

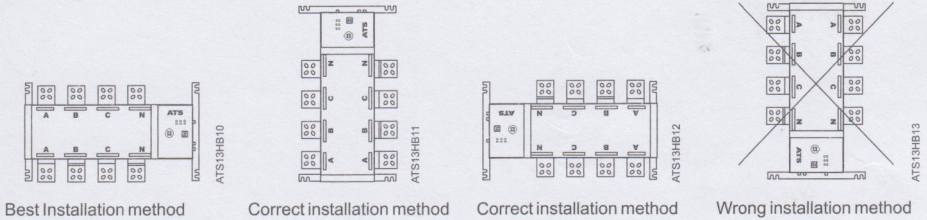
# ATS

**PROFESSIONAL MANUFACTURER**

MANUFACTURER INFORMATION

DISTRIBUTOR INFORMATION

## Schematic diagram of correct installation method



## Terminal Function

Terminal No	Access point No.	Function	Notes
No. 1 terminal work power input	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 control signal input	201、206	Passive control	Control mode 2: Internal MCU control mode
	202	External passive control signal input common terminal	Control mode 1: External passive signal control
	203	Line I is switched on, when closed with 202.	
	204	Line 0 is switched on, when closed with 202.	
205	Line II is switched on, when closed with 202.		
No. 3 terminal position feedback signal output 1	301、306	Not used, directly connected internally.	400A and above assembly
	302	Passive position feedback signal output common terminal	Passive output
	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 position feedback signal output 2	401、406	Not used, directly connected internally.	400 A and above assembled
	402、403	closed after Line I is switched on.	Passive output
	404、405	closed after Line II is switched on.	Passive output
No. 5 terminal extended port signal output	501	Self-starting signal output normally open point	Optional parts Passive output
	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 output
	505	Locked-up signal output common terminal	
	506	Locked-up signal output normally closed point	



## Quick troubleshooting method

Please, see 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 exclude 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.

### 2. Motor test

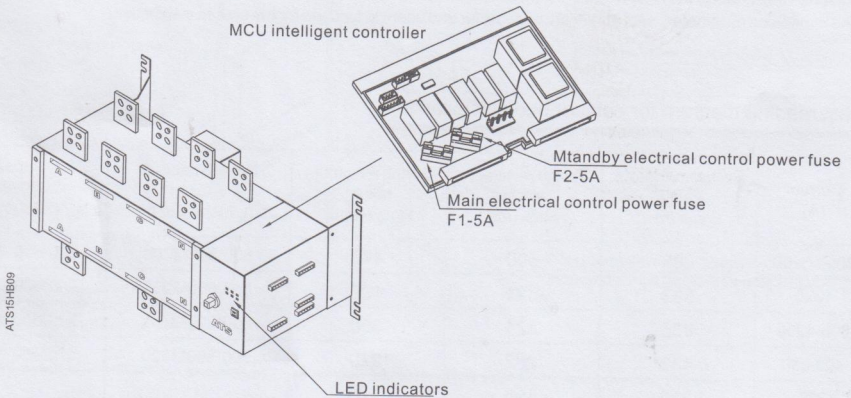
Connect 104 and 105 of the terminal No. 1 with the 220V live wire and the neutral wire respectively and short-connect the common point 202 of the terminal No. 2 with 203, 204, and 205 respectively. If the motor can run, any fault in the motor can be excluded.

### 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 burnout is usually caused by voltage leap or short-circuit of external power source, please make sure the external voltage is normal, and any fault of short-circuit should be excluded before inserting fuse and testing the switch in case of damage to the circuit board.



## Instructions for LED indicators

For the convenience of customers to use the products manufactured in this company in a simple way, the ATS-N1 series ATS are equipped with a LED indicator, which is described as follows:

A. No. 1 or No. 3 indicator lights is:

Lit up continuously, which stands for that the working power supply of the lines I (102,103) or II (104,105) are powered on and the working voltage is normal;

Flickering quickly, which stands for that the working voltage of supply of the lines I (102,103) or II (104,105) are too high (over AC 225V).

Flickering slowly, which stands for that the working voltage of supply of the lines I (102,103) or II (104,105) are too low (below AC 190V).

