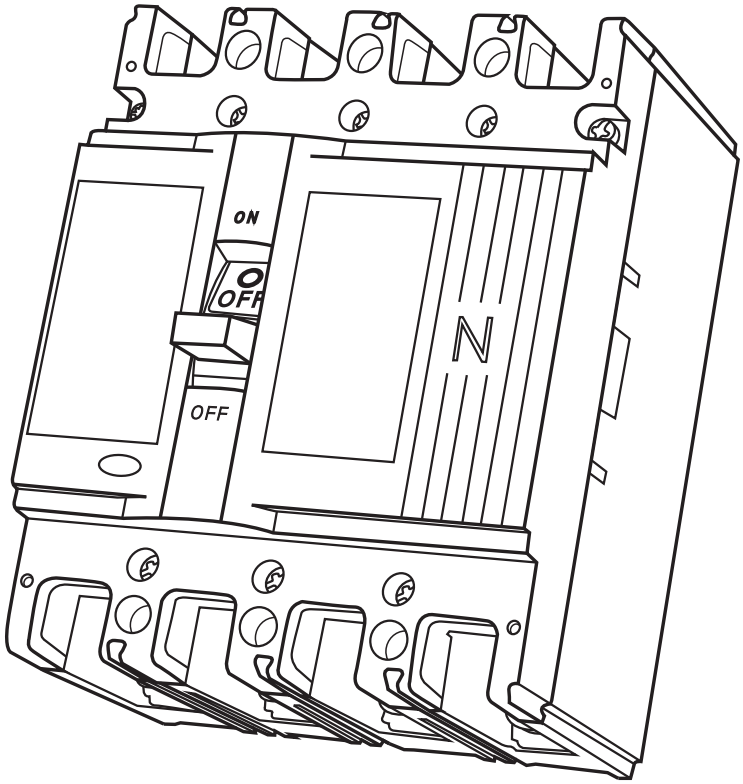
MAXGE

SGM3(S)

Moulded Case Circuit Breaker

PRODUCT MANUAL



MAXGE ELECTRIC CO.,LTD

Ⅰ、Range of application

SGM3(S) series of moulded case circuit breaker is a new type product developed and manufactured by adopting international advanced technology.It is supplied with rated insulation voltage 800V and used for circuit of AC 50Hz,rated operating voltage AC 400V or below rated operation current up to 800A for infrequent changing over and starting of the motors.Equipped with the protection devices for over-current,short circuit and under voltage,the product is capable of preventing damage of circuits and supplying units the product conforms to IEC60947-2.

The products can be installed vertically.

The products also can be installed horizontally

The products have isolating function,the symbol is: “ —⁄ ⊢×— ”

The products is in conformity with the below standard:

IEC60947-1 and GB14048.1 general rule

IEC60947-2 and GB14048.2 low voltage circuit breaker

IEC60947-4-1 and GB14048.4 electromechanical contactor and electromotor starter

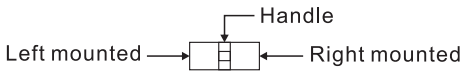
IEC60947-5-1 and GB14048.5 electromechanical control circuit devices

Ⅱ、Model and explanation

S G M 3(S) □ □

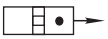
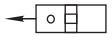
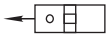
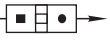
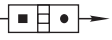
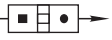
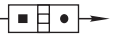
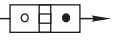
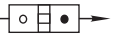
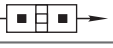
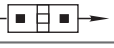
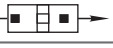
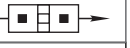
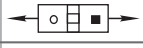
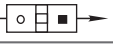
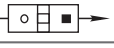
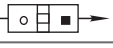
- Rated short circuit breaking capacity
  - L-Standard Level
  - M-Middle Level
  - H-Highest Level
- Rated current of frame
- Design code
- Moulded case circuit breaker
- Enterprise code

MAXGE



□: Alarm contact ○: Under voltage release
■: Auxiliary contact ←: Wiring direction
●: Shunt release

