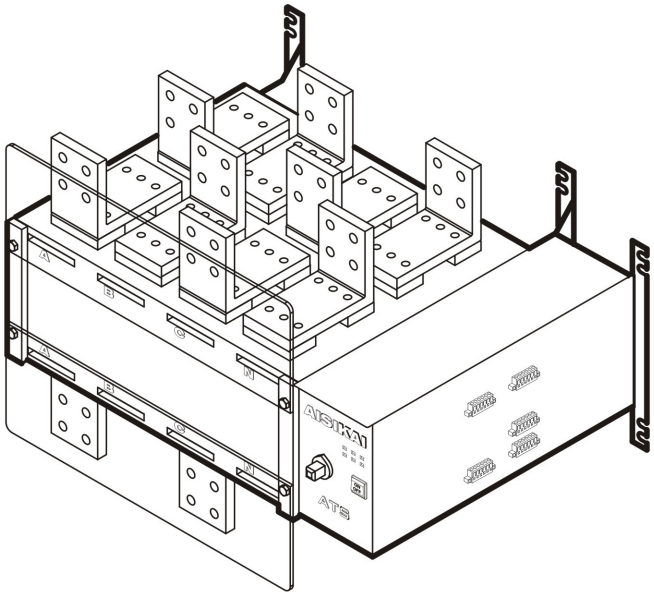
AiSIKAI®
ELECTRIC

USER MANUAL FOR ATS

V1.0



AUTOMATIC TRANSFER SWITCH

Company Profile

Jiangsu AiSiKai Electric Co., Ltd. is committed to the manufacture and R & D of high-quality electrical products, which has obtained the certification of UKAS and ISO9001 Quality Management System, all the series products produced in which have obtained the China National compulsory CCC certification and the European CE certification and which has possessed a number of technology patents.

The standard SKT and SKX series ATS has been subjected to the class PC intelligent integration design, is provided with 0-position function, has a large separation distance between the contacts, is able to withstand extremely high impulse voltage (8KV and above), has dual-row composite contacts internally, in which the conductive contact area is twice that of the electromagnetic ATS switch and the copper bar, as it is punched into forming at one stroke, is characteristic of such advantages as compact volume, long service life and small arc. All the series products are AC-33A in the utilization category, which are suitable to be used in such occasions that are required for frequent switching under load as the airports, the subways and so on. The customized-made transferring switches are provided with N-phase overlapping switching function, so as to prevent any potential drift generated on N line in the different systems when switching and to cause any inconsistent current trend or shunt, thus resulting in any damage done to the precision load equipment.

Model Description

SK □ □ — □A / □P

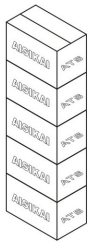
- Pole No
- Design current
- 1-standard type 2-super-thin type
- T-Fully automatic; X-Fire control type; S-manual type
  G-isolation type; N-intelligent type; E-oil engine type
- JIANGSU AISIKAI ELECTRIC CO.,LTD

Technical Parameters

Agreed thermal current Ith		20A	40A	63A	80A	100A	125A	160A	250A	400A	630A	800A	1000A	1250A	1600A	2000A	2500A	3200A
Rated insulation voltage Ui		750V								1000V								
Rated impulse withstand voltage Uimp		8KV								12KV								
Rated voltage of the switch copper Ue		AC440V																
Rated work current Ie	AC–33A	20	40	63	80	100	125	160	250	400	630	800	1000	1250	1600	2000	2500	3200
Rated connection capability		10Ie																
Rated breaking capability		8Ie																
Rated conditional short –circuit current		100KA								70KA			100KA		120KA		80KA	
Rated short–time withstand current IS		7KA			9KA		13KA			26KA			50KA		55KA		55KA	
Electric control unit working voltage		Standard type:AC220V, AC110V, AC280V, AC380V, DC12V and DC24V may be custom-made as required.																
Instructions		The use category of the standard type products is AC-33A and, if used for AC-31A and AC-35A, is all the same as AC-33A.																