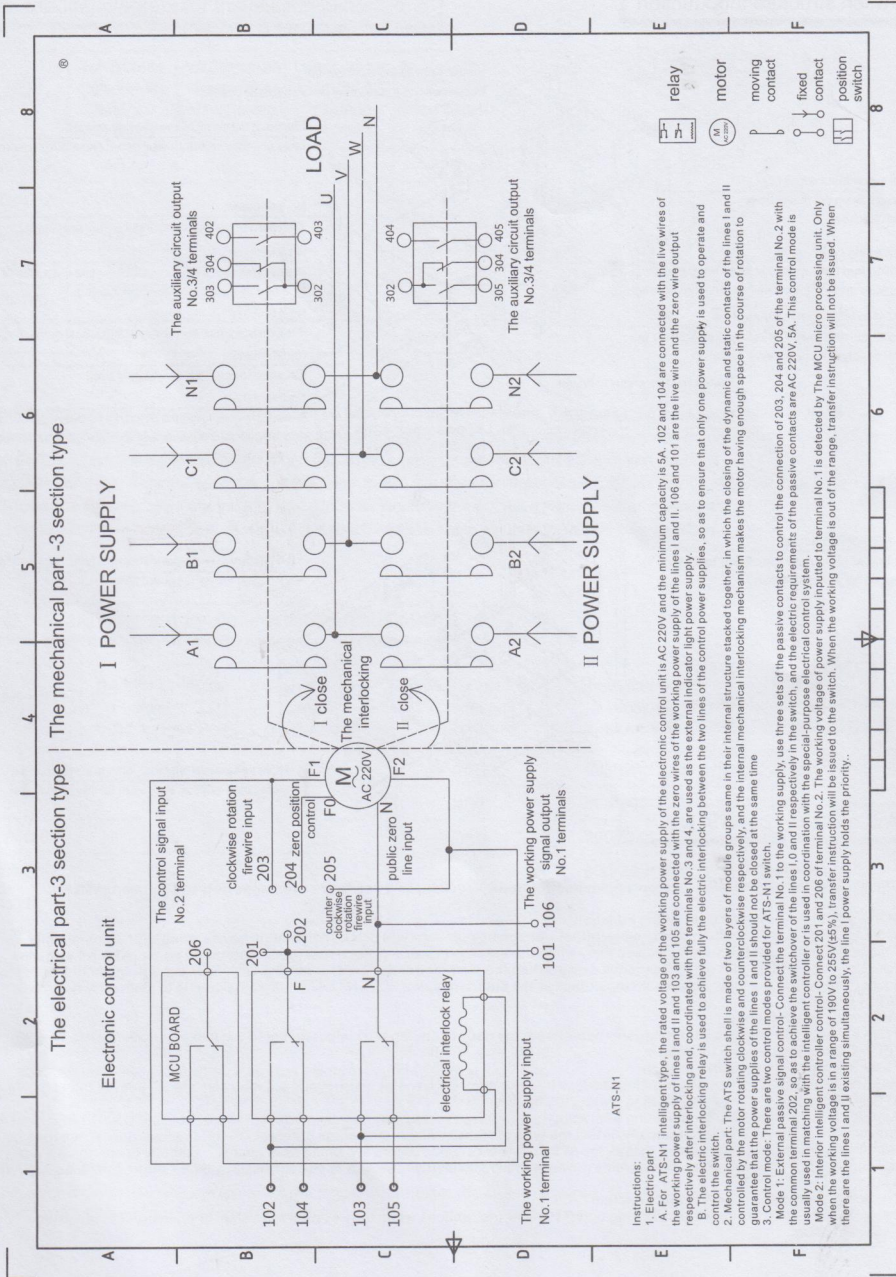
B. No. 2 indicator light is lit up, which stands for that the button for Electric/Manual is on the ON position (Electric Mode); if not, which stands for the button is on the OFF position (Manual Mode).

C. No. 4 indicator light is lit up, which stands for that the line I is switched on. The switch position status indicator points to I.

D. No. 5 indicator light is lit up, which stands for the line I and line II are both cut off. The switch position status indicator points to 0.

E. No. 6 indicator light is lit up, which stands for that the line II is switched on. The switch position status indicator points to II.

