

State High-tech Enterprise
State exemption Products
Shanghai Famous Brand



SQ40 Series

Auto-transfer power switch



- ◎ Conforms to standards of GB/T14048.11 《Automatic transfer switch 》
- ◎ Applicable to the dual-loop power-supplying system of Electric networks $\leftarrow \rightarrow$ Electric networks;
Electric networks $\leftarrow \rightarrow$ Generator.
- ◎ Of high reliability and adaptability of environment.
- ◎ With auto-control or manual-control working mode.



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Catalogue

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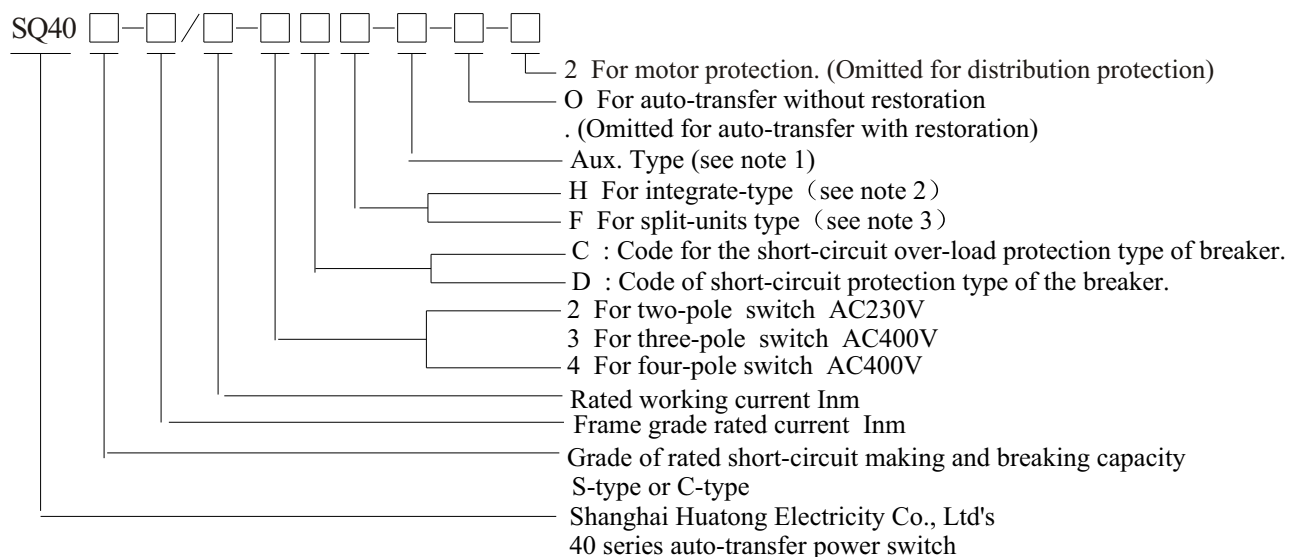


➤ Outline

SQ40 series Automatic transfer switch (“ATSE” in short hereinafter) is mainly consisted of two SM40 series circuit breaker with high breaking capacity , intelligent controller, and single motor operational mechanism which is in machinery and electric double-interlocking and is of high reliability developed by ourselves. It is applicable to be used in high building, hospital, marketplace, bank, fire protection, chemical industry, metallurgy and so on where needs incessant power-supply to realize auto-transferring power in the dual-circuits of the systems stably.

We also specially provide an irregular “Auto-transfer without restoration” type of it which also conforms to standards of IEC60947-6-1-1998 and GB/T 14048.11-2002.

➤ Model and meaning



Note 1: 2A2S2 With 1 pair of N.O. aux. Contact and 1 pair of AC230V shunt-release (2A2S4): release (AC400V shunt-release);

4C: With 2 pair of transferring type of aux. Contact

No code: With 1 pair of transferring type of aux. Contact (Normal supply)

Note 2: Integrate-type means the controller and the main body are assembled on a same Motherboard.

Note 3: Split-units type means the controller is isolated with the main body, but they are connected with each other by a connector through special cable.

