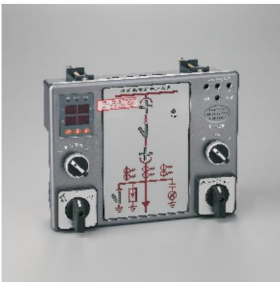




Switchgear Intelligent Control Device User Manual



Switch cabinet intelligent 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. The RS485 communication interface of this product can make the device and other equipment in the substation form a real

Computer anti-mistake 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, factory default address, baud rate 9600.

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

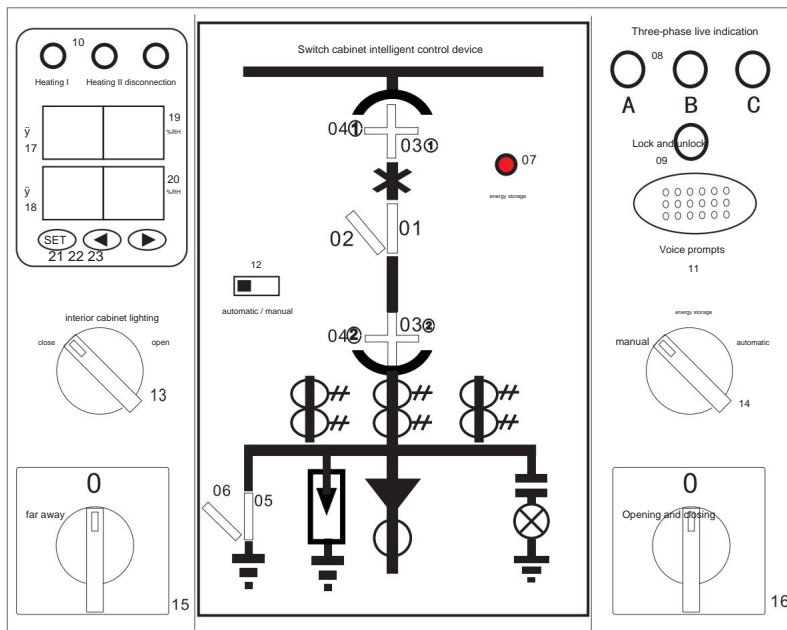
7. Measurement accuracy: Temperature ±2℃ Humidity ±5%RH.

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

9. Anti-electromagnetic interference performance: in line with the standard provisions of IEC60255-22.

3. Panel and function description

1. Panel description of digital intelligent control device:



(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 Working position indication 04, 04 Test position indication

