

State High-tech Enterprise
State Exemption Products
Shanghai Famous Brand



SQP1 series

Auto-transfer power switch

(Intelligent)



- Conforms to standard of GB/T 14048.11-2002
《Automatic Transfer Switchgear and Equipment》
- PC level of new generation.
- Big switch capacity of main contact up to 6Ie
- Single knife-switch and double-throw structure (Bikini type)
- Intelligent controller, of high ability of anti-interference, of stable operation.
- Of small volume, compact structure, reliable mechanism;
- Switch within 100ms.



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Catalogue

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SQP1 series auto-transfer power switch

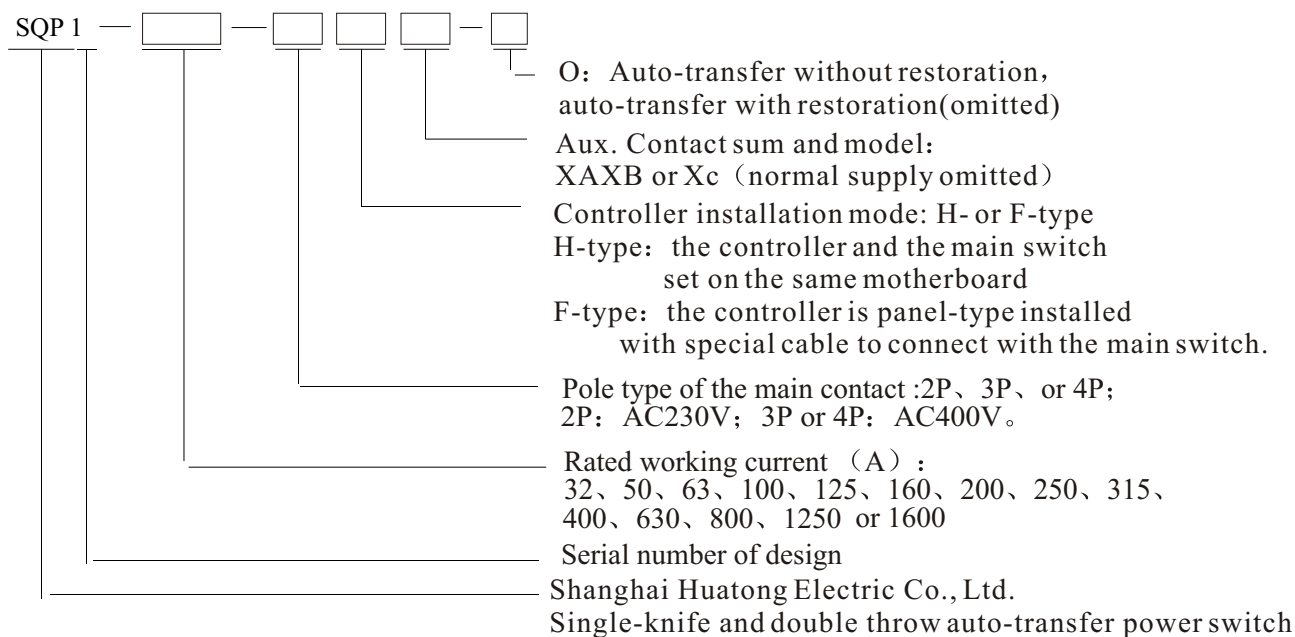
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Application

SQP1 series automatic transfer switch is a new PC-level auto-transfer power switch co-developed by our company and Shanghai Electric Appliance Research Institute with advanced know-how. It is applicable to the circuit of AC 50Hz, rated insulating voltage 690V, rated working voltage 400V and below, rated current from 32A(or below) to 1600A (630A~1600A is in developing), And widely used in high building, hospital, marketplace, bank, fire protection, chemical industry, metallurgy and so on where needs incessant power-supply by auto-transfer the power in the circuits of dual-loop power-supply systems. It conforms to the standards of IEC60947-6-1-1998 《Automatic Transfer Switchgear and Equipments》 and GB/T14048.11-2002 《Automatic Transfer Switchgear and Equipments》 .

Model and Meaning



Example of the Model and Meaning :

Model: SQP1-200-4PF-2A2B

Meaning: SQP1series auto-transfer switch, rated current of frame grade 200A (suitable in the power supply system of load current 200A and below) , four-pole split-units, aux.contact 2-N.O., 2-N.C.

