ATS330AC ATS CONTROLLER
USER MANUAL 1.0

Software Version

No.	Version	Date	Note
1	V1.0	2023-07-01	Original release.

Chongqing Mebay Technology Co.,Ltd
Add: No6-2,Building 4, Gangan Rd, Jiangbei District, Chongqing.
Tel：+86-23-6869 3061
Fax：+86-23-6765 8207
Web：http://www.mebay.cn
http://www.cqmb.cn
E_mail：sales@mebay.cn

Symbol Description

Symbol	Description
 Note	Remind operators to operate correctly, otherwise it may cause the equipment not to work correctly.
 Be care	It is indicated that potential hazards can damage equipment without proper precautions.
 Warning	It is indicated if appropriate preventive measures are not taken, potentially dangerous situations may result in death, serious personal injury or significant property losses.

Warning

1.The installation of this equipment must be carried out by professionals.
2.When installing and operating the controller, please read the entire instruction manual first.
3.Any maintenance and commissioning of the equipment must be familiar with all the equipment.
4.After the installation of the controller is completed, please verify that all protection functions are valid.

Catalogue

Notes:

2. MEBAY Technology reserves the rights to change the contents of this document without prior notice.

Summary

The ATS330 is a dual power automatic switching controller for mains and standby power switching applications, allowing automatic or manual control of ATS dual power switching. It has a dot matrix high resolution LCD display which shows power status, switch status, frequency, voltage, phase sequence and other parameters; the operating modes (manual, automatic, power failure) indicate the ATS switch operating status through LED indicators.

There are Chinese/English interface options, more language can be set according to user's request. All parameters of the controller can be adjusted via the controller panel keys or by using a PC (external RS485 expansion module) to meet the different application requirements of the user.

Main Features

- ◆ Dual core 32bit high performance single chip microcomputer.
- ◆ AC power supply: Voltage operating range. (AC: 100-260V)
- ◆ LCD screen, Available in Chinese/English languages, user's language set if necessary.
- ◆ The voltage and frequency of the mains and standby power supply can be displayed.
- ◆ Automatic/Manual mode.
- ◆ Suitable for various AC systems (3 phase 4-wires,, single-phase 2-wire, and 2-phase 3-wire).
- ◆ Input/output function, status can be shown directly.
- ◆ Totally 4 relays output.
- ◆ Totally 1 configurable switch input.
- ◆ A black box function, which saves the relevant parameters of the unit when a fault alarm occurs, making it easy to find the cause of the unit's failure.
- ◆ Acquisition and display of parameters such as voltage, frequency, etc.
- ◆ Control Protection: Realize automatic ATS switching of generator sets, perfect fault display and protection functions.
- ◆ Standard water-proof rubber gasket. The waterproof can reach IP65.
- ◆ Module design: All the connections are adapted with European connectors so that installation, connection, repair and replacement can be more easily.
- ◆ Extensible RS485 interface: The connection of the extensible RS485 allows the use of the MODBUS protocol to achieve the "three remote" function.

Parameters Display

- ◆ S1 voltage
- ◆ S1 Frequency
- ◆ S1 Number of closing times
- ◆ S2 Voltage
- ◆ S2 Frequency
- ◆ S2 Number of closing times
- ◆ S1/S2 with power supply time
- ◆ Switch Status
- ◆ Work Mode

