



TGQ3L

Series Automatic Transfer Switch

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1 Overview

TGQ3L Series Automatic Transfer Switch is used in the AC 50Hz / 60Hz single-phase or three-phase dual-circuit power supply network with the rated operating voltage AC400V/415V (3P/4P), the rated operating voltage AC230V (2P), and the rated operating current up to 630A automatically connect one or several load circuits from one power supply to another power supply, thus guaranteeing the continuity of load power supply.

There are optional "Auto" and "Manual" models for transfer switching equipment. When detecting that the normal power supply works abnormally, ATSE automatically transfers the load from the normal power supply to the backup power supply. When the normal power supply returns to normal, the load will automatically return to the normal power supply in the automatic transfer automatic recover mode.

Standard: This product complies with GB/T 14048.11 "Low-voltage switchgear and controlgear - Part 6-1: Multiple function equipment – Transfer switching equipment".

Recommended applications: Equipment or scenarios with high requirements for uninterruptible power supply and power supply continuity, such as data centers, hospitals, industrial plants, and commercial centers industries.

Qualification certificates: CCC, CE, RoHS.

2 Working Environmental Conditions

- Ambient air temperature: The upper limit of the ambient air temperature is +70°C, the lower limit is -40°C, and the mean temperature within 24 hours does not exceed +35°C;
- Altitude: The altitude of the installation site does not exceed 2000m;
- Atmospheric conditions: The relative humidity of the atmosphere does not exceed 50% when the ambient maximum temperature is +40°C, and a higher relative humidity is allowed at low temperatures, such as up to 90% at +20°C. Special measures should be taken for condensation occasionally caused due to temperature changes;
- Pollution degree: The pollution degree is Level 3;
- EMC electromagnetic compatibility: Class B (common);
- The installation category of the main circuit is Class IV, and of the auxiliary circuit is Class II;
- Installation inclination: The product is fixedly installed in the cabinet, and the maximum inclination is $\pm 22.5^\circ$;
- Flashover distance: The flashover distance is 30mm at AC 400V;
- Transportation, storage and installation conditions: The device shall not be exposed to rain or snow during transportation. The storage environment temperature is ranged -25°C~+70°C, and the relative humidity is not more than 95% (at 25°C) and it can be up to +70°C in a short time (no more than 24h);
- When the altitude exceeds 2000m, please refer to the derating factor table.

Note: If the working environment does not meet the above conditions, please contact the manufacturer.

TGQ3L Series Automatic Transfer Switch

3 Type Designation

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①	②	③	④	⑤	⑥	⑦	⑧	⑨	⑩	⑪	⑫	⑬	
①	Enterprise code												
②	Automatic transfer switching equipment												
③	Design code												
④	Excitation drive												
⑤	Frame current		125, 250, 400, 630										
⑥	Working position		II means two-segment type; III means three-segment type										
⑦	Number of poles		2-2P (125 frame); 3-3P; 4-4P										
⑧	Structure form		Y – Integrated type; by default – Split type (the default wiring length is 2.0mm for split controller, and please contact our company in advance for any special requirements.										
⑨	Controller type		C type controller										
⑩	Controller working mode		By default: Grid – grid F – Grid – generator										
⑪	Transfer mode		R: Automatic transfer automatic recover; S: Automatic transfer non-automatic recover										
⑫	Communication function		T: With communicaiton; By default: No communciaiton										
⑬	Rated current		125: (16~125) A 250: (125~250) A 400: (250~400) A 630: (400~630) A See the attached table 1										

Note: The integrated controller adopts the LED digital display, and the split controller adopts the LCD display.