Chart 1 Tripping type and inner accessory code

Accessory Name	Tripping type and inner accessory code		Accessory installation position and wiring direction				
	Electro-magnetic release	Multiple release	SGM3(S)-125 SGM3(S)-160	SGM3(S)-250	SGM3(S)-400	SGM3(S)-630	SGM3(S)-800
Alarm contact	208	308					
Shunt release	210	310					
Auxiliary contact	220	320					
Under voltage release	230	330					
Auxiliary contact、Shunt release	240	340					
Shunt release、Under voltage release	250	350					
Two group auxiliary contact	260	360					
Auxiliary contact、Under voltage release	270	370					
Shunt release、Alarm contact	218	318					
Auxiliary contact、Alarm contact	228	328					
Under voltage release、Alarm contact	238	338					
Shunt release、Auxiliary contact 、Alarm contact	248	348					
Two group auxiliary contact、Alarm contact	268	368					
Auxiliary contact,Under voltage release,Alarm contact	278	378					

Remark: 1. 000: no thermal release or magnetic release; 200: only have electro-magnetic release; 300:have thermal-magnetic release

2. SGM3(S)-125L\M\H,SGM3(S)-250L\M\H code 268,368 can supply three groups contact(3NO+3NC)

3. SGM3(S)-125L\M\H,SGM3(S)-250L\M\H code 220,320,240,340,270,370 can supply 2 groups contact(2NO+2NC); 260\360 can supply 3 groups contact(3NO+3NC) or 4 groups contact(4NO+4NC)

III、Technical parameter

Model		SGM3(S)-125		SGM3(S)-160			SGM3(S)-250			SGM3(S)-400			SGM3(S)-630			SGM3(S)-800		
Frame size current Inm [A]		125		160			250			400			630			800		
Rated current In [A]		10、16、20、25、32、40、50、63 80、100、125		(10)、16、20、25、32、40、50、63、80、100 125、160			100、125、140、160、180、200、225			225、250、315 350、400			400、500、630			630、700 800		
Poles		3	4	3	4		3	4		3	4		3	4		3	4	
Nominal insulation voltage Ui [V]		AC800		AC800														
Rated operational voltage Ue [V]		AC400		AC400、AC690														
Rated impulse withstand voltage Uimp [V]		8000		8000														
Flashover distance [mm]		50								100								
Breaking capacity level		L	M	L	M	H	L	M	H	L	M	H	L	M	H	L	M	H
Rated Ultimate Short-circuit breaking capacity Icu [kA]	AC690V				20			20			20			20			30	
	AC400V	35	50	50	70	100	50	70	100	50	70	100	50	70	100	65	75	100
Rate service short-circuit breaking capacity Ics [kA]	AC690V				10			10			15			15			20	
	AC400V	35	35	35	50	70	35	50	70	50	70	75	50	70	75	65	75	75
On-load operation performance [T]	AC400V	8000					8000			7500			7500			7500		
No-load operation performance [T]	without maintenance	20000					20000			10000			10000			10000		
	with maintenance	40000					40000			20000			20000			20000		

MAXGE

Ⅳ、Protective characteristic

Distribution using

Rated current(A)	Thermal release(Ambient temperature +40℃)		Electro-magnetic release tripping Current (A)
	1.05In(Cold state)non-tripping time(h)	1.3In(Thermal state)tripping time(h)	
10≤In≤63	Not trip in 1 hours	≤1	10In±20%
63<In≤100	Not trip in 2 hours	≤2	
100<In≤800	Not trip in 3 hours	≤2	5In±20%，10In±20%

Remark:SGM3(S)-63L,M 10A~25A electro-magnetic release tripping current is 300A 20%

Electromotor protection

Circuit breaker model	Thermal release(Ambient temperature +40℃)					Electro-magnetic release tripping current (A)
	1.0In(Cold state) non-tripping time(h)	1.2In(Thermal state) tripping time(h)	1.5In(Thermal state) tripping time(h)	1.5In(Cold state) non-tripping time(h)	Trip level	
SGM3(S)-125L、M	Not trip in 2 hours	≤2	≤2min	0.5s<TP≤5s	5	12In±20%
SGM3(S)-160L、M、H			≤4min	4s<TP≤10s	10	
SGM3(S)-250L、M、H SGM3(S)-400L、M、H SGM3(S)-630L、M、H SGM3(S)-800L、M、H			≤8min	6s<TP≤20s	20	

Remark:SGM3(S)-63L,M 10A~25A electro-magnetic release tripping current is 300A 20%
Frame size SGM3(S)-800 current 700A,800A don't supply electromotor protection

Ⅴ、Circuit breaker category

According to poles： 3poles，4poles

According to usage： Distribution using，Electromotor protection

According to operation mode:

A.Operation by handle B.Operation by electric(with letter P) C.Operation by rotary handle (with letterZ)

Ⅵ、The requirement of circuit breaking using,installation and location

Regular service condition:

A.-5℃~40℃,and the average cost not exceed +35℃ in 24h
B. The altitude of the installation location not higher than 2000m
C. The air relative humidity not exceed 50%when the ambient air temperature is 40℃； the relative humidity can be higher if under the lower temperature(such as 90% when 20℃)， and considering the frost appeared when the temperature changed.

