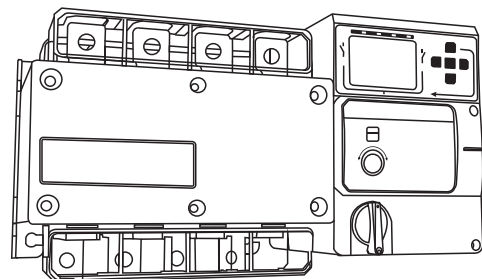


Technology For Life



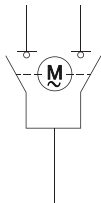
# **Intelligent Type Automatic Transfer Switch VGSH4 Series User Manual**



Model description

Enterprise code	ATS drive code	Design serial code	Rated operating current (A)	Pole code	Function code
VGS	H	4	125	4P	E
/	H: Motor drive	Standard frame type (current range: 10A~630A)	10, 16, 20, 25, 32, 40, 50, 63, 80, 100, 125, 140, 150, 160, 180, 200, 225, 250, 315, 350, 400, 500, 630	4P: 4 Pole	M: Basic type T: LED indicator controller (Intelligent type) E: LCD display controller (Intelligent type)

Design annotation



Model explanation:

VGSH4-125/4P E type  
1、PC class motor drive automatic transfer switch  
2、M: M type  
3、T: T type  
4、E: E type  
5、Standard frame, rated operating current 125, 200, 250, 400, 630A  
6、Copper busbar 4 poles

Standards

GB/T14048.11  
IEC60947-6-1

Product Overview

**VGSH4** series intelligent type automatic transfer switch is the most advanced third-generation product with PC class and AC-33B category. It is a frequently operated electrical automatic transfer switch suitable for reliable conversion of two power sources in 50/60Hz 10A-630A low-voltage AC power distribution system. It has four working modes: automatic, motor drive, emergency manual and locking.

Normal Operating Conditions & Installation Methods

Category	Requirement
Operating temperature	Between -20°C and +45°C, 24h average value does not exceed +35°C
Operating humidity	Average humidity at +40°C does not exceed 50%, no condensation;
Altitude	Less than 2000 meters, if it exceeds 2000 meters, please reduce the rated value.
Vibration & Gas	No strong vibration and impact in the use environment, no harmful gases that corrode metals and damage insulation
Surrounding substances	No severe dust, no conductive particles and explosive hazardous substances
Pollution level	III level
IP level	IP20
Storage requirements	Between -30°C and 70°C, dry, non-corrosive and non-saline environment, the longest period is 1 year.
Packing	Carton packing for 630A and below; wooden packing for 800A and above.
Stacking	No over 5 layers for 630A and below; no over 3 layers for 800A and above.
Installation method	Can be installed vertically or horizontally, upside down installation is prohibited.
Wiring method	Standard type, top input and bottom output; bottom input and top output can be customized

## Controller Function Table

Function \ Model	E type	T type	M type
Status display	LCD display+LED indicator	LED indicator+Rotary adjustment	LED indicator
Manual operate	●	●	—
Auto switch and auto recovery (I & II)	●	●	●
Mutual backup(auto switch, no auto recovery)	●	●	—
DC 24V Fire control linkage	●	●	—
Fire control feedback	●	●	—
Passive fire control linkage	●	●	—
Over & undervoltage monitoring	● (Three phase four wires)	● (Only monitor phase C)	—
Over & undervoltage adjustable	● (Overvoltage 225-265V Undervoltage 160-215V)	Default(Overvoltage 260V Undervoltage 170V)	—
Over & undervoltage hysteresis values adjustable	● (2-20%)	Default(3%)	—
Over & underfrequency monitoring	●	—	—
Over & underfrequency adjustable	● (Over&under Frequency 40-70Hz)	—	—
Over & underfrequency return values adjustable	● (42-68Hz)	—	—
Phase sequence (reverse phase) detection	●	—	—
Voltage&frequency&phase sequence detection on/off adjustable	●	—	—
Switching delay adjustable	● (0-90S)	● (Rotary adjustment 0-60S)	—
Fault & recovery delays adjustable	● (0-60S)	Default(1S)	—
Start & stop generator delay adjustable	● (0-300S)	Default(30S)	—
Transfer failure indicator	●	●	—
Programmable output port	●	—	—
RS485 Communication	●	—	—

Note: ① Symbol "●" indicates a standard function, "—" indicates no such function.

②The overvoltage, undervoltage and delay time of the T type ATS are set to the above parameters by factory default.

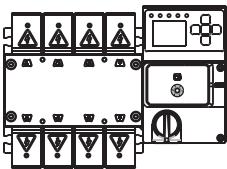
If other parameters are required, such as overvoltage 255V, undervoltage 180V, etc., please contact sales when ordering.

Main Technical Parameters

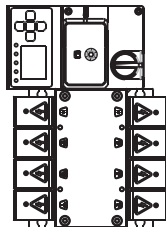
Characteristics comply with IEC 60947-6-1 & GB/T14048.11

Frame size		125	200	400		630	
Conventional heating current I (up to 40°C)		125A	200A	250A	400A	500A	630A
Rated insulation voltage U(V) (main circuit)		800	800	1000	1000	1000	1000
Rated impulse withstand voltage Uimp(kV)(power supply circuit)		6	8	10	10	12	12
Rated insulation voltage U (V) (control circuit)		300	300	300	300	300	300
Rated impulse withstand voltage Uimp (kV) (control circuit)		4	4	4	4	4	4
Rated operating current Ie(A) according to IEC 60947-6-1 & GB/T14048.11 standard							
Rated voltage	Use category						
400 VAC	AC-31B	125	200	250	400	500	630
400 VAC	AC-32B	125	200	250	400	500	630
400 VAC	AC-33B	125	200	250	400	500	500

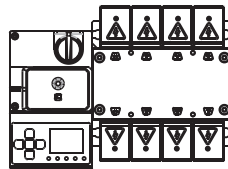
Diagram of Correct Installation Method



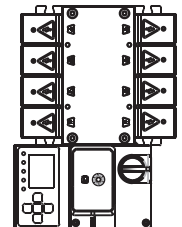
Best (Front)



Correct (Vertical)



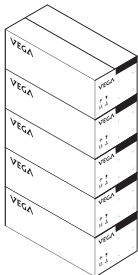
Correct (Reverse)



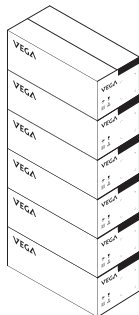
Error (Inverted)