05 Grounding switch closing

06 Grounding switch sub-indication

indication 07 Energy storage

08 Live indication (ABC) three-phase

indication 09 Locking indication 11

10 Heating dehumidification indication

Voice prompt 13 Cabinet lighting

12 Manual automatic heating switch

knob switch

14 Energy storage knob switch

15 Remote/local switch 17 The

16 Opening/closing transfer switch 18 The

first temperature display 19 The

second channel temperature display 20 The

first temperature display

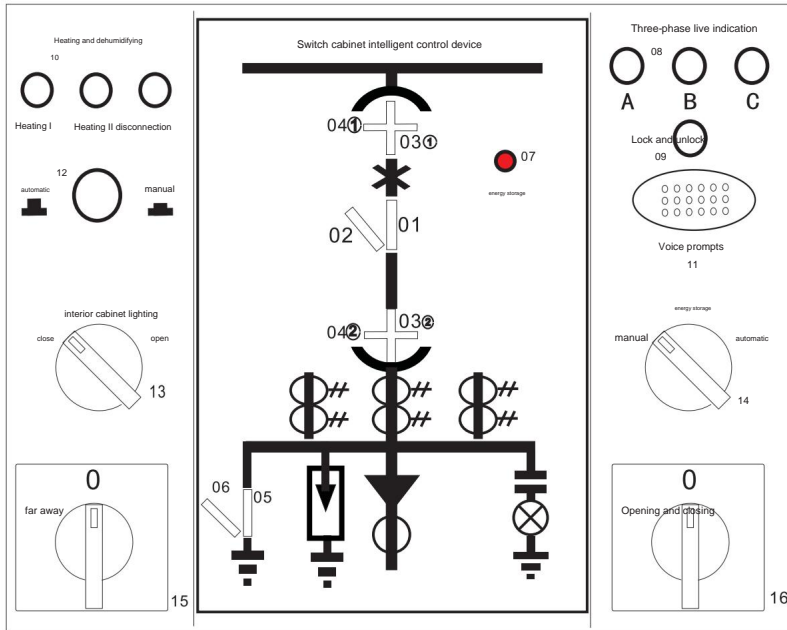
increase key

Value SET release key and OK key 21

22

23

2. Panel description of ordinary intelligent control device:



(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 on indication

06 Grounding switch sub-indication

07 Energy storage indication

08 Live indication (ABC) three-phase

09 Lockout indication

10 Heating dehumidification indication

11 Voice prompts

12 Manual automatic heating switch

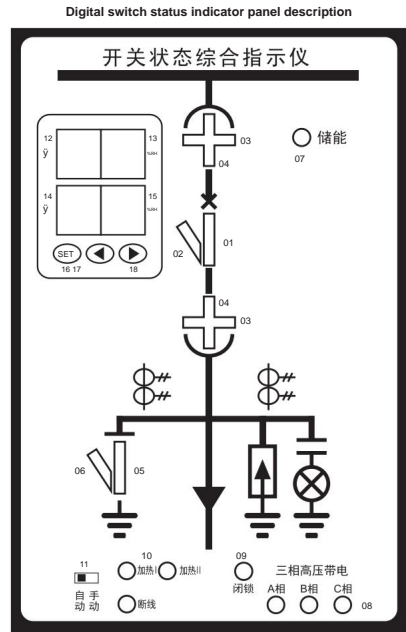
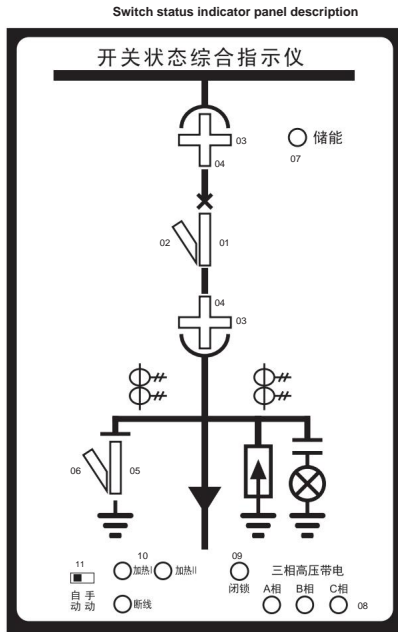
13 In-cabinet lighting knob switch

14 Energy storage knob switch

15 Remote/local transfer switch

16 Open/close transfer switch

3. Description of the switch status indicator panel:



(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

02 Circuit breaker opening indication

03, 03 Working position indication 04, 04 Test position indication

05 Grounding switch on indication

06 Grounding switch sub-indication

07 Energy storage indication

08 Live indication (ABC) three-phase

09 Lockout indication

10 Heating dehumidification indication

11 Manual automatic heating switch

12 The first temperature display

13 The first humidity display

14 The second temperature display

15 The second channel humidity

16 SET: Menu key and OK key

17 display value increase key

18 value decrease key

4. Function description:

(1) Status display of circuit breaker:

When closing, the closing contact is closed, and the red analog bar lights up. ⁰¹When opening, the opening contact is closed and the green analog bar lights up. ⁰²

(2) Handcart position display:

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

(3) Grounding knife position indication:

The contact is closed, and the red analog bar lights up. ⁰⁵indicating that the grounding is closed.
The contact is open, and the green analog bar lights up. ⁰⁶indicating that the ground is disconnected.

(4) Energy storage status indication:

The contact is closed, and the red light is on. ⁰⁷indicating 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.

Auxiliary contacts.

(5) High voltage live indication

LED startup voltage (KV): bus voltage \times 0.15-0.65. Latching start control voltage

(KV): busbar voltage \times 0.65.

