



Switchgear Contact Temperature Measurement Control Device User Manual



Switch cabinet contact temperature measurement control device

1. Product overview

This product is a brand-new concept switchgear intelligent control device with powerful functions, suitable for 3-35KV

Indoor central cabinets, handcart cabinets, fixed cabinets, ring network cabinets and other switch cabinets.

This product adopts the intelligent control of single-chip microcomputer, which can judge and display the opening and closing status of the switch and the position of the switch handcart.

Voice warning prompts for misoperation. It can collect the temperature and humidity in the cabinet in real time, and according to user settings

Set to automatically adjust the temperature and humidity environment in the cabinet. This product can also prompt the user whether the high voltage is live, and according to the situation

Apply electromagnetic lock working status. This product can be equipped with busbar contact temperature measurement, with 3-point temperature measurement, 6-point temperature measurement,

9-point temperature measurement, 12-point temperature measurement, etc., can monitor the temperature of the busbar, the upper and lower contacts of the circuit breaker and other contacts in real time.

The RS485 communication interface can make the device and other equipment in the substation form a real-time microcomputer anti-error monitoring system.

This product is manufactured with unique anti-interference design and industrial-grade electronic components, with strong anti-interference ability, which can

High reliability. In addition to the above series of standard configuration products, the company can also provide users with

Customized products with different functional combinations to meet the diverse needs of users.

2. Technical indicators

1. Working voltage: Device power supply: AC/DC220V±10% 50HZ.

Load power supply: AC220V±10% 50HZ.

2. Voltage loop power consumption: ≤15VA.

3. Dielectric strength: ≤AC2000V between the shell and the terminal.

4. Insulation performance: more than 100MΩ between the shell and the terminal.

5. Communication: RS485 interface, MODBUS protocol, factory address can be set, baud rate 9600.

6. Temperature and humidity control range: temperature 0~99℃ humidity 0%RH-95%RH.

7. Contact temperature measurement: optional 3-point temperature measurement, 6-point temperature measurement, 9-point temperature measurement, 12-point temperature measurement, etc.

8. Measurement accuracy: Temperature ±2℃ Humidity ±5%RH.

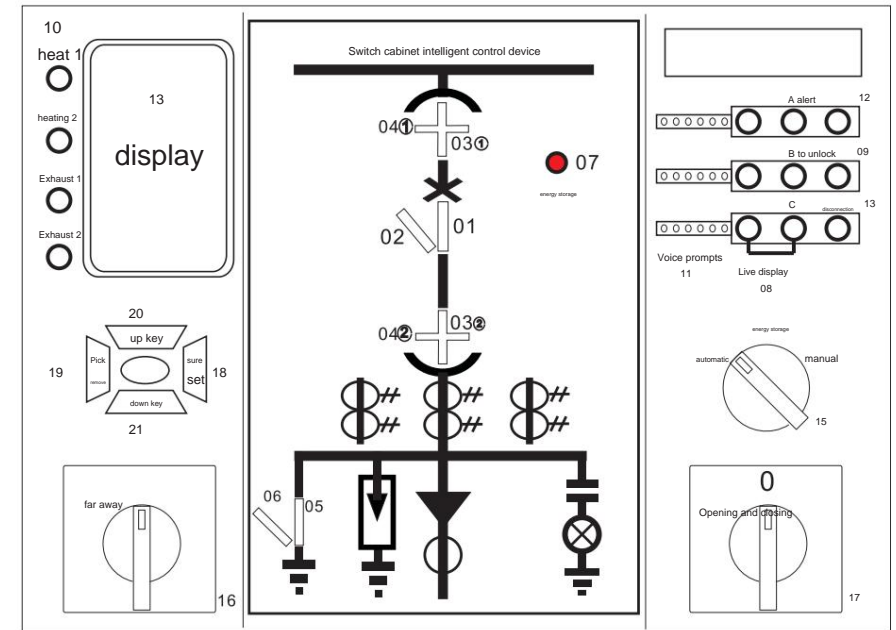
9. Multi-electricity measurement (optional): measure three-phase voltage, current, power, power factor, electric energy, etc.

10. Working environment: normal working temperature -20 ~70 ℃, Annual average humidity ≤95%.

11. Anti-electromagnetic interference performance: in line with the standard requirements of IEC60255-22.

12. Display mode: blue screen LCD display.

3. Panel and function description



(Note: The numbers in the figure are to illustrate the indication function of the layout, and there is no number on the actual instrument)

- 01 Circuit breaker closing indication 02 Circuit breaker opening indication
- 03, 03 Working position indication 04, 04 Test position indication
- 05 Grounding switch close indication 06 Grounding switch sub-indication
- 07 Energy storage indication 09
- 08 Live indication (ABC) three-phase
- Lock indication 11 Voice prompt 13
- 10 Heating/dehumidifying/over-temperature exhaust indication
- LCD display 15 Energy storage
- 12 Contact overtemperature warning indicator
- knob switch Open/close transfer
- 14 Energy storage knob switch
- switch 17 Return key and cancel
- 16 Remote/local transfer switch
- key 19
- 18 Menu key and OK key
- 20 Up key and number increase key
- 21 Scroll Down and Number Decrease Keys

4. Function description:

(1) Circuit breaker status display:

When closing, the closing contact is closed and the red analog bar lights up. When opening, the opening contact is closed and the green analog bar lights up. 02

(2) Display of handcart position:

When the working position contact is closed, the red vertical analog bar lights up. 03
When the test position contact is closed, the green horizontal analog bar lights up. 04

(3) Grounding knife position indication:

When the contact is closed, the red analog bar lights up, indicating that the grounding is closed.
The contact is open, and the green analog bar lights up, indicating that the ground is disconnected.