TGQ3L Series Automatic Transfer Switch

4 Technical Parameters

Table 1

Frame size	125		250		400		630	
Rated current I _e (A)	16, 20, 25, 32, 40, 50, 63, 80, 100, 125		125, 140, 160, 180, 200, 225, 250		250, 315, 350, 400		400, 500, 630	
Work position (II: Two-segment type; III: Three-segment type)	II	III	II	III	II	III	II	III
Closing coil current A (AC230V)	/	8	/	8.5	/	8	/	8
Opening coil current A (AC230V)	14	14	18	18	18	18	18	18
Transfer time (ms) ± 30ms	80	80	90	90	120	120	120	120
Return time (ms) ± 30ms	90	90	95	95	130	130	130	130
Contact transfer time (ms) ± 10ms	20	20	20	20	20	20	20	20
Nominal diameter of thread (mm)	M6		M8		M10			
Scew tightening torque N.m	10		12		28			
Use category	AC-33A				AC-33A(≤400A); AC-33iA/AC-33B(>500A)			
Rated operating voltage	AC230V/AC400V/AC415V/50/60Hz				AC400V/AC415V/50/60Hz			
Number of poles P	125 frame 2/3/4; 250 frame 3/4				3/4			
Rated insulation voltage U _i	800V							
Rated impulse withstand voltage U _{imp}	8kV							
Electrical level	Special PC level							
Wiring method	Front-panel / screw tightening							
Rated limit short circuit current (I _q , kA)	120							
Electrical life	6000							
Mechanical life	20000*							
Controller type (C: intelligent type)	C							
Operation method	Manual/Auto/Operation via controller panel / Remote operation (with communication products)							
Delay time range (s)	0-180s (C); Delay accuracy ±0.01s							
Power voltage deviation range V	C (Undervoltage): 161~197 adjustable ±10%; C (Overvoltage): 242~301 adjustable ±10%							
Normal working range	85%Us~110%Us							
Special requirements	No (normal insallation)							
The product is suitable for isolation or not	Yes							
Switch position	II-segment type: Source I, Source II; III-segment type: Source I, power-off O Source II							

* means maintainable

TGQ3L Series Automatic Transfer Switch

5 Outline and Installation Dimensions

Unit: mm

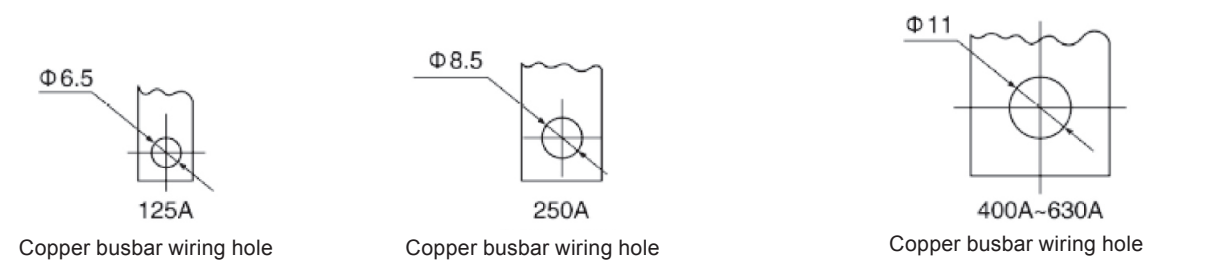
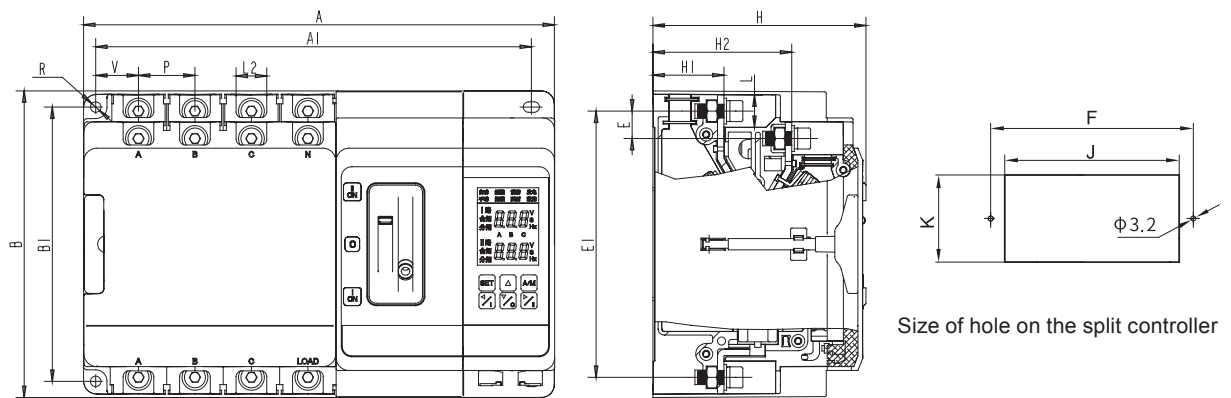