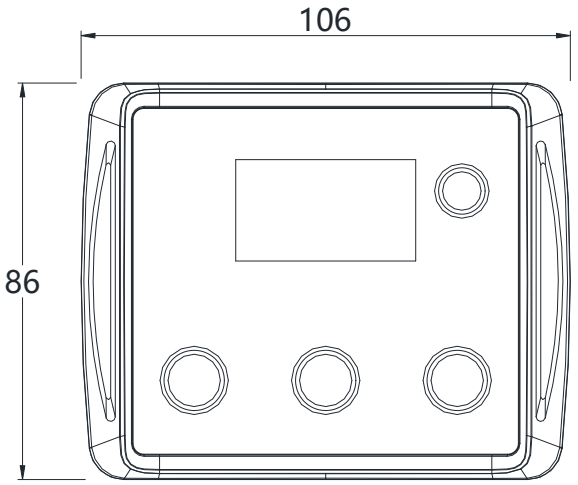
◆ Real-time status

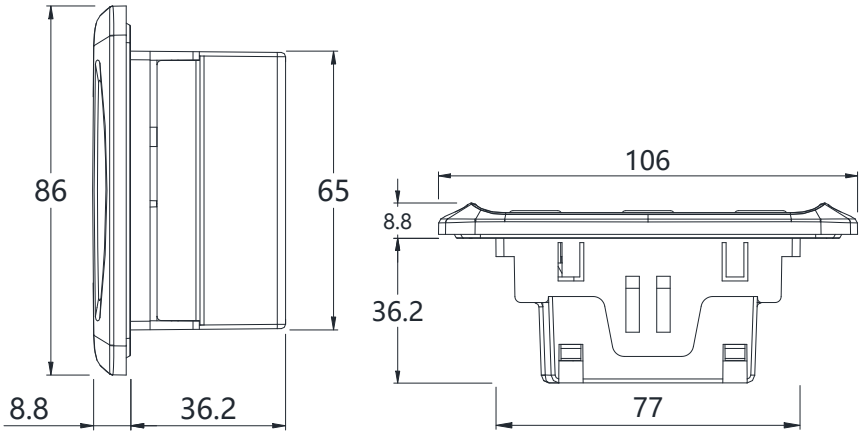
Parameters

Options	Parameters
Working voltage	AC 100V-260V(L1N1/L2N2)
Power consumption	Standby：MAX 1W
	Working：MAX 2W
S1 Voltage Input	3P4W 100VAC-260VAC (ph-N)
S2 Voltage Input	3P4W 100VAC-260VAC (ph-N)
MAX Accumulating Time	99999.9Hours (Min Store time:6min)
Closing S1 output	250VAC/16 AMP Non-contact normally Open output
Closing S2 output	250VAC/16 AMP Non-contact normally Open output
Double split output	250VAC/3 AMP Non-contact normally Open output
Remote start S2 output	30VDC/1 AMP Non-contact normally close output
Fire input	Fire input signal earth active
Closing feedback input	The Closing feedback signal is valid
Working condition	-25-65℃
Storage condition	-40-85℃
Protection Level	IP65：when waterproof rubber gasket is added between controller and its panel
Insulation strength	Apply AC 2.2kV voltage between high voltage terminal and low voltage terminal; The leakage current is not more than 3mA within 1min.
Overall dimension	106mm*86mm*45mm
Panel cutout	78mm*66mm
Weight	0.3Kg

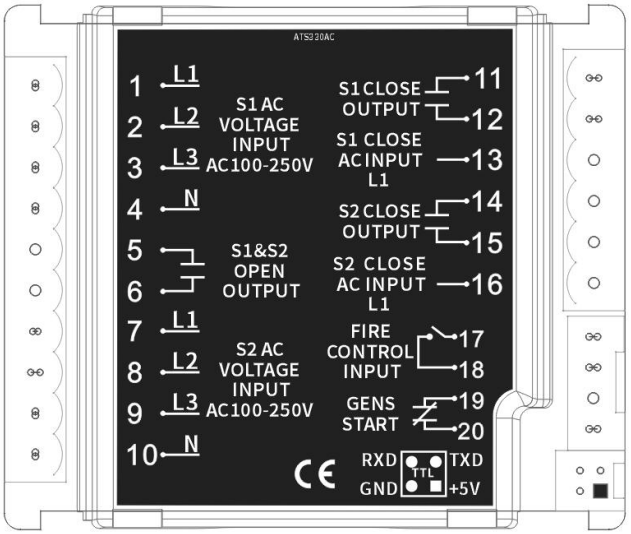
Overall Dimension and Wiring Diagram

◆ Overall Dimension:





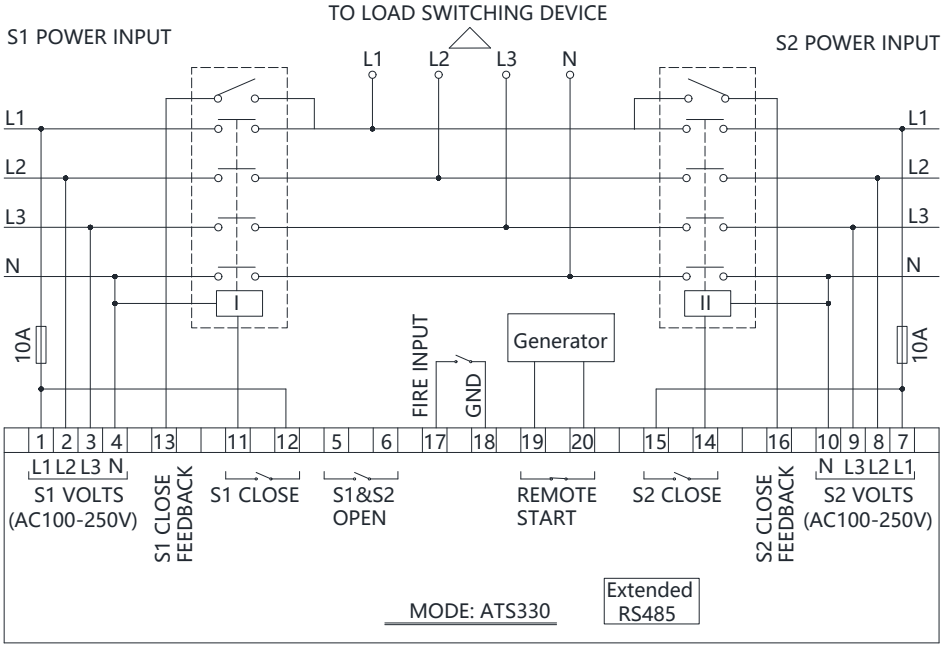
◆ **Descriptions of terminal connection**



No.	Function	Description	Cable cross sectional area
1	L1(S1)	S1 Mains voltage input, AC 100 - 260V.	1.0mm^2
2	L2(S1)		1.0mm^2
3	L3(S1)		1.0mm^2
4	N(S1)		1.0mm^2
5	Double split output	Non-contact normally open output Capacity: 250VAC/3A	1.0mm^2
6			1.0mm^2

7	L1(S2)	S2 Spare voltage input, AC 100 - 260V.	1.0mm²
8	L2(S2)		1.0mm²
9	L3(S2)		1.0mm²
10	N(S2)		1.0mm²
11	S1 Close output	Non-contact normally open output Capacity: 250ACV/16A	1.0mm²
12			1.0mm²
13	S1 close AC input L1	S1 closing feedback signal is valid.	1.0mm²
14	S2 Close output	Non-contact normally open output Capacity: 250VAC/16A	1.0mm²
15			1.0mm²
16	S2 close AC input L1	S2 closing feedback signal is valid.	1.0mm²
17	Fire control input	Fire control input signal ground is active	1.0mm²
18			1.0mm²
19	Gens start	Non-contact normally close output Capacity: 1A/30VDC	1.0mm²
20			1.0mm²
	RS485 Extended interfaces	For PC operation and control	

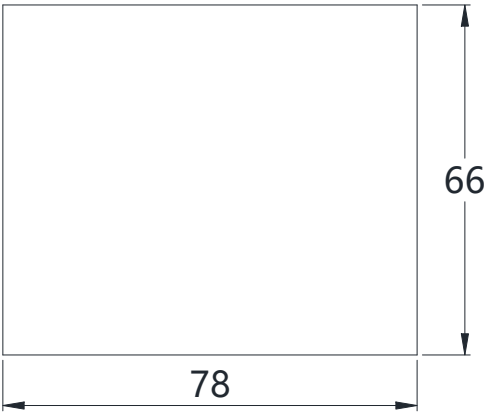
◆ ATS330AC Typical Wiring Diagram



Installation instruction

◆ The controller is fixed by two special fixing members and screws, and the screws of the metal fasteners cannot be too tight.