Auxiliary contact

Model	Contact sum and type	
	Normal supply	Special supply
SQP1-32、 50、 63、 100	1C , AC250V/6A	2C , AC250V/6A
SQP1-125、 160、 200	1A1B , AC400V/6A	2A2B , 3A3B AC 400 V/6A
SQP1-250、 315、 400	1A1B , AC400V/6A	2A2B , AC400V/6A
SQP1-630、 800、 1250、 1600	2C , AC250V/15A	

Note 1: *A (*N.O.) 、 *B (*N.C.) 、 *C (transfer) 。

Note 2: 630A above aux. Contact, one 1C isochronous with the main contact, another 1C isochronous with the stand-by main contact.



Main technical parameters

Table1

Model	SQP1-32 SQP1-50 SQP1-63 SQP1-100	SQP1-125 SQP1-160 SQP1-200	SQP1-250 SQP1-315 SQP1-400	SQP1-630 SQP1-800	SQP1-1250 SQP1-1600
Appliance level	PC Level				
Category of utilization	AC-33B				
Rated working voltage	230V (2 Pole) 400V (3 Pole,4 Pole)				
Rated frequency	50Hz				
Under-voltage transfer value	70%Ue				
Under-voltage return-value	80%Ue				
Over-voltage transfer value	120%Ue				
Over-voltage return-value	115%Ue				
Transfer delay-time	0.1s 、 0.5s 、 2.0s 、 5.0s Adjustable, Factory settings value 2.0s				
Return delay-time	5s				
Voltage (U _{LN}) Indication accuracy	2.5 Level				
Rated making /Breaking capacity	600 A	1200 A	2400 A	4800A	9600A
Rated limited short-circuit current(SCPD)	5 KA	10 KA	10 KA	16 KA	20 KA
Electric operation life (Cycle times)	1000	1000	1000	500	500
Mechanical operation life(cycle times)	5000	5000	3000	2500	2500
Transfer motion time	≤100 ms	≤150 ms	≤200ms	≤300ms	≤300ms

Characteristic

- 1) Conforms to standards of GB/T14048.11 《Automatic transfer switchgear and equipment》
- 2) Suitable in the circuit of dual-loop power-supplying systems of net←→net、net←→ generator。
- 3) Of high reliability and adaptability of environment.
- 4) The main contact systems:
The type of 400A and below is single knife-switch and double-throw structure which is self-interlocked and simple to operate in two-ways equipped with a coil. It acts fast without dual-disconnected position. The shortest action time limit is below 100ms. The type of 630A and above is double-knife switch and triple-throw structure which is self-interlocked and operated in two-ways equipped with three coils. The manual operation may have dual-disconnected position to isolate the stand-by power and power in common use with the load at same time. An extra locker can be used on the dual-disconnected position to prevent the mal-operation of the switch.
- 5) The main contact is with big capacity and able to switch with 6 times of rated current
- 6) Sorted by three types of 2-pole, 3-pole, and 4-pole.
- 7) Divided into 2 types of manual-control and auto-control by the working mode.
- 8) Installation mode: integrate-unit or split-units
- 9) SQP1 is attached with N.O. and N.C. accessorial contacts (or with transferring aux. contact), which operate isochronously with the main contact. The accessorial contact can be attached outwards to an indicator light to indicate the place of the main contact, and can be used to load or unload the subordinate burden, and to send message of the switch position to a computer through transmissible appliances.
- 10) Easy and convenient to be used without setting the working parameters for it is auto-control by an embedded-SCM. The delay-time conversion is adjustable if necessary.
- 11). It can monitor lively both the stand-by power and the power in common use, and indicates the results on the monitoring display.
- 12). Set up with indicator light on display panel to indicate the switch position of the stand-by power or power in common use.
- 13). It displays lively the data of various phase and power voltage automatically by turns through an embedded digital voltage-meter.

Normal working condition and installation condition

- Normal working condition:
 - 1) Ambient temperature within : $-25^{\circ}\text{C}\sim+55^{\circ}\text{C}$;
 - 2) The elevation of installation not over 2000m .
 - 3) Pollution grade :3
 - 4) Installation type:III
 - 5) Category of utilization of main circuit is AC-33B (6Ie) , motor load or mixed load.
- Wiring mode and installation: SQP1 series 400A and below is front-board type wiring; 630A and above is rear-board wiring.
The main body installed by either vertically or horizontally in the cabinet. Split-type controller is panel installed with special cable to connect with the main body (the main switch), the cable is 1.8m, if different please note at order.

