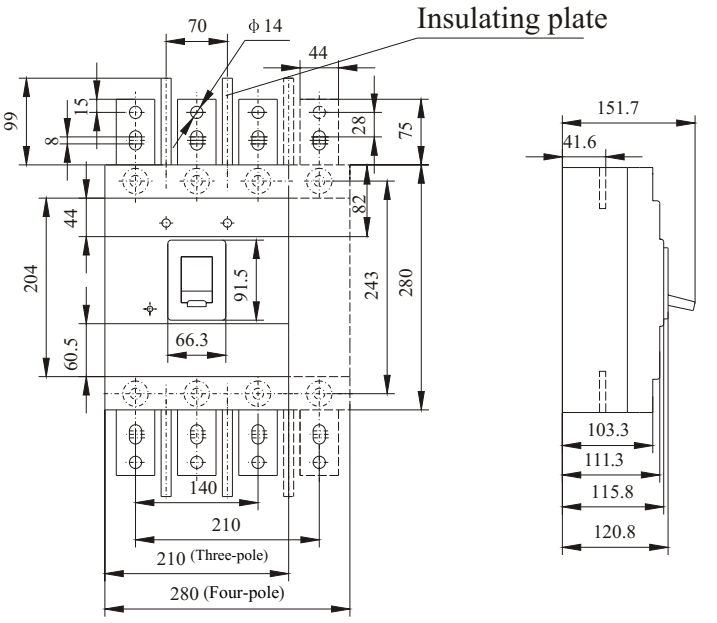
◆ SM40E1-400(C 、 S) 、SM40E2-400(C 、 S)
Plug-in type (three-pole, four-pole)

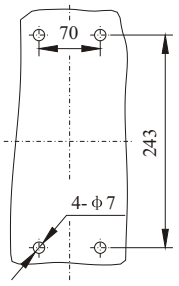


Plug-in type installation plate hole size

◆ SM40-800(630)(C 、 S 、 R) 、 SM40L-800(630)(C 、 S 、 R)

Front-board (three-pole, four-pole)

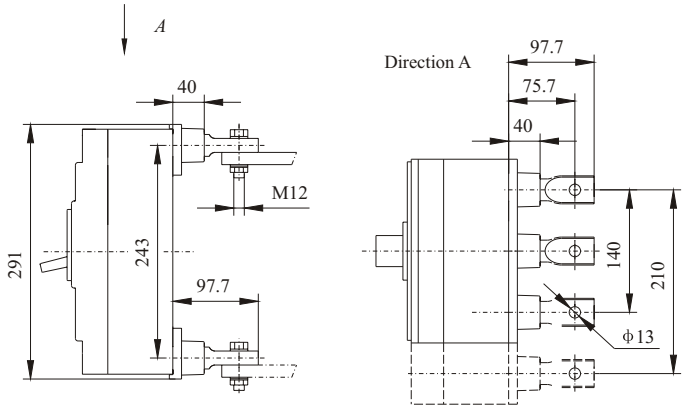


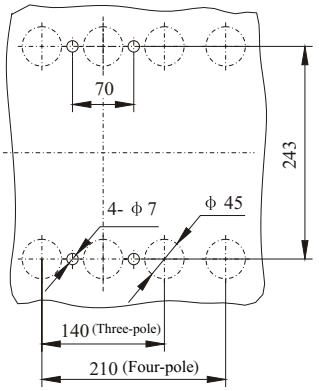


Front-board installation plate hole size

◆ SM40-800(630)(C 、 S 、 R) 、 SM40L-800(630)(C 、 S 、 R)

Rear-board (three-pole, four-pole)

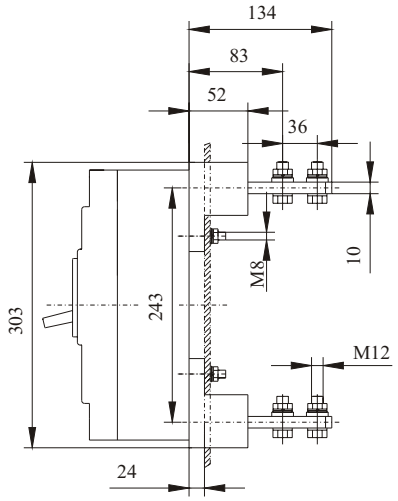


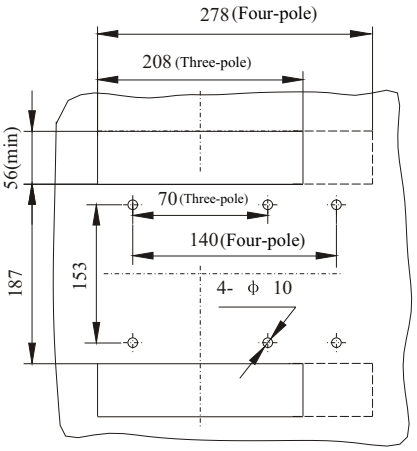


Rear-board installation plate hole size

◆ SM40-800(630)(C 、 S 、 R) 、SM40L-800(630)(C 、 S 、 R)

Plug-in type (three-pole, four-pole)

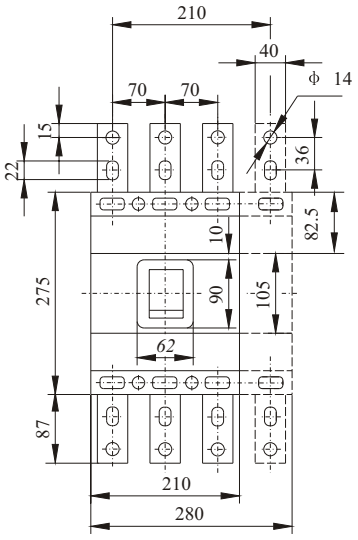


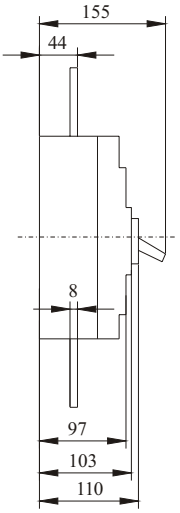


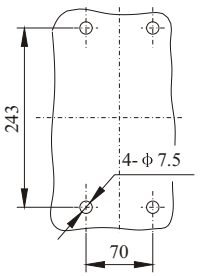
Plug-in type installation plate hole size

◆ SM40E1-800(630)(C 、 S) 、 SM40E2-800(630)(C 、 S)

Front-board (three-pole, four-pole)



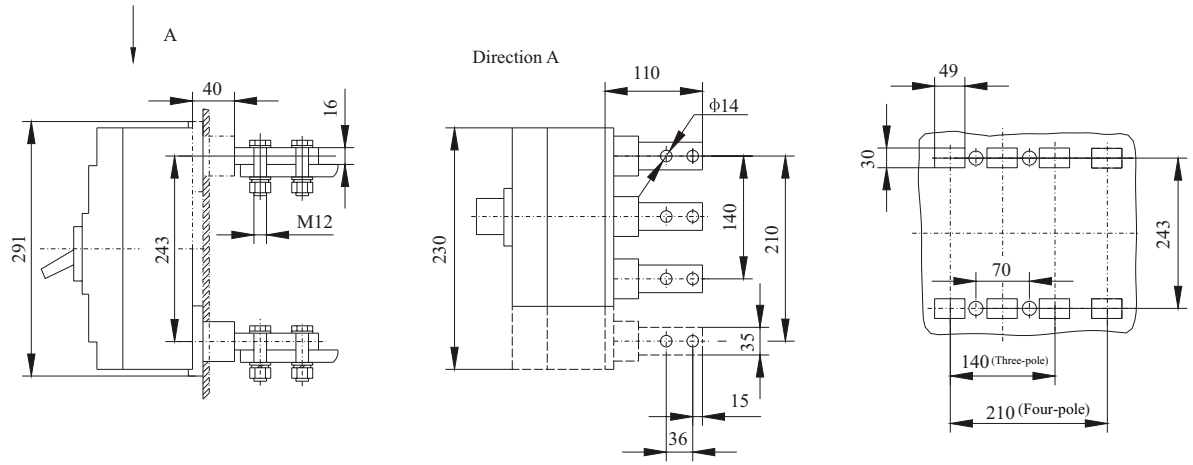




Front-board installation plate hole size

SM40E1-800(630)(C 、 S) 、 SM40 E2-800(630)(C 、 S)

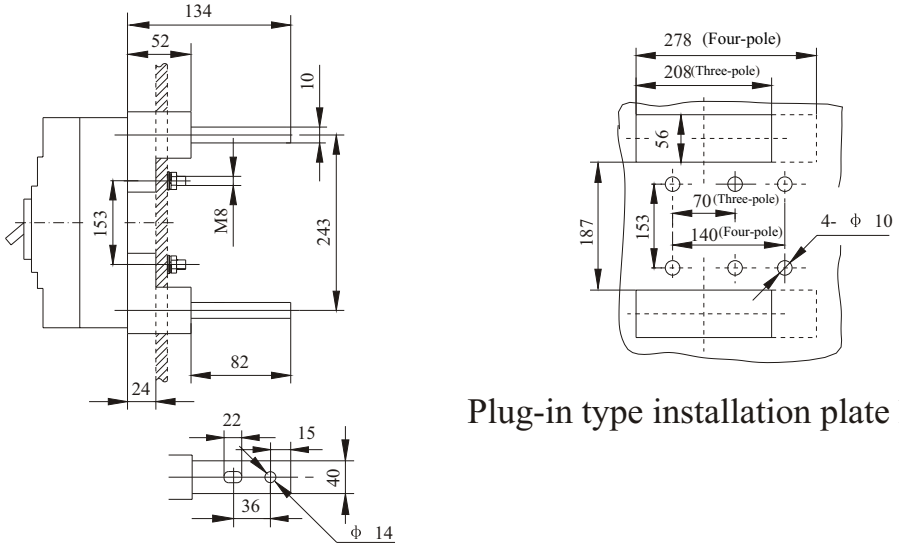
Rear-board (three-pole, four-pole)