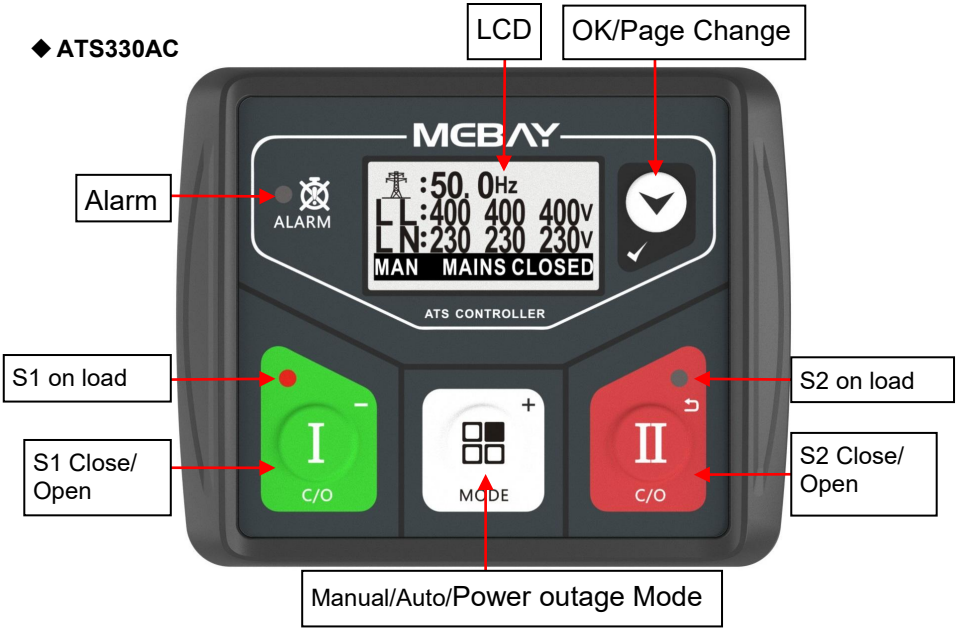
◆ Panel Cutout: W78mm*H66mm.



Note: If the controller is installed directly in the genset shell or other fluctuated equipment, the rubber pad must be installed.

Panel and display

◆ **ATS330AC**



◆ **LED Indicators description**

Indicator Type	Description
Alarm	◆ Lights red when a fault alarm occurs.
S1 on load	◆ It is light on when S1 I close input is activated.
S2 on load	◆ It is light on when S2 II close input is activated.
Input /Output Description	**Description**
I1	◆ Fire control input
O1	◆ Double split output
O2	◆ S1 output
O3	◆ S2 output
O4	◆ Remote start output

◆ **Key Function Description**

KEYS	NAME	Main Function
	S1 Close/Open Decrease	◆ Active in Manual mode. Press this key, mains closing forced output or mains open. ◆ Under edition mode, to decrease the numbers. ◆ Under records mode, pressing this key to change the page.
	Manual Mode Auto Mode Power outage Increase Manual start/ stop	Pressing this key will set the module into Manual Mode/Auto Mode/Power outage Mode. ◆ Under edition mode, to increase the numbers. ◆ Under records mode, pressing this key to change the page. ◆ In manual mode, press this button for 3s to enter manual start and stop;
	S2 Close/Open Revert	◆ Active in Manual mode. Press this key, gens closing forced output or gens open. ◆ Pressing this key can cancel the setting and back to upper class under edition. ◆ Under the setting mode with checking data, the data can be saved and system will exit after pressing.
	Page change OK Setting mode	◆ Page change. ◆ Confirm the change under edition mode. ◆ Choose alarm records under records checking mode. ◆ Press for 3 seconds to enter the parameter setting mode.

◆ **Alarm records checking**

ATS 330 controller can save 12 group of alarm records which contains the alarm record data includes detailed data such as alarm time,prompt status information, etc.

