

State High-tech Enterprise  
State Exemption Products  
Shanghai Famous Brand



# SGR2 series

Fuse combination  
isolation switch



The product has three-pole enclosed insulating-type structure. It has very good insulating protective function, and the operational handle is on the top of the cover convenient to be used with reliable safety. Through the transparent panel on the cover which is convenient to be taken off, it is easy to observe the working situation inside. The fuse combination is fixed on the cover, easy to be changed. When break the switch, the fracture can be seen clearly.



Shanghai Huatong Electricity Co., Ltd.



## Catalogue

### **4** SGR2 series fuse combination isolation switch

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### ◆ Use purpose

SGR2 series fuse combination isolation switch (switch for short hereinafter). is suitable in the circuit of AC 50Hz, AC rated insulation voltage 800V, rated working voltage 400V, 690V, rated working current 160A~630A. It can be used in the circuit of power-distribution or electromotor to isolate the high short-circuit as switch of the power and for isolation. However, It is not to be used to switch-on/off directly the single electromotor.

It is without the protective function of overload and short circuit when the fuse combination replaced by the isolating bar (knife), only to isolate the circuit according to the rated making and breaking capacity.

### ◆ Conformed standards

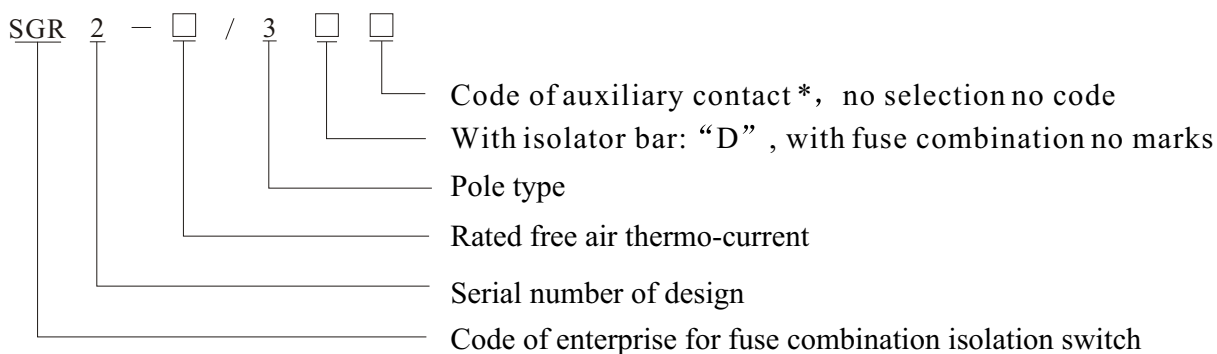
GB 14048.3-2002 《Low-voltage switchgear and control-gear, isolator, disconnecter and fuse-combination units》 .

IEC60947-3, 2001, 1999 (Version 2) 《Low-voltage switchgear and control-gear, isolator, disconnecter and fuse-combination units》

### ◆ Normal working condition

- A) The elevation at the installation place not over 2000m
- B) Ambient air temperature -5~+40 °C.
- C) 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
- D) No bomb danger and storm damage
- E) Pollution grade: 3
- F) Installation grade, III
- G) Utilization type AC-20B、 AC-21B、 AC-22B、 AC-23B;
- H) No impact or shock.

### ◆ Model and meaning



\*One N.O. And one N.C. Marked with "11" (SGR2-160A~630A) ,  
Two N.O. And two N.C. Marked with "22" (SGR2-250~630A)



### ◆ Characteristic of structure

The product is in three-pole full enclosed insulating-type structure. It has good insulating protective function for the entire enclosure is moulded from high-intensity fire-retardant materials. The operational handle is on the top of the cover convenient to be used with reliable safety. Through the transparent board of cover, it is easy to observe the working situation inside. And the fuse is fixed on the cover as dynamic contact and contact bar, both of the fuse and the cover easy to be changed. When break the switch, the fracture can be seen clearly.

The contact systems of the switch is in advanced design. When the switch breaks with load, the current will auto-transfer to the arc angle and with the superior arc-extinguishing room, the breaking is very reliable and stable without ablation.

The components of the switch are in plug combinational structure convenient for maintenance. The fuse combination units can be replaced by the isolating bar as isolation switch when the load side of the switch is in frame grade or when the MCCB is for the circuit protection.

### ◆ Main technical parameters

- a) Rated insulating voltage: AC 800V
- b) Rated working voltage: AC 400V AC 690V
- c) Rated free air thermo-current: 160A, 250A, 400A, 630A
- d) Rated working current: when 400V: 160A, 250A, 400A, 630A  
when 690V: 100A, 200A, 315A, 425A
- e) Utilization type: when 400V: AC-20B, AC-21B, AC-22B, AC-23B  
When 690V: AC-20B, AC-21B, AC-22B
- f) Selected fuse combination units: the fuse should be in conformity with standards of GB13539.1.  
The match of fuse and the switch see table 1.