Rear-board installation plate hole size

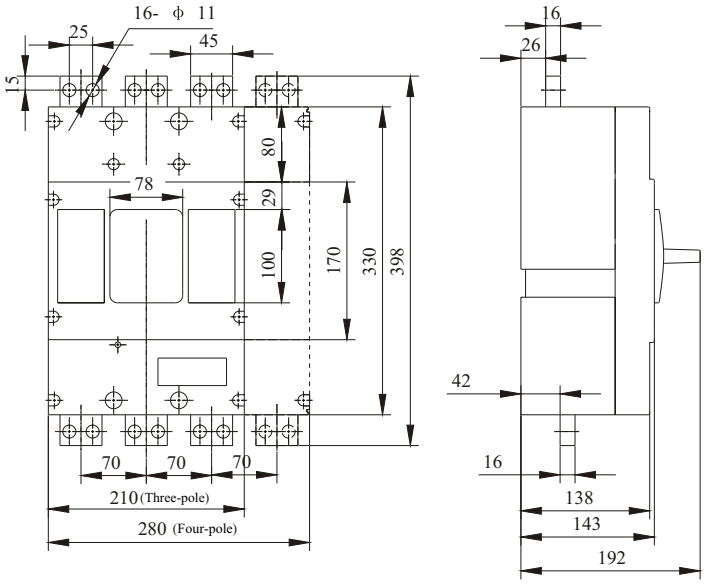
SM40E1-800(630)(C 、 S) 、 SM40E2-800(630)(C 、 S)

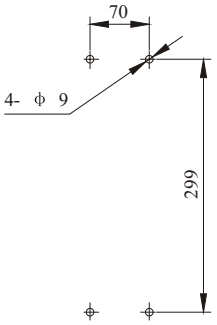
Plug-in type (three-pole, four-pole)



Plug-in type installation plate hole size

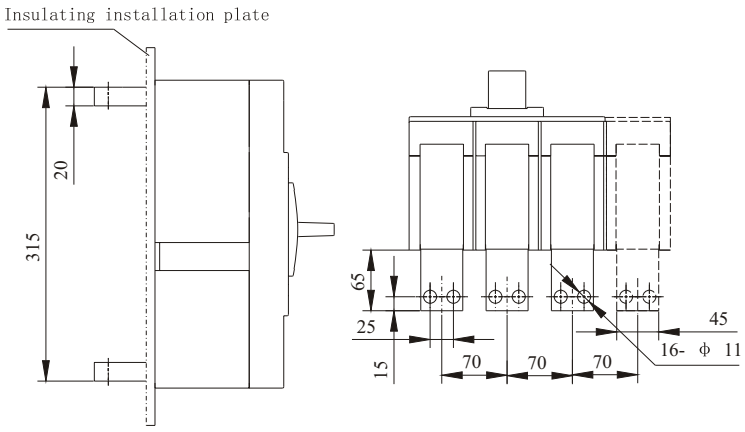
SM40-1250(C 、 S)
Front-board (three-pole, four-pole)

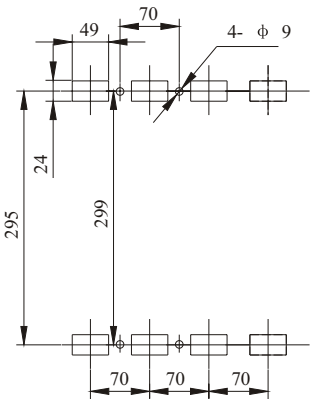




Front-board installation plate hole size

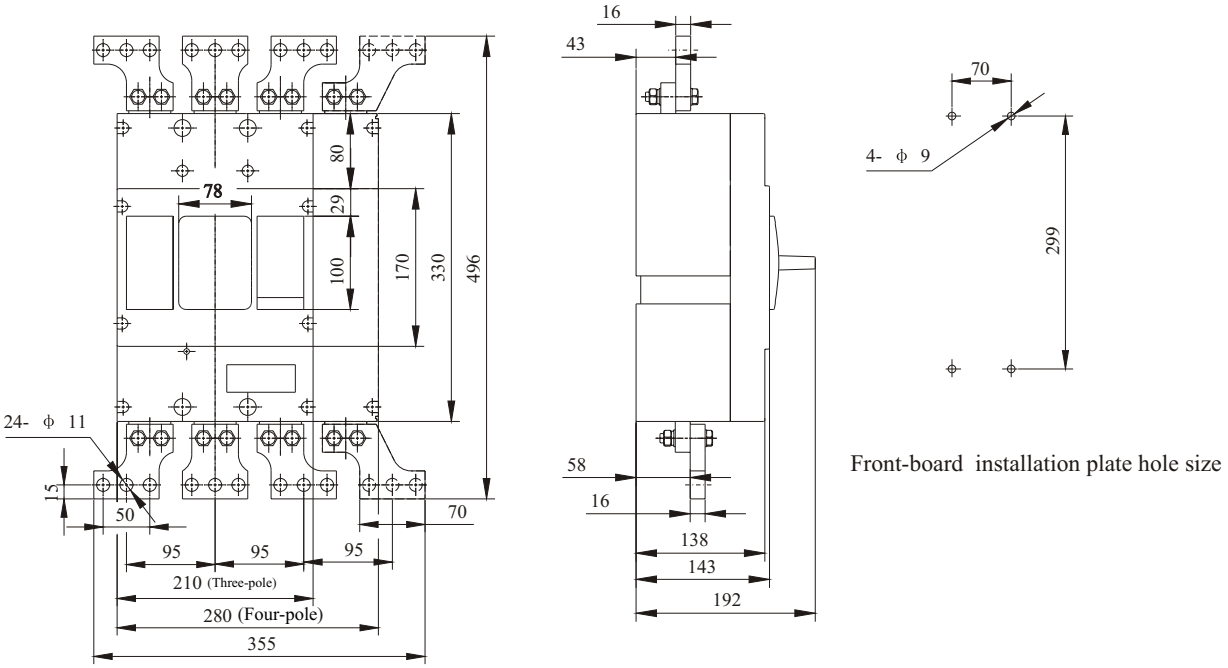
SM40-1250(C 、 S)
Rear-board (three-pole, four-pole)





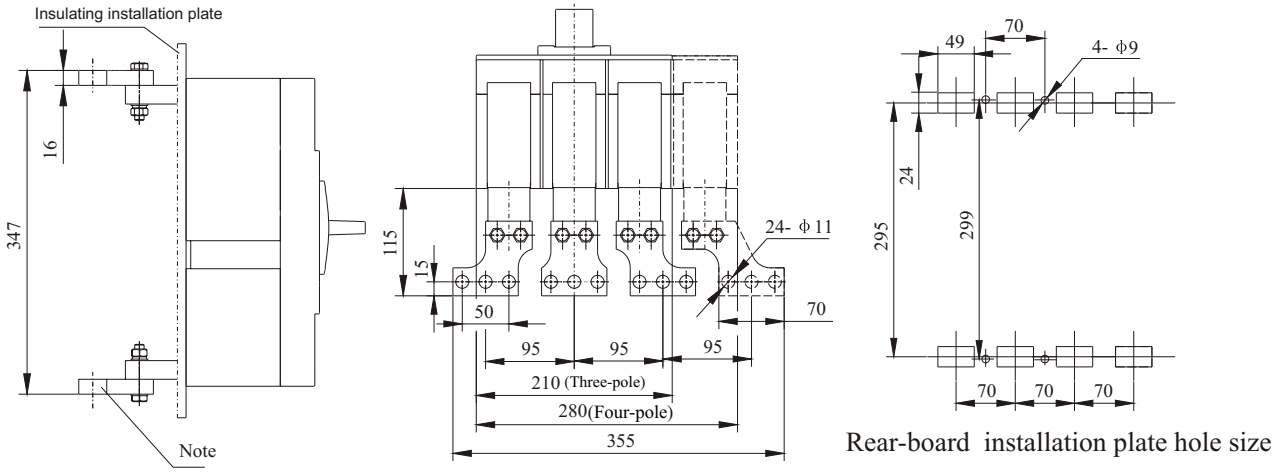
Rear-board installation plate hole size

◆ SM40-1600(C 、 S)
Front-board (three-pole, four-pole)



Front-board installation plate hole size

◆ SM40-1600(C 、 S)
Rear-board (three-pole, four-pole)

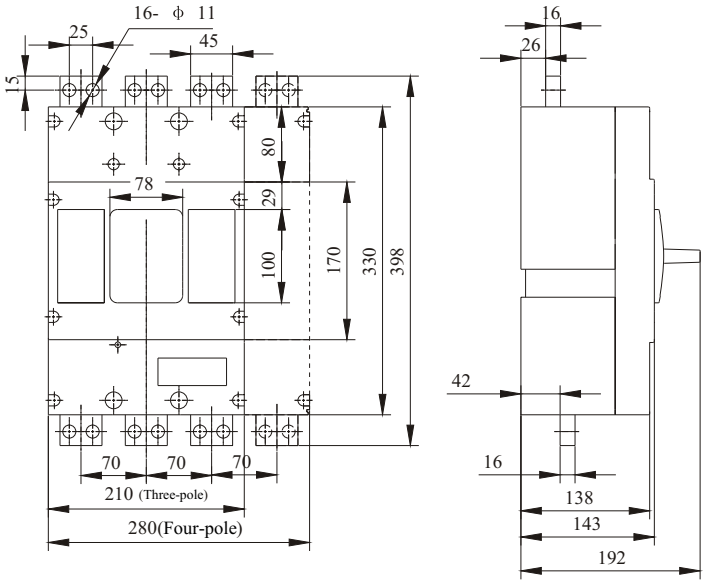


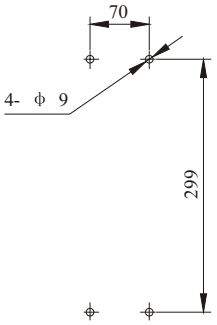
Rear-board installation plate hole size

Note: the prolate copper bar should be fixed after the installation of the breaker.