(6) Temperature and humidity control function:

Number of sensor channels: two channels of condensation + two channels of temperature or one channel of

condensation + one channel of temperature. ⁰⁸Logical relationship: start heating when temperature <5 or humidity $>90\%RH$ (two-way heating);

When temperature $>15\text{y}$ or humidity $<80\%RH$, stop heating; when

temperature $>45\text{y}$, overheat exhaust relay output; when temperature $<35\text{y}$,

overheat exhaust stop output.

Disconnection alarm: The temperature and humidity sensor or heater is disconnected, and the corresponding alarm indicator light

is on. Manual heating switch: the switch can be in two states, automatic or manual, usually in the automatic state. At this time, the temperature and humidity control logic is the same as above. When the switch is pressed, it is in the manual forced heating state.

(When the ambient temperature is lower than $15^{\circ}C$, after the forced heating is canceled, the heater will stop heating to $15^{\circ}C$)

(7) Intelligent anti-mistake voice prompt:

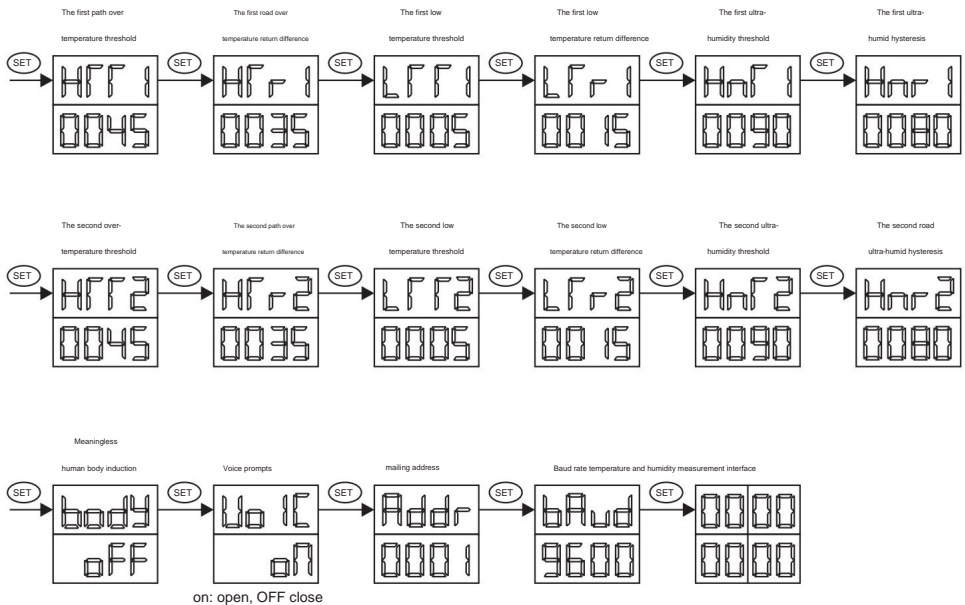
When the handcart is between the test position and the working position, when the circuit breaker is in the closed state, there will be a voice prompt of "Please open the circuit breaker" until the circuit breaker is opened. ; When the handcart is not in the test position or working position, if the grounding switch is forced to close by mistake, there is a "Please Earthing switch" voice prompt until the earthing switch is opened;

When the circuit breaker is closed and the handcart is not in the test position or working position, if the grounding knife switch is forced to close by mistake , there will be a voice prompt of "Please disconnect the circuit breaker, please disconnect the grounding switch"; when the device is powered on, there will be a voice prompt. The voice prompt of "This circuit is live, do not approach"; When the device is powered on, when the three-phase high voltage is charged, there is a voice prompt of "This circuit is live, do not approach".

(8) Communication function:

The device can be equipped with an RS485 communication interface, which can transmit real-time temperature and humidity values in real time, switch state position, heating, disconnection, exhaust, lock and other states, three-phase high-voltage live state and a series of parameters (Refer to the communication protocol for details).