(4) Energy storage status indication:

The contact is closed, and the red light is on, indicating that the energy has been stored.

Note: In the power-off state, all the luminous indications are off, and the above contact signals are all from the circuit breaker.

Passive auxiliary contacts.

(5) High voltage live indication

LED startup voltage (KV): bus voltage × 0.15-0.65. Latching start control voltage (KV): busbar voltage × 0.65.

(6) Temperature and humidity control functions:

Number of sensor channels: two channels of condensation + two channels of temperature.

Logical relationship: start heating when temperature < 5 or humidity > 90%RH (two-way heating, factory setting);

Stop heating when temperature > 15 or humidity < 80%RH (factory setting value);

When the temperature is > 45, the output of the overheat exhaust air relay (two-way exhaust air, factory setting value);

When the temperature is less than 35, the output of the superheated exhaust air will stop (factory setting).

(7) Contact temperature measurement function:

The device has a temperature measurement function, the temperature measurement sensor is a strap type, and the standard length of the strap is 34 cm;

According to the strap contacts, it can be divided into 3-point temperature measurement, 6-point temperature measurement, 9-point temperature measurement, and 12-point temperature measurement.

Do not install it on the upper and lower contacts of the circuit breaker or on the busbar copper bars. The three phases of A, B and C are yellow, green and red respectively.

Three straps; each strap has its fixed contact address, which corresponds to the address on the device host, and

communicate with the host, and upload the real-time temperature measured to the device host.

The temperature measurement range of the strap is 0-120°C. When the contact temperature exceeds 70°C (factory setting value), the device will be overheated.

The thermal alarm indicator is on, and there is an overheat alarm relay contact closure output.

(8) Intelligent anti-mistake voice prompt:

When the handcart is between the test position and the working position, and the circuit breaker is in the closed state,

There is a voice prompt of "Please open the circuit breaker" until the circuit breaker is opened;

When the handcart is in the working position, if the grounding switch is forced to close by mistake, there is a "Please separate the grounding switch"

voice prompt until the grounding switch is opened;

When the above two misoperations occur at the same time, there will be a voice prompt of "Please disconnect the circuit breaker, please disconnect the grounding switch";

When the device is electrified, the human body induction triggers, and there is a voice prompt of "this circuit is electrified, do not approach it".

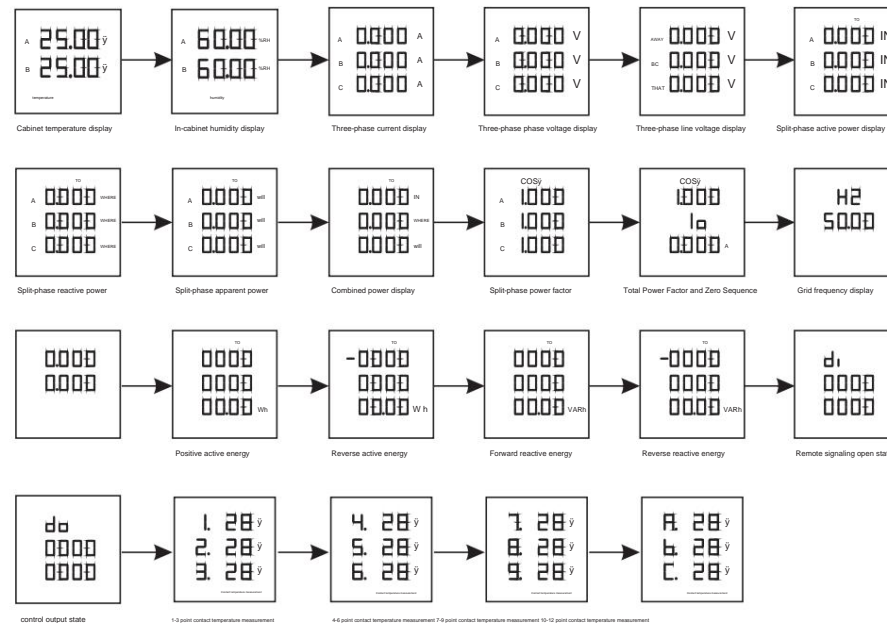
(9) Communication function:

The device can be equipped with an RS485 communication interface, which can transmit real-time temperature and humidity values in real time. real-time battery count,

According to the status position of the switch quantity, a series of parameters such as heating, disconnection, exhaust, overheating and so on.