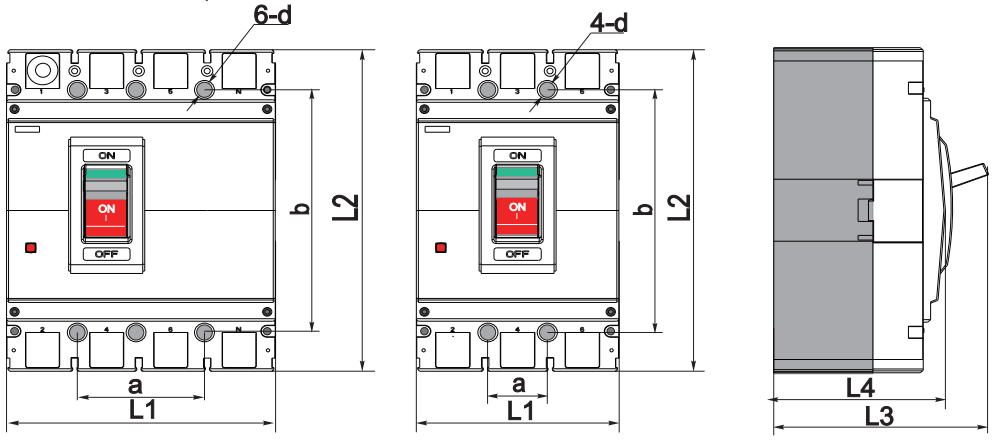
Regular installation condition:

A.Installation category：circuit breaker main circuit class three，control circuit and auxiliary circuit class two
B.Installation condition: can be installed both vertically and horizontally.
C.Pollution Class: class 3
D.External field: the external field can not be 5 times higher than geomagnetic field at any direction on the installation site

MAXGE

Ⅶ、Shape and installation size

Circuit breaker panel front wire connection shape and installation size

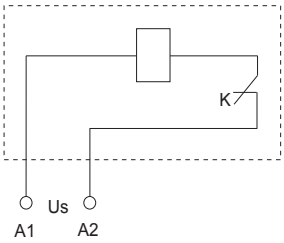


Model	Poles	Shape size[mm]				Installation size[mm]		
		L1	L2	L3	L4	a	b	d
SGM3(S)-125L	3	75	130	76	59	25	111	Φ3.5
	4	100	130	76	59	50	111	Φ3.5
SGM3(S)-125M	3	75	130	84	67	25	111	Φ3.5
	4	100	130	84	67	50	111	Φ3.5
SGM3(S)-160L	3	92	150	89	74	30	129	Φ4.5
	4	122	150	89	74	60	129	Φ4.5
SGM3(S)-160M	3	92	150	107	92	30	129	Φ4.5
	4	122	150	107	92	60	129	Φ4.5
SGM3(S)-160H	3	92	150	107	92	30	129	Φ4.5
	4	122	150	107	92	60	129	Φ4.5
SGM3(S)-250L	3	107	165	114	94	35	126	Φ4.5
	4	142	165	114	94	70	126	Φ4.5
SGM3(S)-250M	3	107	165	131	111	35	126	Φ4.5
	4	142	165	131	111	70	126	Φ4.5
SGM3(S)-250H	3	107	165	131	111	35	126	Φ4.5
	4	142	165	131	111	70	126	Φ4.5
SGM3(S)-400L	3	150	257	151.5	115.5	44	194	Φ7
	4	198	257	151.5	115.5	88	194	Φ7
SGM3(S)-400M	3	150	257	151.5	115.5	44	194	Φ7
	4	198	257	151.5	115.5	88	194	Φ7
SGM3(S)-400H	3	150	257	151.5	115.5	44	194	Φ7
	4	198	257	151.5	115.5	88	194	Φ7
SGM3(S)-630L	3	182	270	155	120	58	200	Φ7
	4	240	270	155	120	116	200	Φ7
SGM3(S)-630M	3	182	270	155	120	58	200	Φ7
	4	240	270	155	120	116	200	Φ7
SGM3(S)-630H	3	182	270	155	120	58	200	Φ7
	4	240	270	155	120	116	200	Φ7
SGM3(S)-800M	3	210	280	155	115.5	70	243	Φ7
	4	280	280	155	115.5	140	243	Φ7
SGM3(S)-800H	3	210	280	155	115.5	70	243	Φ7
	4	280	280	155	115.5	140	243	Φ7