# Internal Principle Diagram of ATS-N1 Switches



The mechanical part -3 section type

The electrical part-3 section type

## Electronic control unit

## I POWER SUPPLY

## II POWER SUPPLY

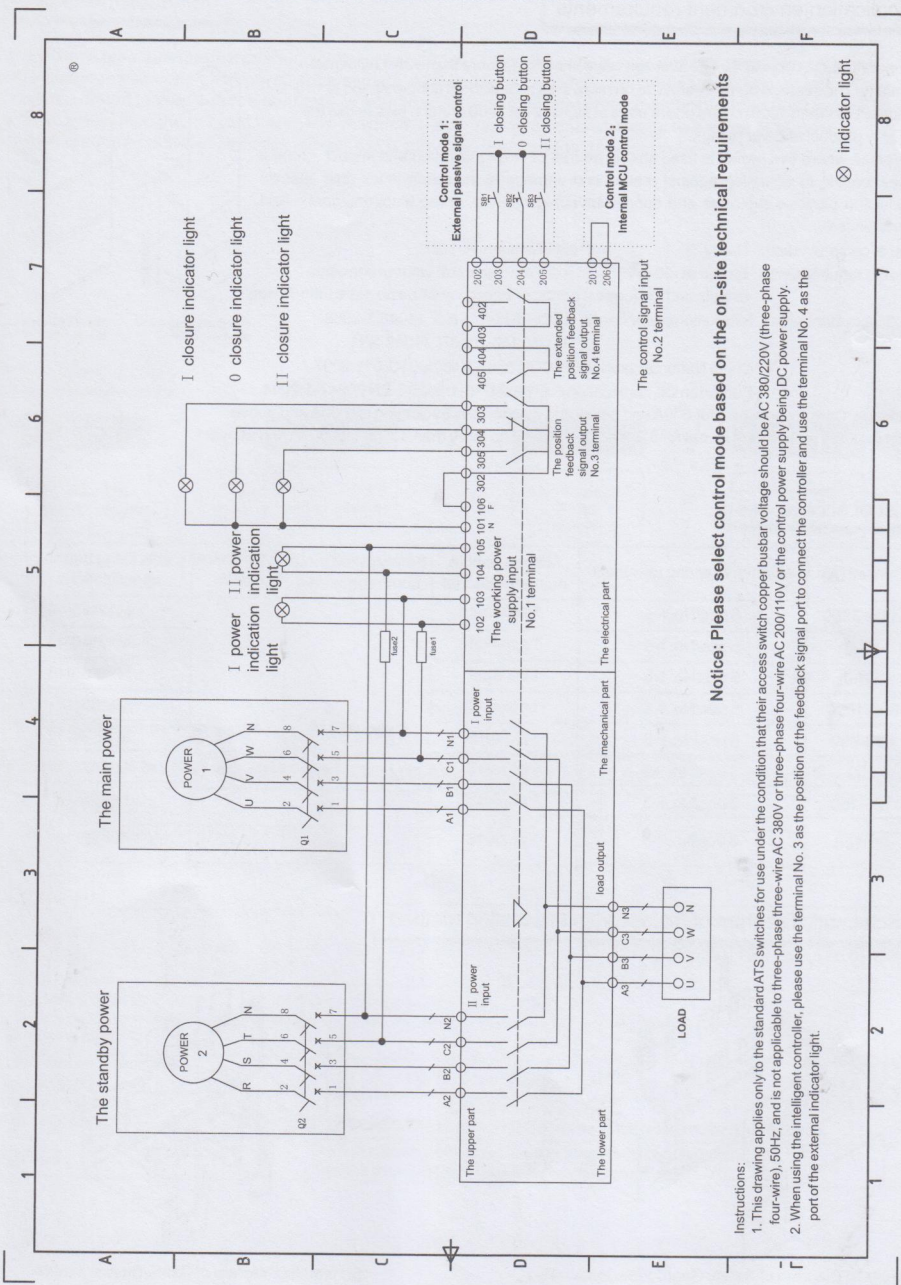
ATS-N1

### Instructions:

1. Electric part: intelligent type, 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 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. 108 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.
2. 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.
3. 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 guaranteed 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 control the power supplies of the lines I and II should not be closed at the same time.
4. Control mode: There are two control modes provided for ATS-N1 switch.
  - Mode 1: External passive signal control: Connect the terminal No.1 to the working supply, use three sets of the passive contacts to control the connection of 203, 204 and 205 of the terminal No.2 with the working power supply of the lines I and II respectively.
  - Mode 2: Interior intelligent controller control: Connect 201 and 206 of terminal No.2. The working voltage of power supply inputted to terminal No.1 is detected by The MCU micro processing unit. Only when the working voltage is in a range of 180V to 255V(±5%), transfer instruction will be issued to the switch. When the working voltage is out of the range, transfer instruction will not be issued. When there are the lines I and II existing simultaneously, the line I power supply holds the priority.