Overall and mounting dimensions

The overall of SQP1-32、50、63、100、125、160、200 see figure 1 and 2; SQP1-250、315、400 see figure 3 and 4. SQP1-630、800、1250、1600 see figure 5 and 6. all types of overall and mounting dimensions see table 2, the dimensions of controller see figure 2, the overall and mounting dimensions of the integrate type is identical to the split type, the specs of split type controller and the cable for connection is general for use..

Table 2

Rated current	Pole type	Overall dimensions (L)×(W)×(H)	Mounting dimensions (L1)×(W1)	Mounting hole
32 A、50A 63A、100A	4P、3P	270×240×140	230×220	9 × 20
	2P	230×240×140	190×220	
125A、160A、 200A	4P、3P	300×300×150	260×280	φ 9
	2P	250×300×150	210×280	
250A、315A 400A	4P、3P、2P	300×305×175	275×280	φ 9
630A、800A	3P	425×390×185	395×360	φ 11
	4P	490×390×185	425×360	
1250A、1600A	3P	515×390×185	485×360	φ 11
	4P	610×390×185	580×360	

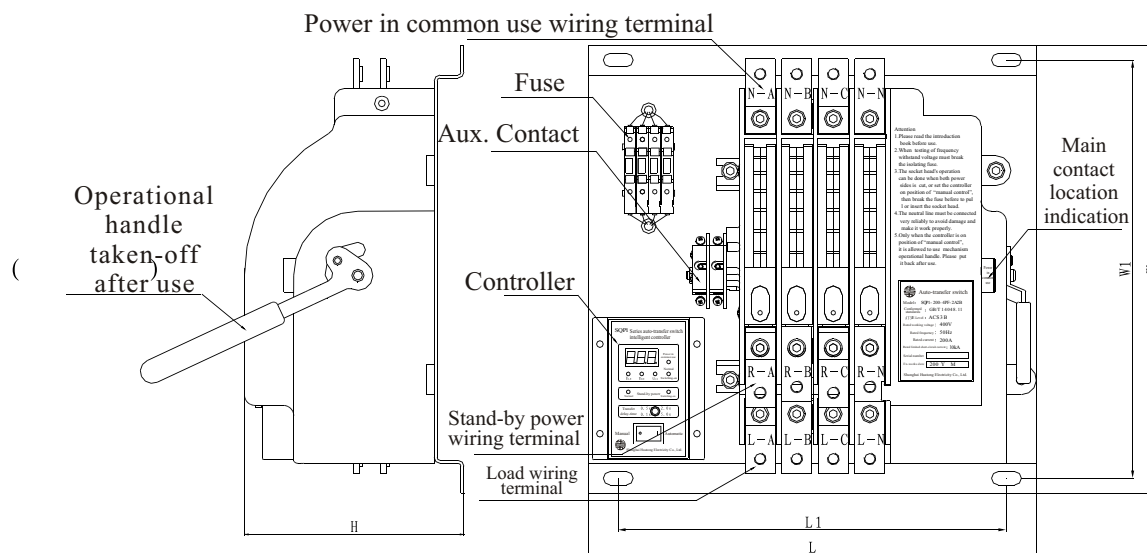


Figure 1: integrate type (SQP1-32、50、63、100、125、160、200)