◆ SM40E1-1250(C 、 S) 、 SM40E2-1250(C 、 S)

Front-board (three-pole, four-pole)

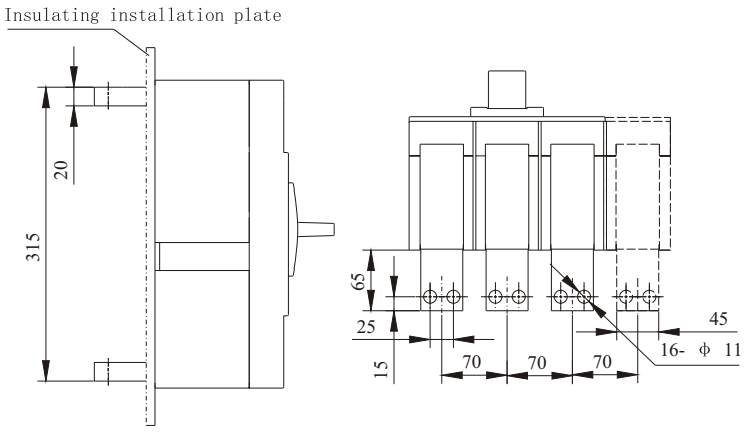


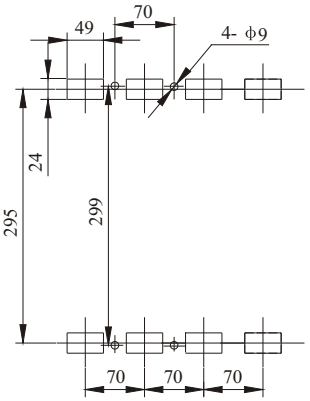


Front-board installation plate hole size

◆ SM40E1-1250(C 、 S) 、 SM40E2-1250(C 、 S)

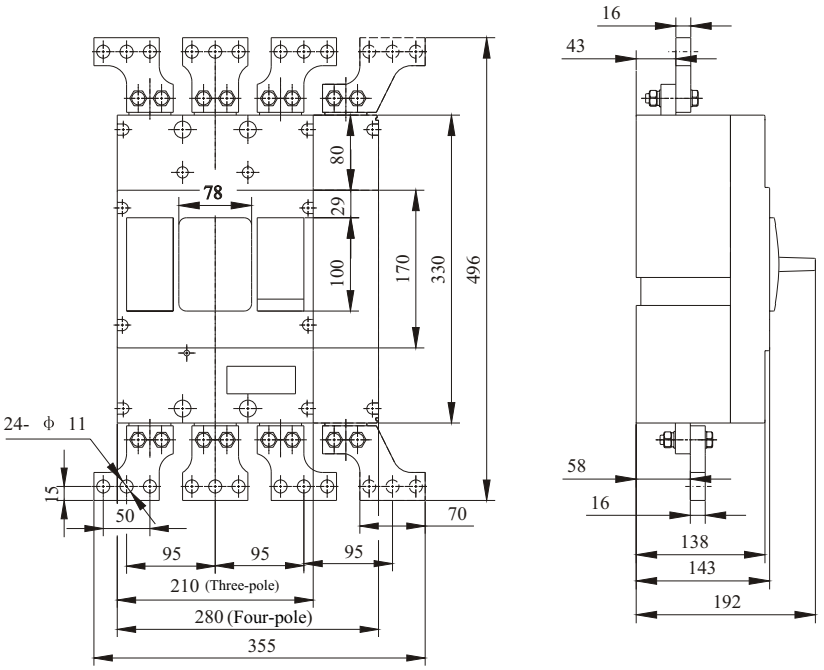
Rear-board (three-pole, four-pole)

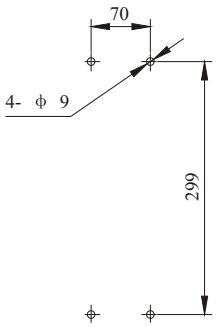




Rear-board installation plate hole size

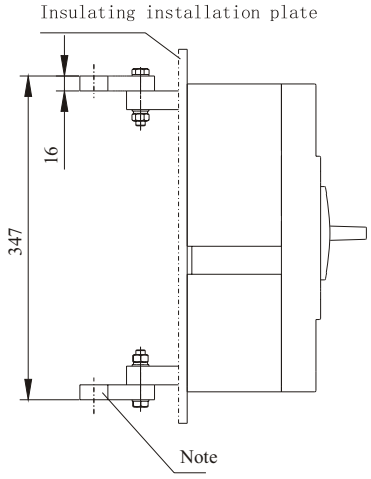
◆ SM40E1-1600(C 、 S) 、 SM40E2-1600(C 、 S)
Front-board (three-pole, four-pole)

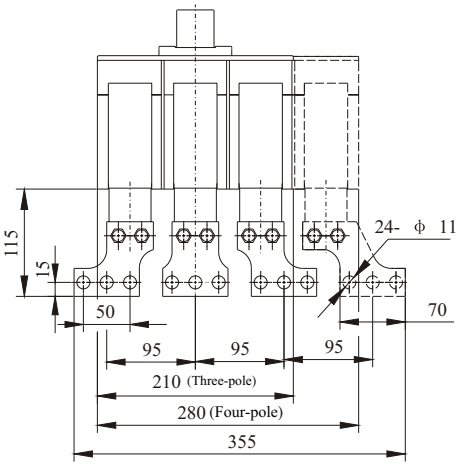


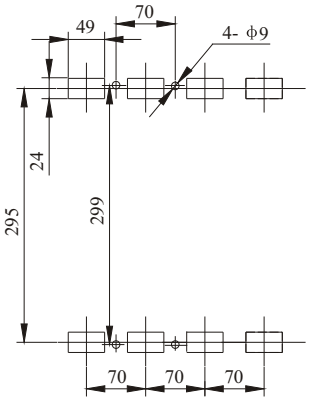


Front-board installation plate hole size

◆ SM40E1-1600(C 、 S) 、 SM40E2-1600(C 、 S)
Rear-board (three-pole, four-pole)



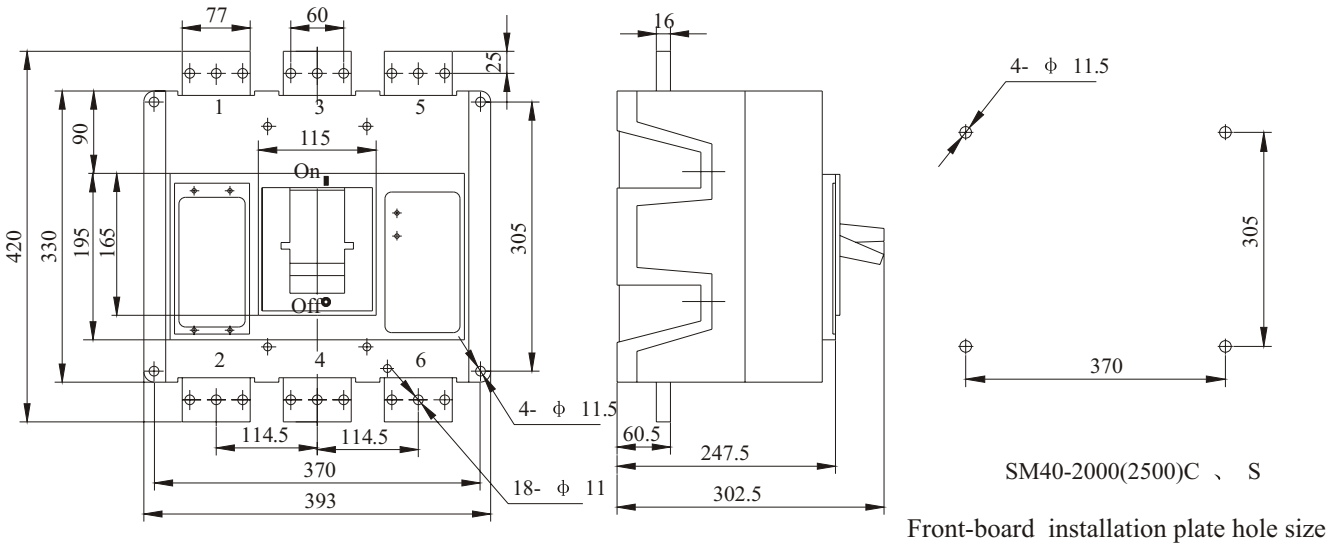




Rear-board installation plate hole size

Note: the prolate copper bar should be fixed after the installation of the breaker.