# Typical Control Principle Diagram of ATS-N1 Switches

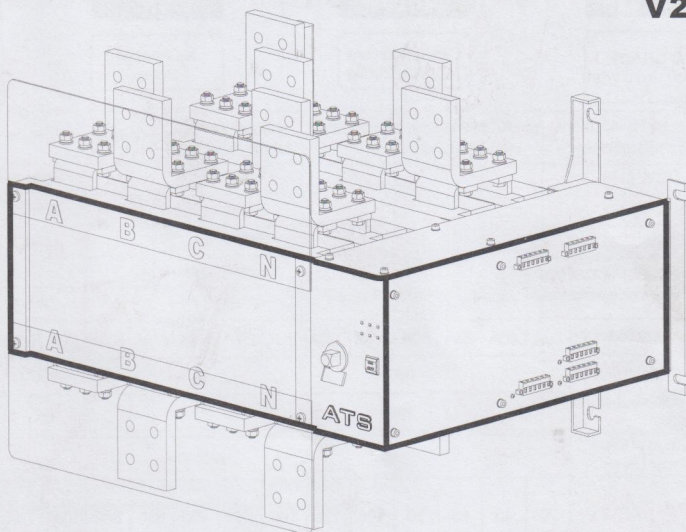


**Notice: Please select control mode based on the on-site technical requirements**

- 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.
  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.

# ATS

## N1 SERIES INTELLIGENT ATS USER MANUAL V2.2



**AUTOMATIC TRANSFER SWITCH**



## Product Introduction

The standard type automatic transfer switch is AC-33A in utilization category, which is suitable for frequent on load switching occasions as airports, subways etc. ATS series 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 contact internally, in which the conductive contact area is twice that of the electromagnetic ATS switch, and the copper bar is punched into forming at one stroke.

## Model Description

**ATS**

PC GRADE  
motor drive type

**400A**

Design current  
(400A-3200A)

**4P**

Number of  
Poles

**N1**

Intelligent  
type  
Built-in MCU Inside

## 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	660V										800V										
Rated impulse withstand voltage Uimp	6KV										8KV										
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	10Ie																				
Rated conditional short-circuit current	7KA				13KA				35KA				50KA				75KA				
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 a dry environment without corrosion or salts and the longest period of storage shall be no more than 1 year.

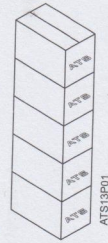
Applicable standards: International standards: IEC60947-1/GB/T.14048.1-2008  
 IEC60947-1/GB/T.14048.3/11

China National compulsory CCC rules, CNCA-01C-011:2007

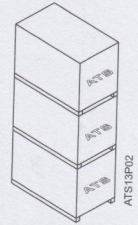
European CE certification: EN60947-6-1:2005 EN 60947-1:2004

Packing: Carton packaging for 630A and below and wooden box packaging for 800A and above.

Stacking: No more than 5 layers for 630A and below and no more than 3 layers for 800A and above.