(10) Description of the device setting menu:

After power on, enter the temperature and humidity measurement interface in the cabinet: press the "up" and "down" keys to switch other interfaces



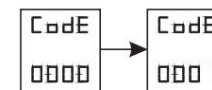
Long press the "OK" key to enter the password "0001" to enter the main menu, and press the "up and down" keys to select the menu;

Enter key: long press and enter the password to enter the main menu, after the menu value is modified, press this key to save the modification;

Cancel key: in the menu, press this key to return to the previous menu and exit the main menu;

Up key: number increase key and page turn query key;

Down key: Number reduction key, page-turning query key and menu password setting shift key;

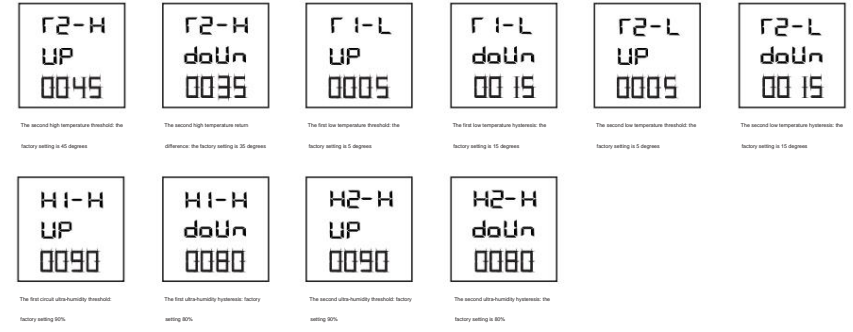


Menu character introduction: character

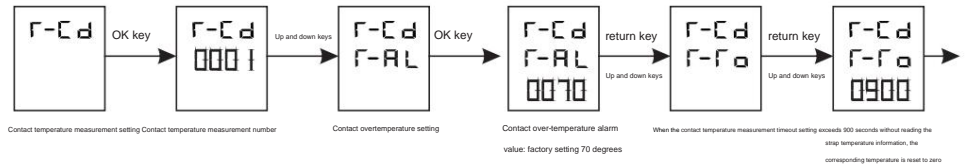
text description	code password
Code	
SEt	Set set disp
dISP	display
Circ	Circ cycle display
PAUS	Paus toggle display
LEd	Led backlight power saving time
CLER	Clcr energy clear
NO	NO is not cleared
YES	Yes OK to clear
InPT	Inpt input settings
PT	PT Voltage Multiplier
CT	CT current magnification
LINE	Line connection
SU	SU voltage range
SA	SA Current range conn
Conn	Communication setting
LEd	Led Cabinet Lighting Control
T1-H	T1-H first high temperature exhaust setting
T2-H	T2-H Second high temperature exhaust setting
T1-L	T1-L 1st circuit low temperature heating setting
T2-L	T2-L Second low temperature heating setting
H1-H	H1-H 1st dehumidification setting
H2-H	H2-H 2nd dehumidification setting
UP	UP Temperature and humidity overrun
doWn	threshold setting down Overrun hysteresis setting

Character text	description mod Protocol
nod	settings
Addr	Addr mailing address
PAR	Par verification method
BAUD	Baud baud rate setting
ALAR	Alar Alarm Settings
U-H	UH voltage upper limit alarm
U-L	UL low voltage limit alarm
I-H	IH current upper limit alarm
I-L	IL Current lower limit alarm
ALt	Alt alarm delay setting do switch
do	output do1 first channel out
do1	delay setting do1u first channel out type setting
do1U	
AO	Ao analog output
AOH1	The upper limit of the first transmission output of AoH1
AOL1	The lower limit of the first transmission output of AoL1
AoU1	AoU1 first channel transmission type setting
T-CD	T-cd contact temperature measurement address setting
T-AL	T-AL contact over temperature threshold setting
CONF	Cont controls output settings
HoT	HOT Manual Heat Control Settings
YYAL	YYAL voice anti-mistake prompt start and stop settings
YYRT	YYRT infrared human body sensor start and stop settings
oN	ON function is on
oFF	OFF function off

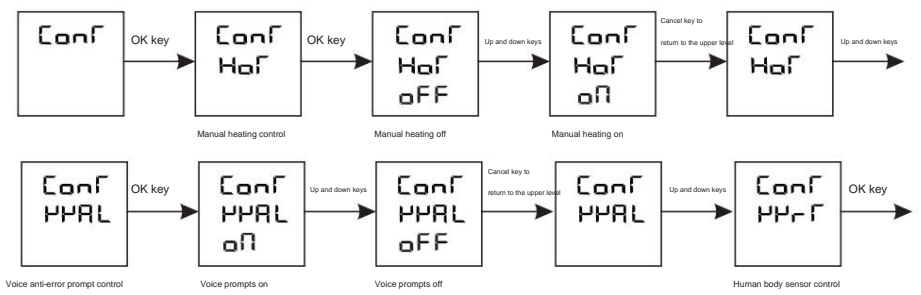
Note: The setting methods of other temperature and humidity control menus are the same, the following is a brief introduction



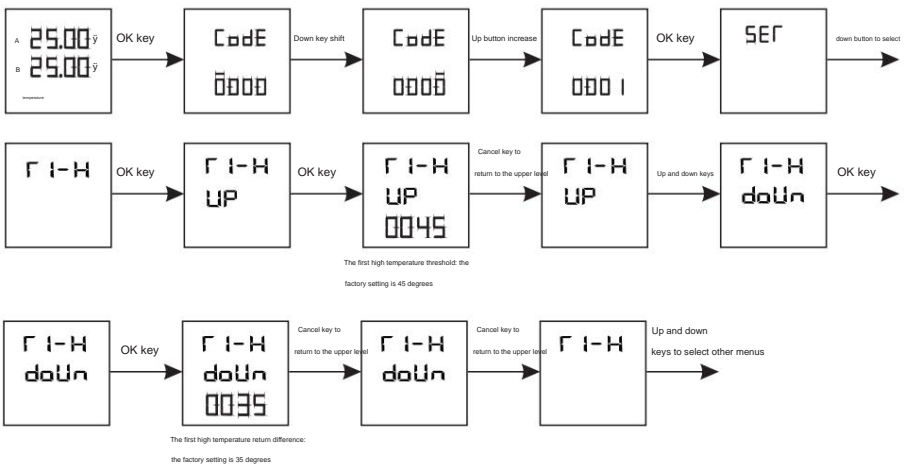
Contact temperature measurement alarm setting: menu entry method is the same as above