(9) Description of the digital control device setting menu:



Fourth, wiring instructions

1. Terminal wiring diagram of digital and common control devices

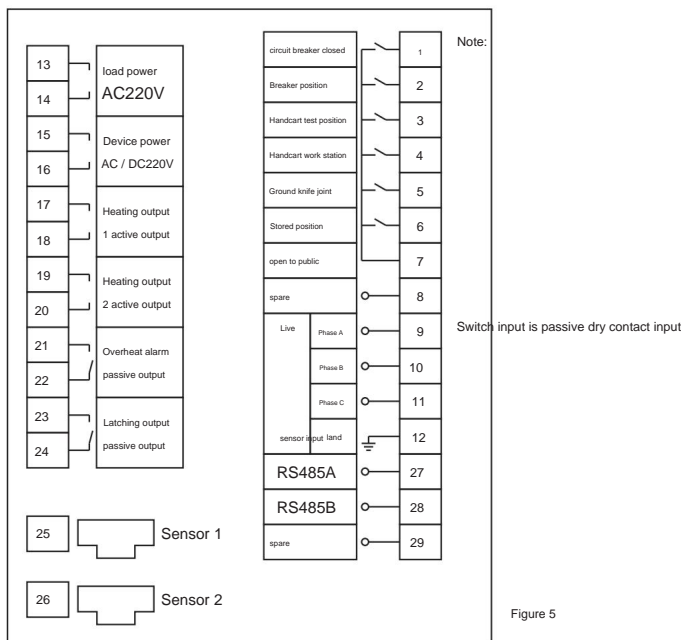


Figure 5

Wiring Instructions:

- (1) The power supply terminals of the device are 15 and 16, the voltage is AC/DC220V or 110V±10%, and the load power supply terminals are 13 and 14.

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.

- (2) Some terminals of the primary circuit simulation display are: 1-7, and all switching values are passive contacts. The above is the standard configuration of the device

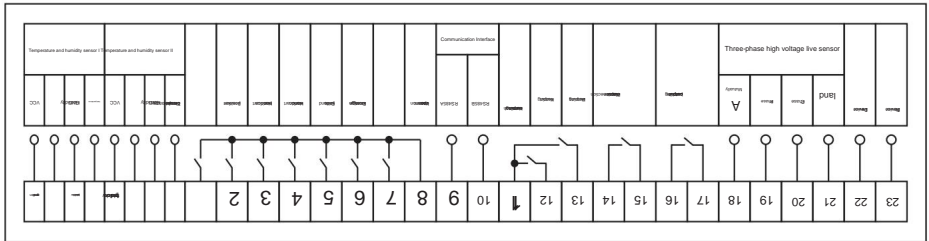
The specific terminal definition will be changed according to the different ordering requirements of the user, and the terminal definition on the back of the device shall prevail.

- (3) 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.

terminals (25, 26), and the other end is connected to the matching temperature and humidity sensor.

- (4) Others can be connected to the working power supply only after the wiring is connected according to the terminal wiring diagram of the device and checked correctly.

2. Terminal wiring diagram of switch status indicator



Wiring Instructions:

- (1) The power terminals of the device are 22 and 23, and the voltage is AC/DC220V or 110V±10%; the heater output of the device is a passive relay contact output,

External wiring of heating power supply.

- (2) Some terminals of the primary circuit simulation display are: 1-8, and all switch values are passive dry contacts. The above is the standard configuration of the device, the specific terminal

The sub-definition will be changed according to the different ordering requirements of users, and the terminal definition on the back of the actual device shall prevail.

- (3) The wiring method of the accessory temperature and humidity sensor line is: connect the USB plug-in connector to the temperature and humidity sensor terminals (I, II) of the device,

The other end is connected to the matching temperature and humidity sensor probe.

- (4) Others can be connected to the working power supply only after the wiring is connected according to the terminal wiring diagram of the device and checked correctly.



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 short-circuited, 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

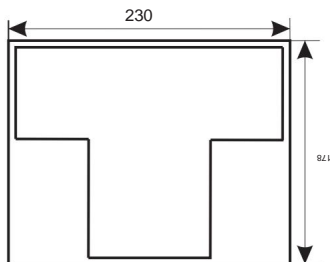
String. Otherwise, it may cause the temperature and humidity collection control failure of the device.