Application environment requirements

Temperature：-20 to +45°C. The average value shall be no more than +35°C within 24h.
Humidity: The average humidity shall be no more than 50% without condensation at +40° C.
Altitude: Less than 2000 meters and, if used at higher than 2000 meters, please use the product at lower ratings.
The place where this switch is used should be free of strong vibration and impact ,harmful gases leading to corrosion against metals and damage to insulation ,thick dust ,electric conduction particles,explosive and dangerous substances or strong electromagnetic field interferences.
level of contamination：Grade Ⅲ.　　IP classification：IP20.
Storage requirements：Stored at -30 to 70°C, in an environment drying without corrosion or salts and the longest period of storage shall be no more than 1 year.
Applicable standards：International standards：IEC60947-1/GB/T.14048.1-2008
IEC60947-1/GB/T.14048.3/11
China National compulsory CCC rules, CNCA-01C-011:2007
European CE certification：EN60947-6-1:2005　EN 60947-1:2004
Packing：Carton packaging for 600A and below and wooden box packaging for 800A and above.
Stacking：No more than 5 layers for 600A and below and no more than 3 layers for 800A and above.



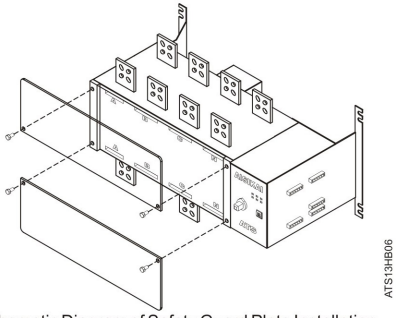
Schematic diagram of carton packaging stacked

Schematic diagram of wooden box packaging stacked

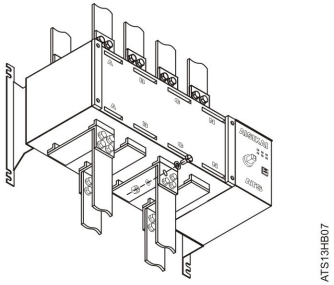
List of accessories

Current (A)	Number of wiring terminals	Manual handle number/material	Safety guard plate number/material	Users Manual quantity	Cable fixing bolt number/ specifications (set)
2000-3200	5 pcs/No.1-5	1 pc/steel	2 pcs/ PMMA	1 copy	M12*45/48
1600	5 pcs/No.1-5	1 pc/steel			M12*40/48
1250	5 pcs/No.1-5	1 pc/steel			M10*35/48
800-1000	5 pcs/No.1-5	1 pc/steel			M8*35/48
400-630	5 pcs/No.1-5	1 pc/ABS			M12*30/12
250	3 pcs/No.1-3	1 pc/ABS			M10*25/12
125-160	3 pcs/No.1-3	1 pc/ABS			M8*25/12
20-100	3 pcs/No.1-3 (Type T2 is equipped only 1/No.3 terminal.)	1 pc/ABS			M6*20/12