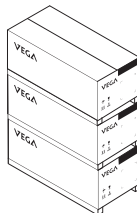
Product Stacking Requirements



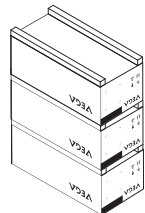
Max 5 layers



Over 5 layers are prohibited



Wooden box stacking example

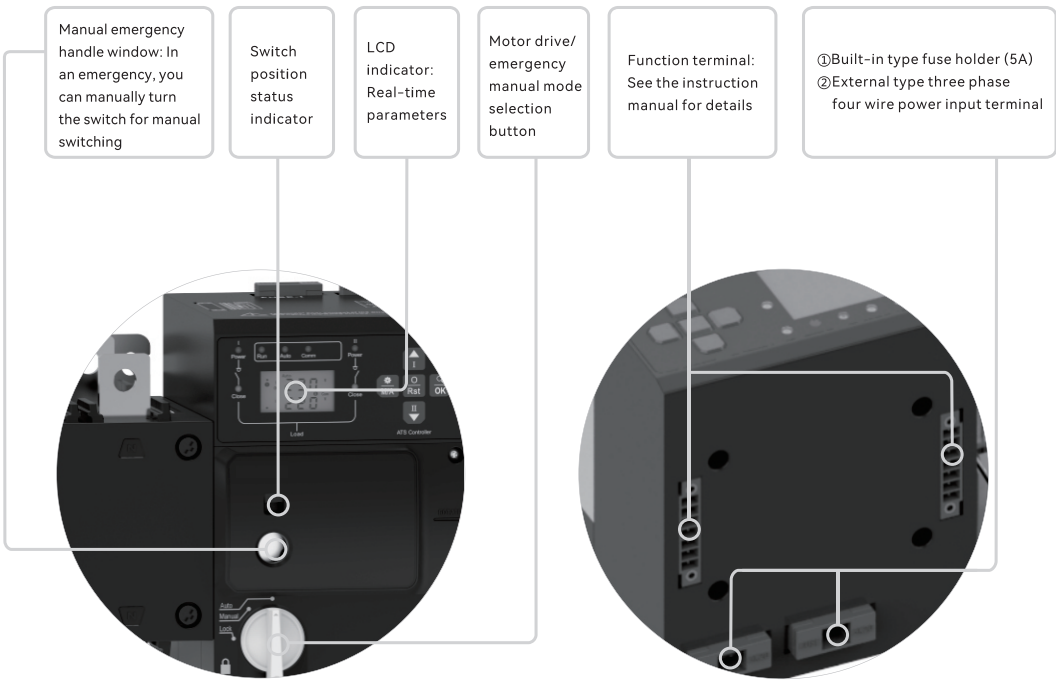
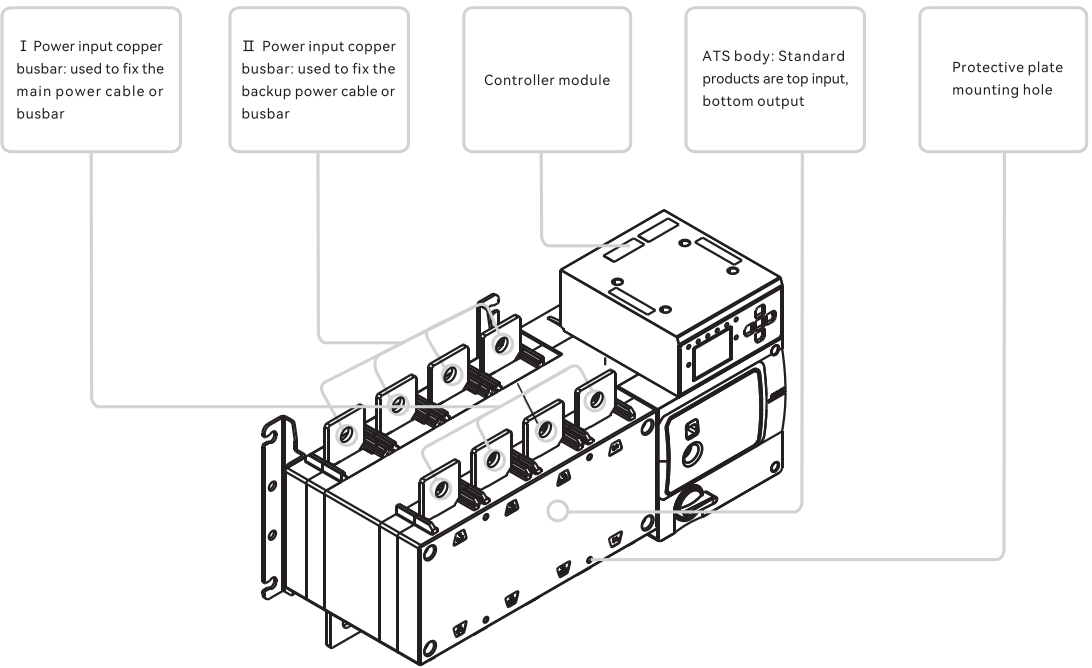