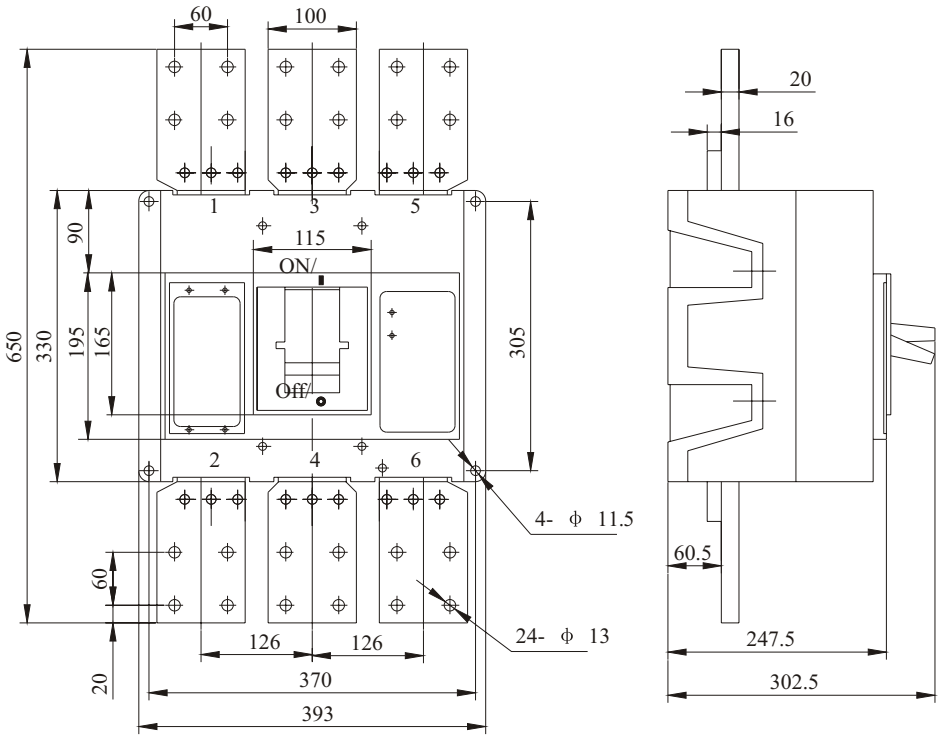
◆ SM40-2000(C 、 S) Front-board



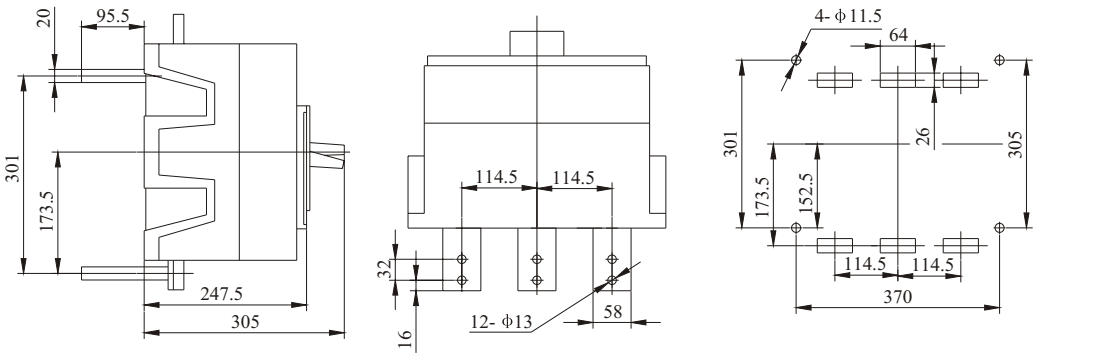
SM40-2000(2500)C 、 S

Front-board installation plate hole size

◆ SM40-2500(C 、 S) Front-board

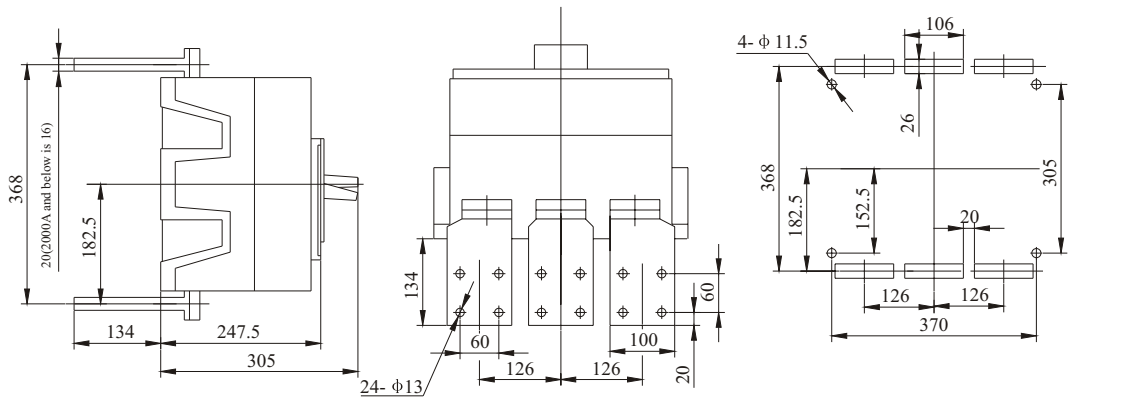


◆ SM40-2000(C 、 S) —— 1000A ～ 1600A Rear-board



Rear-board installation plate hole size

◆ SM40-2000(2500)C 、 S —— 1800A ～ 2500A Rear-board



Rear-board installation plate hole size

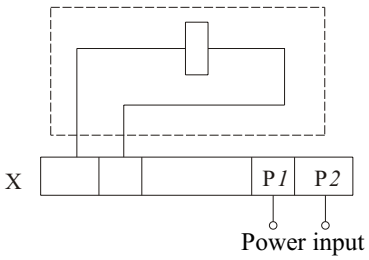
Internal accessories of breaker

The accessories can be directly led out through conductors or added with a terminal row.

Under-voltage release

Type C under-voltage release: AC50Hz 230V, 400V

Outside-hung under-voltage module's wiring figure (inside of the dotted-line frame are the internal accessories of the breaker)



Note: X means the terminal row

Power of the under-voltage release

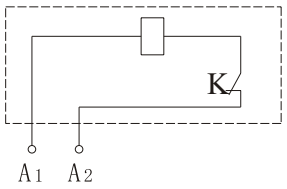
Breaker fitted with	Power of under-voltage release VA	
	AC230V	AC400V
SM40-63 、 SM40L-63	3.5	3.3
SM40-100 、 SM40L-100 、 SM40E-100	2.6	3.3
SM40-160 、 SM40L-160 、 SM40E-160	3.8	3.3
SM40-225 、 SM40L-225 、 SM40E-225	3.8	3.3
SM40-400 、 SM40L-400 、 SM40E-400	3.7	2.7
SM40-630 、 SM40L-630 、 SM40E-630	2.5	2.8
SM40-800 、 SM40L-800 、 SM40E-800	2.5	2.8
SM40-1250(1600) 、 SM40E-1250(1600)	3.0	3.2
SM40-2000(2500)	3.4	3.6

At 35 ~ 70% of the rated working voltage, the under-voltage release should have the breaker reliably released;
At 85 ~ 110% of the rated working voltage, the under-voltage release should have the breaker guaranteed to switching-on;
When the rated working voltage is below 35%, the under-voltage release should prevent the breaker from switching-on.

Present politely: the under-voltage release must be electrified before the breaker's being re-buckled again and switched-on, or it may get damaged !

- Shunt release

Wiring figure (inside of the dotted-line frame are the internal accessories of the breaker)



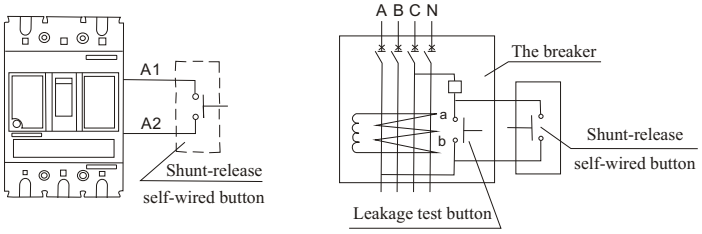
Power input

Note: K means the micro-switch-onside of the shunt release in series with the coil and as a N.C. contact, it will be automatically broken after the breaker is cut off and closed when the breaker is switched-on.
Norms of voltage: AC50Hz 230V, 400V; DC220V.

At 70~110% of the rated control power's voltage, the shunt release should have the breaker reliably released.

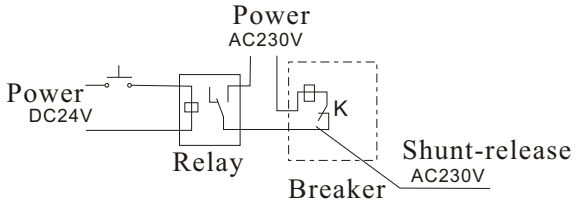
☆ Notes of the special shunt-release of the residual current MCCB

It can be attached to accessories only on the left side of the SM40L series residual current MCCB for on the right side of which equipped with leakage release. However, the 3340,4340 is equipped with shunt plus auxiliary, so when equipped with auxiliary contact on the left side, the right side of it can not be attached to the shunt release mentioned above. To solve this problem, we use special shunt release which is parallel connecting with the leakage test button as follows:

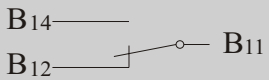


Since power provided already, it is unnecessary to set one more.. The side line between a and b has been linked by the manufacturer, user only needs to wire a button according to the hint of dotted line above. Please pay attention to the marks on the breaker so as to avoid any damage.

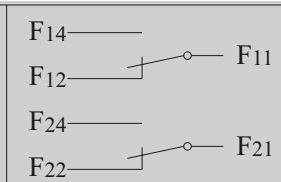
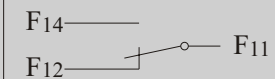
★ The DC24V shunt-release is supplied by users themselves. It can be fixed with a DC24V relay according to the following figure:



- Alarm contact

Positions of the breaker in "Off", "On"	
Position of the breaker in "Free release" (alarm)	B_{11}, B_{12} are turned to the off status from the on status, B_{11}, B_{14} are turned to the on status from the off status.

- Auxiliary contact

Position of the breaker in "Off"		Breakers with the frame grade current 400A and above (one group has 4 pairs of contacts)
		Breakers with the frame grade current 225A and below (one group has 2 pairs of contacts)
Position of the breaker in "On"	In the time of "Off", the contact in the on status turns to the off status while that in the off status turns to the on status	

- Rated current of auxiliary and alarm contacts

Category	Rated current of frame grade Inm A	Appointed heating current Ith A	Rated working current Ie(A)	
			AC400V	DC220V
Auxiliary contact	≤ 225A	3	0.3	0.15
	400A ≤ Inm ≤ 800A	3	0.4	0.2
	1250A ≤ Inm ≤ 2500A	6	3	0.2
Alarm contact	10A ≤ Inm ≤ 800A		AC220V/1A	0.15
	1250A ≤ Inm ≤ 2500A		0.3	0.15

- Electrified operation performance and the related Experimental conditions of the auxiliary contact

Category of use	Making status			Breaking status			Times of electrified operation cycle	Times of operation cycle per min *)	Electrified time *)
	I/Ie	U/Ue	COSϕ or T0.95	I/Ie	U/Ue	COSϕ or T0.95			
AC-15	10	1	0.3	1	1	0.3	6050	6	≥ 0.05s
DC-13	1	1	6Pe	1	1	6Pe			≥ $T_{0.95}$

- Turn-on and turn-off capacity of the auxiliary contact in abnormal conditions

Category of use	Making status			Breaking status			Times of electrified operation cycle	Times of operation cycle per min *)	Electrified time*)
	I/Ie	U/Ue	COSϕ or T0.95	I/Ie	U/Ue	COSϕ or T0.95			
AC-15	10	1.1	0.3	10	1.1	0.3	10	2	≥ 0.05s
DC-13	1.1	1.1	6Pe	1.1	1.1	6Pe			≥ T0.95

Note: the two tables above

1.T 0.95=6Pe is an experienced formula, of which Pe takes "W" as the unit, $T_{0.95}$ takes "mm" as the unit.