How to check the alarm records:

1. Enter alarm record page: Enter the setting mode, select the alarm record and press ▼]key to enter
2. Press ▣ to turn upper digit and press I to turn lower digit in order to choose the record you need. Press ▼ to confirm the record and come into history records checking page.
3. Press I to turn lower records under records checking page. Press ▣ to turn upper records and press ▼ to revert back to alarm history records page.
4. Exit from records page: In the history records page and checking page, press II to exit.

Control and operating instructions

The controller can work in manual mode, automatic mode, power outage, and switch by pressing the ▣ key. When the mode is valid, the mode and status are displayed in the status bar.

⚠Remote start output is default set as Genset Start Output (Normally Open) and there is only normally close contact in it. The controller also can control the genset start even if there is no power supply.

Manual Mode and Manual start/ stop

When the button ▣ status bar shows manual mode, it means that the controller is working in manual mode.

In manual mode, when the I key is pressed, the S1 closing output relay will be forcibly output; when the II key is pressed, the S2 closing output relay will be forcibly output. In manual mode, the generator remote start relay does not output.

In manual mode, press and hold the MODE button ▣ for more than 3 seconds, and you will directly enter the manual start-up interface as follows. Press the MODE key ▣ again to cycle through different parameter rows, and then press the confirm key ▼ to confirm the operation.

1.Return	
2.Stop Genset	Disconnect the start signal, i.e. stop the running genset.
3.Start Genset	Output the start signal, i.e. start the genset.

AUTO Mode

In AUTO mode: When the S1 mains changes from normal to abnormal (loss, over voltage, under voltage), the [S1 abnormal delay] will start immediately. When the delay is completed, the mains is still in an abnormal state, then start [S2 Start Delay]. When the delay is over, the remote start output relay is open to control the start of the generator set. When the voltage of the S2 set is normal, it will start [S2 Normal Delay], after the [Transition Interval Delay], the S2 closing output relay will be closed, and the ATS switch to the S2 generator group for power supply.

When the S1 mains changes from abnormal to normal, the [S1 normal delay] will start immediately. After the delay is over, the S2 closing relay will be disconnected. After the [transition interval delay], the S1 mains closing output relay is closed, and the ATS switch to S1 mains power supply.

When the S1 mains power returns to normal, immediately start [S2 Shutdown Delay]. After the delay is over, the output relay of the remote start-up is disconnected to control the generator set to stop;

Power outage mode:

When switching to the power outage mode, Then S1 closed and S2 closed are both disconnected and the double division relay output. The unit start signal is immediately switched off, warnings and alarms are not valid in this mode and all keys on the panel are invalid except for the screen change key.

When performing equipment maintenance, please make sure that the controller is working in manual mode. Check and confirm the position of the ATS switch to prevent accidents and endanger personal safety.

Prompt status information

NO.	Item	Description
1	S1. Closed	The S1 has been closed,show in status bar.
2	S2. Closed	The S2 has been closed,show in status bar.
3	Offload	Switch was already opened and load disconnect.
4	Alarming	When there is fault alarm occurs, the indication will be displayed when change the mode to Auto Mode manually, show in status bar.
5	AUTO	Current mode is Auto mode, show in status bar.
6	MAN	Current mode is Manual mode, show in status bar.
7	OFF	Current mode is Power outage mode, show in status bar.

S1/S2 Voltage status

No.	Item	Description
1	S2 Start	Delay time before S2 start
2	S2 Return	Delay time before S2 stop
3	S2 Working	S2 unit remote start output when active.
4	S2 Standby	When the remote start output of the S2 unit is invalid.
5	S1 Available	S1 normal Delay.
6	S1 Unavailable	S1 abnormal Delay.