MAXGE

Shunt release

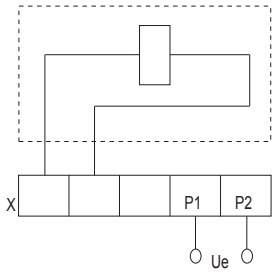
Apply to SGM1,SGM3(S),SGM1L,SGMIE,SGM1EL

rated supply voltage Us [V]	AC230V、AC400V；DC24V、DC110V、DC220V
Operation voltage [v]	(0.7~1.1)Us
Wiring diagram	

Remark：K-the microswitch in series with coil in the shunt release is the normally closed contact,when circuit breaker opening,the contact disconnect automatically,switch on when closing;in the dotted box is the circuit breaker inner wiring diagram.

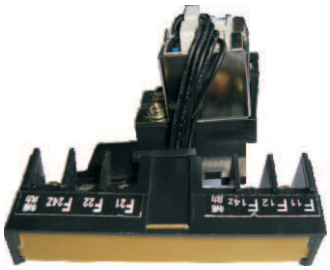
Under voltage release

Apply to SGM1,SGM3(S),SGM1L,SGMIE,SGM1EL

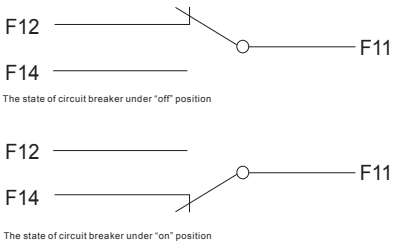
rated supply voltageUs [V]	AC230V、AC400V
Operation voltage [v]	When the voltage is 35%-70% of rated operational voltage,make the circuit breaker tripped stably; When 85%-110%,guarantee the circuit breaker switched on,when lower than 35% should prevent switch on.
Wiring diagram	

Remark：X-terminal blocks ,in the dotted box is the circuit breaker inner wiring diagram.

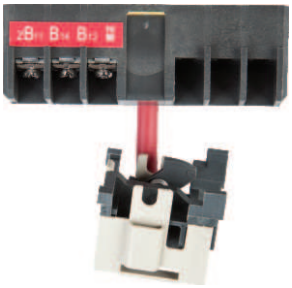
Auxiliary contact



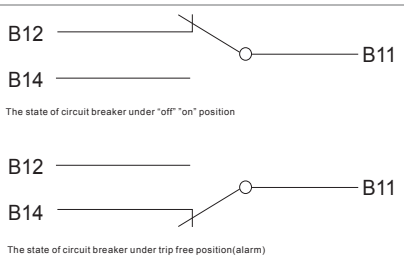
Apply to SGM1,SGM3(S),SGM1L,SGMIE,SGM1EL

Conventional thermal current Ith[A]	3A
Rated operational current Ie[A]	In≤225A:0.26A； In≥400A:0.3A
Wiring diagram	

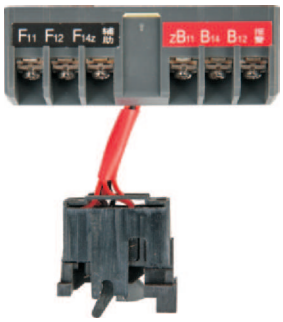
Alarm contact

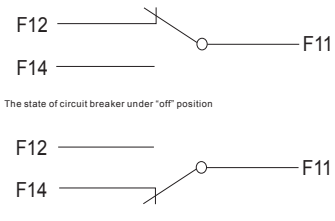


Apply to SGM1,SGM3(S),SGM1L,SGMIE,SGM1EL

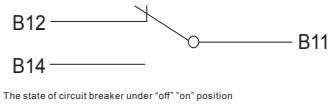
Conventional thermal current Ith[A]	3A
Rated operational current Ie[A]	In≤225A:0.26A； In≥400A:0.3A
Wiring diagram	