Table 2

Spec.		Outline dimensions (mm)			Installation dimensions (mm)											Size of hole for split type (mm)		
In	Number of poles	A	B	H	A1	B1	H	H2	E1	E	R	V	P	L	L2	F	J	K
125	4P	238	140	117	220	125	34	6835	124	15.5	4.5	20.5	25	17.5	18	127	112	56
	3P	213			195													
	2P	188			170													
250	4P	292	190	135	270	170	44	86	165	17	6.5	26.5	35	20	26			
	3P	257			235													
400/630	4P	375	285	199	345	252	56	106	250	27	11	40	45	33	37			
	3P	330			300													

TGQ3L Series Automatic Transfer Switch

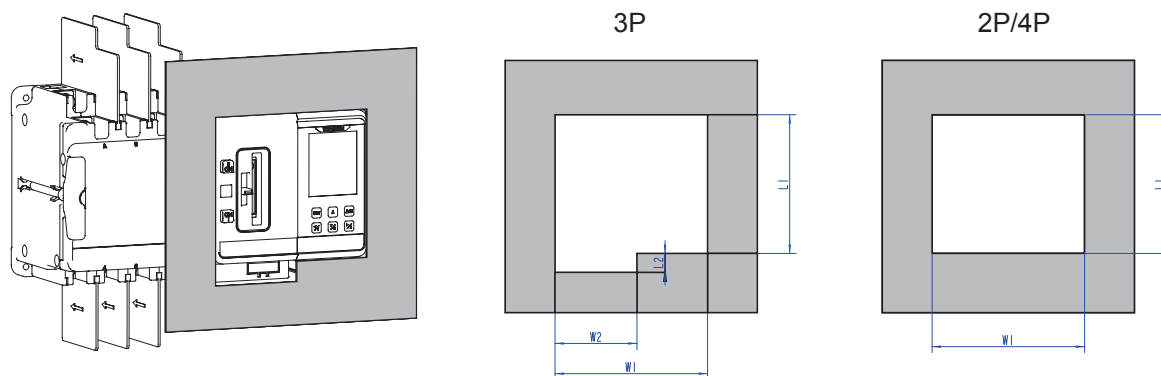


Fig. 1 Size of hole on the panel

Table 3

Frame size	Panel size			
	L1	L2	W1	W2
125A	110	16	121	65
250A	138	16	135	78
400A	200	22	165	108
630A	200	22	165	108