➤ Characteristic

- 1) Conforms to standards of GB/T14048.11 《Automatic transfer switch》
- 2) Applicable to the dual-loop power-supplying system of Electric networks ← → Electric networks; Electric networks ← → Generator.
- 3) Of high reliability and adaptability of environment.
- 4) Divided into 2 types of manual-control and auto-control by the working mode. Manual-control is set with dual-disconnecting position to isolate the load with stand-by power and power in common use, or to make the load to switch-on with any one of them; Auto-control is without manual operation.



- 5) It can be attached with an aux. contact which operates isochronously with the main one or with the shunt-release. The aux. contact can be attached outwards to an indicator light to indicate the position of the main contact, and can be used to load or unload the subordinate burden, or to send signals of the switch position to a computer through transmissible appliances, while the shunt-release is for fire emergency breaking.
- 6) Easy and convenient to be use without setting the working parameters since it is auto-control by an embedded-SCM. The delay-time conversion is adjustable if necessary.
- 7) It can monitor lively both the stand-by power and the power in common use, and indicates the results on the monitoring display.
- 8) Set up with indicator light on display panel to indicate the switch operational state.
- 9) 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.

- 1) Ambient temperature within -5°C - $+40^{\circ}\text{C}$.
- 2) The elevation at installation place not over 2000m.
- 3) Pollution grade 3.
- 4) Installation mode is III.
- 5) The category of utilization of the main circuit is AC-33B, with motor load or mixed load.
- 6) Installation condition: it can be installed either vertically or horizontally. The split-units type controller is panel-installed to connect with the main body (main switch) By special cable in 1.8 m. (Please annotate when order if it is not 1.8m)

➤ Main technical parameters

1. Apparatus grade: CB level
2. Category of utilization: AC-33B
3. Rated working voltage: 400V (3-pole or 4-pole), 230V (2-pole)
4. Rated frequency: 50Hz
5. Under-voltage transferring value: 70% U_e
6. Under-voltage return-value: 80% U_e
7. Over-voltage transferring value: 120% U_e
8. Over-voltage return-value: 115% U_e
9. Transferring delay-time: 0.1s, 0.5s, 2.0s, 5s adjustable, factory settings 2s:
- 10 Return-delay-time: 5s
- 11 Accuracy of voltage indicated: level-2.5
- 12 Rated short-circuit making and breaking capacity: see table 1



 Specification

The specification of SQ40 series ATSE see table 1.

Table 1

Model	Rated current (A)	Executive breaker Model	Rated short-circuit making capacity I _{cm} (kA)		Rated short-circuit breaking capacity I _{cn} (kA)	
			C	S	C	S
SQ40 _S ^C -63	6、10、16、20、25、 32、40、50、63	SM40 _S ^C -63	24	52.5	12	25
SQ40 _S ^C -100	10、16、20、32、40、 50、63、80、100、	SM40 _S ^C -100	52.5	84	25	40
SQ40 _S ^C -160	100、125、140、160	SM40 _S ^C -160				
SQ40 _S ^C -225	100、125、140、160、 180、200、225	SM40 _S ^C -225				
SQ40 _S ^C -400	200、250、315、350、 400	SM40 _S ^C -400	73.5	84	35	40
SQ40 _S ^C -630	400、500、630	SM40 _S ^C -630				
SQ40 _S ^C -800	700、800	SM40 _S ^C -800				
SQ40 _S ^C -1250	800、1000、1250	SM40 _S ^C -1250	68.25	84	32.5	40
SQ40 _S ^C -1600	1400、1600	SM40 _S ^C -1600				



Overall and mounting dimensions

The externality see figure 1 and figure 2, the mounting dimensions see table 2. Both overall and mounting dimensions of integrate type and split-units type are same. The split-units type controller is identical to the specs of the connecting cable.