Schematic diagram of stacked carton

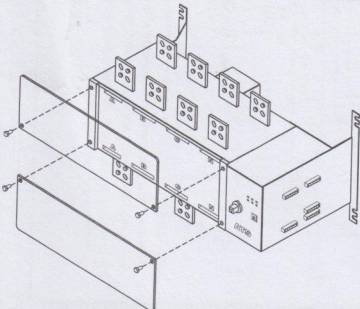


Schematic diagram of stacked wooden crate

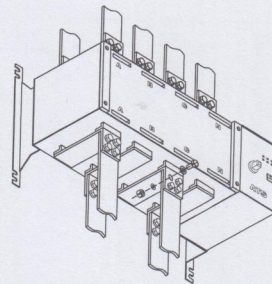
## List of accessories

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	1 pc/ABS			M8*25/12

## Schematic Diagram of Accessories Installation Method



Schematic Diagram of Safety Guard Plate Installation

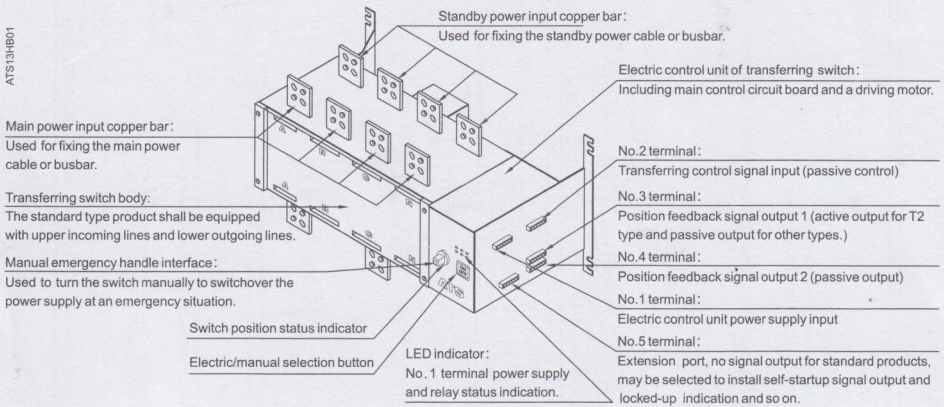


Schematic Diagram of Cable/Busbar fixation



## Switch structure introduction

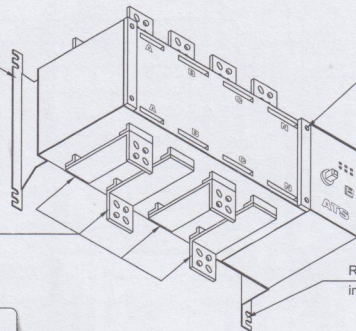
ATS19H001



Left installation bracket:

Matched with the right installation bracket and used for fixing switches.

Load power output integrated copper bar,  
used for fixing the load cables or busbars



ATS19H002

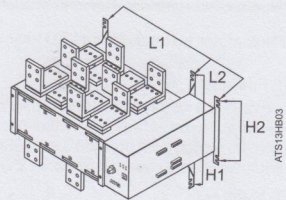
## Advantages of ATS-N1

ATS-N1 ATS has built-in MCU (MicroprogrammedControlUnit) inside, so it has five advantages over the standard ATS.

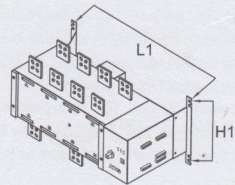
- 1. Intelligent Full-Automatic Controlling Function:**  
In the built-in MCU controlling mode, when under-voltage or over-voltage occurs in the main power, controller automatically checks the voltage of the standby power. Only when the standby power's voltage reaches the standard value, ATS-N1 switches from main to standby after a 3 to 5 seconds delay. When the main power restores, controller will check the voltage of the main power. Only when the main power's voltage reaches the standard value, ATS-N1 switches from standby to main after a 3 to 5 seconds delay.
- 2. LED indicating function:**  
If main or standby power is overvoltage/undervoltage, the corresponding LED indicator lights will flicker quickly/slowly. See the LED indicator instructions for details.
- 3. False Instruction Judgment Function:**  
In the external passive signal controlling mode, when two contrary transfer instructions are inputted into ATS-N1 at the same time, ATS-N1 will not act to any instruction to protect the motors.
- 4. Standby Power Sources Distinguishing Function:**  
The built-in controller can automatically detect the type of standby power and adopt different controlling methods. When the standby power is from generator, it delays the ATS for 3 to 5 seconds before switching from mains to standby to coordinate with a starting diesel generator. When the standby power is utility power, it allows ATS to switch immediately to shorten the time of power failure.
- 5. Transfer Instructions Time-Limited Function**  
Controllers can stop issuing the switching on/off transfer instructions when they exceed the safety time, in order to lengthen motor's lifespan.

### 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	267		110		7



ATS13HB03



ATS13HB04

#### Notes:

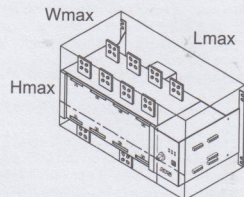
1. The left and the right installation bracket must be fixed in the same flat plane, the installation hole dimensions shall be adjusted according to the actual situation and it is prohibited to use the wrong hole dimensions to make forced installation of the switch, which will cause the switch to be deformed internally or even destroy the switch directly.
2. For 2000A and above switches, it is recommended 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.

### 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 (L × W × H mm)	Compact cabinet (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	290	195	142		

#### 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 installation 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 consider the actual situation of the space required for the operation and connection of the cables.



ATS13HB05