6 Controller Functions

6.1 Key parameters of controller

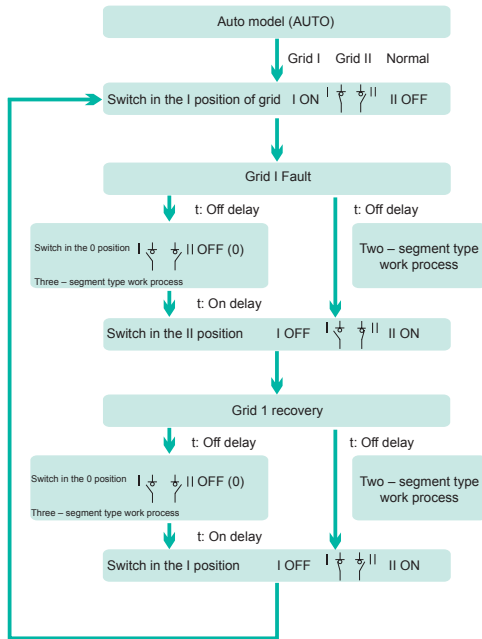
Table 4

Controller model	C type
Control working power	AC230V 50/60Hz
Working position	II and III
Operation method	Auto operation, manual operation, operation via panel, remote operation, communication remote control
Transfer mode	Automatic transfer automatic recover / Automatic transfer non-automatic recover
Display mode	LED (Integrated type), LCD (Split type)
Monitoring I power source	Voltage loss, overvoltage, phase loss monitoring (A, B, and C phases)
Monitoring II power source	Voltage loss, overvoltage, phase loss monitoring (A, B, and C phases)
Generator control	Yes (one set of dry contacts of the relay)
Fire linkage control	Cut off non-fire fight power (input of one set of passive contact signals, and output of one set of normally open passive signals)
Power overfrequency and underfrequency detection	Detection range: 40Hz~60Hz
Timed start function	Timed transfer, timed start of generators
Transfer delay adjustable (s)	0 ~ 180s continuously adjustable
Return delay adjustable (s)	0 ~ 180s continuously adjustable
Undervoltage setting adjustable (V)	Adjustable range: 161~197 ± 10%, Factory default: 187
Overvoltage setting adjustable (V)	Adjustable range: 242~301 ± 10%, Factory default: 263
Mutually reserved	Source I priority by default, priority adjustable
Communication function	Modbus-RTU, Transfer mode RS-485
Installation method	Integrated / Split type (the split display provided based on the integrated type for the split type)

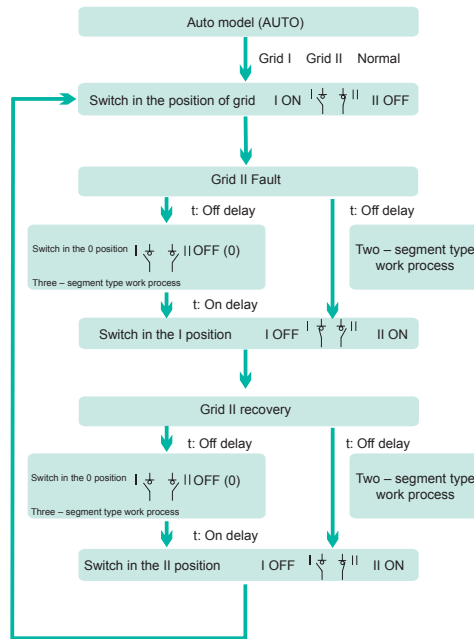
TGQ3L Series Automatic Transfer Switch

6.2 Work Process

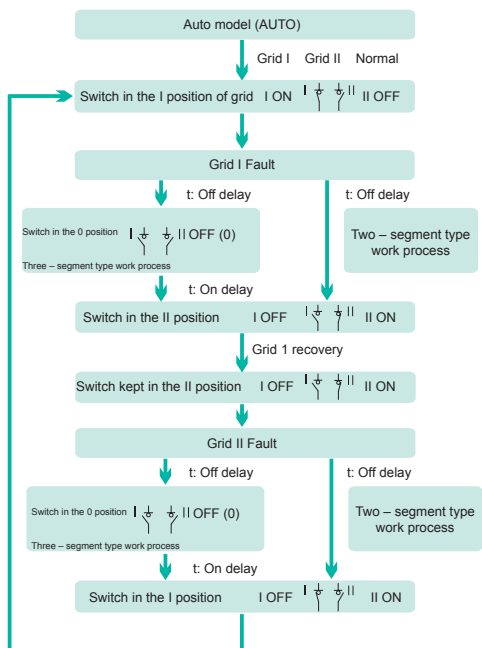
1. Grid – Grid
Transfer mode: Automatic transfer I Power priority automatic recover



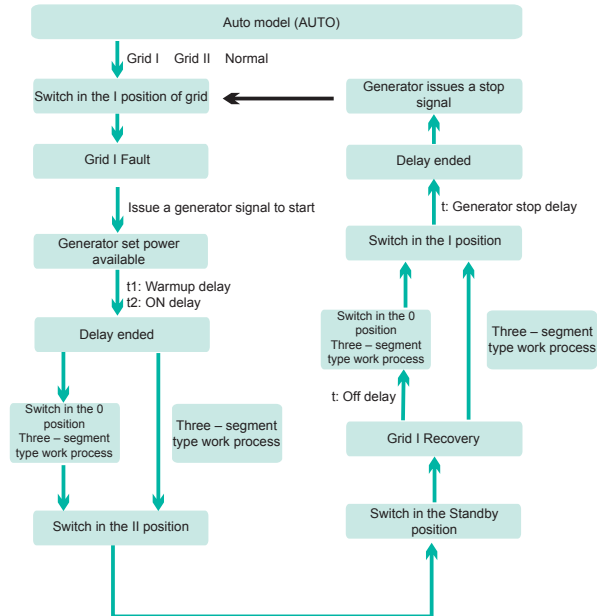
2. Grid – Grid
Transfer mode: Automatic transfer II Power priority automatic recover