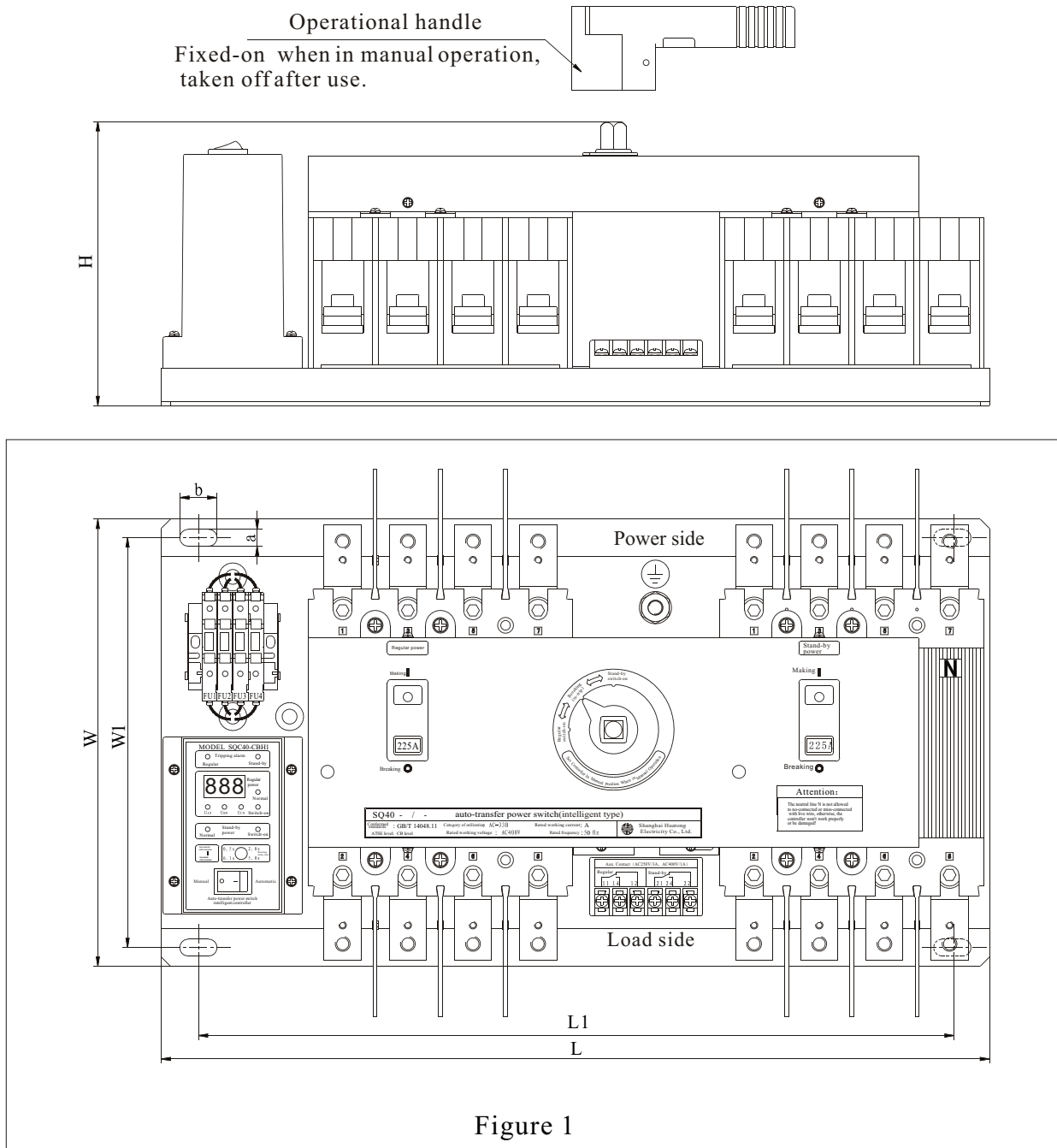


Figure 1

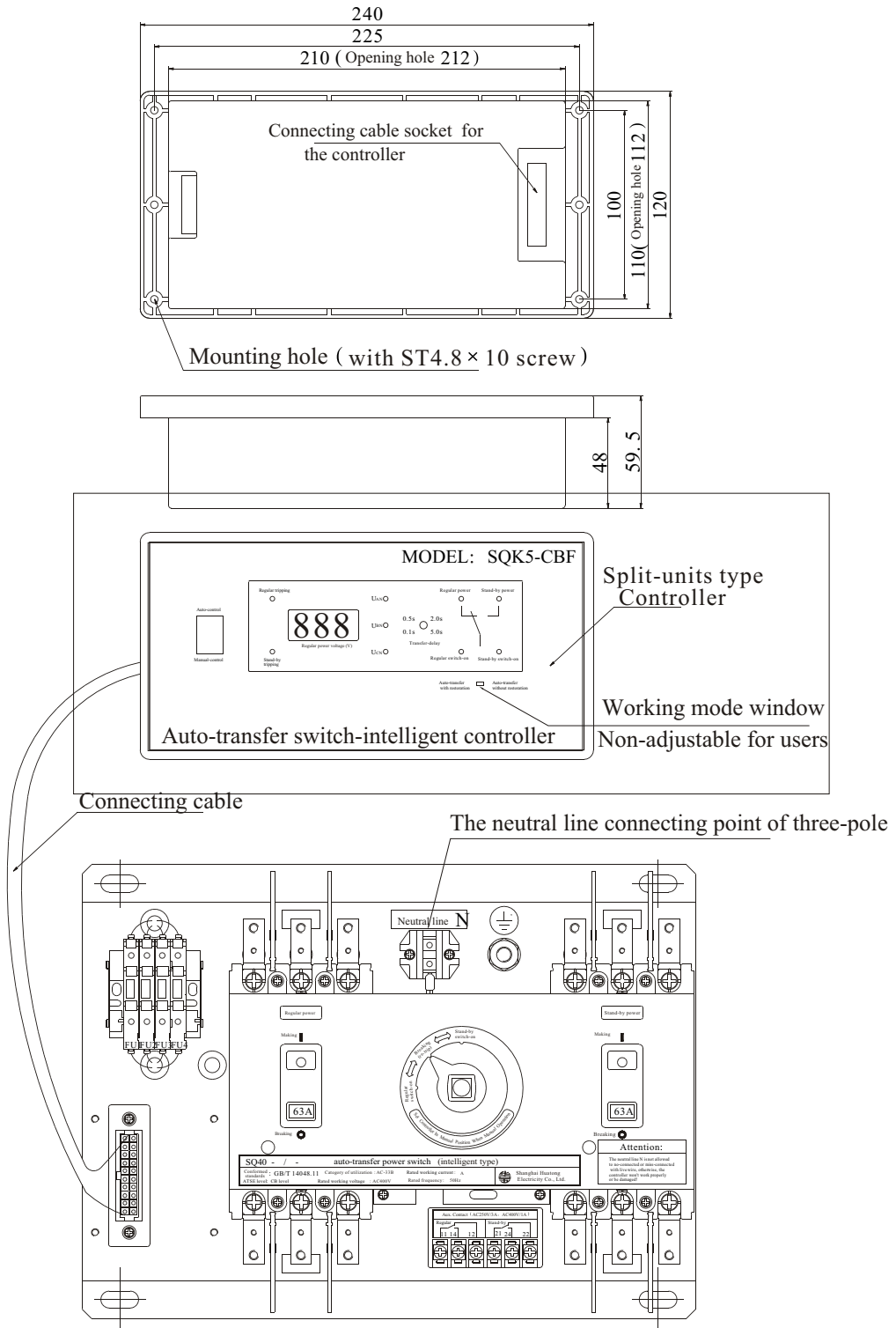


Figure 2



Figure 2

Model	Pole type	Overall dimensions (L)×(W)×(H)	Mounting dimensions (L1)×(W1)	Mounting hole a × b
SQ40 _S ^C -63	3 (2)	325×240×142	285×220	9 × 20
	4	350×240×142	310×220	
SQ40 _S ^C -100	3 (2)	365×240×142	325×220	
	4	395×240×142	355×220	
SQ40 _S ^C -160	3 (2)	410×240×153	370×220	
	4	445×240×153	405×220	
SQ40 _S ^C -225	3 (2)	410×240×153	370×220	
	4	445×240×153	405×220	
SQ40 _S ^C -400	3 (2)	535×330×193	475×300	11 × 20
	4	585×330×193	525×300	
SQ40 _S ^C -630	3 (2)	700×330×212	640×300	
	4	770×330×212	710×300	
SQ40 _S ^C -800	3 (2)	710×330×212	640×300	
	4	770×330×212	710×300	
SQ40 _S ^C -1250	3 (2)	710×390×245	650×360	
SQ40 _S ^C -1600	4	780×390×245	720×360	

Notes: if the auto-transfer power switch is set in the cabinet (box), the "w" in the table accords with the "H", while the "H" accords with the depth.