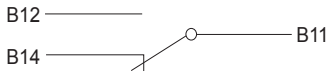
MAXGE

<table>
<tr><td rowspan="3">Auxiliary contact、Alarm contact
 

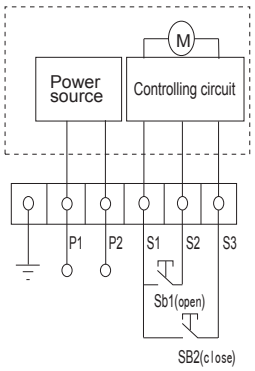
Apply to SGM1,SGM3(S),SGM1L,SGM1E,SGM1EL</td><td>Conventional thermal current Ith [A]</td><td colspan="2">3A</td></tr>
<tr><td>Rated operational current [A]</td><td colspan="2">In≤225A：0.26A； In≥400A：0.3A</td></tr>
<tr><td>Wiring diagram</td><td> 

The state of circuit breaker under "off" position

The state of circuit breaker under "on" position</td><td> 

The state of circuit breaker under "off" "on" position
 

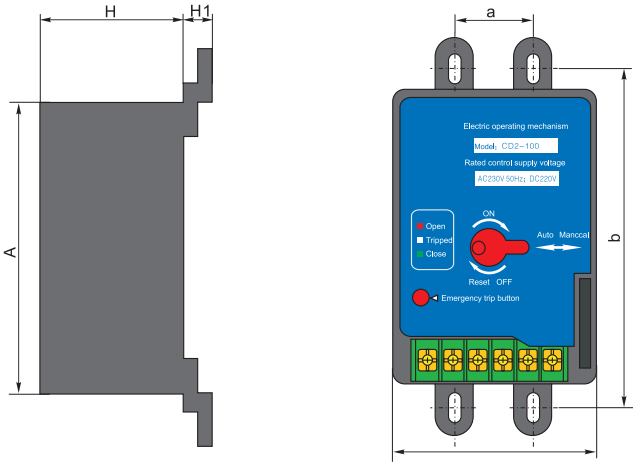
The state of circuit breaker under trip free position(alarm)</td></tr>
<tr><td rowspan="2">Electric operating mechanism
 

Apply to SGM1,SGM3(S),SGM1L,SGM1E,SGM1EL</td><td>Input voltage [v]</td><td colspan="2">AC230V、AC400V； DC110V，DC230V，DC24V</td></tr>
<tr><td>Wiring diagram</td><td colspan="2"> 

Instruction:P1-P2: DC IN; SB1,SB2: operating button(Equipped by user)
Remark:in the dotted box is the circuit breaker inner wiring diagram.</td></tr>
</table>

MAXGE

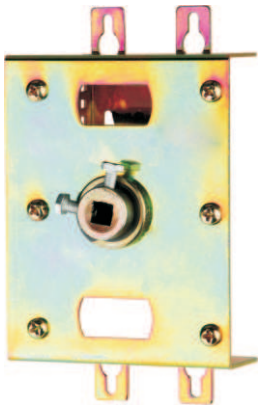
Electric operating mechanism shape and installation size

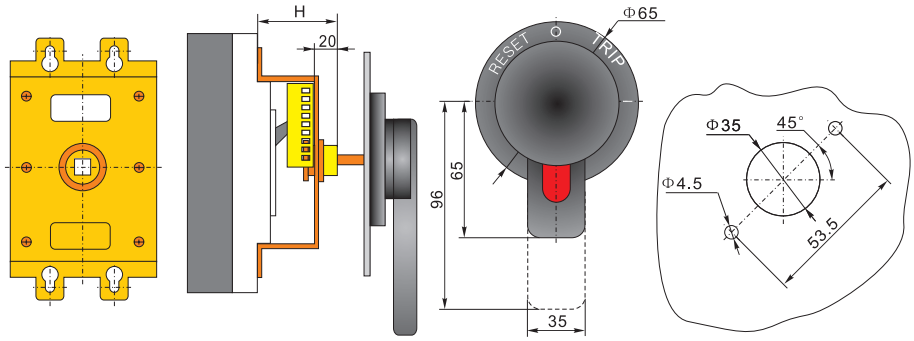


	Shape size [mm]				Installation size [mm]	
	L1	B	H	H1	a	b
SGM1L-160	116	90	77	12.5	30	129
SGM1L-250	116	90	77	15	35	126
SGM1L-400	176	130	115	27	44	215
SGM1L-630	176	130	115	31	70	243
SGM1L-800	176	130	115	31	70	243