Schematic Diagram of Accessories Installation Method

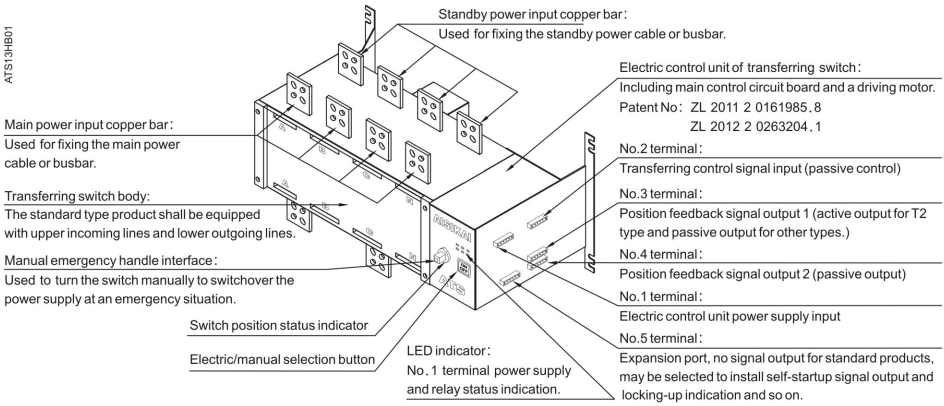


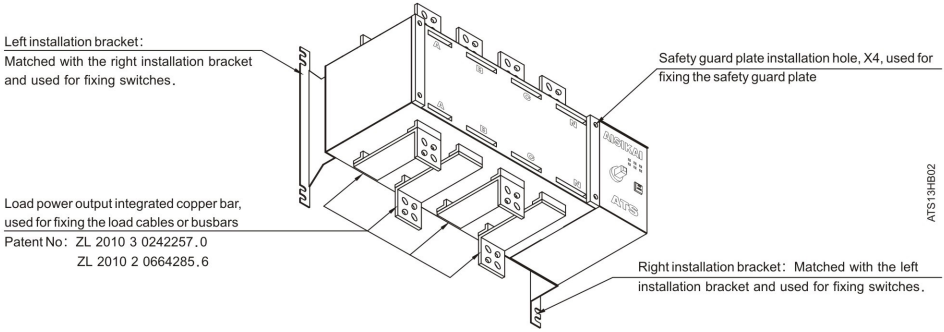
Schematic Diagram of Safety Guard Plate Installation



Schematic Diagram of Cable/Busbar fixation

Switch structure introduction

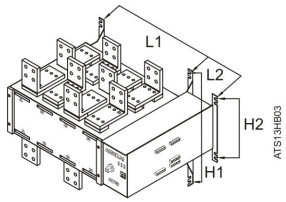




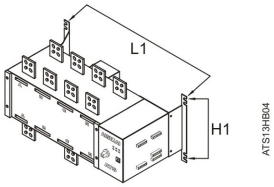
1. No.1-5 wiring terminals are equipped according to the different types of the switches. See the List of Accessories for details.
2. For the convenience of customers to use the products manufactured in this company in a simpler way, the SKT1 series ATS are equipped with a LED indicator. This LED indicator is used to indicate the operating voltage of the electric control unit of the switches and the internal relay status, which is described as follows:
   A. No.1 and No.4 indicator lights are lit up, which stands for that the working power supply of the lines Ⅰ and Ⅱ are powered on (102、103; 104、105).
   B. No.2 and No.5 indicator lights are lit up, which stands for that the fuses of the working power supply of the lines Ⅰ and Ⅱ are normal (F1 、F2).
   C. No.3 indicator lights is lit up, which stands for that the control relay of the line Ⅰ is working normally (for 250A and below switches, only when No.4 indicator light is not lit up, can No.3 indicator light have this function).
   D. For 400A to 3200A switches, No.6 indicator lights is lit up, which stands for that the control relay of the line Ⅱ is working normally.
   E. For 125A to 250A switches, No.6 indicator lights is lit up, which stands for that the key switch or the button is on the ON position.

Fast reading diagram for installation dimensions

Current (A)	Transverse hole center distance L1 (mm)	Auxiliary angle transverse center distance L2 (mm)	Longitudinal hole center distance H1 (mm)	Auxiliary Angle longitudinal center distance H2 (mm)	Hole diameter (mm)
2000-3200	467	142	355	220	11
800-1600	609		220		11
400-630	413		180		9
250	339		110		7
125-160	267		110		7
20-100	228		84		7



ATS13HB03



ATS13HB04

Notes:

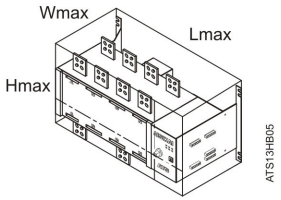
1. The left and the right installation bracket must be fixed in the same flat plane, the installation hole dimensions shall be adjusted according to the actual situation and it is prohibited to use the wrong hole dimensions to make forced installation of the switch, which will cause the switch to be deformed internally or even destroy the switch directly.
2. For 2000A and above switches, it is recommend to use a busbar for arrangement. If the use of a cable for installation will increase the stress of the installation bracket, please increase the effective reinforcement measures.
3. The dimension parameters said above are suitable for end users to be used for the on-site installation. If more detailed dimension parameters are required, please call us or visit www.aisikai.cc to download the book of the ATS.