Upside-down stacking is prohibited

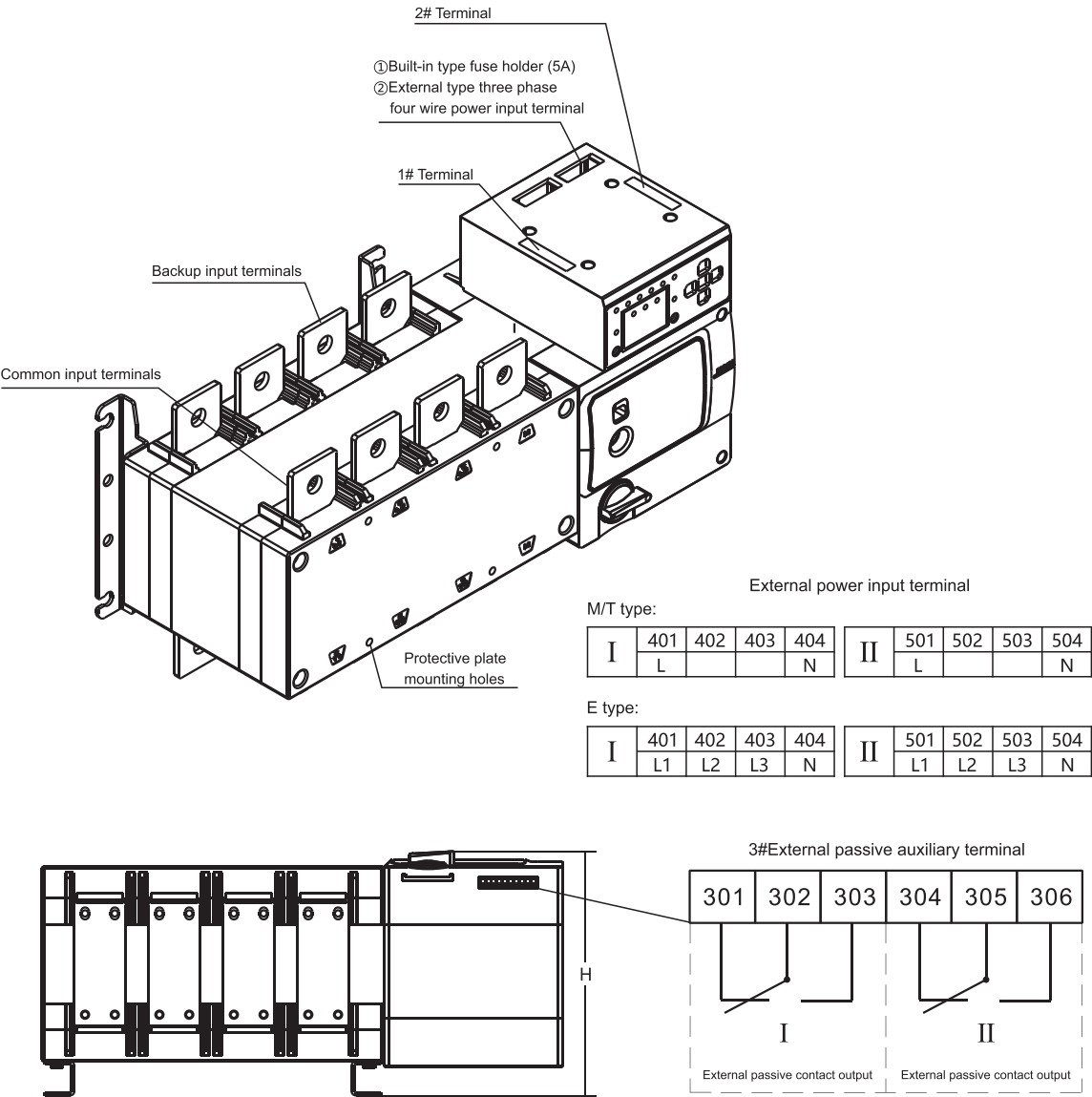




## Structure Introduction

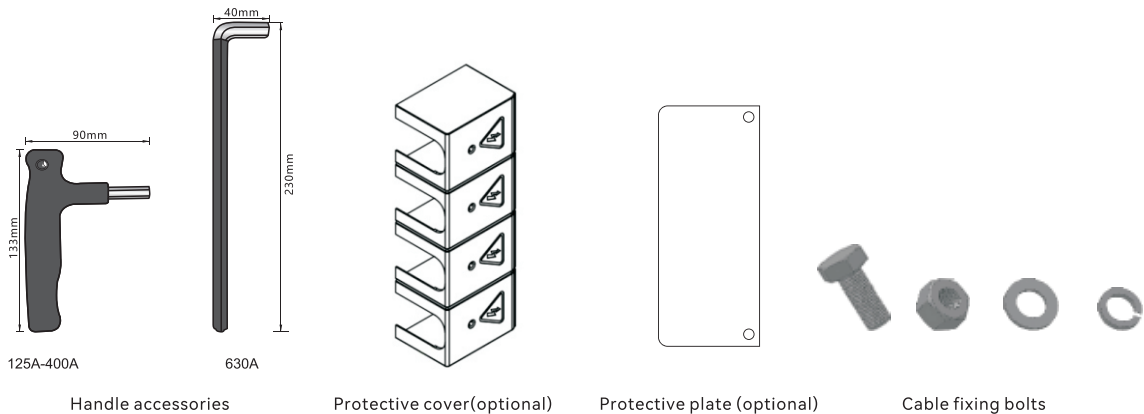


Terminal wiring instructions



Terminal number	Access point number	Function	Illustrate
Terminal 3	301、302、303	301, 302, 303 I way passive output (SPDT)	Passive contact 1A AC 220V
	304、305、306	304, 305, 306 II way passive output (SPDT)	

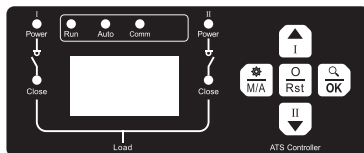
## Attachment list



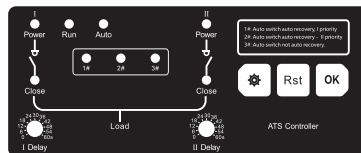
Current (A)	Manual handle quantity/material	Protective cover quantity/material	Protective plate quantity/material	Quantity of user manual	Cable fixing bolt specifications/quantity (sets)
16-125	1PC//PA66+Q235	2PCS/PMMA	2PCS/PMMA	1PC	M6*18/12
125-200	1PC//PA66+Q235				M8*25/12
250-400	1PC//PA66+Q235				M10*25/12
400-630	1PC//PA66+Q235				M12*30/12