Apply to SGM1,SGM3(S),SGM1L,SGMIE,SGM1EL

Rotary handle operating mechanism shape and installation size



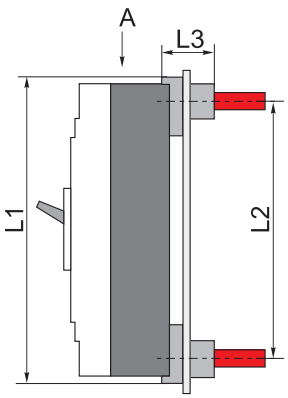


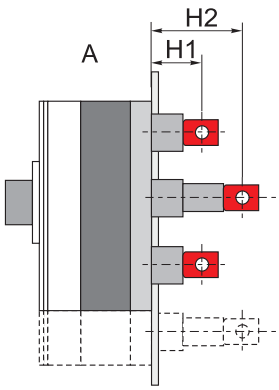
Model	SGM1L-160	SGM1L-250	SGM1L-400	SGM1L-630	SGM1L-800
Installation sizeH (mm)	49	55	74	66	66

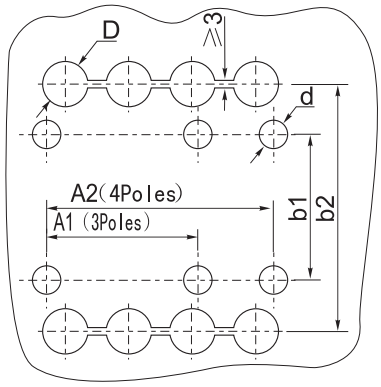
Apply to SGM1,SGM3(S),SGM1L,SGMIE,SGM1EL

MAXGE

Circuit breaker panel back wiring shape and installation size(apply to SGM1,SGM3(S),SGM1L,SGM1E,SGM1EL)



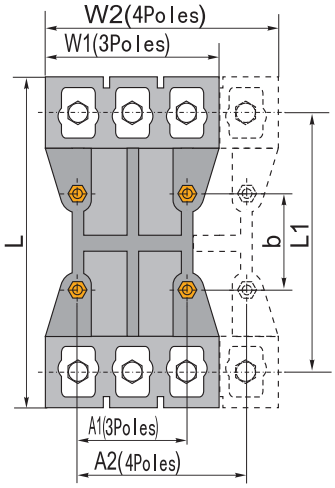


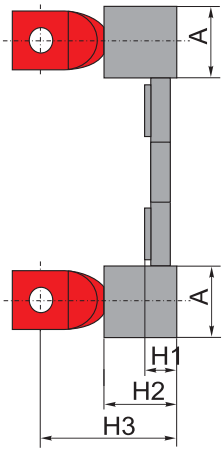


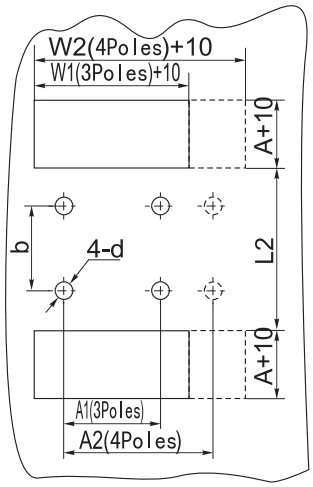
back panel wiring panel hole size

Model	shape size [mm]					installation size [mm]					
	L1	L2	L3	H1	H2	A1	A2	b1	b2	D	d
SGM3(S)-160	164	132	35	53	93	72	102	90	132	Φ22	Φ5.5
SGM3(S)-250	173	144	35	55	100	87	122	93	144	Φ24	Φ5.5
SGM3(S)-400	267	224	37	48.5	108.5	124	172	164	224	Φ32	Φ6.5
SGM3(S)-630	295	243	37	62	84	178	248	158	243	Φ48	Φ7.0
SGM3(S)-800	295	243	37	62	84	178	248	158	243	Φ48	Φ7.0

Circuit breaker plug-in type back panel wiring shape and installation size(apply to SGM1,SGM3(S),SGM1L,SGM1E,SGM1EL)







back panel wiring panel hole size

Model	W1	W2	L	L1	L2	A	H1	H2	H3	A1	A2	b	d
	3 Poles	4 Poles								3 Poles	4 Poles		
SGM3(S)-160	84	115	168	132	90	31	17.5	50	64	60	90	56	Φ6.5
SGM3(S)-250	100	135	183	144	88	41	17.5	50	71.5	70	105	54	Φ6.5
SGM3(S)-400	142	190	279	224	166	48	21	60	83.5	60	108	129	Φ8.5
SGM3(S)-630	203	273	296	243	183	48	18	61	97	140	210	143	Φ10
SGM3(S)-800	203	273	296	243	183	48	18	61	97	140	210	143	Φ10