3. Grid – Grid
Transfer mode: Automatic transfer Mutually reserved non-automatic recover

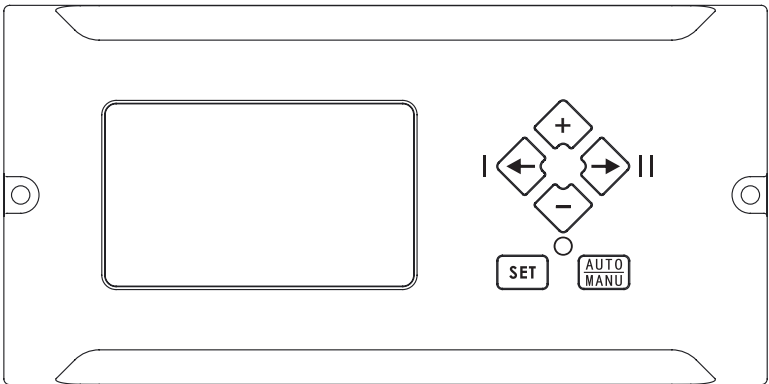
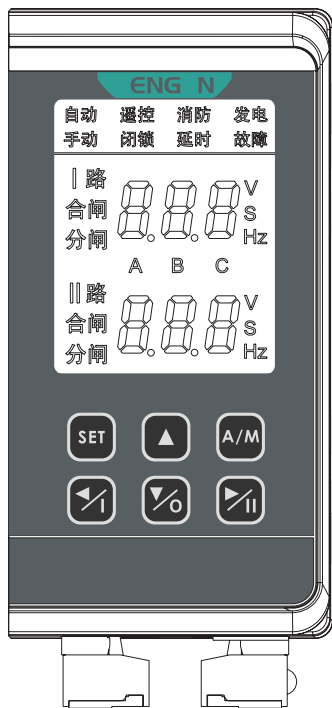


4. Grid – Generator
Transfer mode: Automatic transfer I Power priority automatic recover



TGQ3L Series Automatic Transfer Switch

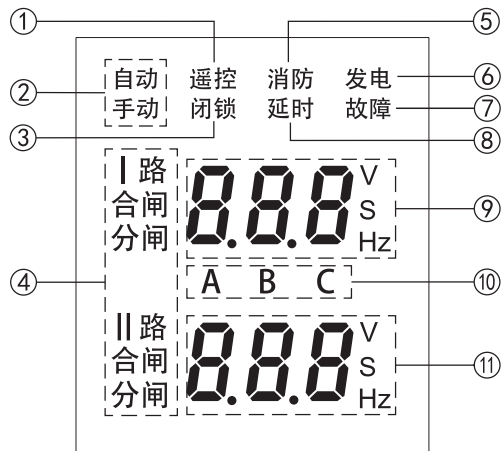
6.3 Description of operation buttons



Integrated / Split

- SET / SET** Set key: To realize function selection settings.
- ▲ / +** Plus key, to increase a parameter value.
- A / M / AUTO / MANU** Manual / Auto key: To switch the Auto / Manual model in the Electric mode.
- ← / I** Left key, left shift option, up menu item, and Source I is turned on in the Manual mode.
- 0 / -** Minus key: To decrease a parameter value and turn the switch to the Neutral position in the Manual mode.
- / II** Right key, right shift option, down menu item, and Source II is turned on in the Manual mode.