Fast reading diagram for cabinet body installation

Current (A)	Switch maximum length Lmax (mm)	Switch maximum width Wmax (mm)	Switch maximum height Hmax (mm)	Recommended cabinet body (L × W × H mm)	Compact cabinetbody (L × W × H mm)
2000-3200	633	500	470	800*800*2200	720*800*2000
1600	633	321	407	800*600*2200	720*600*2000
800-1250	633	321	350	800*600*2000	720*600*1800
400-630	433	262	270	600*500*1800	550*450*1600
250	359	195	170	500*400*800	500*250*600
125-160	290	195	142		
20-100	245	137	106		

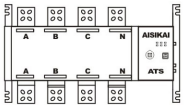
Notes:

1. Switch maximum length (Lmax) is the distance from the left elevation of the left installation bracket to the right elevation of the right installation bracket.
2. Switch maximum width (Wmax) is the distance from the rear elevation of the ins tallation bracket to the front elevation of the manual emergency handle interface.
3. Switch maximum height (Hmax) is the distance from the top elevation of the upper copper bar to the bottom elevation of the bottom copper bar.
4. For the cabinet height, please take such actual conditions as the space required for the operation and the connection cables.



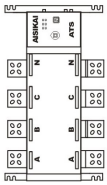
ATS13HB05

Schematic diagram of correct installation method



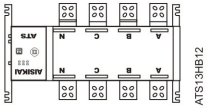
ATS13HB10

Best Installation method



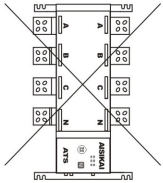
ATS13HB11

Correct installation method



ATS13HB12

Correct installation method



ATS13HB13

Wrong installation method

Terminal Function

Terminal No	Access point No.	Function	Notes
No. 1 terminal	101、106	Feedback power supply neutral wire and live wire output	Active output, 1A AC220V
	102、103	No.1 operating power supply live wire and neutral wire input	＞5A AC 220V
	104、105	No.2 operating power supply live wire and neutral wire input	＞5A AC 220V
No. 2 terminal	201、206	Passive control when disconnected and active control when closed.	See SKT1 Type Principle Diagram
	202	External passive control signal input common terminal	
	203	Line Ⅰ is switched on, when closed with 202.	
	204	Line 0 is switched on, when closed with 202.	Line Ⅰ / Ⅱ switched off
	205	Line Ⅱ is switched on, when closed with 202.	
No. 3 terminal	301、306	Not used, directly connected internally.	400A and above assembly
	302	Passive position feedback signal output common terminal	Active output for T2 type and passive output for other types, see principle diagram for details 1A AC 220V
	303	Closed with 302, when Line Ⅰ is switched on.	
	304	Closed with 302, when Line 0 is switched on.	
	305	Closed with 302, when Line Ⅱ is switched on.	
No. 4 terminal	401、406	Not used, directly connected internally.	400 A and above assembly
	402、403	Line Ⅰ is closed after switched on.	Passive 1A AC 220V
	404、405	Line Ⅱ is closed after switched on.	Passive 1A AC 220V
No. 5 terminal	501	Self-starting signal output normally open point	Optional parts, passive 1A AC 220V
	502	Self-starting signal output common terminal	
	503	Self-starting signal output normally closed point	
	504	Locked-up signal output normally open point	Optional parts, passive 1A AC 220V
	505	Locked-up signal output common terminal	
	506	Locked-up signal output normally closed point	

Quick troubleshooting method

Please,see Page3 Operation Instructions for LED Indicators for fast fault diagnosis or follow the steps below for troubleshooting.

1. Fuse test

First use a multimeter to detect the flaky fuse to find out whether it is normal. If the fuse is burned, please remove the external electrical fault before the fuse is inserted. Then turn the key to the manual position, use the handle attached to turn the switch from position 1 to position 2 for several times. Finally, turn the key to the electric-operated position to test each function to find out whether they are normal. For the fuse capacity, see the table on the right for details.

Switching current \ Control voltage	AC110V、AC220V AC280V、AC380V	DC12V DC24V
20A-250A	3A	10A
400A-3200A	5A	10A

Note：The ATS switch is fitted with a vehicle-used flaky fuse and, when replacing it, please refer to the table for details. It is prohibited to use any large-capacity fuse, as this will cause damage to the electric control unit.