## ATS Controller Instructions

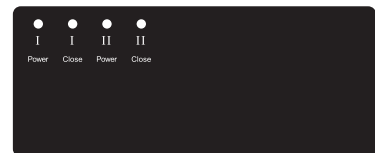
### E type



### T type



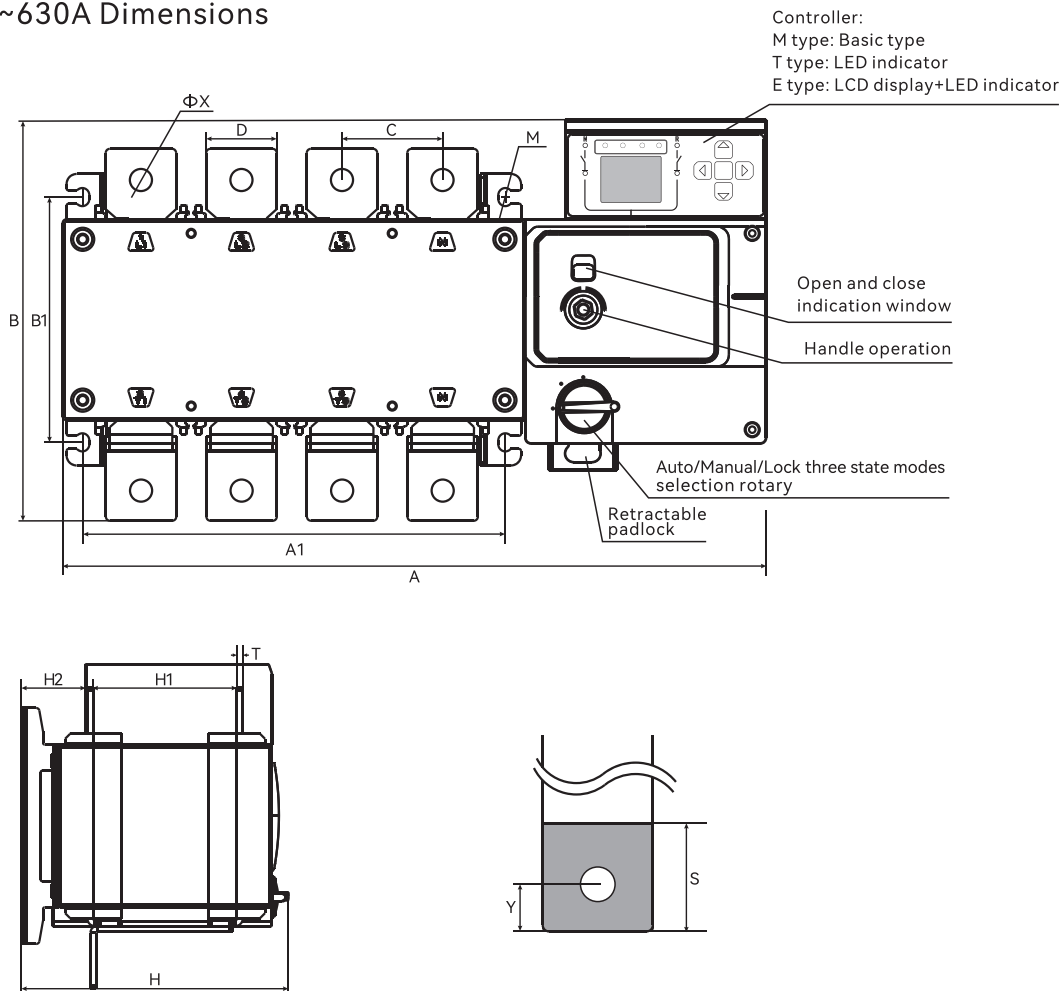
### M type



Model	I - Power II - Power	Running	Auto/Manual	1# - Priority	2# - Priority	3# - Auto switch not auto recovery	I - Close II - Close	Comm - RS485
E Type	I power indicator light Light ON : Normal Light OFF : Abnormal II power indicator light Light ON : Normal Light OFF : Abnormal	Running indicator: Flash: Normal	Auto/Manual indicator: Light ON: Auto mode Light OFF: Manual mode	—	—	—	Light ON: I-Close Light ON: II-Close	RS485 communication Flashes when connected
T Type	I power indicator light Light ON : Normal Light OFF : Abnormal II power indicator light Light ON : Normal Light OFF : Abnormal	Running indicator: Flash: Normal	—	I way light ON: priority mode, auto switch auto recovery	II way light ON: priority mode, auto switch auto recovery	Light ON: auto switch NOT auto recovery, no priority	Light ON: I-Close Light ON: II-Close	—
M Type	I power indicator light Light ON : Normal Light OFF : Abnormal II power indicator light Light ON : Normal Light OFF : Abnormal	—	—	—	—	—	Light ON: I-Close Light ON: II-Close	—

## Appearance Figure

### 125A~630A Dimensions



## Installation Dimensions Table

Specifications	A	A1	B	B1	C	D	H	H1	H2	T	X	M	Y	S
125A	215	150	153	96	30	14	121	64.5	29.5	2.5	7	6	8	16
200A	272	200	167.5	107	36	20	141	76.5	33.5	3.5	9	6	10	25
250A	348	210	210	122	50	25	164	88	40.5	3.5	11	6	15	30
400A	348	210	210	122	50	35	164	88	40.5	3.5	11	6	15	35
630A	424.5	273	269	184	65	40	257.5	150	55.5	5	13	8	15	40

# T Type ATS Controller User Manual

## 1. Overview

ATS controller is an intelligent automatic transfer switch control module with programmable functions, automatic measurement, and remote control. It has a small size, integrated installation and disassembly, and can replace traditional relays and large control circuit boards, which is in line with market trends.

ATS controller provides the basic necessary monitoring and protection of the automatic transfer switch (ATS) to keep the switch in normal operation.

## 2. Product functions

- Rotary adjustment, indicator light, button operation;
- Collect I & II C phase voltage (power supply voltage), power supply range AC160~265V/50~60Hz;
- With overvoltage (C phase), undervoltage (C phase), delay and other functions;
- With auto/manual status switching, in manual mode, the switch can be forced to open and close remotely;
- The set parameters are permanently saved and power-off memory;
- The controller panel can provide power usage status and abnormal alarm indication.

## 3. Controller function description

**Power-on initialization:** When the product is powered on (the controller is powered by I way C-N and II way C-N, ensuring that at least one of the phases is powered normally), it will first self-check and actively find an initial position according to the factory settings (I way closed, II way closed, O position). Only after finding the initial position can it be set or manually operated.

The controller is operated by adjustment rotaries and buttons, and can synchronously detect the C-phase voltage of I way and II way. The real-time status of the controller can be observed on the main page, and phase failure, undervoltage, and overvoltage can be detected and corresponding command actions can be made according to the controller setting parameters. When the controller detects that O position or normal standby are simultaneously faulty, the controller issues a O position indication.

**Switch mode:** ① Auto switch auto recovery - I priority

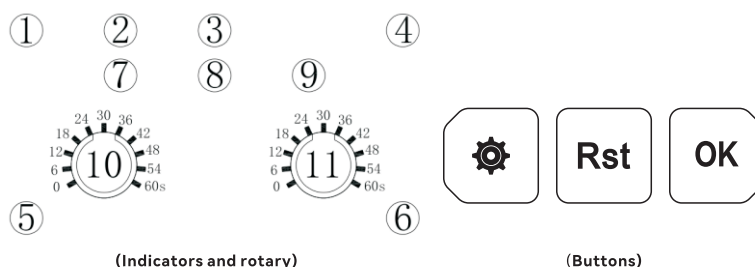
② Auto switch auto recovery - II priority

③ Auto switch NOT auto recovery - I way fault, II way normal, switch to II way; II way fault, I way normal, switch to I way, no priority

**Working mode:** Power generation function - Grid to power generation: When I way is abnormal, the controller sends a command to start after a delay

When I way is restored and closed, the controller sends a command to unload after a delay.

## 4. Rotary and button description



(Indicators and rotary)

(Buttons)

**Indication ①:** I way power indicator, always on when normal, off when faulty, flashing for 0.2s when judging faulty, flashing for 0.5s when judging recovery;

②: Operation indicator, indicating normal operation of the machine, flashing for 0.5s;

③: Manual/auto switching indicator, always on automatically, off manually;

④: II way power indicator, always on when normal, off when faulty, flashing for 0.2s when judging faulty, flashing for 0.5s when judging recovery;

- ⑤: I way closing indicator, always on when closing is in place, flashing during switching;
- ⑥: II way closing indicator, always on when closing is in place, flashing during switching;
- ⑦: Auto switch auto recovery - I way priority indicator;
- ⑧: Auto switch auto recovery - II way priority indicator;
- ⑨: Auto switch NOT auto recovery indicator;
- ⑩: Common delay adjustment rotary;
- ⑪: Standby delay adjustment rotary.

When the closing fails:

⑤, ⑥ closing indicator lights flash for 0.2s to indicate that you need to troubleshoot the fault and reset or power off and restart the controller.

- 1: Check whether the mechanical lock is in the auto position;
- 2: Check whether the auxiliary accessory signal inside the product is normal after powering off;
- 3: Check whether the motor is blocked.

Closing failure is a serious fault. If it cannot be solved, please contact after-sales.

Operation buttons:

[Set]: Set three working modes;

[Reset]: After adjusting the rotary or when the controller fails, you must press this button to reset;

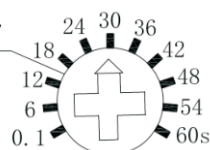
[Save]: After setting the mode, press this button to save.

## 5. Setting instructions

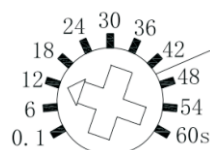
The controller enters parameter modification (used to achieve specific functions and parameter settings, and should be operated by professionals).

Time setting: If you need to change the common delay time to 30S and the standby delay time to 12S, adjust the rotary as follows:

**Common delay setting rotary**



**Standby delay setting rotary**



Note: After each adjustment of the rotary, the reset button must be pressed or the power must be turned off and restarted to work according to the latest adjustment parameters (to prevent misoperation).

Due to the mechanical characteristics of the rotary, the delay error is less than 10% and the repetition error is less than 1%.