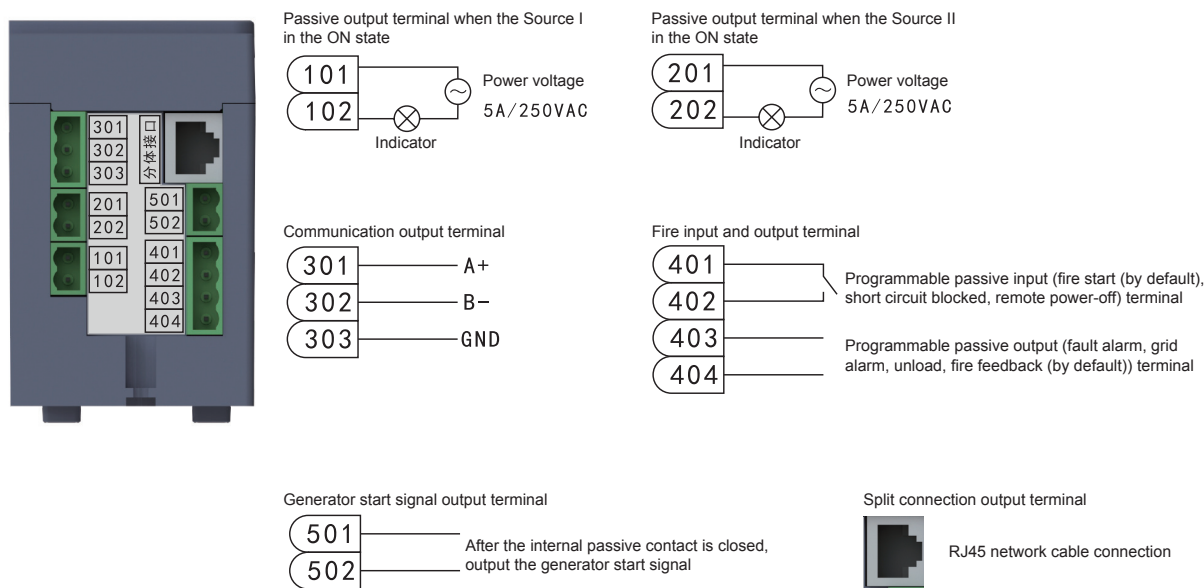
6.4 Definition of display board



- ① The controller is in remote control state, and the Auto / manual mode is invalid.
- ② Auto / manual mode when the operating power source is the internal drive of the switch.
- ③ When the controller is in the Locked state, the controller stops controlling the switch, and at this time, the switch can be operated only via the manual handle and the switch.
- ④ To display the switch OFF/ON status.
- ⑤ Enable the fire protection function.
- ⑥ The function terminal outputs the generator start signal.
- ⑦ Switch is failed.
- ⑧ Protection state when the switch is in the transfer delay or is operated frequently and the transfer delay is prohibited.
- ⑨ Phase voltage of Source I power, transfer delay time, frequency.
- ⑩ Corresponding phase line when the phase voltage of the power supply is displayed.
- ⑪ Phase voltage of Source II power, transfer delay time, frequency