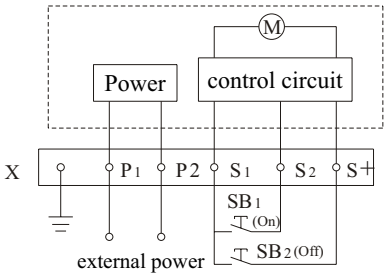
2.The times of electrified operation cycle of the auxiliary contact may be identical to the total times of the operation cycle of the breaker when the latter is less than 6050.

3.Both operation frequency and electrified time are allowed to be identical to those of the main circuit of the breaker.

External accessories of the breaker

Electric operation mechanism

★See the following figure for the wiring of CD2 electric operation mechanism (inside of the dotted-line frame is the wiring drawing of the breaker's external accessories)



Note:

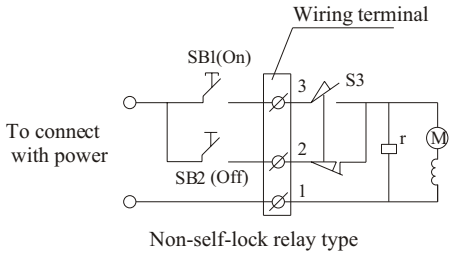
SB1, Sb2 operation buttons (made ready by users)

X terminal row

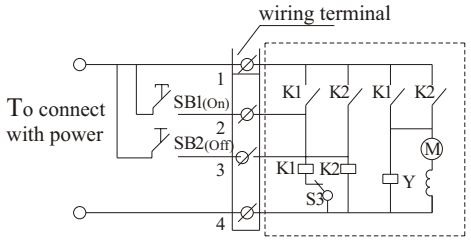
P_1, P_2 are external power supplies

Norms of voltage: AC50Hz 110V, 230V; DC 110V, 220V
Compliant to: SM40-63~800,SM40L-63~800,SM40E-100~800

★CD type motor operational mechanism wiring way see below:(inside of the dotted line is the wiring way of the auxiliary of the breaker)



Non-self-lock relay type



with self-lock relay type

Symbol description:
SB1,SB2 operational button (provideby oneself), voltage: AC50Hz200V,380V;
compliant to breaker: SM40-400~800,SM40-1250~2500
(SM40-400~800 only for voltage AC380V)
attention to user:
Please give clear indication for the self-lock relay type
when order CD-type motor

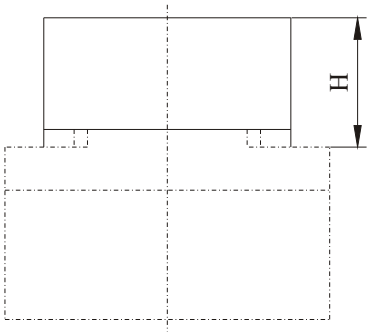
operational mechanism. Withoutextra notes , wewill provide non-self-lock one while ex-works.

☆ Starting current, power and duration of the electric operation mechanism

distribution breaker	Starting current (A)		Motor power (W)		Service life (times)	
	CD2 type	CD type	CD2 type	CD type	CD2 type	CD type
SM40-63 、 SM40L -63	≤ 0.5		14		14000	
SM40-100 、 SM40L-100 、SM40E-100	≤ 0.5		14		14000	
SM40-160 、 SM40L-160 、SM40E-160	≤ 0.5		14		10000	
SM40-225 、 SM40L -225 、SM40E -225	≤ 2		35		10000	
SM40-400 、 SM40L -400 、SM40E -400	≤ 2	≤ 5.7	35	120	5000	5000
SM40-630 、 SM40L -630 、SM40E-630	≤ 2	≤ 5.7	35	120	5000	5000
SM40-800 、 SM40L -800 、SM40E -800	≤ 2	≤ 5.7	35	120	5000	5000
SM40-1250（1600）、SM40E -1250（1600）		≤ 9.8		200		3000
SM40-2000 （ 2500 ）		≤ 11.2		240		3000

Note: after the breaker releases, the electric operation mechanism must first make it re-buckled again, then switched-on.

☆ Height of the electric operation mechanism



CD2 electric operation mechanism

Breaker fitted with	Height mm	Breaker fitted with	Height mm
SM40-63 、 SM40L-63	90.5	SM40-800 、 SM40L-800	146
SM40-100、SM40L-100、SM40E-100	89.5	SM40E-400	152
SM40-160、SM40L-160、SM40E-160	93	SM40E-630	153
SM40-225、SM40L-225、SM40E-225	93	SM40E-800	153
SM40-400 、 SM40L-400	142	SM40-1250(1600) 、 SM40E-1250(1600)	139
SM40-630 、 SM40L-630	146	SM40-2000(2500)	173

● SZ series turning handle operation mechanism

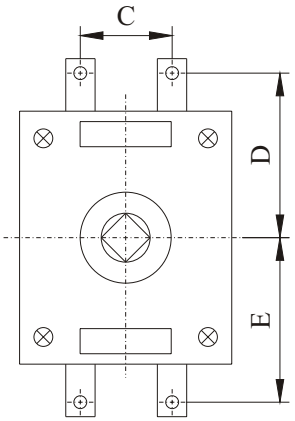
Characteristic:

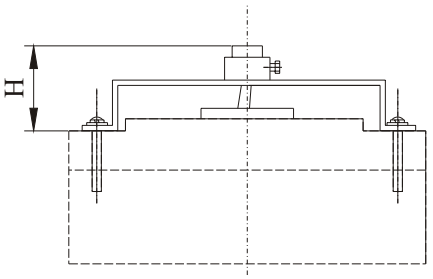
This mechanism uses a unique design and drive structure and carries out the making, breaking and re-buckling of the moulded-case circuit-breaker through the turning handle, flexibly and stably operated with a less force of operation, simply mounted, and the integrated performance and quality are better than any other products of the same category. The handle operation mechanism of the breakers of a same norm are universal to both three and four poles.

Purpose:

Specially used for SM40 series moulded-case breakers and, through the turning handle, realizing the required operations on the panels of a drawer cabinet, distribution cabinet, power box etc. and ensuring the cabinet door unable to be opened when the breaker is in the status of switch-on (i.e. jointly locked with the door).

☆ Central type





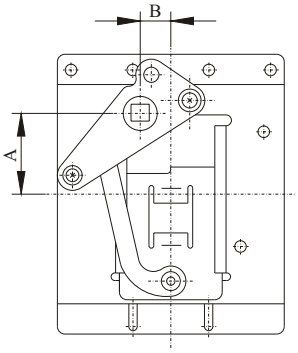
SZ40-63 ～ 800

Used for horizontal and vertical installation of breaker

Central-type dimension

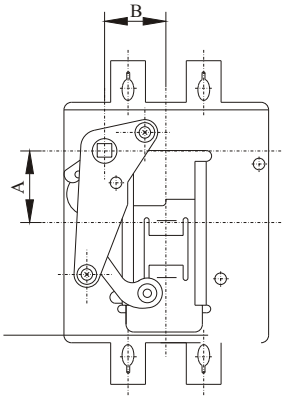
Model	Model of breaker	C	D	E	H	Remark
SZ40-63	SM40-63 、 SM40 -63	25	46.5	53.5	52	For breaker sideways and vertically(Central-type)
SZ40-100	SM40-100、SM40L-100、SM40E-100	30	66	66	60	
SZ40-160	SM40-160、SM40L-160、SM40E-160	35	71.5	71.5	58	
SZ40-225	SM40-225、SM40L-225、SM40E-225	35	71.5	71.5	58	
SZ40-400	SM40-400 、 SM40L-400	138	97	97	86.5	
SZ40-630	SM40-630 、 SM40L-630	198	121	121	88.5	
SZ40-800	SM40-800 、 SM40L-800	198	121	121	88.5	
SZ40-400E	SM40E-400	128	97.5	97.5	100.5	
SZ40-630E	SM40E-630	198	121	121	97	
SZ40-800E	SM40E-800	198	121	121	97	
SZ40-1250	SM40-1250(1600) 、SM40E-1250（1600）	195	139	160	90	

☆ Cam-type （type A）



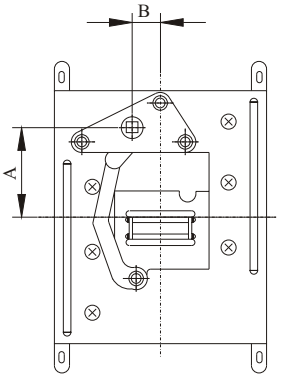
SZA40-100

For breaker sideways mounted



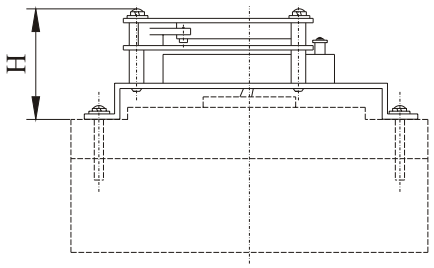
SZA40-225(160)