7	S2 Available	S2 normal Delay.
8	S2 Unavailable	S2 abnormal Delay.
9	S1 Loss of Phase	Loss of any phase of L1, L2 and L3.
10	S2 Loss of Phase	Loss of any phase of L1, L2 and L3.
11	S1 No voltage	S1 No voltage
12	S2 No voltage	S2 No voltage
13	S1 Abnormal	S1 Over-voltage, under-voltage, over-frequency, under-frequency and other abnormalities
14	S2 Abnormal	S2 Over-voltage, under-voltage, over-frequency, under-frequency and other abnormalities

Switch status

No.	Item	Description
1	Closing S1	S1 closing delay is in progress.
2	Closing S2	S2 closing delay is in progress.
3	Transfer rest	Interval time between switch transfer
4	S1 on load	S1 was already closed and S1 is taking load.
5	S2 on load	S2 was already closed and S2 is taking load.
6	Offload	Switch was already opened and load disconnect.

Warning and fault alarm

◆ **fault alarm**

Warning: After the fault alarm occurs, the system will be immediately trip. Only after troubleshooting, can it be closing normally.

Notes：When a fault alarm occurs, the "**ALARM**" lights flicker and the current fault interface displays the alarm description and trips.

NO.	Item	Description
1	S1 Faile to close	In Auto mode, S1 close failure is occurs. "**ALARM**" lights is flashing, displays "**S1 faile to close**" on the current fault screen.
2	S2 Faile to close	In Auto mode, S2 close failure is occurs. "**ALARM**" lights is flashing, displays "**S2 faile to close**" on the current fault screen.
3	S2 Over volt	The S2 voltage is greater than its set upper limit. "**ALARM**" lights is flashing, displays "**S2 over volt**" on the current fault screen.
4	S2 Under volt	The S2 voltage is less than its set lower limit. "**ALARM** " lights is flashing, displays "**S2 over volt**" on the current fault screen.
5	S2 Over freq	The S2 frequency is greater than its set upper limit. " **ALARM** " lights is flashing, displays "**S2 over freq**" on the current fault screen.
6	S2 Under freq	The S2 frequency is less than its set lower limit. "**ALARM**" lights is flashing, displays "**S2 under freq**" on the current fault screen.

Parameter setting

◆ **Enter the edition page**

Please set the parameters according to below steps:

1) Press the key for 3 seconds to enter the parameter setting interface;

2) Under the parameter browsing interface, press I to shift up the parameters, press to shift down the parameters, press to get into parameter changing page. The default password is “07623”.

3) Under the parameter browsing interface, press I to shift up the parameters, press to shift down the parameters, press to get into parameter changing page.

4) Under the parameter modification interface, Press to add number 1, press I to reduce number 1, press to turn the digit into right and done.

5) After the parameter modification is completed, press the key to confirm the modification, the item identifier stops flashing , indicating that it returns to the parameter browsing interface;

6) Under the parameter modification interface, Press II to cancer parameter modification and return to parameter browsing interface.

7) Under the parameter browsing interface, Press II to save the parameters and exit from edition page.

Revert back to default: put password "97011" when coming into parameters setting, then all the parameters can be set as defaults.

Note: the data can’t be saved if the user didn’t press II to confirm the setting.

Warning: The parameter setting will take effect immediately after the completion, please pay attention to site safety!

◆ **Parameter list.**

1) Basic setting

No	Parameter	Range ***(default)***	Notes
0	Language	0-English ***1-简体中文*** 2-繁體中文	Language option.
1	S1 available delay	1.0-999.0S***(10.0S)***	The delay from S1 voltage abnormal to normal.
2	S1 unavailable delay	1.0-999.0S***(5.0S)***	The delay from S1 voltage normal to abnormal.
3	S2 available delay	1.0-999.0S***(10.0S)***	The delay from S2 voltage abnormal to normal.
4	S2 unavailable delay	1.0-999.0S***(5.0S)***	The delay from S2 voltage normal to abnormal.
5	S2 start delay	0-60000 S***(1S)***	When the S2 set is ready to start, start delay begins, after the start delay has expired, start signal will be initiated.
6	S2 stop delay	0-60000 S***(5S)***	When the S2 set is ready to stop, stop delay begins, after the stop delay has expired, stop signal will be initiated.
7	Load /Unload	1.0-60.0s***(60.0s)***	Mains and Gens loading and unloading pulse