Table 1

Model	Rated working voltage (V)	Rated working current (A)	Fuse combination type	Rated current of selected fuse combination units (A)	Fuse power loss (W)
SGR2-160	400	160	NT00	4, 6, 10, 16, 20, 25, 32, 36, 40, 50, 63, 80, 100, 125, 160	9.6
	690	100		4, 6, 10, 16, 20, 25, 32, 36, 40, 50, 63, 80, 100	
SGR2-250	400	250	NT1	80, 100, 125, 160, 200, 224, 250	18.3
	690	200		80, 100, 125, 160, 200	
SGR2-400	400	400	NT2	125, 160, 200, 224, 250, 300, 315, 355, 400	26.8
	690	315		125, 160, 200, 224, 250, 300, 315	
SGR2-630	400	630	NT3	315, 355, 400, 425, 500, 630	40.3
	690	425		315, 355, 400, 425	

Notes: the fuse combination units made in Shanghai Electric Appliances and Ceramic Factory is recommended.

- G) Shock withstand voltage: phase-phase, phase-ground is 8KV, the fracture of each phase is 12KV
- H) Rated limited short-circuit current: When the switch is equipped with standard fuse combination units, the rated limited short-circuit withstand and short-circuit making capacity under the situation of AC 690V,  $\cos \phi = 0.2$  are 50KA.
- I) Operational performances: the operational cycle times and the operational performance testing circuit parameters see table 2 and table 3.



Table 2

Model	Rated current (A)	Operational cycles times			Operational cycle times per hour
		Idle	Loaded	Sum	
SGR2-160	160	1400	200	1600	120
SGR2-250	250	1400	200	1600	120
SGR2-400	400	800	200	1000	60
SGR2-630	630	800	200	1000	60

Table 3

Rated voltage (V)	Rated working current (A)	Utilization type	Making			Breaking		
			I/Ie	U/Ue	Cos φ	I/Ie	Ur/Ue	Cos φ
400	Full value	AC-21B	1	1	0.95	1	1	0.95
		AC-22B			0.8			0.8
		AC-23B			0.65			0.65
690	Full value	AC-21B	1	1	0.95	1	1	0.95
		AC-22B			0.8			0.8



J) Rated making and breaking capacity see table 4

Table 4

Rated voltage (V)	Rated working current (A)	Utilization type	Making			Breaking			Operational cycle times
			I/Ie	U/Ue	Cos φ	I/Ie	Ur/Ue	Cos φ	
400	Full value	AC-21B	1.5	1.05	0.95	1.5	1.05	0.95	5
		AC-22B	3		0.65	3		0.65	
		AC-23B	10		0.35	8		0.35	3
690	Full value	AC-21B	1.5	1.05	0.95	1.5	1.05	0.95	5
		AC-22B	3		0.65	3		0.65	



### ◆ Overall and mounting dimensions

Overall and mounting dimensions see figure 1, figure 2 and table 5.

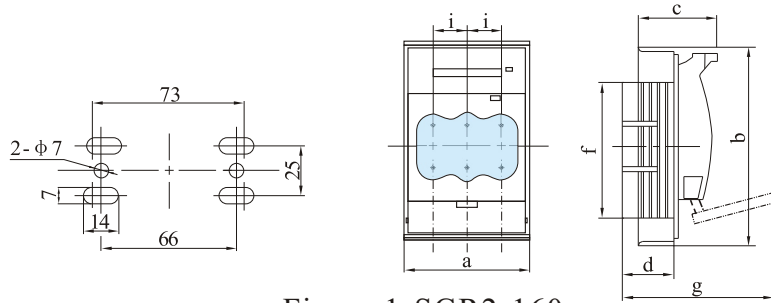
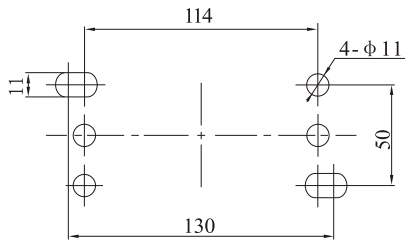
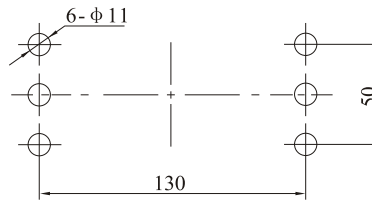