Working mode setting: If you need to change from auto switch and auto recovery I way priority to auto switch NOT auto recovery, the steps are as follows:

1: Press and hold the setting key for 3 seconds to enter the setting (the 3 mode lights flash at this time);

2: Press the setting key to switch between the 3 modes (the corresponding mode indicator lights flash), here switch to auto switch NOT auto recovery light flashing;

3: Press the save key to save the mode and return to the main page. The auto switch NOT auto recovery mode light is always on.

At any time, press the reset button for 3 seconds to reset the machine.

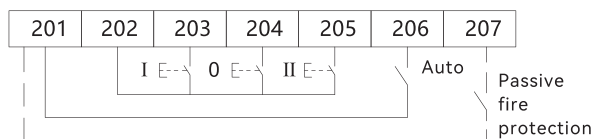
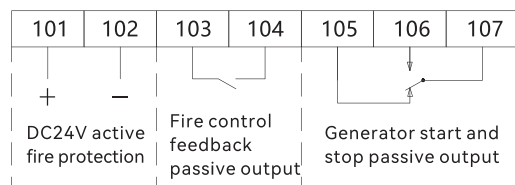
If you do not operate the button for more than 1 minute in any setting step, it will automatically return to the main page.

### Factory fixed parameters :

Function	Factory parameters
Overvoltage value	260V(C phase voltage)
Undervoltage value	170V(C phase voltage)
Overvoltage hysteresis value	3% (1)
Undervoltage hysteresis value	3% (1)
I way normal to fault determination time	1S
I way fault to normal recovery time	1S
II way normal to normal recovery time	1S
II way fault to normal recovery time	1S
Delay start generator time	0S
Delay stop generator time	30S



## ②Power input terminal



Terminal number	Terminal point number	Function	Illustrate
Terminal 1	101、102	101, 102 Fire control	DC24V constant voltage signal input
	103、104	103, 104 Fire control feedback	Passive contact 1A AC 220V
	105、106、107	105, 106, 107 Generator start and stop signal output	Passive contact 5A AC 220V
Terminal 2	201、206	201, 206 Open for passive control Closed for automatic control	When the external button is switched to remote control, 201-206 must be in the disconnected state
	202、203	When 202,203 short-circuited, execute I way closing	Active input is prohibited, otherwise it will damage the controller.
	202、204	When 202,204 short-circuited, execute 0 position	
	202、205	When 202,205 short-circuited, execute II way closing	
	201、207	When 201,207 short-circuited, execute forced 0 position.	

Special note: 201-207 is strictly prohibited from connecting voltage and other signals, otherwise the controller will be damaged;

In manual mode, multiple signals cannot be closed at the same time to avoid false operation.

Fire signal description: Firefighting is activated when a signal is available and cancel signal recovery.

## Controller simple problem solving

Fault Phenomenon	Fault Reason	Troubleshooting
Controller does not respond after power on	The power cord is in poor contact or fuse damaged	Check the wires and fuse (5A)
	The product is not connected to the neutral line	Check and connect the wires correctly
Controller does not automatically switch	Incorrect settings or operation	Check working mode, manual/auto status
	I and II ways power are connected in reverse	Change wiring
	Mechanical lock self-locking	Check the mechanical lock position
The operation does not respond or the operating indicator light is abnormal	The voltage is abnormal or there is a problem with the controller	Check the power supply voltage and then power off and restart
Controller indicates voltage failure	The neutral and live wires are wrong or not connected firmly	Check the wiring. Excessive input voltage may cause damage.
Controller phase sequence error	L1, L2, L3, N wrong connected	Switch between two L wires
Screen Set flashing	Parameter setting error	Please ensure that the parameters are set correctly. e.g: the overvoltage recovery value shall not be less than or equal to the undervoltage recovery value, and the overfrequency recovery value shall not be less than or equal to the underfrequency recovery value.



# E Type ATS Controller User Manual

## 1. Overview

ATS controller is an intelligent automatic transfer switch control module with programmable functions, automatic measurement, digital display, and RS485 communication (configurable); it has a small size, integrated installation and disassembly, and can replace traditional relays and large control circuit boards, which is in line with market trends.

ATS controller has the characteristics of being able to change internal control conditions and settings according to user needs, and can be used in conjunction with the power system transfer switch. ATS controller provides the necessary monitoring and protection for the automatic transfer switch (ATS) to maintain the normal operation of the switch.

## 2. Product functions

- LCD display, indicator light, button operation;
- Collect and display two-way three-phase voltage and frequency in real time, power supply range AC160~265V/50~60Hz;
- With overvoltage, undervoltage, overfrequency, underfrequency, phase loss, phase sequence (reverse phase), delay and other functions;
- All relevant action parameters such as opening and closing delay can be set;
- With auto/manual status switching, in manual mode, the switch can be forced to open and close;
- All parameters are programmable on site, using secondary passwords to prevent non-professionals from misoperation;
- With RS-485 isolated communication interface, using ModBus-RTU communication protocol, with remote control, remote signaling, remote measurement, "three remote" functions;
- The set parameters are permanently saved and power-off memory;
- The controller panel can provide power usage status and abnormal alarm indication.

## 3. Controller function description

**Power-on initialization:** When the product is powered on (the controller is powered by I way C-N and II way C-N, ensuring that at least one of the phases is powered normally), it will first self-check and actively find an initial position according to the factory settings (I way closed, II way closed, O position). Only after finding the initial position can it be set or manually operated.

The controller is operated by LCD (code) display and buttons, and can synchronously detect the three-phase electrical parameters of I and II ways. The real-time status of the controller and the real-time voltage value can be observed on the main page. It can detect phase loss, undervoltage, overvoltage, and reverse phase and make corresponding command actions according to the controller setting parameters. When the controller detects a O position or standby fault at the same time, the controller will issue a O position indication (opening).

**Switch mode:** ① Auto switch auto recovery - I priority

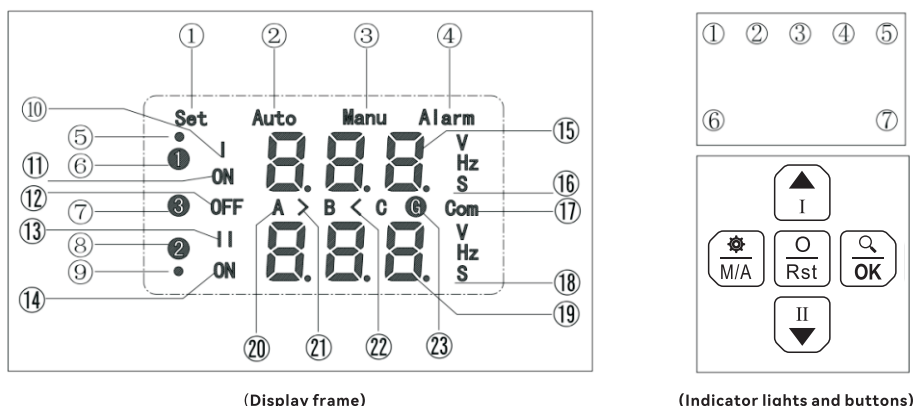
② Auto switch auto recovery - II priority

③ Auto switch NOT auto recovery - I way fault, II way normal, switch to II way; II way fault, I way normal, switch to I way, no priority

**Working mode:** ① Power generation function - Grid to power generation: When I way is abnormal, the controller sends a command to start after a delay. When I way is restored and closed, the controller sends a command to unload after a delay.