	pulse width		width, when it is 60s, it is regarded as continuous output.
8	Transfer Interval	0-999.0s***(1.0S)***	Interval time from S1 switch open to S2 switch close; or from S2 switch open to S1 switch close.
9	Over conversion delay	0-20.0s***(20.0s)***	Under the condition of continuous output of closing and opening: the time that the closing relay continues to output after detecting the closing state signal.
10	S1 AC system	0: 1 phase 2 wire 1: 2 phase 3 wire ***2: 3 phase 4 wire***	AC power supply mode for closing output.
11	S2 AC system	0: 1 phase 2 wire 1: 2 phase 3 wire ***2: 3 phase 4 wire***	AC power supply mode for closing output.
12	S1 under volt	100-260V***(180V)***	When the S1 voltage is lower than the "low voltage crank threshold" and comes into S1 low voltage delay(normal failure delay) but still lower, then S1 becomes invalid. If the voltage become higher than "low voltage revert threshold" during normal failure delay time, then it will not alarm.
13	Revert under volt	100-260V***(200V)***	
14	S1 over volt	100-260V***(250V)***	When the S1 voltage is higher than the" high voltage crank threshold" and comes into S1 high voltage delay(normal failure delay) but still higher, then S1 becomes invalid. If the voltage become lower than "low voltage revert threshold" during normal failure delay time, then it will not alarm.
15	Revert over volt	100-260V***(240V)***	
16	S2 over freq alarm	40-80.0HZ***(57.0HZ)***	S2 over frequency value, when the S2 frequency is higher than this value, it is considered that the S2 frequency is abnormal. The maximum value disables this alarm.
17	S2 under freq alarm	0-70.0HZ***(40.0HZ)***	S2 under-frequency value. When the S2 frequency is lower than this value, the S2 frequency is considered abnormal. The minimum value disables this alarm.
18	S2 over voltage alarm	0-260V***(250V)***	The S2 over voltage value. When the S2 voltage is higher than this value, the S2 voltage is considered abnormal. The maximum value disables this alarm.
19	S2 under voltage alarm	0-260V***(180V)***	S2 under voltage value. When the S2 voltage is lower than this value, the S2 voltage is considered abnormal. The minimum value disables this alarm.
20	Closed state input	***0: Disable*** 1: Enable	When the closing status input is enabled: the status of the closing status indicator on the panel will be indicated according to the input status. Otherwise, it will be generated by the

			action of the mains or power generation closing relay.
21	Auto mode	***0: Self-deployed*** 1: Mutual backup 2: S2 priority	**Self-deployed:** S1 and S2 switch automatically, S1 priority. **Mutual backup:** S1 and S2 have the same priority and are used as a backup to each other. **S2 priority**
22	Primary Modes	0: Manual 1: Auto ***2: Previous Mode***	The primary modes on power, easy for user operation.
23	User password	00000-65535 ***(07623)***	Change the password.
24	Start screen display	0-20.0s ***(5.0s)***	Start screen display time,0: No-display.
25	Saving mode	5.0-6000.0s***(600.0s)***	LCD light will be closed automatically without any button pressed after delay. If setting as 6000.0s, back light always lighted.
26	Homing display	5.0-600.0s ***(600.0s)***	The time when the page reverts back to the home page, If setting as 600.0s: disabled.
27	LOGO delay display under standby	5.0-6000.0***(6000.0s)***	Start screen will be opened without any button pressed after delay, If setting as 6000.0s: disabled.
28	LCD contrast	20-60***(20)***	Set the LCD display contrast.
29	Controller ID	1-255***(16)***	The IP built by controller and PC.
30	RS485 baud rate	0-4800 1-9600 ***2-19200***	RS485 communication baud rate.
RS485 Comm: RS485 external expansion module needs to be connected for normal use.			

Fault finding

Symptoms	Possible Solutions
Controller no response with power	Check S1 or S2 AC power supply.
S2 Start Abnormal	Check the connection line between the controller and the S2 set self-starting control interface; Check whether the remote start function setting is normal; Check that the related delay setting of the controller is normal.
ATS not transfer	Check the ATS switch; Check the connection line between the controller and ATS; Check the controller delay and other parameter settings.