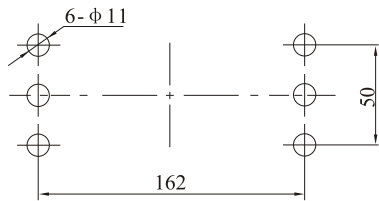
Figure 1 SGR2-160



SGR2-250



SGR2-400



SGR2-630

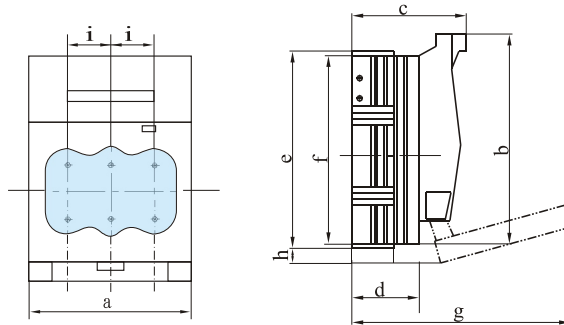


Figure 2 SGR2-250~630

Table 5

Model	a	b	c	d	e	f	g	h	i
SGR2-160	107	201	83	45	—	151	205	—	33
SGR2-250	184	243	111.5	66	224	214.5	295	38	57
SGR2-400	210	288	128	80	—	255	340	45	65
SGR2-630	256	300	142.5	94.5	—	267	360	45	80

Notes: SGR2-160 inner connecting plate's width is 20mm, the wiring screw is M8  
 SGR2-250 inner connecting plate's width is 30mm, the wiring screw is M10  
 SGR2-400 inner connecting plate's width is 33mm, the wiring screw is M10  
 SGR2-630 inner connecting plate's width is 40mm, the wiring screw is M12

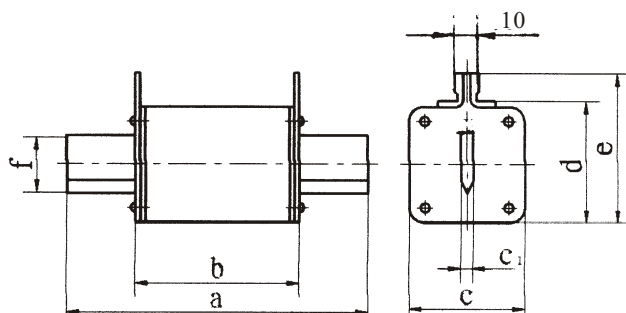


Figure 3: knife-shape fuse combination units overall dimensions

Table 6

Model	Reference of selected fuse and its specs	Fuse rated voltage V	Fuse combination overall dimensions, mm						
			a	b	c	c <sub>1</sub>	d	e	f
SGR2-160	NT00	500	78.5	49	29	6	46.5	56.5	15
SGR2-250	NT1	500	135	68	48	6	52	62	21
SGR2-400	NT2	500	150	68	58	6	60.5	71	27
SGR2-630	NT3	500	150	68	67	6	74.5	84.5	33

Notes: the fuse selected must conforms to standards of GB13539.1-2002  
The fuse combination made in Shanghai Electric Appliances and Ceramic Factory is recommended

## ◆ Maintenance

The switch should be installed by vertically. Before the installation, please check the contents of the nameplate and the equipped fuse combination if they meet the requirement of use. During the installation of SGR2, firstly take off the cover and fuse combination units, use a level-type screwdriver to insert the level groove between the two cover masks, and turn 90 degree over anti-clockwise so as to pull out the mask with extinguishing-room at input terminal and the one with electricity protection at output terminal. Use some screws to fix the base up according to the position of installation hole. And also fix tightly the conductors for connection at the input/output terminals. Use a level-type screwdriver to insert the level groove, turn 90 degree over clockwise to fix the two mask enclosures on the base on previous position. Then reset the cover on the base with the operational handle to make the switch switched-on. (Remember to pull out and take off the cover and fuse combination from the static contact when overhaul or repair the equipment or change over the fuse combination units), if the bus wire is bare, it should be packed with insulator, of which the length should not be less than 100mm so as to avoid phase-phase short-circuit. The cross-section area of the connecting conductors of SGR2 series and its corresponding rated current see table 7.

Table 7

Rated current (A)	160	250	400	630
Conductor's cross-section area mm <sup>2</sup>	70	120	240	400

## ◆ Ordering notice

Please make an annotation of the switch's model, specs, quantity etc. when ordering.

Example: SGR2-160/3 125 11 400V 5 pieces, i.e. 5 pcs of the isolation switch with the rated free air thermo-current 160A, rated working voltage 400V, three-pole, assembled with fuse 125A, with an auxiliary contact of 1 N.O. and 1 N.C.

Please provide the related technical data if you have the specific requirements of the elevation, ambient temperature etc. we may supply it upon an agreement.