② Grid to grid: no power generation function

## 4. Display and operation button description



Normal for I and II ways, including voltage, frequency, and phase sequence, all are normal. Any error is a fault (the default is normal when the function detection is closed).

Indicator light ①/⑤: I/II power indicator light, always on for normal operation, off for fault, flashing for 0.2s when judging fault, and flashing for 0.5s when judging recovery;

②: Running indicator light, indicating the normal operation of the machine, flashing for 0.5s;

③: Manual/auto working status indicator light, always on automatically, off manually;

④: Communication indicator light, lights up for 0.2s when receiving the issued command;

⑥/⑦: I/II closing indicator light, always on when closing is in place, flashing during the transfer;

When closing failure occurs: ⑥, ⑦ closing indicator lights flash for 0.2s.

### Operation button:

【Setting/Manual-Auto】1: Press and hold for 3 seconds to enter the password input interface, press this key in the parameter setting interface to return to the project selection;

2: Click the manual/auto mode switch button.

【O position/Reset】1: Switch to O position on the main page and automatically switch to manual mode;

2: Press and hold this key for 3 seconds to reset the machine

【▲/I Way】1: Switch I way to close in manual mode on the main page;

2: In the parameter setting interface, you can switch the setting interface and the increase of parameters. Press and hold to increase continuously.

【▼/II Way】1: Switch II way to close in manual mode on the main page;

2: In the parameter setting interface, you can switch the setting interface and the decrease of parameters. Press and hold to decrease continuously.

【Confirm/Query】1: Confirm the project setting interface, save the modified parameters and return to the main interface.

2: In the main monitoring interface, you can quickly query the real-time values of voltage, frequency and switch time by jogging.

### Display frame

①: Setting status indication;

②: Auto working mode indication;

③: Manual working mode indication;

④: Closing failure alarm indication;

⑤/⑨: Phase sequence indication of I/II ways, phase sequence function stop-OFF, normal phase sequence-ON, wrong phase sequence-flashing;

⑥: Auto switch auto recovery I priority indication;

⑦: Auto switch NOT auto recovery indication;

⑧: Auto switch auto recovery II priority indication;

⑩/⑬: I/II power supply indication (same as indicator light ①/⑤);

⑪/⑭: I/II closing indication;

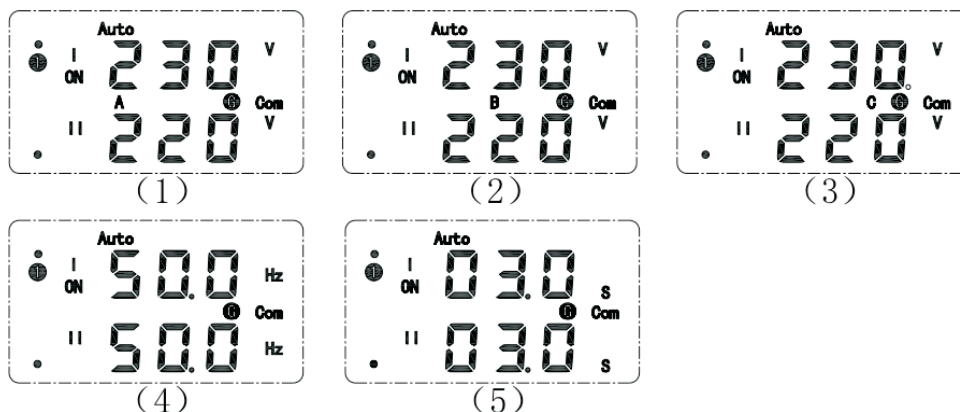
⑫: Opening indication;

⑮: Display I power parameters in working status, display project symbols in setting;

⑯/⑳: I/II power supply side voltage, frequency, time unit;

- ⑦: Communication indication (same as indicator light④);
- ⑧: Display II power parameters in working status, display project parameter values in setting;
- ⑨: A, B, C phase indication;
- ⑩/⑪: Over/Under status indication, lights up when setting overvoltage, undervoltage, overfrequency, or underfrequency;
- ⑫: lights up when AC power is used for power generation.

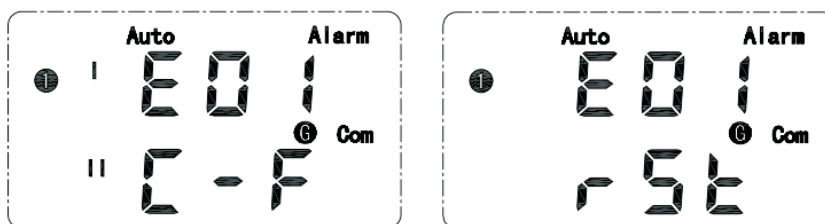
Under normal conditions (e.g.: auto switch auto recovery, I priority, auto mode, AC power for power generation, phase sequence detection ON, communication connected), the following (1)–(5) display in a cycle:



You can also quickly switch to view the 5 interfaces by pressing the Confirm key.

Special note: If there is an error such as closing failure, you must reset or power off the controller after troubleshooting (the interface displayed after closing failure is as shown below)

The first row displays the fault code, and the second row flashes "C-F"/"rSt".



Fault Codes	Fault description	Causes and treatment methods
E01	Detected the closing signals of I and II ways at the same time	1: Check whether the mechanical lock is in the automatic position;  2: Check whether the auxiliary accessory signal inside the product is normal after power off;  3: Check whether the motor is blocked. Closing failure is a serious fault. If it cannot be solved, please contact after-sales.
E02	The switching time from II to I way exceeds 2 closing times and the closing signal of I is not detected	
E03	The switching time from O position to I way exceeds the closing time and the I way closing signal has not been detected	
E04	The switching time from I to II way exceeds 2 closing times and the closing signal of II way is not detected	
E05	The switching time from O position to II way exceeds the closing time and the II way closing signal has not been detected	
E06	The I way switching time exceeds 1/2 of the closing time and the O position signal has not been detected	
E07	The II way switching time exceeds 1/2 of the closing time and the O position signal has not been detected	
E08	No closing signal detected	

## 5. Parameter setting and display instructions

All parameters of the normal operation of the controller can be modified and set. To ensure safe operation, a security password is set, initially (001).

If no button is pressed for 1 minute, the main monitoring interface will be returned.

If no button is pressed for 2 minutes, the display screen will be black and can be awakened by pressing any key. Be careful not to operate other functions (such as double split, manual/auto mode switching) by mistake after awakening.

Steps for the controller to enter the parameter modification interface (used to achieve specific functions and parameter settings, and should be operated by professionals):

1 - When the controller is in the normal display state after the system is powered on, press and hold the "Set" key for 3 seconds to enter the password input interface, and the display will show: "PIN 000" (000 flashes);

2 - Press the " " key to enter the initial password, and the display will show: "PIN 001" (001 flashes);

3 - Press the "OK" key, and after "P00 003" is displayed, it will be unlocked (P00 flashes).