2. Motor test

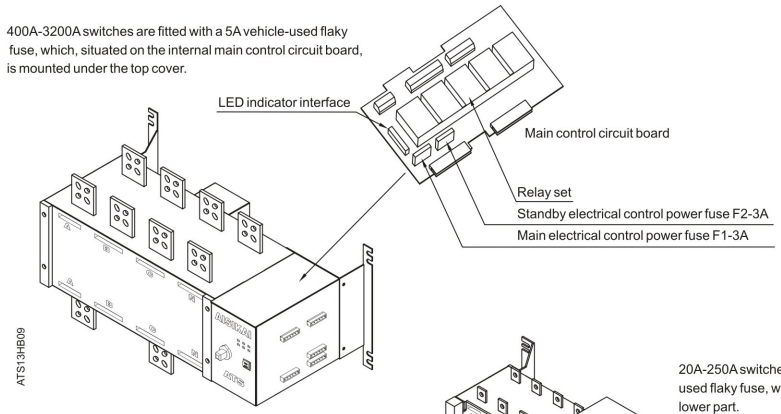
Connect 104 and 105 of the terminal No.1 with the 220V live wire and the neutral wire respectively and short–connect the common point 202 of the terminal No. 2 with 203, 204, and 205 respectively. If the motor can be put into action, any fault in the motor can be excluded.

3. Main control circuit board test:

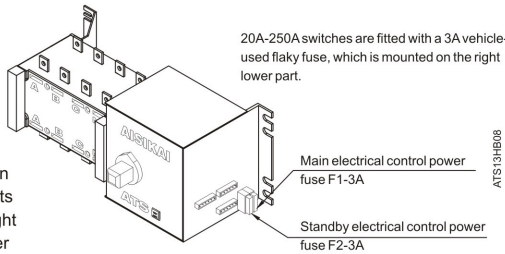
Connect 102 and 103 of the terminal No.1 with the 220V live wire and the neutral wire respectively and short–connect 202 with 203, 204, and 205 once again respectively. If the switch can be connected with the line I, the line 0 and the line II respectively, any fault in the main control circuit can be excluded.

Notice：As the Fuse is usually caused by external power source voltage mutations or short-circuit burned, please make sure the external voltage is normal,and any fault of short-circuit should be excluded before inserting fuse and then the switch is tested, otherwise there be damage caused to the circuit board.

400A-3200A switches are fitted with a 5A vehicle-used flaky fuse, which, situated on the internal main control circuit board, is mounted under the top cover.

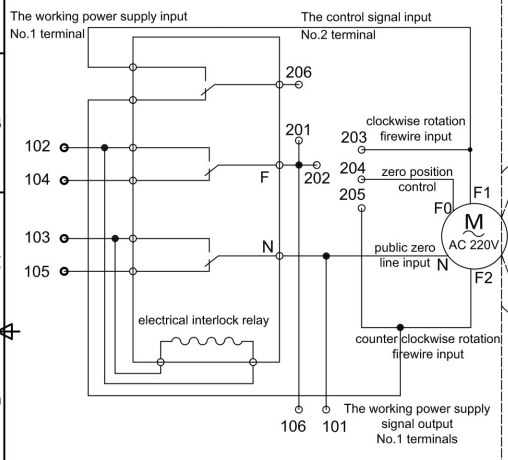


20A-250A switches are fitted with a 3A vehicle-used flaky fuse, which is mounted on the right lower part.