For breaker vertically mounted



400
SZA40- 630
800

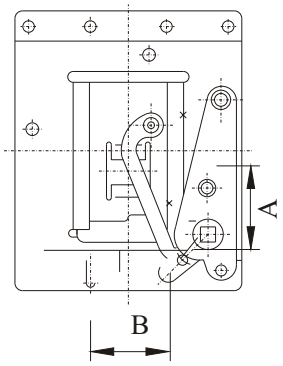
For breaker vertically mounted



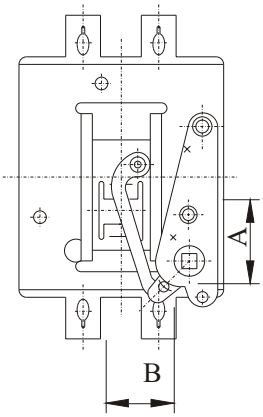
Cam-type dimension （type A）

Model	Model of breaker	A	B	H	Remark
SZA40-100	SM40-100、SM40L-100 、SM40E-100	35	31	50	For breaker vertically (Eccentric hole)
SZA40-160	SM40-160、SM40L-160 、SM40E-160	41	7	50	
SZA40-225	SM40-225 、SM40L-225 、SM40E-225	41	7	50	
SZA40-400	SM40-400 、 SM40L-400	68	15	66.5	For breaker sideways or vertically(Eccentric hole)
SZA40-630	SM40-630 、 SM40L-630	69	15	66.5	
SZA40-800	SM40-800 、 SM40L-800	69	15	66.5	
SZA40-400E	SM40E-400	68	15	61	
SZA40-630E	SM40E-630	68	15	64	
SZA40-800E	SM40E-800	68	15	64	

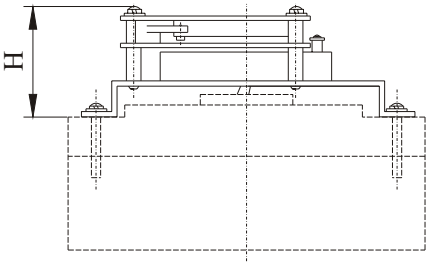
☆ Cam-type （type B）



SZB40-100
For breaker sideways mounted



SZB40-225(160)
For breaker sideways mounted

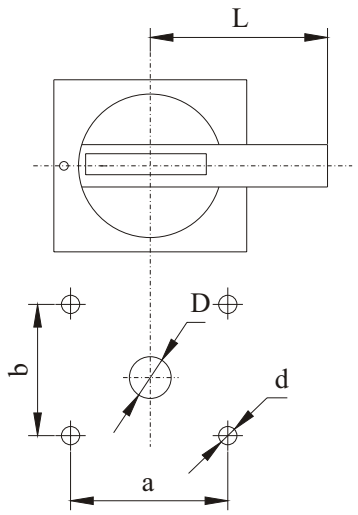


Cam-type dimension（type B）

Model	Model of breaker	A	B	H	Remark
SZB40-100	SM40-100 、SM40L-100 、SM40E-100	43	24	50	For breaker sideway (Eccentric hole)
SZB40-160	SM40-160 、SM40L-160 、SM40E-160	42	24	50	
SZB40-225	SM40-225 、SM40L-225 、SM40E-225	42	24	50	

● Handle for turning

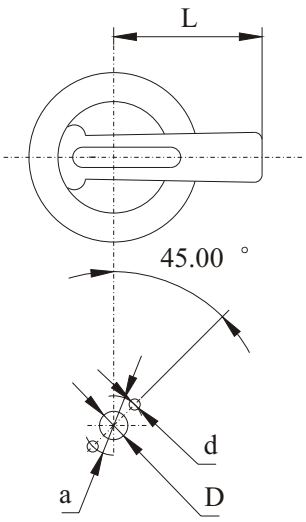
☆ Type A



Installation dimension of type A handle

handle specifications	A1	A2	A3
D	Φ42	Φ63	Φ63
d	Φ4.5	Φ5.5	Φ5.5
a	65	88	88
b	65	88	88
L	60	140	200

☆ Type B



Installation dimension of type B handle

handle specifications	B1	B2
D	Φ33	Φ33
d	Φ4.5	Φ5.5
a	Φ53	Φ53
L	65	126

Note:

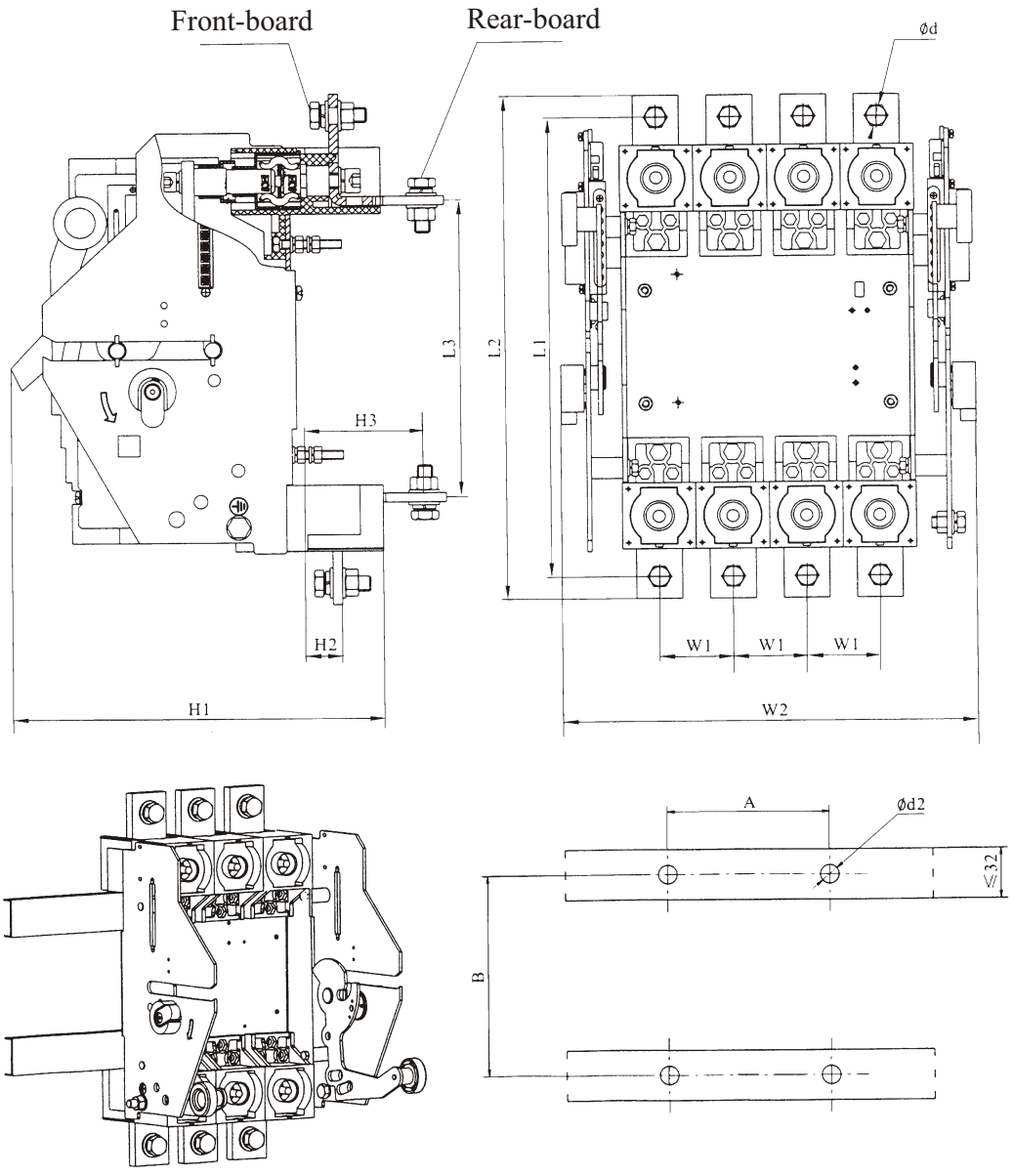
1.The length of the handle's square shaft is 100mm, 150mm (notable for special ones)

2.Parameters of both three- and four-pole breakers' handle are identical.

3.See A1, B1 for the handle operation drill sizes of SM40-63,SM40-100, SM40-225(160), see A2, B2 for those of SM40-400, SM40-630 and SM40-800. See A3 for those of SM40-1250(1600)

Drawer-type Set-up

SM40-400，630，800 Drawer-type (Three-pole) 、 (Four-pole)