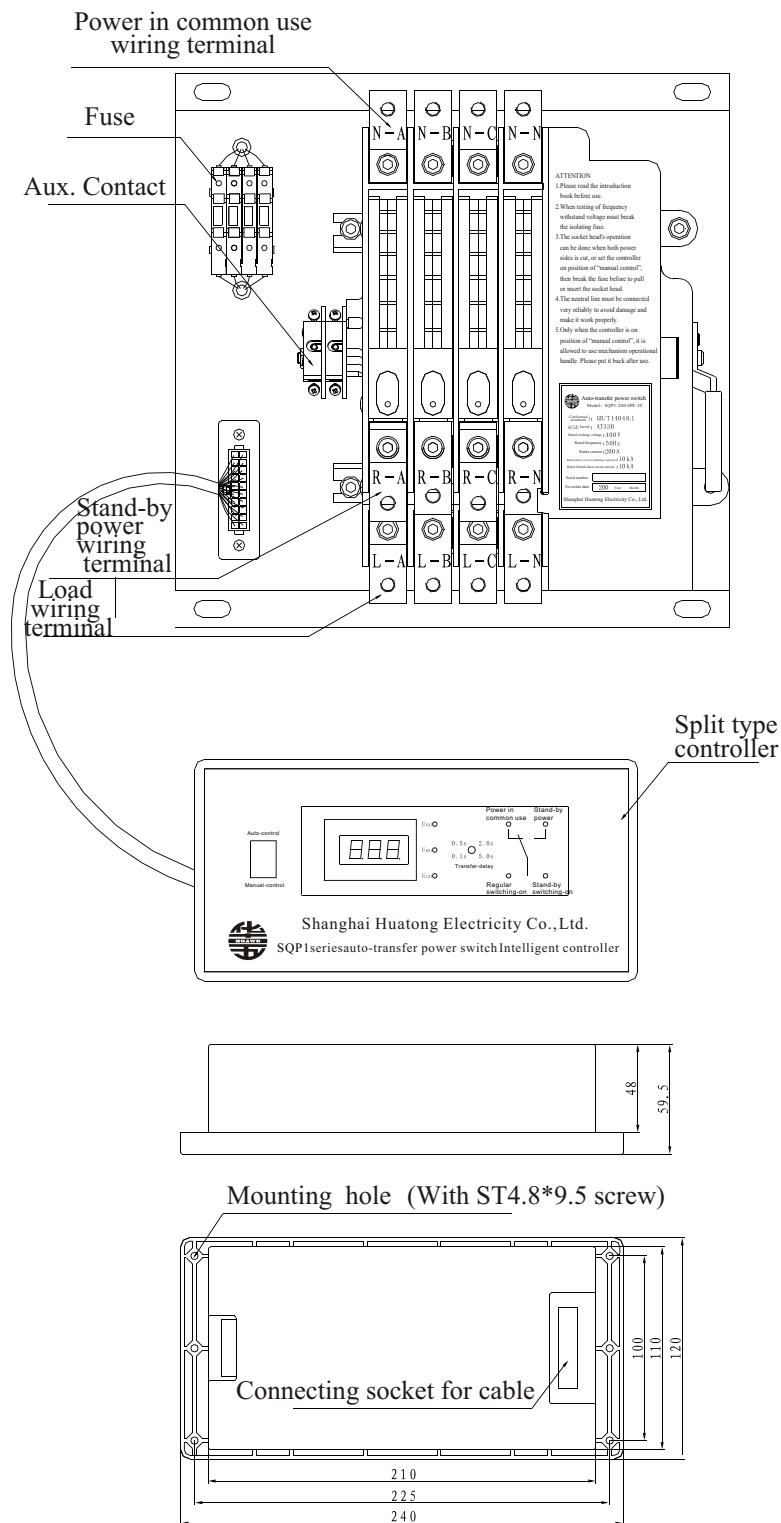


Figure 2 split-units type (SQP1-32、50、63、100、125、160、200)