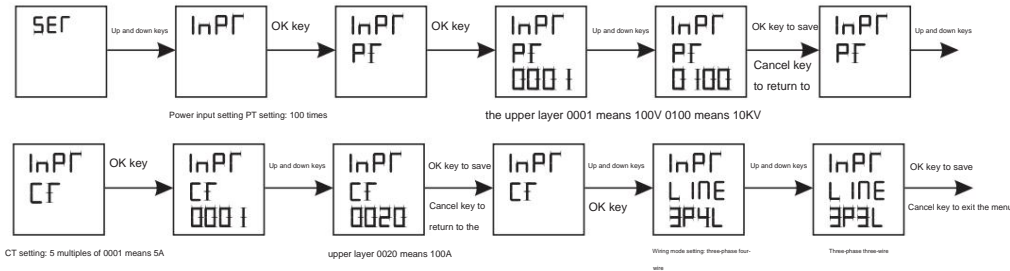
Manual heating, human body induction and voice anti-mistake prompt control: enter the menu as above (press OK to save after modification)



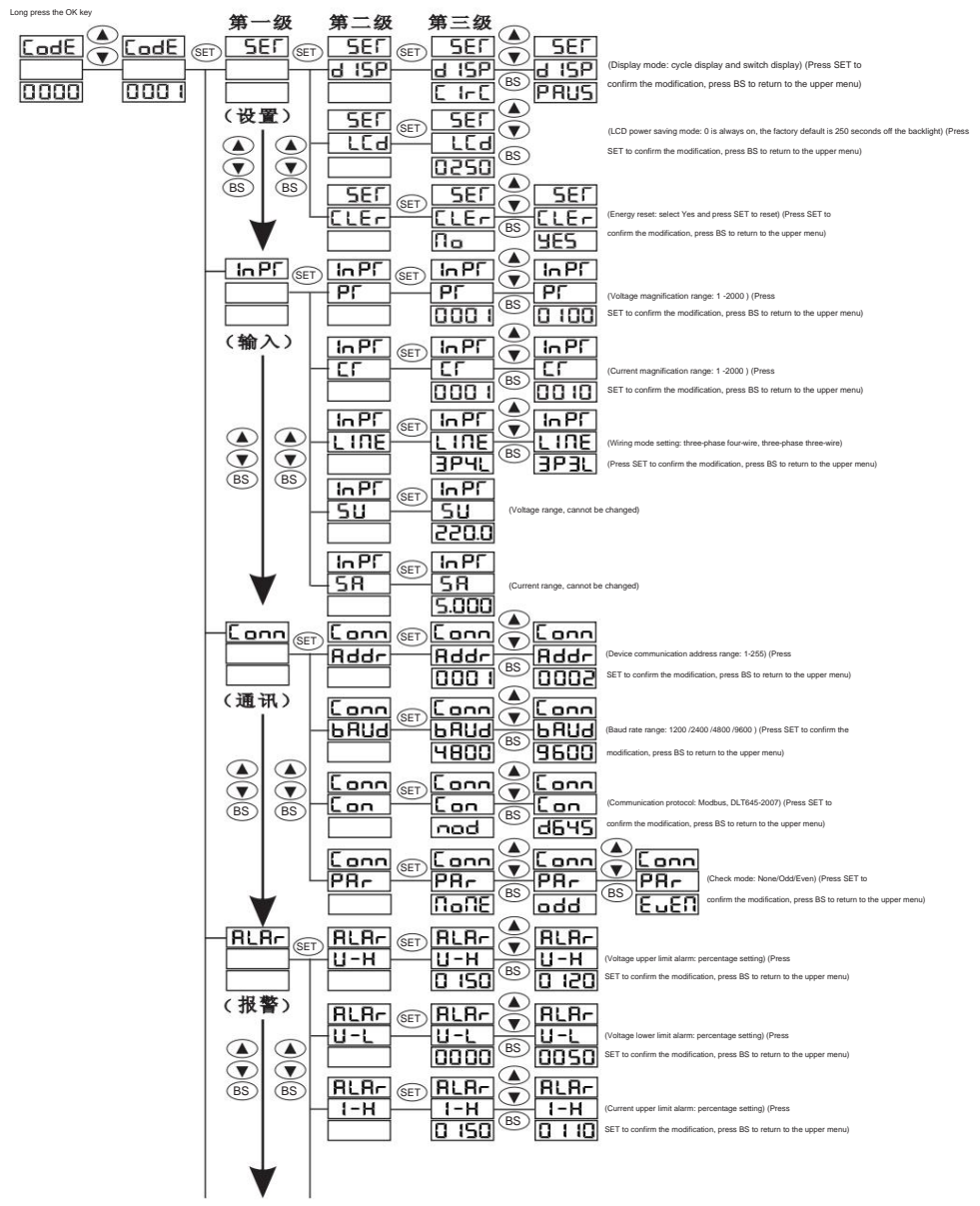
The setting of the temperature control value in the cabinet: (press the OK key to save after modification)