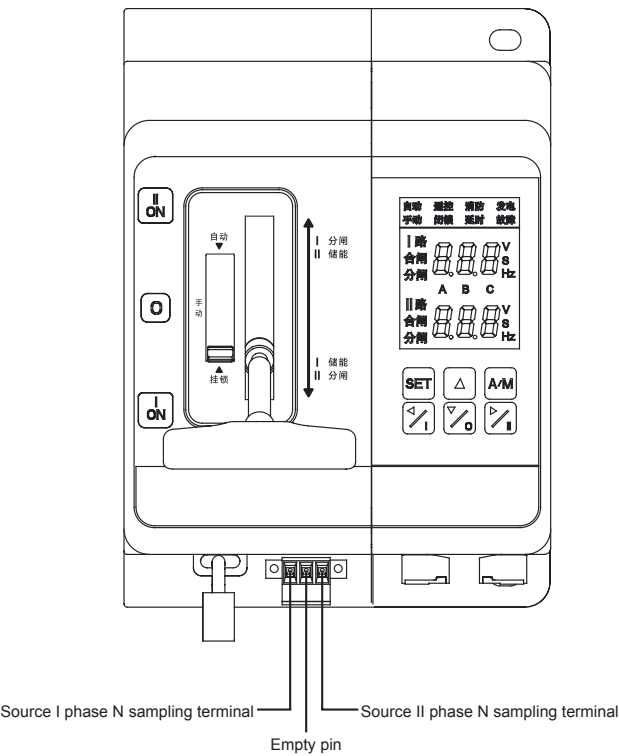
TGQ3L Series Automatic Transfer Switch

6.5 Description of controller terminal



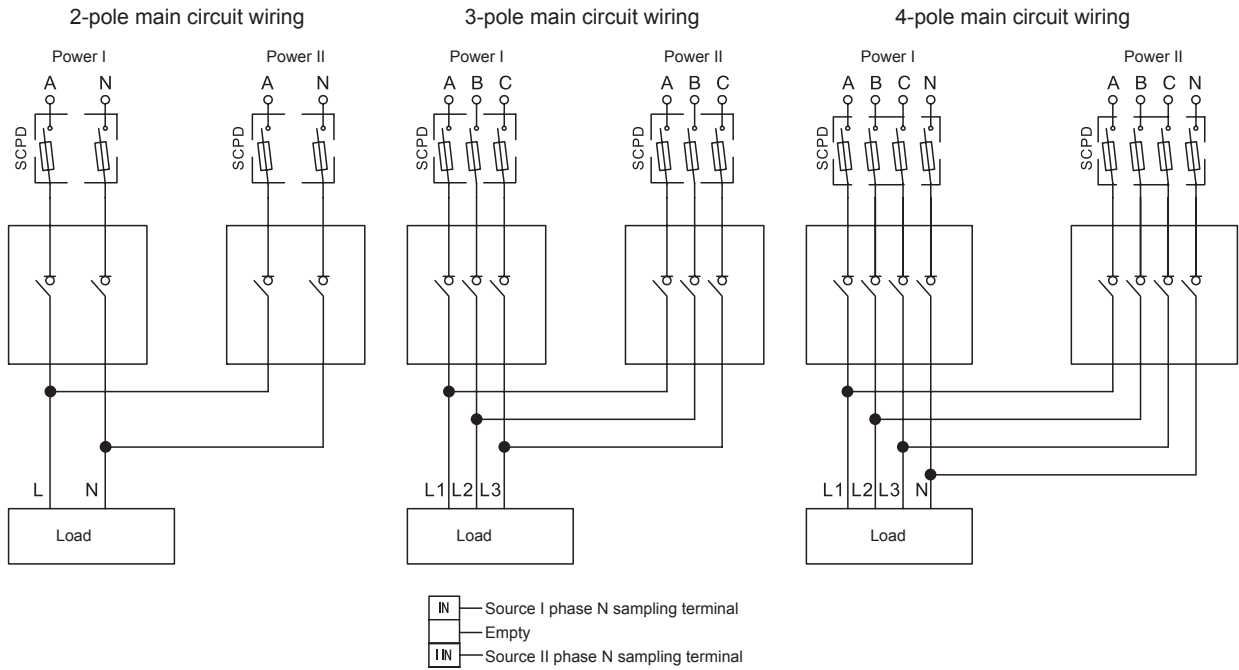
7 Wiring Diagram

7.1 Three-pole N phase terminal wiring description



TGQ3L Series Automatic Transfer Switch

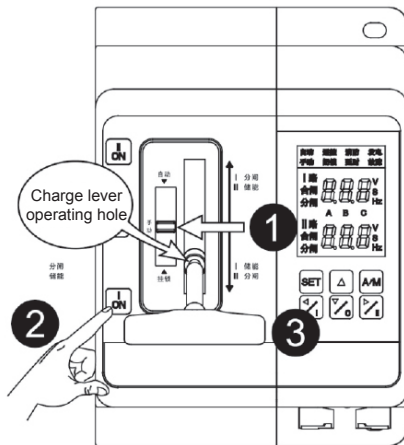
7.2 Main circuit wiring diagram



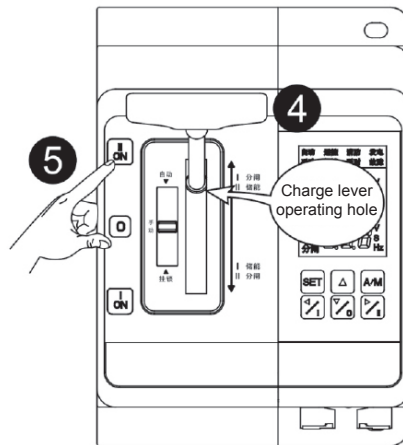
8 Installation, Operation and Maintenance



To manually operate the product, slip the manual slide to the Manual position, turn the switch in the Lock position, and the connected control system stops, as illustrated in Item ①.