After unlocking, press the table to enter the project parameter setting. The comparison table is as follows (lowercase xx or xxx represents the specific parameter value set):

Item	Parameter value/code	Functional description	Range	Factory value
P00	xxx	I way transfer time	0~90S	3
P01	xxx	II way transfer time		3
P02	1tP	Auto switch auto recovery, I priority		1tP
	2tP	Auto switch auto recovery, II priority		
	3No	Auto switch NOT auto recovery		
P03	E-g	Grid to power generation		E-g
	E-E	Grid to grid		
P04	xxx	I way overvoltage value (1)	225~265V-OFF	260
P05	xxx	I way undervoltage value (1)	OFF-160~215V	180
P06	U xx	I way overvoltage hysteresis value (2)	2~20%	3%
P07	U xx	I way undervoltage hysteresis value (2)		3%
P08	xxx	I way overfrequency value (1)	40~70Hz-OFF	65
P09	xxx	I way underfrequency value (1)	OFF-40~70Hz	45
P10	F xx	I way overfrequency return value (3)	42~68Hz	62
P11	F xx	I way underfrequency return value (3)		48
P12	xxx	I way normal to fault confirmation time	0~60S	5
P13	xxx	I way fault to normal confirmation time		10
P14	xxx	II way overvoltage value (1)	225~265V-OFF	260
P15	xxx	II way undervoltage value (1)	OFF-160~215V	180
P16	U xx	II way overvoltage hysteresis value (2)	2~20%	3%
P17	U xx	II way undervoltage hysteresis value (2)		3%
P18	xxx	II way overfrequency value (1)	40~70Hz-OFF	65
P19	xxx	II way underfrequency value (1)	OFF-40~70Hz	45
P20	F xx	II way overfrequency return value (3)	42~68Hz	62
P21	F xx	II way underfrequency return value (3)		48
P22	xxx	II way normal to fault confirmation time	0~60S	5
P23	xxx	II way fault to normal confirmation time		10
P24	xxx	Delayed start generator time (4)	0~300S	5
P25	xxx	Delayed stop generator time		30
P26	xxx	Phase sequence detection	ON/OFF	OFF
P27	2U	There is a voltage fault in either of the I and II ways.	Optional programmable output port	Do-Sd
	UE	There is a voltage fault in both I and II ways		
	nU	I way voltage fault		
	rU	II way voltage fault		
	Sd	Manuel mode		
	CF	Closing failure		
P28	xxx	Communication address 1-247	Optional	1
P29	xxx	Display brightness	1~63	16
P30	xx.x	Closing time(5)	0.0~9.9S	2.5S
P31	xxx	Set new password	0~999	1
P32	rSt	Restore factory settings		

Special note: P30-32 should not be operated or changed without special circumstances.

Note: (1) - Detection accuracy  $\leq \pm 2\%$ , OFF means turning off the corresponding detection function;

(2) - Hysteresis value: If the voltage is set to 260V overvoltage, the hysteresis value is set to 5. Then when the voltage exceeds 260V overvoltage fault, when the voltage is  $260 \times (100 - 5) / 100 = 247V$ , the voltage returns to normal; if the undervoltage is 180V, the hysteresis value is 5. After the undervoltage, the voltage  $180 \times (100 + 5) / 100 = 189$  returns to normal;

(3) - The frequency return value must differ from the over-frequency by at least 2. If the overfrequency is set to 63, the overfrequency recovery value must not be 62 and must be  $\leq 61$ ;

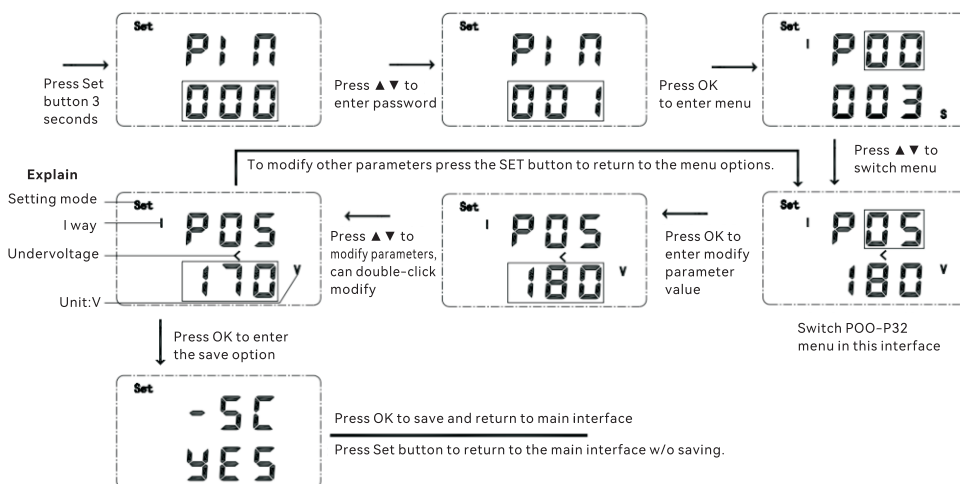
(4) - When the C phase voltage of I way is powered off and II way is out of power, the controller is in a power-free state, then the generator port returns to the default state, that is, the start delay is 0;

(5) - Closing time: Set an accurate closing time (the action time for I to II way or II to I way) to judge the switching failure. For example, if the closing time is set to 5 seconds, when I switches to II for 5 seconds and no closing signal of II is detected, it will be turned again (turned for another 5 seconds). If the closing signal of II is still not detected, it indicates that the closing of II has failed.

(6) - Phase loss and phase sequence judgment time  $\leq 1S$ .

Example of parameter modification: If you need to modify the undervoltage value of channel I to 170V

Operation instructions (refer to this example for other parameter modifications):



The above figure shows a box around the periphery, indicating that this item or parameter is selected (the box displays flashing).

After unlocking the password, it displays "P00,003" (00 in the menu bar flashes);

4 - Press the " $\Delta$ " key to switch the project menu to display "P05, 180" (05 in the menu bar flashes);

5 - Press the "OK" key to display "P05, 180" (I way undervoltage value 180 flashes);

6 - Press the " $\Delta/\nabla$ " key to adjust the number to the required value "P05, 170" (I way undervoltage value 170 flashes);

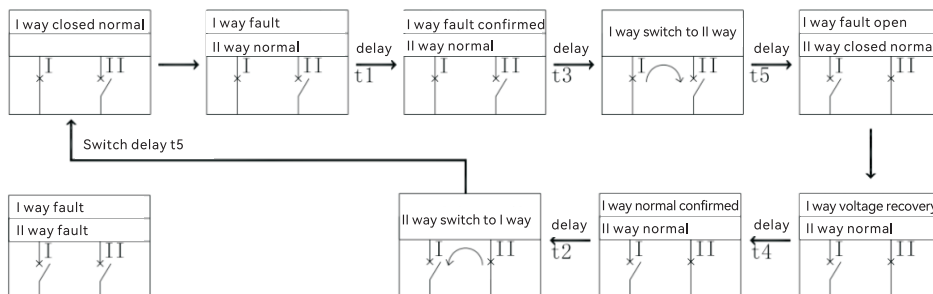
7 - If no other parameters need to be set, press the "OK" key to prompt "-SC,yES" (yES flashes);

(If other parameters need to be set, press the "Set" key to return to the project menu sequence "P05,170" (05 in the menu bar flashes) Then follow steps 5-6 to enter other projects to modify parameters)

8 - Press the "OK" key to save the parameters and return to the main monitoring interface (I way undervoltage value 170V is set successfully)

Press the "Set" key without saving the modified parameters.