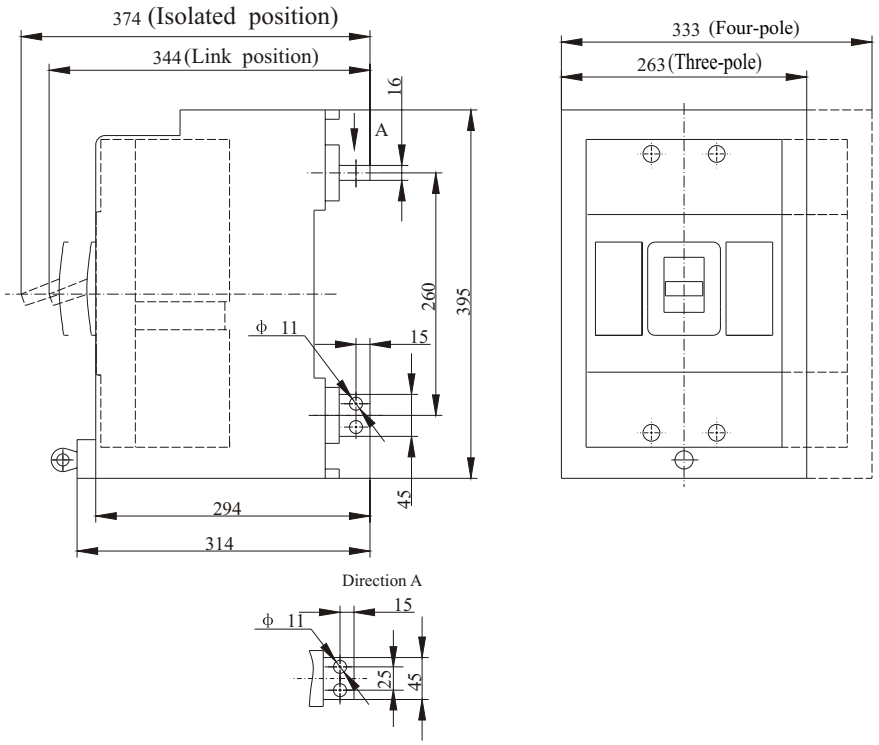


◆ SM40-400，630，800 Drawer type installation dimensions

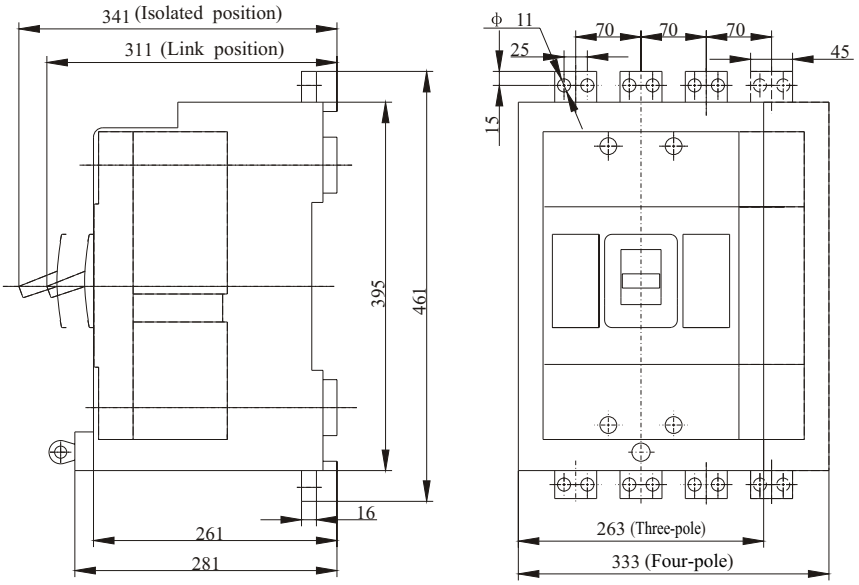
Breaker model	Poles	Overall dimensions									installation dimensions		
		L1	L2	L3	H1	H2	H3	W1	W2	ϕd1	A	B	ϕd2
SM40-400 、 SM40L-400	(Three-pole)	310	339	203	253	17.5	77	48	223	11	96	134	6.5
	(Four-pole)								271		144		
SM40E-400	(Three-pole)	303	332	196	260			44	211		88	141	
	(Four-pole)								255		132		
SM40-630 、 SM40L-630 SM40-800 、 SM40L-800	(Three-pole)	367	410	241	238	26	73	70	289	13	140	131	
	(Four-pole)								359		210		
SM40E-630 、 SM40E-800	(Three-pole)				251				289		140		
	(Four-pole)								359		210		

● SM40-1250 Drawer-type (Three-pole 、 Four-pole)

Back line

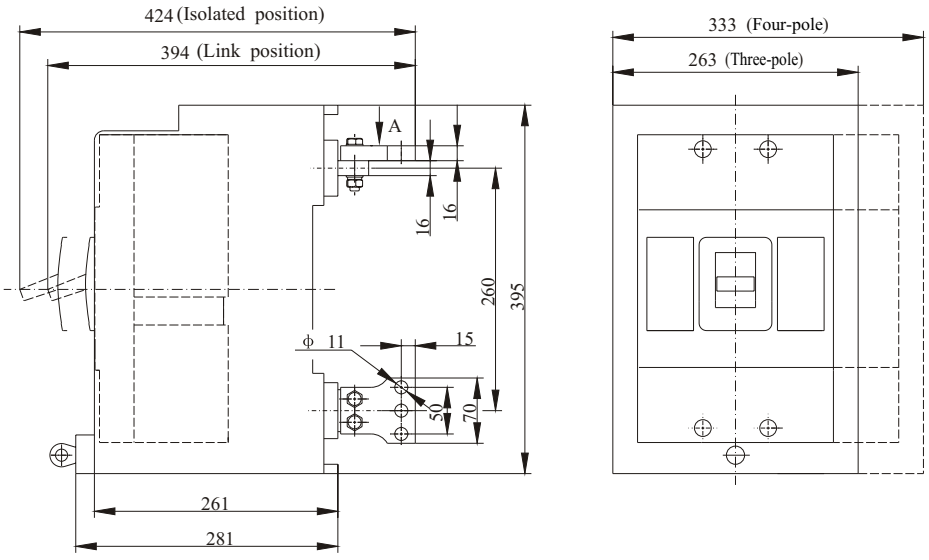


Up /bottom line

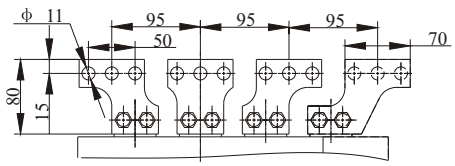


SM40-1600 Drawer-type (Three-pole 、 Four-pole)

Back line

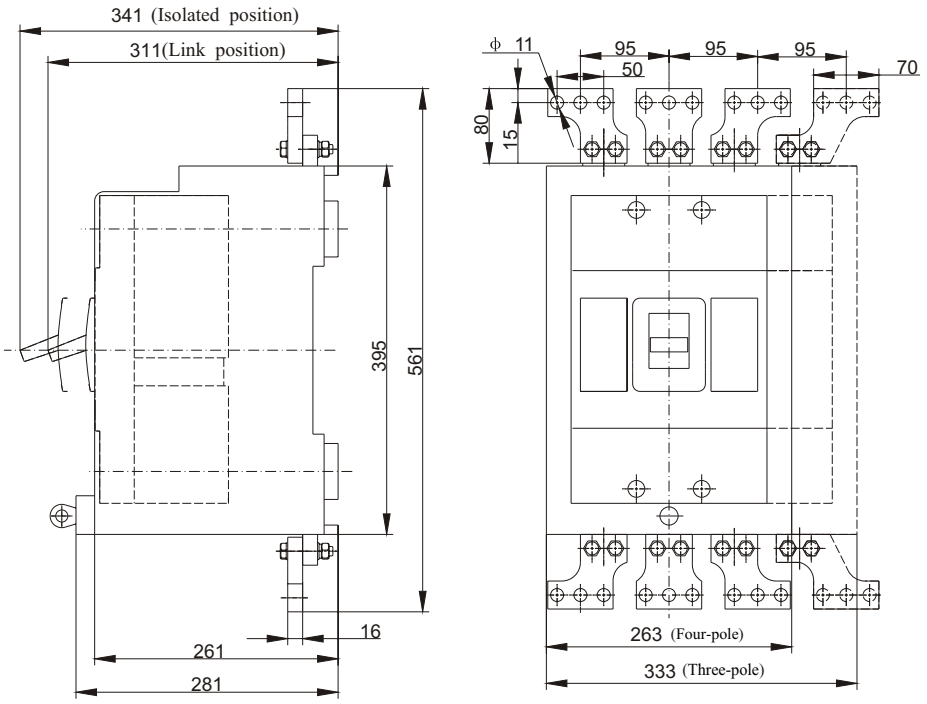


Rotary orientation A



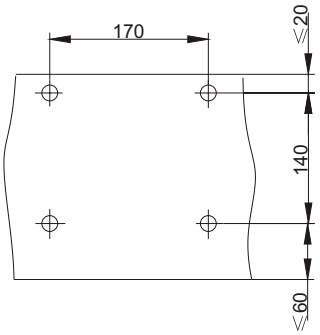
◆ SM40-1250 Drawer-type (Four-pole)

Up /bottom line

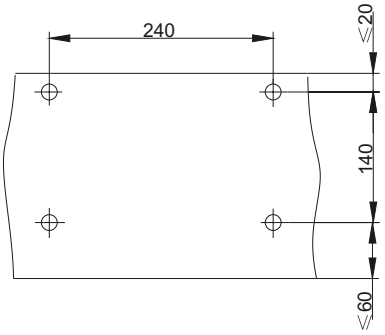


● SM40-1250 、SM40-1600 Drawer type installation dimensions(Three-pole 、 Four-pole)

Three-pole bottom installation dimensions

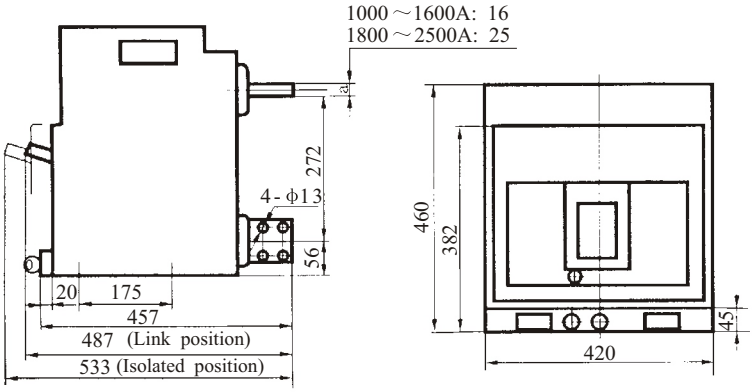


Four-pole bottom installation dimensions

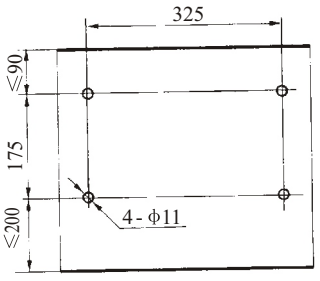


● SM40-2000 （ 2500 ）Drawer-type (Three-pole)

Overall dimensions

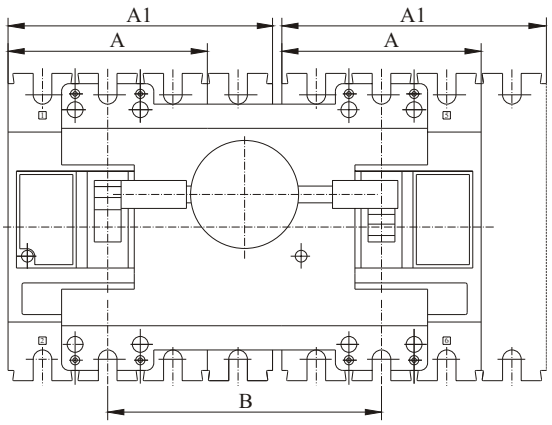


Bottom installation dimensions



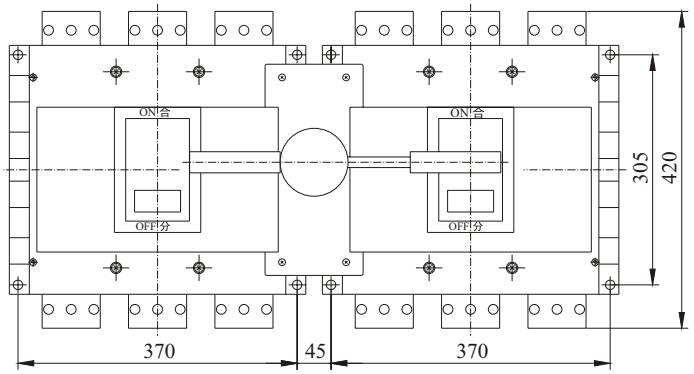
◆ Mechanical interlocking mechanism of two breakers