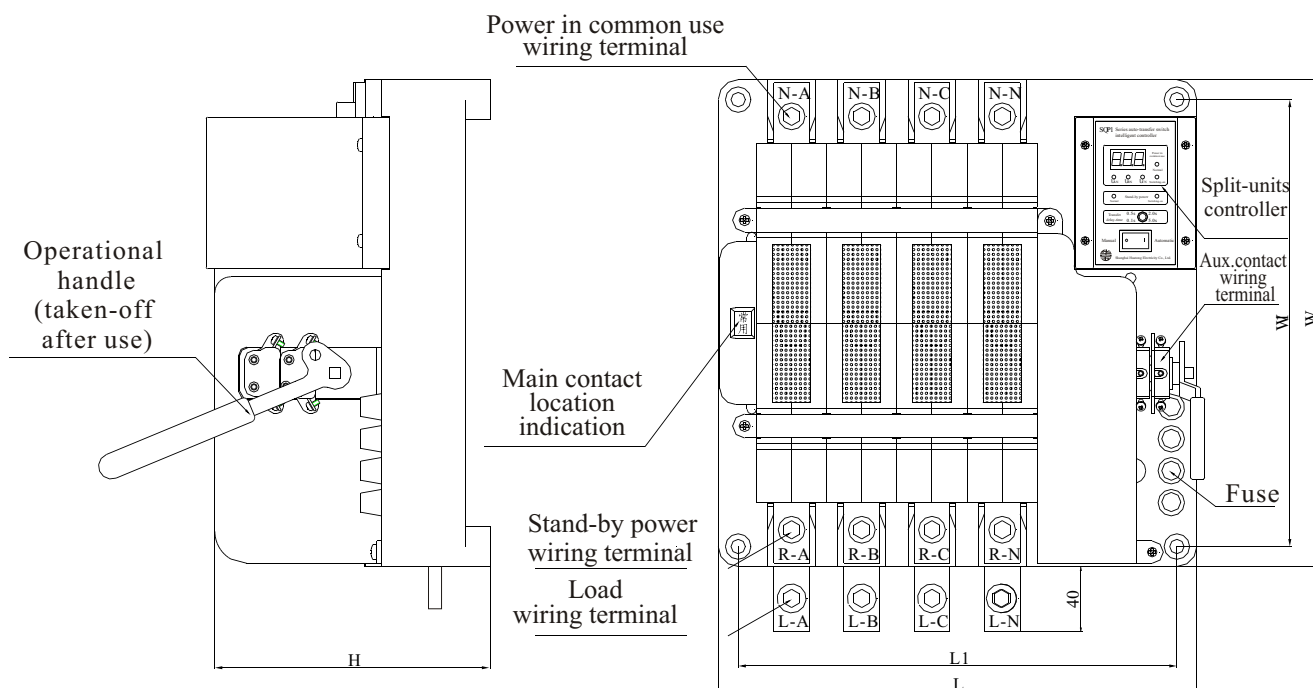


Figure3 Integrate type (SQP1-250, 315, 400)

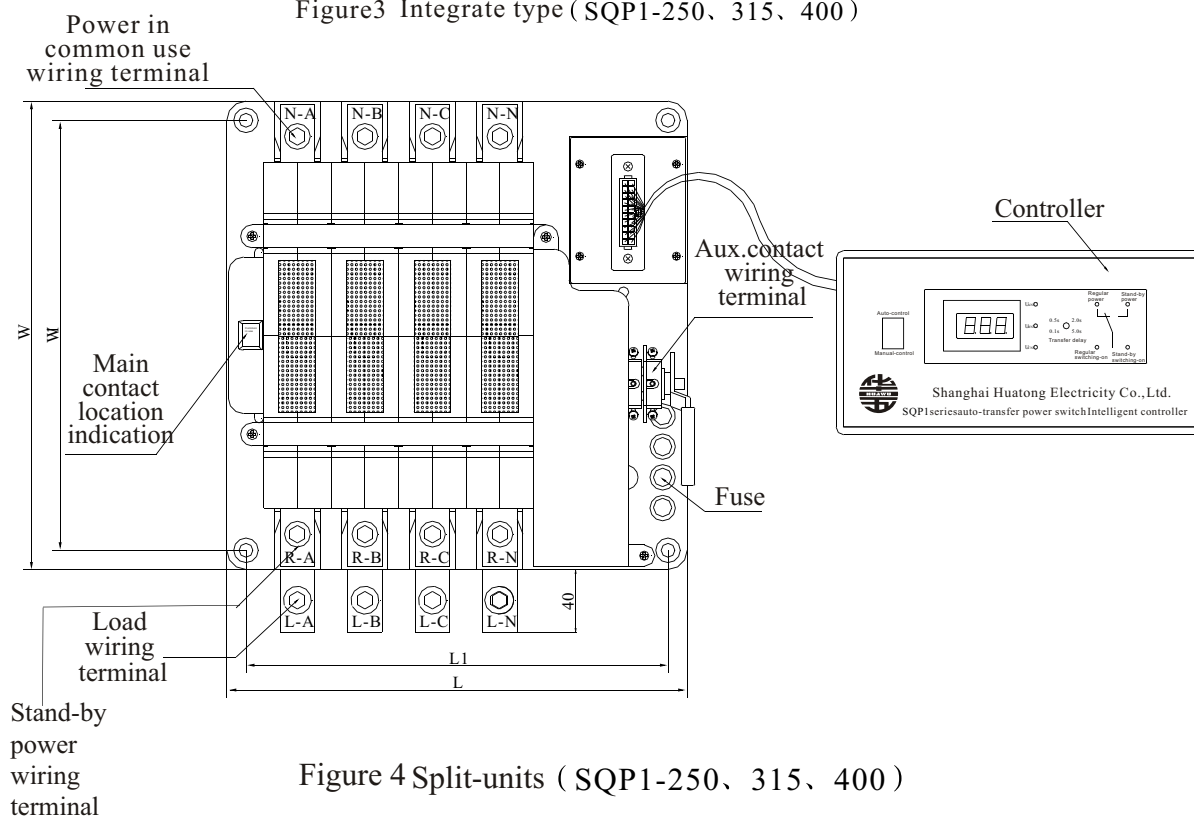


Figure 4 Split-units (SQP1-250, 315, 400)