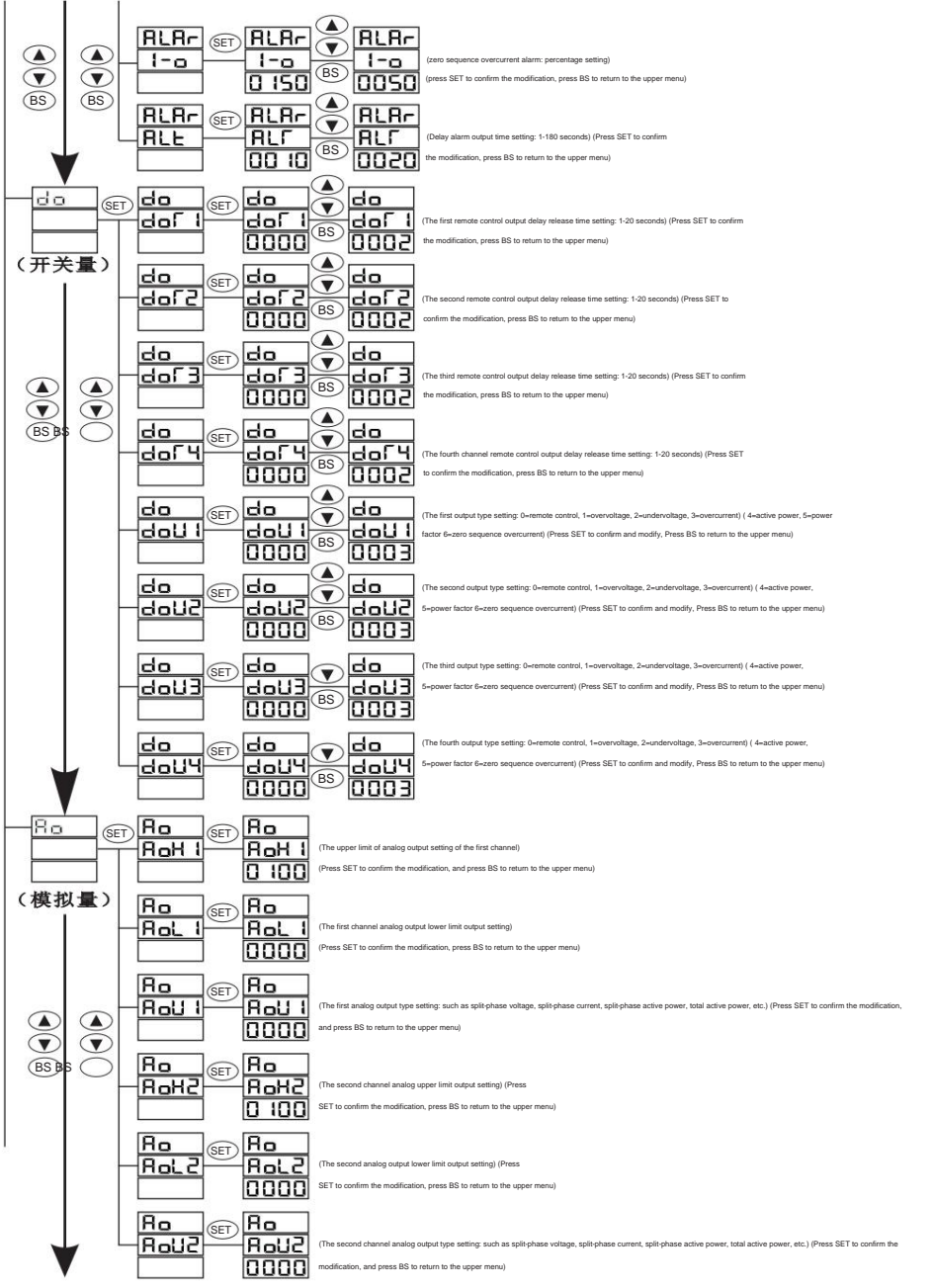
Transformer PT, CT setting: enter the menu as above (press the OK key to save after modification, this is an optional function)