Installation

A) The integrate type ATSE can be directly installed in the power control cabinet (box) according to its overall dimensions; While the main body of split-type is installed in the cabinet (box), the intelligent controller is fixed in the opening drill 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 (refer to the graphic symbols and the application of design). According to the ATSE rated current value to select suitable wire to connect the power side (upper connection) with the load side (bottom connection) of the power in common use and stand-by one, Meanwhile, pay attention to the phase sequence of them (By A, B, C, N sequence connection). To the three-pole breaker, it must be attached to a wire (the cross-section area not less than 0.75 mm²) to connect those Neutral lines N between the power and the ATSE main-body motherboard. The N-lines 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 breaker. Furthermore there should be reliable grounding for ATSE's installation at its grounding marks' points.

Utilization

1) For normal use, the controller switch should be set on position “Automatic control”.

Under the “Automatic control” working mode, the ATSE 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 is 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 auto-switch-on 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 to re-buckle the breaker or need other manual operation. Under the working mode of “Manual control”, the breaker stops working. Manual operation can make the breaker making or breaking, or re-buckle without automatic switching.

3) When ATSE's load is in short-circuit or over-load, the ATSE breaker will protectively tripping, the indicator light of it will lighten, ATSE won't auto-transfer at the moment. Users should check it in time and after the break-down fixed, turn the breaker on position of “Manual control” with manual operation to re-buckle the breaker, then set the breaker on position of “Automatic control” to re-operate..

4) 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 type 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 properly, 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 voltage withstand frequency test, all the fuse combination of ATSE must be disconnected(400A and above model is small volume breaker), and take off the connector to isolate the breaker and aux. Circuit.
- 4) It is forbidden to manual operate the electric operational mechanism handle when the ATSE's working mode is set on position of "Automatic control".
- 5) It is strictly forbidden to pull or insert the socket head which is in power-on between the breaker 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 combinations(400A and above model is small volume breaker) before insert or pull the socket head with much attention.

The electric wiring of main body

The factory wiring settings figure of the switch's main body is as follows. The electric wiring graph is used only for maintenance or understanding the switch's working principle.