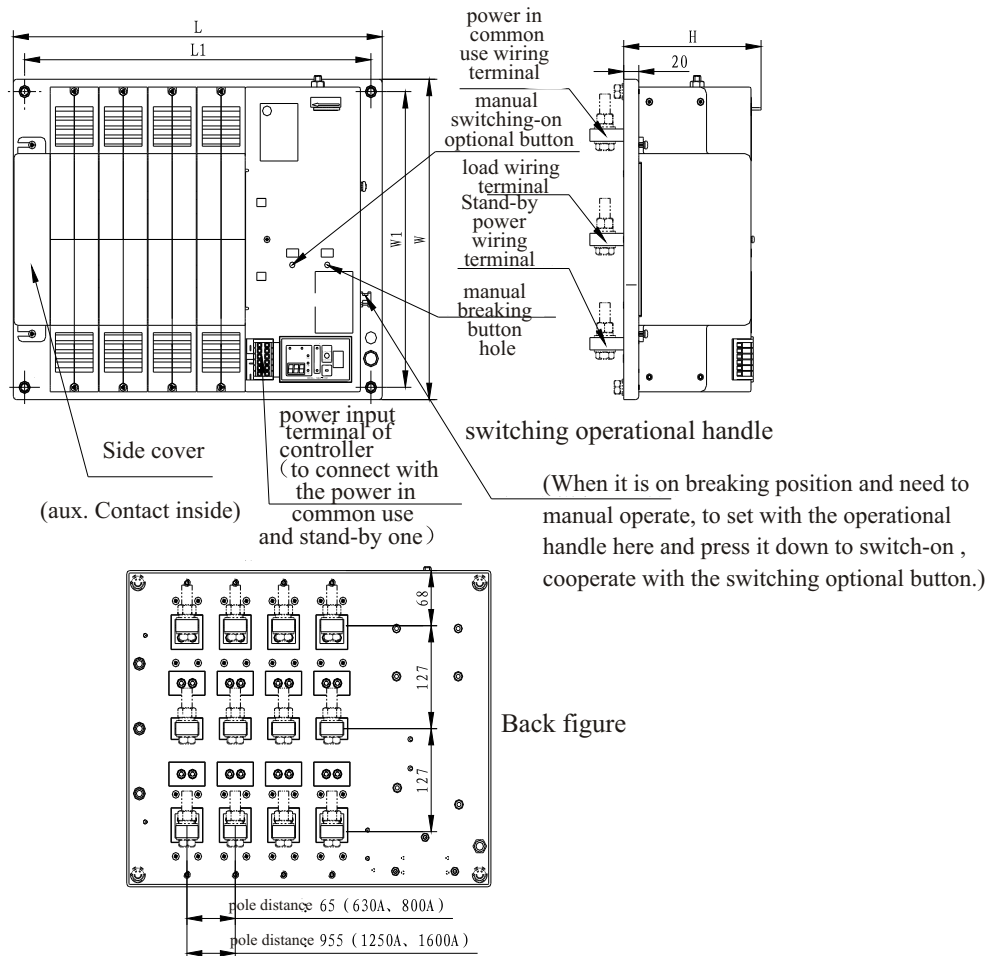


Figure 5 Integrate-type(SQP1-630、800、1250、1600)

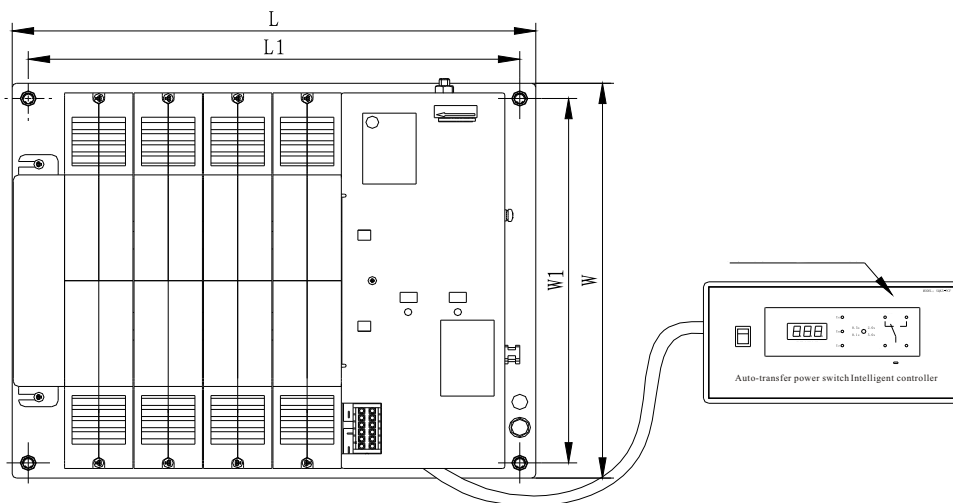


Figure 6 split-types (ZQP1-630、800、1250、1600)