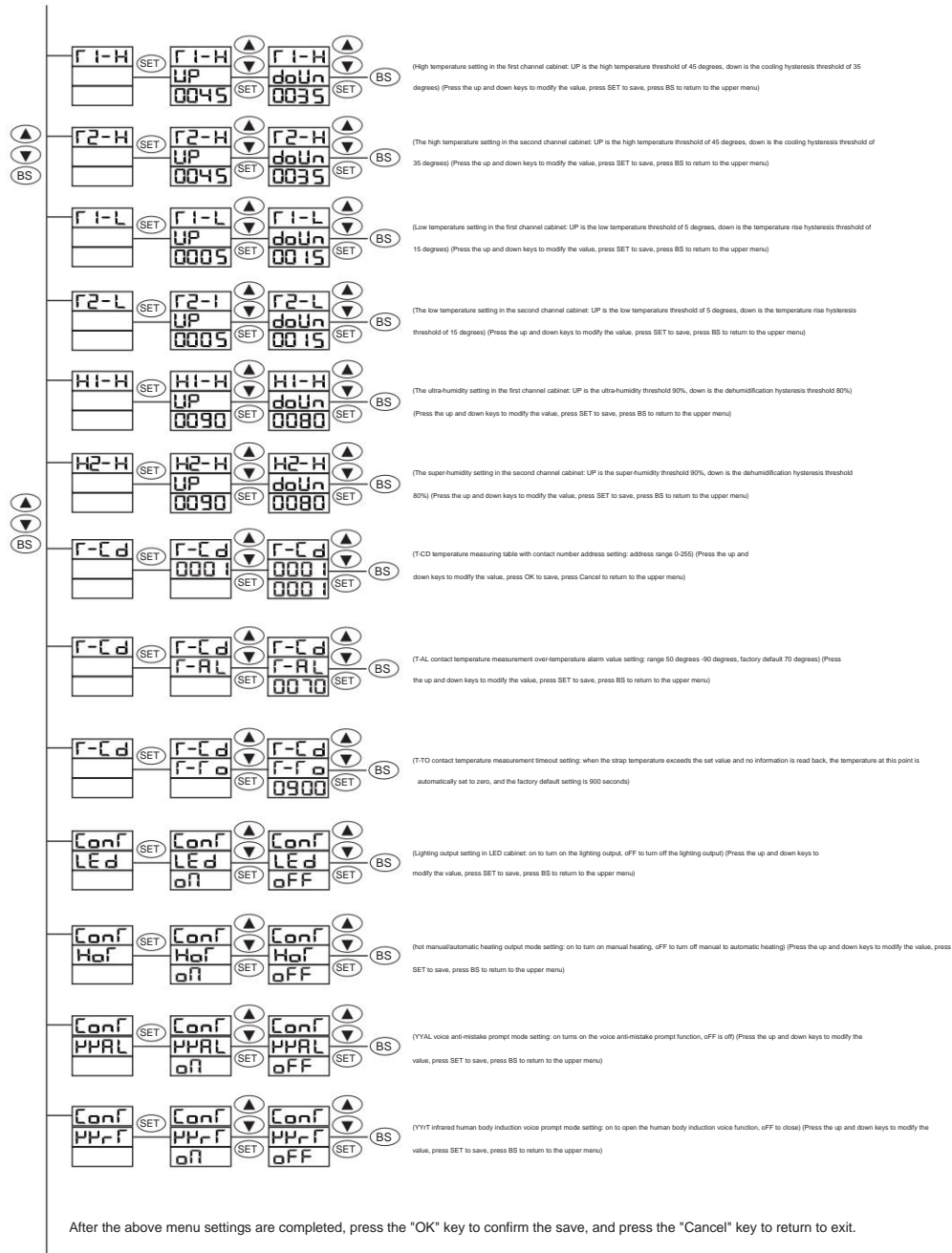
Programming menu structure diagram:



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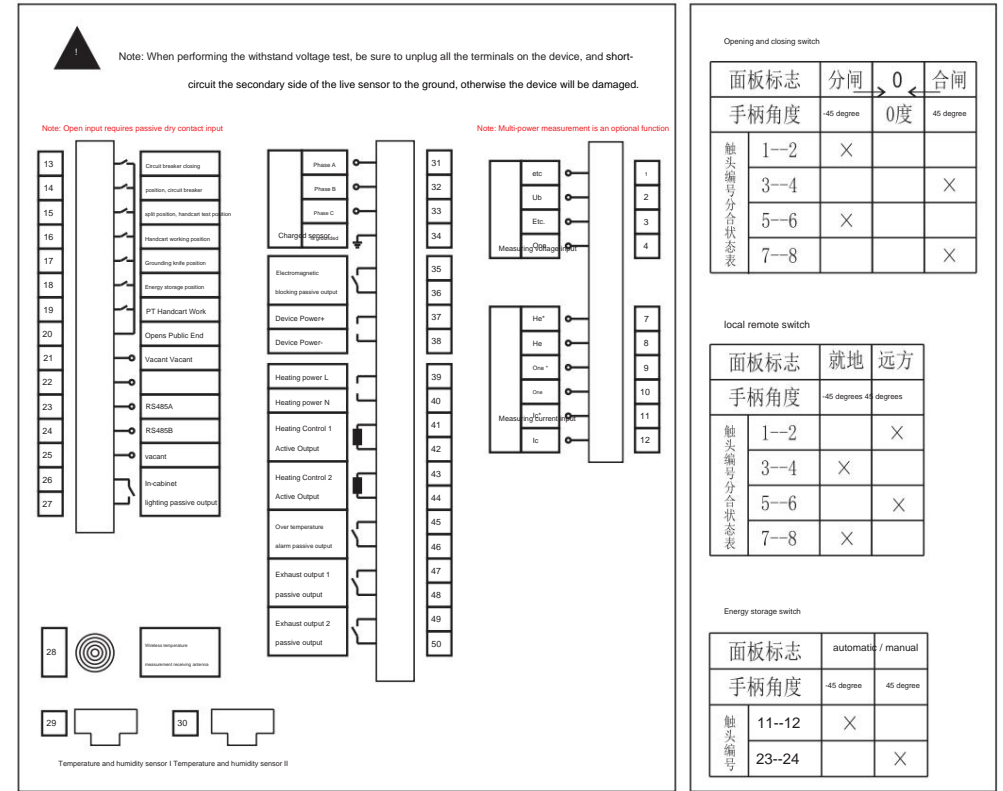


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After the above menu settings are completed, press the "OK" key to confirm the save, and press the "Cancel" key to return to exit.