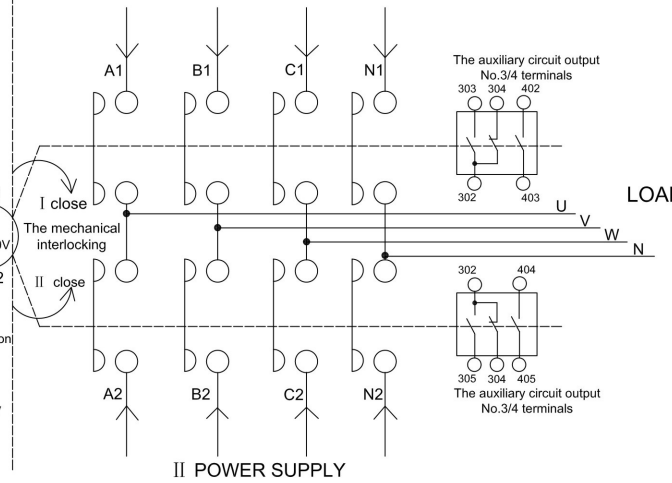


The electrical part-3 section type

Electronic control unit

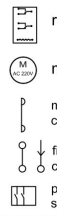


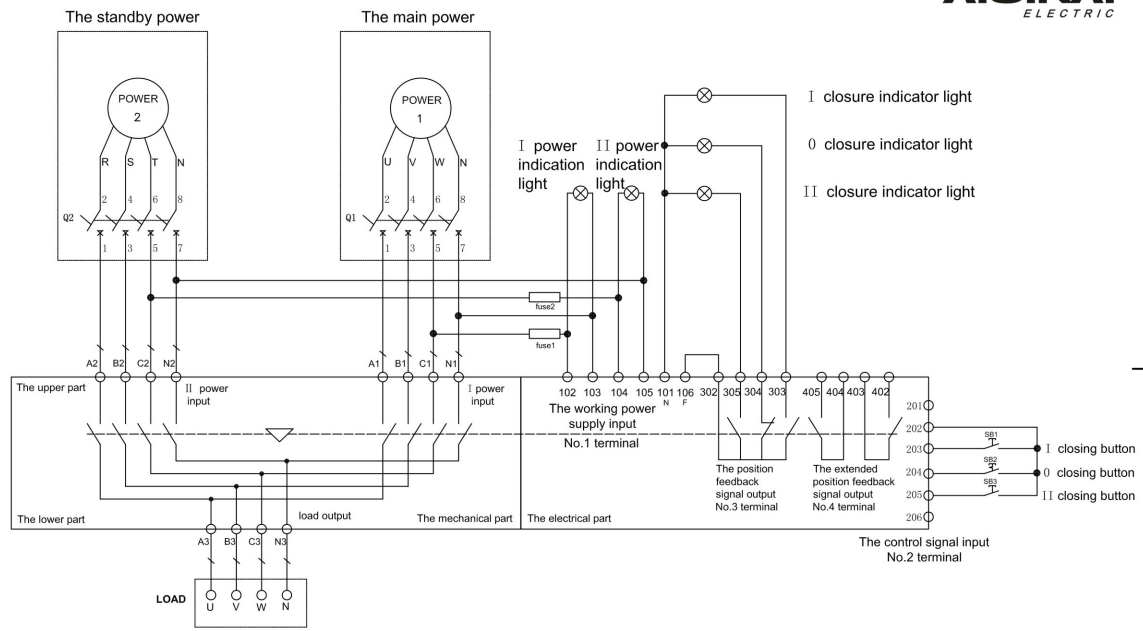
The mechanical part -3 section type



Instructions:

1. Electric part:
   A. For the standard products, the rated voltage of the working power supply of the electronic control unit is AC 220V and the minimum capacity is 5A. 102 and 104 are connected with the live wires of the working power supply of the lines Ⅰ and Ⅱ and 103 and 105 are connected with the zero wires of the working power supply of the lines Ⅰ and Ⅱ.106 and 101 are the live wire and the zero wire output respectively after interlocking and, coordinated with the terminals No. 3 and 4, are used as the external indicator light power supply or the active feedback signals of the intelligent controller.
   B. The electric interlocking relay is used to achieve fully the electric interlocking between the two lines of the control power supplies, so as to ensure that only one power supply is used to operate and control the switch.
2. Mechanical part: The ATS switch shell is made of two layers of module groups same in their internal structure stacked together, in which the closing of the dynamic and static contacts of the lines Ⅰ and Ⅱ is controlled by the motor rotating clockwise and counterclockwise respectively, and the internal mechanical interlocking mechanism makes the motor having enough space in the course of rotation to guarantee that the power supplies of the lines Ⅰ and Ⅱ should not be closed at the same time.
3. Control mode: There are two control modes provided in the Standard SKT1 and SKX2 series switches.
   Mode 1: Passive signal control – Connect the terminal No. 1 to the working power supply, use three sets of the passive contacts to control the connection of 203, 204 and 205 of the terminal No. 2 with the common terminal 202, so as to achieve the switchover of the lines Ⅰ, 0 and Ⅱ respectively in the switch, and the electric requirements of the passive contacts are AC 220V, 5A. This control mode is usually used in matching with the intelligent controller or is used in coordination with the special-purpose electrical control system.
   Mode 2: Active signal control – Connect 201 of the terminal No. 2 to 206 and control the working power supply input of 102 and 103 and 104 and 105 respectively, so as to achieve switchover of the lines Ⅰ and Ⅱ respectively in the switch. This control mode is used to switch over immediately, when the working power supply is higher than AC 180V（relay pulling-in voltage）. When there are the lines Ⅰ and Ⅱ existing simultaneously, the line Ⅰ power supply holds the priority.
   Notice: The mode 2 is applicable to the terminal power supply application switchover without time delay requirements, which is usually the switchover between the two lines of the municipal electricity. If it is cooperated with the startup type generator set for use, it is recommended to install a normal/standby power supply time relay additionally, so as to adapt to the technical requirement of the self-startup generator set and to prevent any damage to the electric control unit of the switch.
4. The auxiliary circuit output is used to indicate the ATS switch position status and SKT1 and SKX2 series are 1A passive contact output. When the switch is in the position Ⅰ, 302 and 303 and 402 and the 403 are put through. When the switch is in the position Ⅱ, 302 and 305 and 404 and 405 are put through.

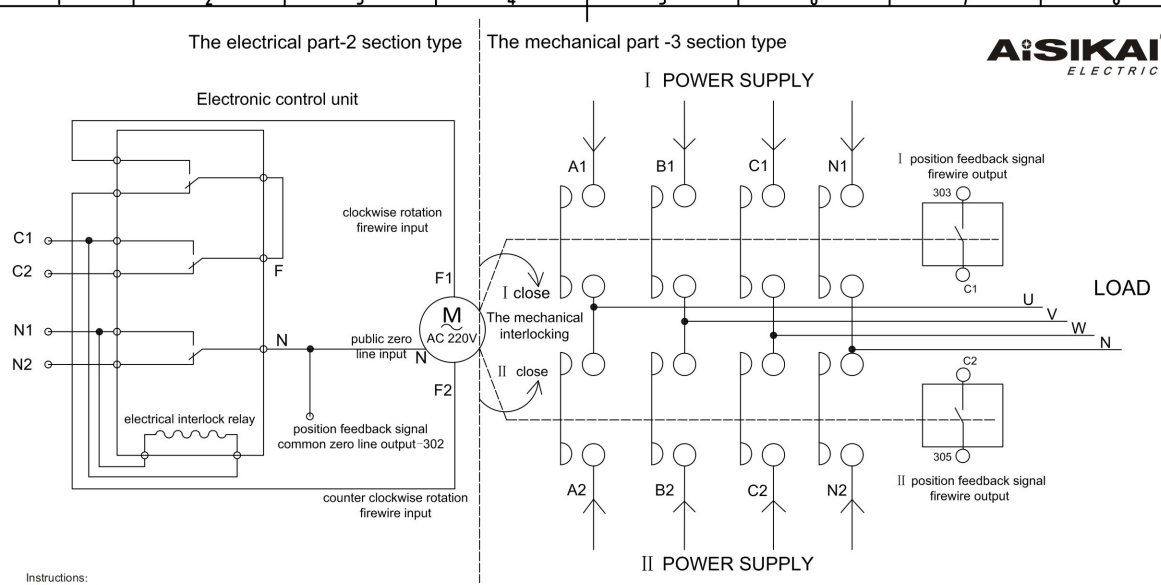




Instructions:

1. This drawing applies only to the standard ATS switches for use under the condition that their access switch copper busbar voltage should be AC 380/220V (three-phase four-wire), 50Hz, and is not applicable to three-phase three-wire AC 380V or three-phase four-wire AC 200/110V or the control power supply being DC power supply. For the relevant drawings, please call 800 828 6568 or log www.aisikai.cc for information.
2. When using the intelligent controller, please use the terminal No. 3 as the position of the feedback signal port to connect the controller and use the terminal No. 4 as the port of the external indicator light.