Installation

- A) The integrate type ATSE can be directly installed in the power control cabinet (box) ; While the main body of split-type ATSE fixed with bolts is installed in the cabinet (box), The intelligent controller is fixed in the opening panel by 4 (or 2 or 6) ST4.8 screws, with special cable to connect with the main body. Pay attention to the connector at the ends of cable that it must be inserted and fastened tightly.
- B) The wiring can be started after the ATSE installation finished. According to the ATSE rated current value to select suitable wire to connect the power in common use with its corresponding side (upper connection) , stand-by power with its corresponding side (bottom connection up-row), load to its corresponding side (bottom connection down-row),. Meanwhile, pay attention to the phase sequence of them (By A, B, C, N sequence connection). To the three-pole ATSE, it must be attached to a wire (the sectional area not less than 0.75 mm^2) to connect those (Neutral line N) between the power and the ATSE main body. The N-line must be connected well without mistake to assure the ATSE working properly. To four-pole breaker, the N-pole of the power in common use and stand-by one must be connected properly with the one of ATSE. To those ATSE of 630A and above, users need to connect with another power for sampling (the cross-area of the wire not less than 0.75 mm^2 . See page 8). Before electrifying it, the correct wiring must be confirmed.

Utilization

1) For normal use, the controller switch should be on position of “Automatic control”
For “Automatic control” working mode, ATSE intelligent controller monitors the power in common use and the stand-by one at same time and indicates ATSE running status. When there are faults of power-cut, under-voltage, over-voltage, phase-shortage occurring, ATSE will automatically switch over the power in common use to the stand-by one after “transferring-delay” time; If the power in common use recover well, it will automatically turns back from the later one to the previous one after “return delay” time (5s). (However, the auto-transfer without restoration type of ATSE, at the same situation, even the power in common use recovers normal, if the stand-by one is normal, it will remain the connection between the load and stand-by power, no restoration back to power in common use , except the stand-by one runs into abnormal , then it will automatically restore back to power in common use) . There set with LED indicator on the control panel to indicate the situation of the switch and power, and indicate the voltages of phases of the power in common use in turn. There is a “transferring delay” adjustable hole on the controller. Users can change ATSE transferring delay time according to the practical needs. (the factory setting is 2s). The shorter time of “transferring delay” is beneficial to minus general motion time, while the longer time of it is beneficial to avoid the status of short-time under-voltage, voltage-loss occurring in the equipment activation or network interference. For example, when the load of motor (Large fans, pump, lift) is activated, or dozens of computers are activated at same time, it may occur short-time under-voltage; When the lightning happens, the high-voltage breaker may re-switch-on automatically after break, it may occur shot-time power-cut and so on.

2) It should be set on position of “Manual control” when the automatic function of transferring is unnecessary or need other manual operation. Under the working mode of “manual control”, the breaker stops working without restoration and the ATSE main contact keeps former status whatever the power situation is. Using the manual operational handle can force the load to connect with the power in common use or stand-by one. When using the manual operational handle, since the main contact transfer speed will be affected by manual operation somehow (automatic transfer no this problem), users would better manual operate it with light load or un-load quickly! And after use must keep it back to the designated location.

3) When ATSE setting from “manual control” to “automatic control” and both the power in common use and the stand-by one are normal, both the types of auto-transfer without restoration and the one of auto-transfer with restoration of ATSE will connect the load in priority with the power in common use. (Even the load was connected with the stand-by one before)

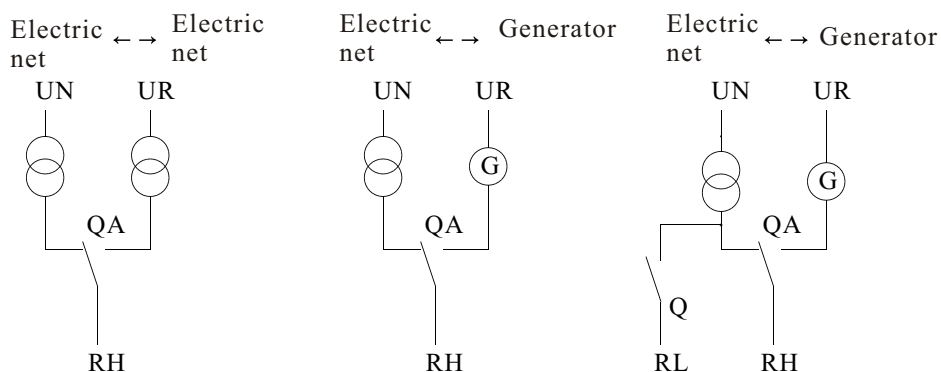
Important Notes

Users must follow the related rules and pay attention to the items below when having those operations so as to properly use our products of ATSE.