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

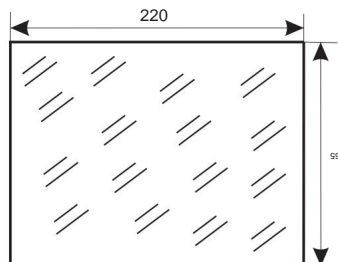
5. Installation method

1. Installation methods of digital and ordinary intelligent control devices:

This product is panel-mounted, and its standard accessories include: temperature and humidity sensor, temperature and humidity sensor cable, mounting bracket, green terminal, 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 220mm x 165mm. To insert the device into the opening, you only need to use three mounting brackets to fit into the fixing holes of the device and then tighten, and tighten the screws. .



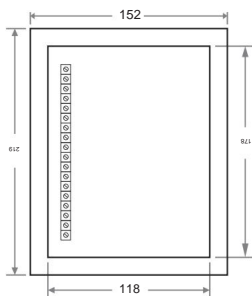
Back dimension drawing



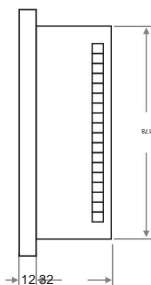
Hole size drawing

2. Installation methods of digital and common switch status indicators:

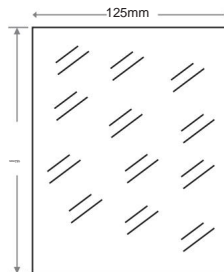
This product is panel-mounted, and its standard accessories are: temperature and humidity sensor, temperature and humidity sensor cable, mounting bracket, green terminal, etc. When installing, you only need to make holes on the panel of the switch cabinet. The size of the opening of the switch cabinet is 182mmx125mm. To insert the device into the opening, you only need to use three mounting brackets to fit into the fixing holes of the device and then tighten, and tighten the screws. .



Back dimension drawing



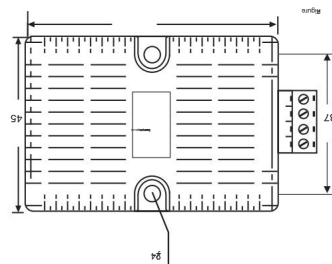
Side dimension drawing



Hole size drawing

3. Sensor installation method

- (1) Use 35mm rail type installation or fix with screws.
- (2) Fixed installation (hole spacing 37mm, hole diameter 4mm).
- (3) The connection of the temperature and humidity sensor is connected by a USB interface plug-in.



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 disconnection indicator light of the temperature and humidity control part of the device is on; the primary circuit simulation shows that the green indicator light of the grounding knife is on; display and indication are not lit.

2. Partial test of the primary circuit simulation display:

After the device is powered on normally, you can use a short-circuit strip line to connect one end to the common terminal 7, and the other end to separate. Do not connect to the status display 1-6, and observe whether the corresponding primary circuit analog display light is displayed normally.

3. Intelligent anti-mistake voice prompt:

When the device is powered on, there will be a voice prompt of "This circuit is live, do not approach it"; when the handcart is between the test position and the working position, and the circuit breaker is in the closed state, there will be a voice prompt of "Please open the circuit breaker" voice prompt until the circuit breaker is opened;

When the handcart is not in the test position or working position, if the grounding switch is forced to close by mistake, there will be a voice prompt of "Please disconnect the grounding switch" until the grounding switch is opened; when the circuit breaker is closed and the handcart is not in the test In the position or working position, if the grounding knife switch is forced to close by mistake , there will be a voice prompt of "Please disconnect the circuit breaker, please disconnect the grounding switch"; when the device is powered on and the three-phase high voltage is charged, there will be a "This circuit has been charged". . do not approach" voice prompt.

4. Temperature and humidity control part test:

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

The temperature and humidity control part of the device is powered on, and the heating I, heating II, and disconnection indicators are not in the automatic state. On, the heater has no output. When the manual heating button is pressed, the heating indicator light is on, and the heater starts to heat.