Fourth, wiring instructions



Wiring instructions:

- The power terminals of the device are 37 and 38, and the voltage is AC/DC220V or 110V±10%. The load power terminals are 39 and 40, and the voltage must be AC220V±10%. The standard configuration of the device is that the heater output is active, and the load power supply must be wired; if the device is a passive heater output, the load power supply does not need wiring, please specify when ordering.
- Some terminals of the primary circuit analog display are: 13, 14, 15-20, and all switch values are passive contacts. The above is the standard configuration of the device. The specific terminal definitions will be changed according to the different ordering requirements of users, and the terminal definitions on the back of the device shall prevail.
- The wiring method of the accessory temperature and humidity sensor line is: connect the USB plug-in connector to the temperature and humidity sensor of the device. The other end is connected to the matching temperature and humidity sensor.
- For the three-phase voltage and three-phase current wiring, refer to the wiring of the multi-function digital display meter.

Only after the correct alignment can be connected to the working power supply.

Opening and closing switch

面板标志	分闸	0	合闸
手柄角度	-45 degree	0度	45 degree
触头编号分合状态表	1-2	×	
	3-4		×
	5-6	×	
	7-8		×

local remote switch

面板标志	就地	远方
手柄角度	-45 degrees	45 degrees
触头编号分合状态表	1-2	×
	3-4	×
	5-6	×
	7-8	×

Energy storage switch

面板标志	automatic / manual
手柄角度	-45 degree 45 degree
触头编号	11-12
	23-24



Notice:

1. When performing the withstand voltage test on the switch cabinet, be sure to disconnect all the terminals on the device, and at the same time

The terminals coming from the sensor should be shorted to ground, otherwise the device will be damaged.

2. All switching values in the display part of the primary circuit of the device are passive contacts. It is strictly forbidden to connect active voltage to the terminals.

Failure to do so will result in damage to the device.

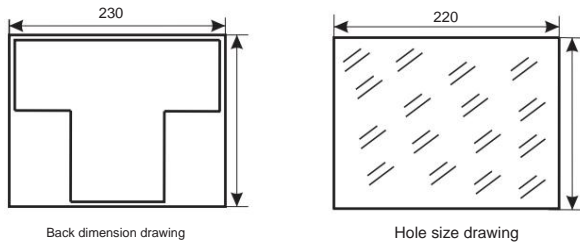
3. The temperature and humidity sensor line is strictly prohibited to be bundled with other lines with strong electromagnetic interference, and should be run separately

String. Otherwise, it may cause the temperature and humidity collection control failure of the device.

4. The device failure and accessories damage caused by the above reasons are not within the scope of our company's warranty.

5. Installation method

This product is panel-mounted, and its standard accessories are: temperature and humidity sensor probe in the cabinet, temperature and humidity sensor sheath wire, Mounting brackets, green terminals, contact temperature gauge strap sensors, etc. When installing, you only need to make holes on the panel of the switch cabinet. The size of the opening of the switch cabinet is 220mmx165mm. To insert the device into the opening, you only need to use three mounting brackets to insert them into the fixing holes of the device and then tighten them, and then tighten the screws. .

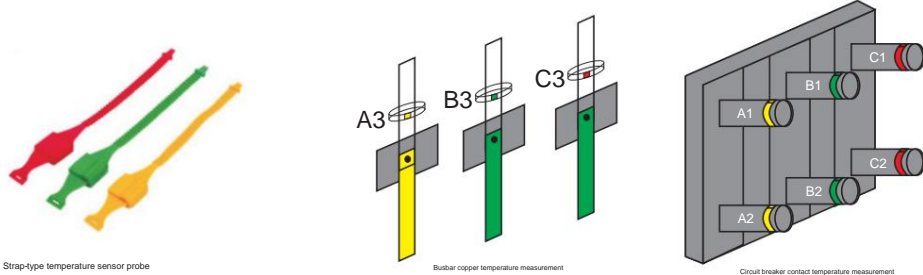


strap sensor installation

(1) 3-point temperature measurement: tie the first pair of straps (1/2/3) with the same contact numbers to the contacts on the circuit breaker, and the temperature measurement contact surface of the straps is close to the contacts; (2)6

Point temperature measurement: tie the second pair of straps (4/5/6) with the same contact numbers to the lower contacts of the circuit breaker, and the temperature measurement contact surface of the straps is close to the contacts;

(3) 9-point temperature measurement: tie the third pair of straps (7/8/9) with the same contact number to the busbar copper connector attachment, and the strap temperature measurement contact surface is close to the copper bar;



Six, function detection method

1. Device power-on test:

When the device is only connected to the power supply, turn on the power switch on the back of the device, and the blocking indicator light of the electrified locking part of the device is on; the green indicator light of the grounding knife part of the primary circuit analog display part is on; the LCD screen displays normally on; other displays and indications are not bright.

2. Partial test of the primary circuit simulation display: after the

device is powered on normally, a short wire can be used to connect one end to the common terminal 20, and the other end to the status display Display the terminal, and observe whether the corresponding primary circuit analog display light is displayed normally.

3. Test of the temperature and humidity control part in the cabinet:

Connect the matching temperature and humidity sensor and heater to the device, at normal temperature (ambient temperature>5y and humidity<90%RH) case test.

The temperature and humidity control part of the device is powered on, the heating, exhaust and overheating indicators are not on, and the heater has no output.