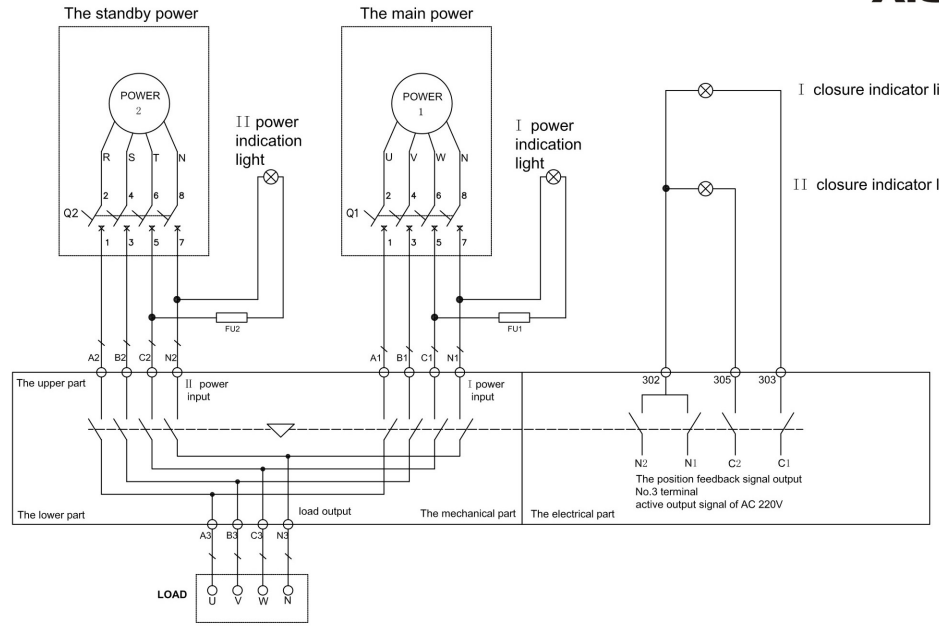
⊗ indicator light



Instructions:

1. Electric part:
   The points C1 and N1 have been connected with the copper busbar C1 and N1 of the normal power supply from the interior of the switch, the points C2 and N2 have been connected with the copper busbar C2 and N2 of the standby power supply from the interior of the switch and the electrical interlocking relay is used to achieve fully the electric interlocking between the two control power supplies, so as to ensure that only one power supply should be used for the operation and control in the switch.
2. Mechanical part: The switch shell is made by two layers of module groups same in their internal structure stacked together, in which the closing of the contacts of the lines I and II is controlled by the motor rotating clockwise and counterclockwise respectively, and the internal mechanical interlocking mechanism makes the motor having enough space in the course of rotation to guarantee that the power supplies of the lines I and II should not be closed at the same time.
3. The switchover between the switch positions Ⅰ and Ⅱ is controlled through the power supply on the copper busbar of the switches C1, N1, C2 and N2.
   When there is power on the copper busbar C1 and N1 (AC 220V), the internal motor (M) starts rotating clockwise and stops its rotation automatically after the switch is fully closed at position Ⅰ contact.
   When there is power on the copper busbar C2 and N2 (AC 220V), the internal motor (M) starts rotating counterclockwise and stops its rotation automatically after the switch is fully closed at position Ⅱ contact.
   When there is power on the copper busbar C1, N1, C2 and N2 simultaneously, the switch will be switched over automatically to the normal power supply side and keep the normal power supply to take priority to supply the electricity.
4. The auxiliary circuit access point is used to indicate the position status of the ATS switch and the SKT2 series is an active output AC 220V. When the switch is in position I, there is output AC 220V between 302 and 303 and when the switch is in position Ⅱ, there is output AC 220V between 302 and 305.

relay
motor
moving contact
fixed contact
position switch



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2. The maximum current pf the SKT2 type ATS switch, when the terminal No. 3 is used as the port of the external indicator light, shall not exceed 1A.

⊗ indicator light

AISIKAI-ATS2013HB-V1.0AE

PROFESSIONAL MANUFACTURER

MANUFACTURER INFORMATION

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