Test the temperature sensor in the automatic state, artificially (the sensor is placed in the refrigerator) to make the temperature of the sensor below 5 ªC, the heater indicator light is on, the heater starts to heat, and the heater is disconnected at this time, and the disconnection indicator light is on;

Artificially (the sensor is taken out of the refrigerator) when the temperature of the sensor is higher than 15°C, the heating indicator goes out, and the

The heater stops heating; artificially (heating device heating sensor) makes the sensor temperature greater than 45 ª, and the overheating exhaust relay outputs.

Test the condensation sensor in the automatic state, make the sensor wet manually (humidify the sensor with a humidifier)

When the temperature is above 90%RH, the heating indicator light is on, and the heater starts to heat. At this time, the heater is disconnected, and the disconnection indicator light is on; if the humidity of the sensor is artificially (stop humidification) below 80%RH, the heating indicator light is off, and the heater stops heating.

5. Test of high voltage live indication part:

When the terminal of the high-voltage live indication part of the device is connected to the phase-by-phase test from the output of the AC220V voltage regulator, when the output

When the input voltage reaches 40-55V (note that the maximum input voltage cannot exceed 65V, otherwise the device will be damaged),

When the high voltage is charged, the corresponding red indicator light is on, the blocking green indicator light is on, the blocking output is disconnected, and the electromagnetic blocking 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.

Seven, after-sales service

1. For reasons within the scope of the company's responsibility, free warranty for one year and lifetime maintenance.

2. 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.

Eight, common fault description

Common faults in the functional area	Judgment and exclusion method	
<p>Device show</p> <p>No display after device is powered on</p>	<p>1) Check that the power switch on the back of the unit is in the ON position.</p> <p>2) Use a multimeter to measure whether there is AC/DC220V voltage at terminals 15 and 16 on the back of the device.</p>	
<p>Primary circuit simulation display</p> <p>There is no corresponding display for circuit breaker opening/closing, test/working position, grounding knife and energy storage indicator.</p>	<p>1) Check whether the terminals 1-7 on the back of the device are connected and inserted tightly. 2) Check whether the corresponding terminals 1-6 of the digital input and the common terminal 7 are in a passive conduction state, or short-circuit the input terminal and the common terminal with a wire.</p>	
<p>Intelligent anti-error voice prompt</p>	<p>1) When the circuit breaker is in the closing position, the device will indicate the closing position of the circuit breaker. The light is on, but the voice keeps prompting: "Please switch off the circuit breaker".</p>	<p>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.</p>
	<p>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".</p>	<p>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.</p>
	<p>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".</p>	<p>Use a multimeter to test whether the terminal test, working position, and grounding knife position of the device are connected to the common terminal, or short-circuit it with a wire, and observe whether the indicator light and voice of the device are normal.</p>
<p>Temperature and humidity control</p>	<p>1) The heating indicator light of the device is always on, and the heater is in a long heating state.</p>	<p>Check whether the ambient temperature and humidity meet the heating conditions; check whether the manual and automatic buttons of the device are in manual mode; check whether the device is reliably connected to the sensor, whether the terminals at the sensor are in good contact, and exchange the sensor or device with other cabinets to determine whether</p>
	<p>2) When the heating indicator of the device is on, the heater does not heat, and the disconnection indicator is on.</p>	<p>the sensor is normal. Use a multimeter to measure whether the heater output terminal of the device has AC220V output; if the output is normal, check whether the external circuit or the heater itself is normal.</p>
<p>High voltage live indication</p>	<p>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.</p> <p>2) When a high voltage is charged, the blocking indicator light will be off or flashing.</p>	<p>Check whether the wiring of the high-voltage live terminals of the device is correct and reliable; use a 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 10-60V (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.</p>
	<p>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.</p>	<p>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.</p>
<p>communication</p> <p>Communication is unavailable.</p>	<p>1) Whether the communication terminal is connected tightly. 2) Whether the communication data lines A and B are reverse 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.</p>	

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