Test the temperature sensor, artificially (the sensor is placed in the refrigerator) to make the sensor temperature below 5 y, the heater indicates

The light is on, the heating relay is closed, and the heater starts to heat; artificially (the sensor is taken out of the refrigerator), the temperature of the sensor is increased

When the temperature is above 15y, the heating indicator light is off, the heating relay is disconnected, and the heater stops heating; artificially (heating equipment to heat the sensor) makes the sensor temperature greater than 45y, the exhaust indicator light is on, and the exhaust relay is closed; artificially make the sensor temperature Below 35y, the exhaust indicator light is off, and the exhaust relay is disconnected.

Test the condensation sensor, artificially (humidify the sensor with a humidifier) to make the sensor humidity greater than 90%, the heating indicator light is on, the heating relay is closed, and the heater starts to heat; The indicator light is off, the heating relay is disconnected, and the heater stops heating.

5. Test of high voltage live indication part:

When the high-voltage live indicator terminal of the device is connected to the test from the output of the AC220V voltage regulator, when the input voltage reaches 15V (note that the maximum input voltage cannot exceed 57V, otherwise the device will be damaged), the corresponding red indicator light corresponding to the high-voltage live voltage is on, and the green indicator light is blocked. Off, the latching relay is disconnected, and the electromagnetic latching is performed.

6. Operation switch test:

Compare the contact diagram of the operation switch, and use a multimeter to measure the on-off of the switch.

7. Strap sensor temperature test:

Select a strap, corresponding to the contact address number marked on it, set the contact address in the device host menu accordingly, then heat the contact surface on the back of the strap sensor normally, and observe the corresponding LCD screen of the device. Whether the temperature display value changes (the response time is about 3 minutes), if the display temperature rises, the strap sensor is normal.

Seven, common fault description

Common faults in the functional area	Judgment and exclusion method
device display No display after device is powered on	1) Check that the power switch on the back of the unit is in the ON position. 2) Use a multimeter to measure whether there is AC/DC 220V voltage at the power terminals on the back of the device.
Primary circuit simulation display There is no corresponding display for circuit breaker opening/closing, test/working position, grounding knife and energy storage indicator.	1) Check whether the switch terminals on the back of the device are connected and inserted tightly. 2) Check whether the corresponding terminal of the digital input and the common terminal are in a passive conduction state, or short-circuit the input terminal and the common terminal with a wire.
Intelligent anti-error voice prompt	1) When the circuit breaker is in the closed position, the closed position indicator light of the device circuit breaker is on, but the voice keeps prompting: "Please open the circuit breaker". Check the current position of the handcart, whether it is in the working or testing position, and whether the indicator light of the device working or testing position is on. If the handcart is in place, but the indicator light of the device is working or the test position is not on, check whether the corresponding terminals are connected reliably and whether the adjustment of the travel switch is appropriate.
	2) When the circuit breaker is in the closed position, the closed position indicator light of the device circuit breaker is on, but the voice keeps prompting: "Please disconnect the grounding knife". 3) When the circuit breaker is in the closed position, the closed position indicator light of the device circuit breaker is on, but the voice keeps prompting: "Please disconnect the circuit breaker, please disconnect the grounding knife". Check the current position of the grounding knife, whether it is in the closed position, and whether the grounding knife closing indicator of the device is on.
	Use a multimeter to check the terminal test, working position and grounding of the device. Whether the knife position is connected to the common terminal, or short-circuit it with a wire. Observe whether the indicator light and voice of the device are normal.
Temperature and humidity control 1) The heating indicator light of the device is always on, and the heater is in a long heating state.	Check whether the ambient temperature and humidity meet the heating conditions; check whether the device is reliably connected to the sensor, whether the terminals at the sensor are in good contact, and exchange sensors or devices with other cabinets. Determine whether the sensor is normal.
High voltage live indication	1) When a high-voltage electrification occurs, the high-voltage electrification indicator is on, and the phase is missing or the brightness is extremely dark. 2) When a high voltage is charged, the blocking indicator light will be off or flashing. Check whether the wiring of the high-voltage live terminals of the device is correct and reliable; use the AC gear of the multimeter to measure whether there is voltage between the terminals A, B, and C of the device and the ground, and the voltage is generally 10-50V (depending on the live sensor); Low Check whether the performance parameters of the live sensor are configured as specified and whether they meet the requirements of the device.
	When a high voltage is not charged, the blocking indicator light is on, and the electromagnetic blocking output contact is always a normally open point. Use the AC gear of the multimeter to measure whether there is an induced interference voltage between the terminals A, B, and C of the device and the ground. If the voltage is greater than or equal to 10V, the shielding effect of the signal line is poor, and the signal from the charged sensor must be compared with the other two. The secondary wires are routed separately.
communication Communication is unavailable.	1) Whether the communication terminal is connected tightly. 2) Whether the communication data lines A and B are reversely connected. 3) Whether the communication protocol is used correctly. 4) Whether the baud rate of the receiving device is set correctly. 5) Check whether the communication address set on the receiving device is consistent with the one marked on the device.

If the above methods cannot help you troubleshoot, please call our customer service number.

Eight, after-sales service

- For reasons within the scope of the company's responsibility, free warranty for one year and lifetime maintenance.
- Answers to questions about the product within 24 hours. If there is a major technical problem, the company will send a technical

The technicians went to the scene to solve the problem as quickly as possible.