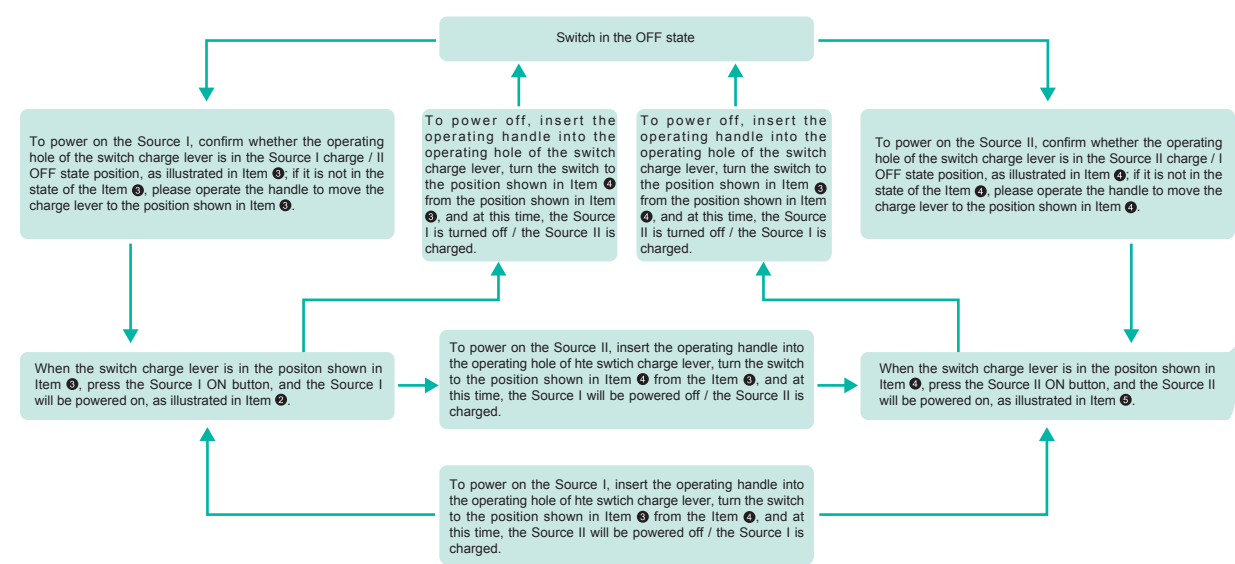


To lock the switch, slip the manual slide to the Lock position, as illustrated in Item ⑦. At this time, it is prohibited to perform any operation of the switch.



Note: The diameter of the lock of the 125 frame is ranged $\phi 1.5 \sim \phi 3$, and of the lock of the 250/400/630 frame is $\phi 2 \sim \phi 4$.

TGQ3L Series Automatic Transfer Switch



9 Derating Factor

Derating factor work table

Table 4

Item	Symbol	Unit	Parameter			
Altitude	H	m	≤2000	≤3000	≤4000	≤5000
Rated operating voltage	Ue	V	400			
Power frequency withstand voltage	/	V	100%	90%	75%	60%
Insulation voltage	Ui	V	100%	90%	80%	60%
Rated current	In	A	1.0In	0.96In	0.93In	0.9In

Note: The high altitude and ambient temperature are also critical factors. In addition to the protection treatment for condensation that may be caused by the temperature difference, frosting must also be considered. Please indicate the high altitude when ordering.

10 Ordering Notice

Please specify the following detailed information when ordering:
Users are required to indicate the necessary information such as product model, current specification, and the number of poles when ordering.
If there are special installation conditions or special location requirements, users should provide corresponding technical information or contact our company for negotiation.
For example: To order automatic transfer switching equipment, frame current 125A, three – segment type, 4-pole, integrated type, C type controller, grid-grid, automatic transfer automatic recover, rated current 100A, 50 sets. It is written as: TGQ3L-125III/4YCR 100A 50 sets.)