Controller operation flow chart (e.g.: auto switch auto recovery I priority):



t1: Confirmation time of I way voltage from normal to fault;      t2: I way delay;      t3: II way delay;  
t4: Confirmation time of I way voltage from fault to normal;  
t5: Closing time (I-II, II-I switching rotation time)

Note: If the flow chart is set to auto switch auto recovery, I way is prioritized.

1 (Fault): After detecting abnormal voltage of I way, the controller will first determine whether the voltage confirms the fault at t1, and then start II way delay t3 after confirming the fault. After t3 delay time, I-II switching (motor rotation) will start, and the rotation closing time is t5. After t5, the II way closing signal is detected, and the II way closing switch is completed, and the II way closing indicator light is on.

2 (Self-recovery): When the voltage of I way is detected to be restored, the controller will first determine whether the voltage is normal at t4. After confirming that it is normal, it will start the delay t2 of I way. After the delay time t2 is over, the II-I switching starts (the motor rotates). The rotation closing time is t5. After t5, the I way closing signal is detected. At this time, the I way closing switch is completed, and the I way closing indicator light is on.

## 6.Wiring terminal

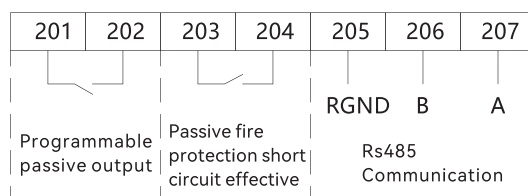
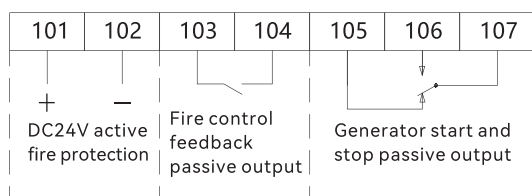
### ①Power input terminal

I	401	402	403	404
	L1	L2	L3	N

II	501	502	503	504
	L1	L2	L3	N

Power supply type	Terminal point number	Function	Illustrate
External type power supply (Standard)	401-404	I way supply input terminal	Please add a 5A fuse at the incoming line
	501-504	II way supply input terminal	
Built-in type power supply (Customized)	Built-in type power supply is powered by ATS, and no external power wire is required. (If you need built-in type wiring, please contact us in advance when ordering.)		

### ②Power input terminal



Terminal number	Terminal point number	Function	Illustrate
Terminal 1	101, 102	101, 102 Fire control	DC24V constant voltage signal input
	103, 104	103, 104 Fire control feedback	Passive contact 1A AC 220V
	105, 106, 107	105, 106, 107 Generator start and stop signal output	Passive contact 5A AC 220V
Terminal 2	201, 202	201, 202 Programmable passive contact output	Passive contact 1A AC 220V
	203, 204	When 203, 204 short-circuited, execute forced 0 position.	/
	205, 206, 207	205, 206, 207 RS485 communication input terminal	

Note: The fire linkage state is double-point linkage when there is a fire input signal, and the fire input signal is cancelled and restored; Strictly follow the terminal wiring diagram for wiring, especially the fire and communication ports, otherwise the controller will be damaged.

## Controller installation, test and precautions

The controller must be installed with power off. It is strictly forbidden to operate the wiring terminals with power on. The wiring must be strictly in accordance with the terminal wiring diagram, otherwise the controller may be burned.

Non-professionals are prohibited from operating and repairing, otherwise it will cause electric shock or product damage.

The internal setting parameters of the controller are set at the factory. If there is no special need, there is no need to change.

It cannot be installed outdoors or in places with strong interference, otherwise it will shorten the service life or cause adverse reactions.

After the product is installed, first use the operating handle to manually operate without power on, and switch between I, O position, and II. The product should be flexible to switch.

Before powering on, check the primary wiring and secondary circuit again to make sure that the wiring is correct before powering on or debugging.

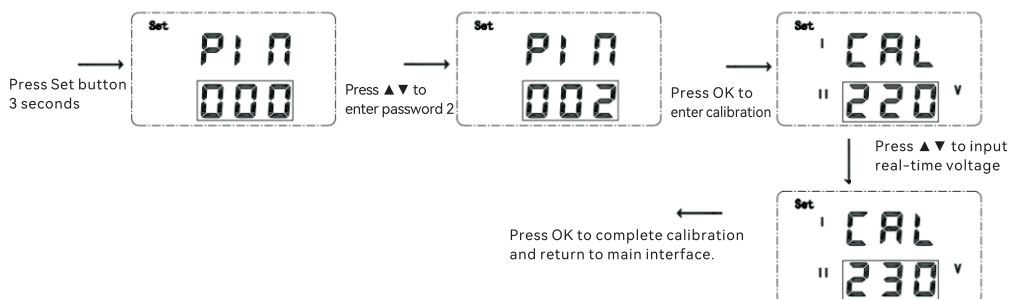
After powering on, first check whether the indicator light is normal. If normal, you can manually operate I and II to close and O position in manual mode to make sure that the controller switches normally.

When conducting dielectric tests or using a megohmmeter to measure insulation resistance, the controller must be completely removed before operation.

**Maintenance steps:** Turn the operation panel button or mechanical lock position to manual, then switch the ATS to O position, turn the mechanical lock switch to the Lock position to lock it, and after the maintenance is completed, turn the mechanical lock to the Auto position first, and then press the controller to the auto mode.

**Special instructions (no random operation without demand):** The voltage has been calibrated at the factory. If there is an error in the voltage due to special circumstances such as changes in ambient temperature, you can calibrate it yourself

If the displayed voltage is 225V and the measured voltage is 230V, the calibration steps are as follows (if the three phase voltage of I/II is required to be consistent):



## Controller use environment, transportation and storage conditions

Usage environment: Ambient temperature: -10°C~40°C

Relative humidity: 10%~93%

Altitude: <3000 meters

Usage place and protection level: IP30, no rain, snow, salt spray erosion

Transportation and storage conditions: The controller belongs to the category of precision instruments and meters, and should be avoided from impact, collision, and rain.

The product should not be subjected to severe impact and should be transported and stored according to regulations.

## After-sales service

Welcome to the controller produced by our company. Within 12 months from the date of leaving the factory, you will enjoy our warranty service. If you have any questions, please contact after-sales service department, we will be happy to serve you. During this period, users should use, maintain and maintain according to the specifications. If it cannot be used normally due to product quality problems, the company is responsible for repair or replacement. If the user fails to operate according to the specifications and requirements of this description, the product will be damaged and cannot enjoy the service.

# VEGA

## Certification

Description: Automatic Transfer Switch

Inspector: \_\_\_\_\_



Date of production: \_\_\_\_\_