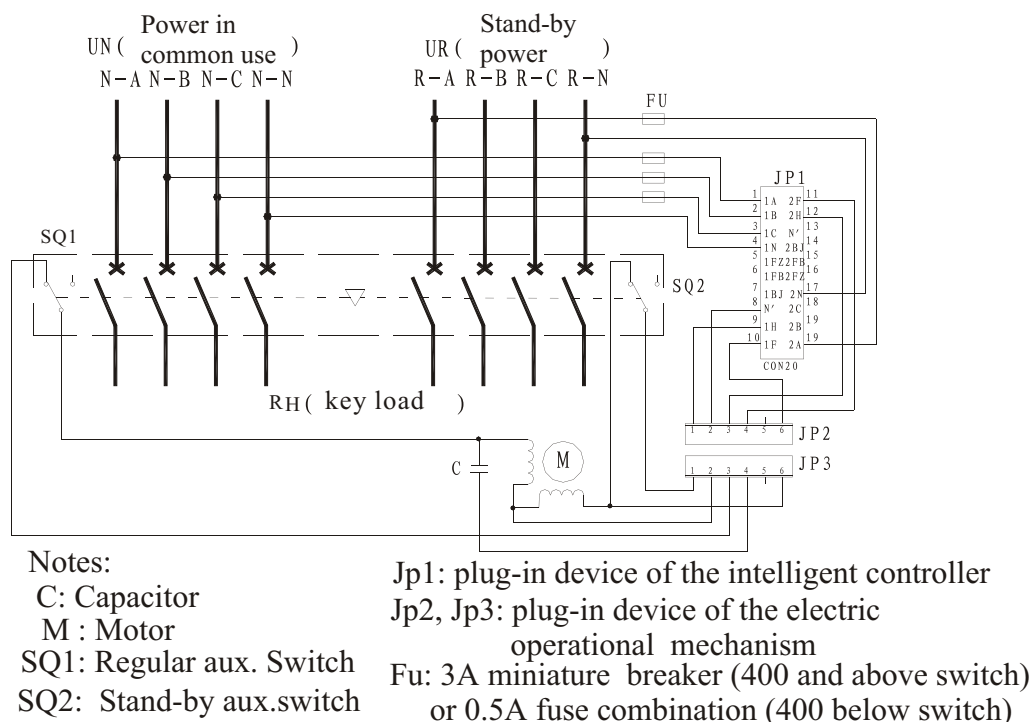
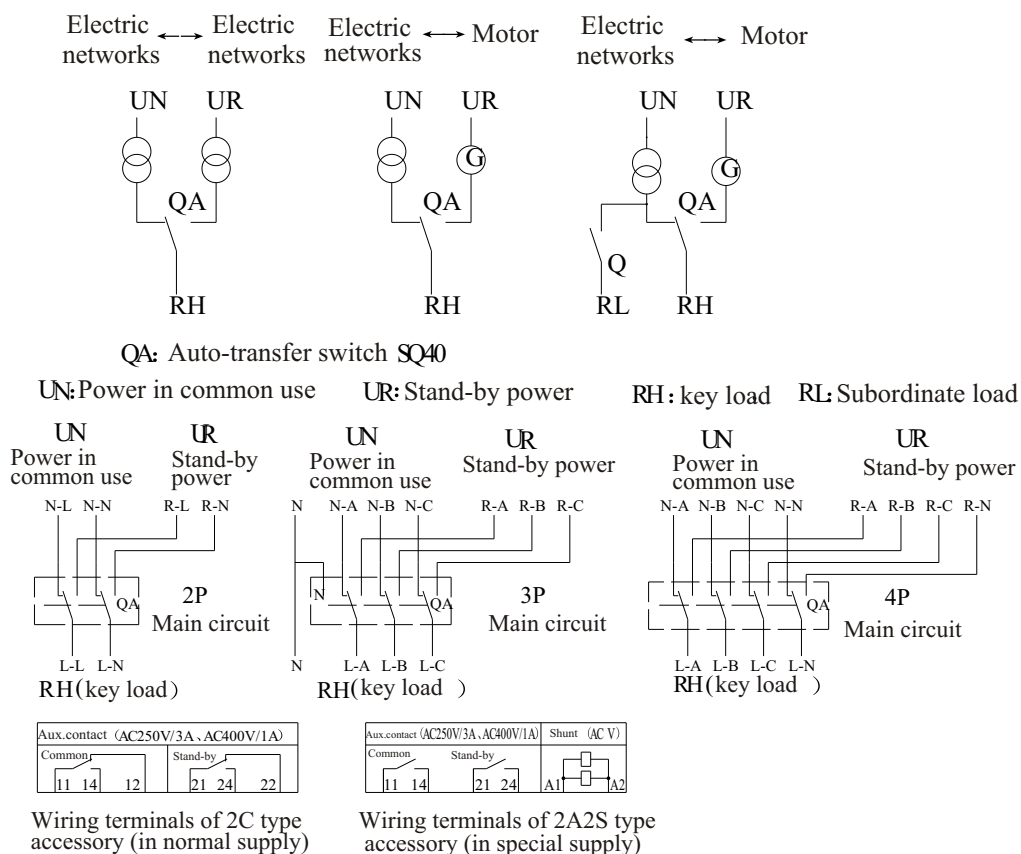


Figure 3



The graph symbol and application of design



Ordering notice

Please give clear indication of the models of ATSE in detail at order, including the following:

1. Rated working current I_e and rated current of frame grade I_{nm} ;
2. Rated limited short-circuit breaking capacity grades (C-type or S-type)
3. The pole type (two-pole, three-pole, four-pole)
4. The protective type of executive breaker (C-type or D-type)
5. Installation type (H- or F-type)
6. Other special requirements (such as to add the breaker's inner accessory, regular stand-by breaker with their rated asymmetric current), please note at order.
7. We provide free after-sales services for the products with quality problem within 18 months from the date of ex-works (for domestic customers only).

Notification

In order to use our SQ40 series ATSE products in a correct and safe way, please read this book of instruction carefully before taking any action!

Since the technology is being invocated continuously, the company keeps the both rights of the explanation and the revision of it. Please keep close in touch.