- 1) The neutral line-N must be wired correctly and reliably, otherwise ATSE won't work normally, even the controller and motor will be damaged.
- 2) The protective grounding of main body of ATSE must be reliable to assure safety.
- 3) During the test of frequency of voltage withstand, all the fuse combination of ATSE must be break
- 4) It is forbidden to manual operate the manual operational handle when the ATSE's working mode is on position of “Automatic control” unless it is on position of “Manual control”. To operate manual handle, set the right position and operated it quickly with unload or light load so as to minus the affection for the main contact by the manual operation speed
- 5) It is strictly forbidden to pull or insert the socket head between the controller which is in power-on and motherboard when ATSE is electrified from the power supplying system so as to avoid accidents. The action can be taken when the power in common use and the stand-by one of ATSE are power-cut, However if it is a must to do as mentioned above, the working mode should be set on position of “manual control”, then break the fuse before insert or pull the socket head with much attention.



Graphic symbols and application of design:



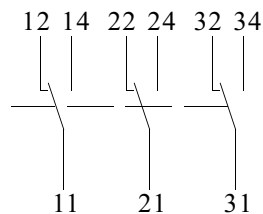
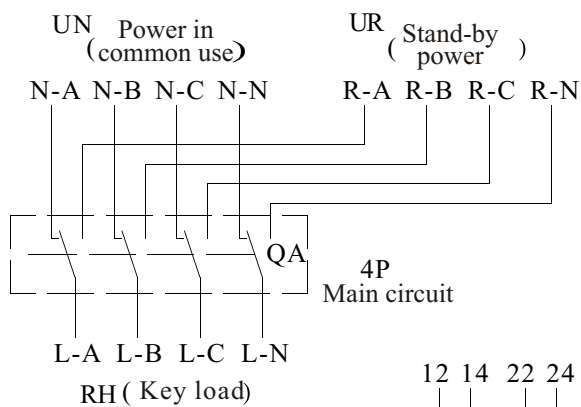
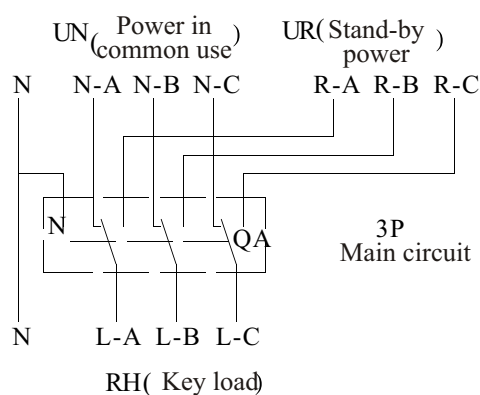
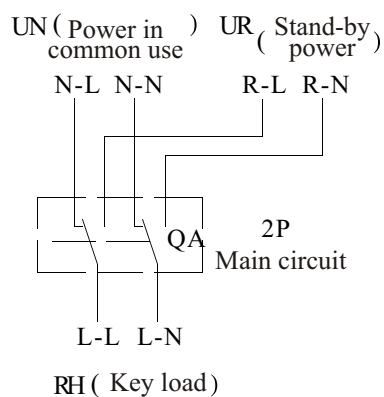
QA: Auto-transfer switch , SQP1 - XXX .

UN: Power in ,
common use

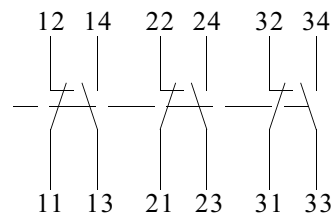
UR: Stand-by,
power

RH: Key load ,

RL: Subordinate load



Aux.contact



Aux.contact

(*C, Transfer type contact) (*A*B, N.O. N.C. type contact)

The electric wiring of main body

The wiring factory settings of switch's main body is as follows.
Just for reference of maintenance or understanding the theory.