● SM40-63 ～ 1600 (Three-pole 、 Four-pole) Mechanical interlocking mechanism



Breaker model	A (Three-pole)	A1 (Four-pole)	B (Three-pole)	B (Four-pole)
SM40-63 、 SM40L-63	76	101	102	132
SM40-100 、 SM40L-100 、 SM40E-100	90	120	120	150
SM40-160 、 SM40L-160 、 SM40E-160	107	142	140	175
SM40-225 、 SM40L-225 、 SM40E-225	107	142	140	175
SM40-400 、 SM40L-400	150	198	190	238
SM40E-400	140	184	184	228
SM40-630 、 SM40L-630 、SM40E-630	210	280	280	350
SM40-800 、 SM40L-800 、SM40E-800	210	280	280	350
SM40-1250 、 SM40-1600	210	280	340	410

● SM40-2000 ～ 2500 Mechanical interlocking mechanism



SM40-PK1 Power monitor

Function and characteristic

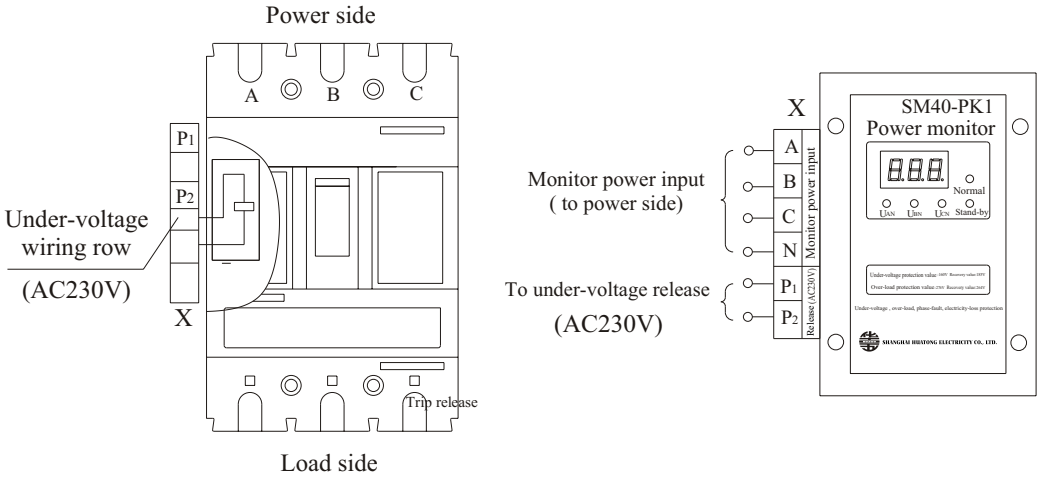
SM40-PK1 power monitor is used in suit with SM40 series MCCB to indicate digitally the voltage and to monitor the power with the protective function of under-voltage, over-load, phase-fault, electricity-loss.

Main parameters

The value of under-voltage protection : 160V; recovery value: 185V ;

The value of over-load protection : 276V , recovery value: 264V

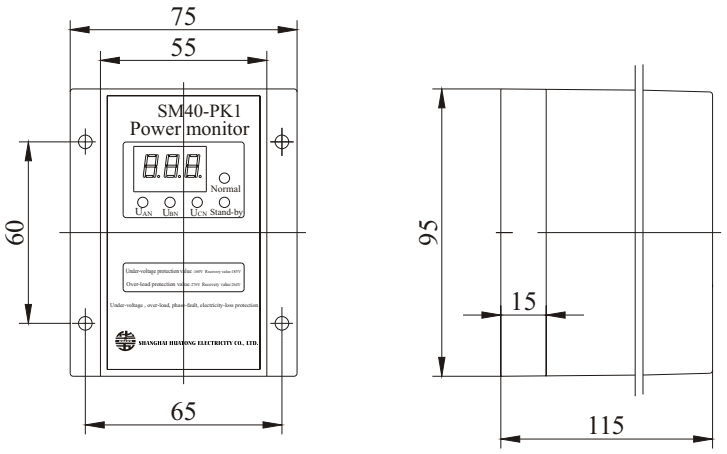
Wiring diagram



Attention:

1. The phase A/B/C/N of the four-pole breaker can be connected to the power monitor by separate. However it needs a zero-line to add in when the breaker is three-pole type, otherwise the monitor won’ t work properly.
2. The under-voltage inside the breaker is 220V
3. Connect the phase A/B/C/N to the monitor first then electrify it before the breaker to be re-buckled and switched-on , otherwise, the breaker will get damaged.

Overall and installation dimensions



Please make in ☐ or fill the value in, make x for those not selected

User		Quantity ordered		Date of order	
Model	SM40— ☐☐☐/☐ ☐ ☐				
rated current	In = ☐ A				
way of wiring	Front-board ☐		Drawer type ☐		
	Rear-board ☐				
	Plug in ☐				
Parameter of accessories	Under-volatage release	AC230V ☐	AC400V ☐		
	Shunt release	AC230V ☐	AC400V ☐	DC220V ☐	
	Electric operation mechanism	AC230V ☐	AC400V ☐	DC220V ☐	
	turning handle operation mechanism	Central type ☐	Eccentric-type A ☐	Eccentric-type B ☐	
Remark					

Please make in ☐ or fill the value in, make x for those not selected

User		Quantity ordered		Date of order	
Model	SM40L — ☐☐☐/☐ ☐ Pcs				
rated current	In=☐ A				
way of wiring	front-board ☐ Rear-board ☐ Plug in ☐ Drawer type ☐				
Residual current protection type	non-delay type Ⅰ	Motion current IΔn ☐ mA			
	non-delay type Ⅱ	Motion current IΔn ☐ mA			
	delay type Ⅰ	Motion current IΔn ☐ mA			
		Time delay-operation limit non-operating time Δt ☐ s			
	delay type Ⅱ	Motion current IΔn ☐ mA			
		Time delay-operation limit non-operating time Δt ☐ s			
	Alarm type	alarm operated current ☐ mA			
parameter of accessories	Under-volatage release	AC230V ☐ AC400V ☐			
	Shunt release	AC230V ☐ AC400V ☐ DC220V ☐			
	Electric operation mechanism	AC230V ☐ AC400V ☐ DC220V ☐			
	turning handle operation mechanism	Central type ☐ Eccentric-type A ☐ Eccentric-type B ☐			
Remark					

Please make in ☐ or fill the value in, make x for those not selected

User		Quantity ordered		Date of order	
Model	SM40 E1 — ☐☐☐/ ☐ ☐ Pcs				
Rectification of intelligent release	Long-delay	Setting current	Ir1 ☐ In	Setting time	t 1 ☐ s
	Short-delay	Setting current	Ir2 ☐ In	Setting time	t s ☐ s
	Instantaneous	Setting current	Ir3 ☐ In		
	Grounding protection	Setting current	Ir4 ☐ In	suitable for four-pole only	
	Overload pre-warn	Setting current	Ip ☐	Ir 1 (only three adjustable, four fix to 0.9Ir1)	
Additional accessories	Power Experimental module	☐			
	Under-volatage release	AC230V ☐	AC400V ☐		
	Shunt release	AC230V ☐	AC400V ☐	DC220V ☐	
	Electric operation mechanism	AC230V ☐	AC400V ☐	DC220V ☐	
	Rotary manual operation mechanism	Central-type ☐	Eccentric-type A ☐	Eccentric-type B ☐	
Remark	1.Write the model completely and correctly at order; 2.For the wiring mode of breaker, front-board wiring may not be noted while the others required, as: rear-board, plug-in or drawer type; 3.Users may not note the model only in case of no special requirements on the release's characteristic Rectification, in this case, the product will be rectified according to the “Regular setting table of Protective Characteristic” when ex-works.				

Please make in ☐ or fill the value in, make x for those not selected

User		Quantity ordered		Date of order	

Model: SM40 E2 — ☐☐☐/ ☐ ☐ ☐ Pcs

Rectification of intelligent release

Long-delay	Setting current	I_{r1} ☐ In	Setting time	t_1 ☐ S		
Short-delay	Setting current	I_{r2} ☐ In	Setting time	t_S ☐ S		
Instantaneous	Setting current	I_{r3} ☐ In				
Selection of overload and short-delay thermal memory	Over-load thermo-memory characteristic ON/OFF	☐				
	Short-delay thermo-memory ON/OFF	☐				
Working mode of short-delay	$I\,T^2$ ON	☐				
	$I\,T^2$ 0FF	☐				
Grounding protection	Setting current	I_{r4} ☐ In	Setting time	t_G ☐ S		
Overload pre-warn	Setting current	Ip ☐ Ir 1	Setting time	☐ S		

Additional accessories

ST portable programmer	☐				
SR-CM display module	☐				
ST-DP communication module	☐				
FST-PT Intelligent control module	☐				
	☐				
Electric operation mechanism	AC230V ☐	AC400V ☐	DC220V ☐		

Remark

1.Write the model completely and correctly at order;
2.For the wiring mode of breaker, front-board wiring may not be noted while the others required, as: rear-board, plug-in type;
3.Grounding protection is available with four-pole only;
4.Users may not note the model only in case of no special requirements on the release's characteristic rectification, in this case the product will be rectified according to the "Regular setting table of protective characteristic" when ex-works.