

Wireless remote synchronization switch

E860-DTU(x0x0-400SL)/E860-DTU(x0x0-400SL)-A

成都亿佰特电子科技有限公司

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1.Product description

1.1 Product introduction



The wireless remote synchronization switch is a terminal device that realizes remote transmission of switch values through LoRa modulation technology . It supports the collection of switch input (DI) and control relay output (DO). The core of its function is to realize remote synchronous control without wiring. It is highly usable and convenient for users to quickly integrate into their own systems. The device supports different power supply mode selections, DC voltage input 8 ~ 28V : E860-DTU (x0x0-400SL) , AC voltage input 85 ~ 265 V : E860-DTU (x0x0-400SL) -A .

Note: This series of products only differs in the power supply method and the number of DI and DO. There are no other differences in the rest.

1.2 Features

- Supports relay output 2/4/8 channels (optional) , using A-type relay ;
- Supports input 2/4/8 channels (optional) , default dry contact;
- Supports a maximum transmission distance of 10 kilometers;
- Supports 1-to-1 and 1-to-many modes;
- Supports two-way following and hardware following;
- Support DIP switch to change working mode;
- Supports network disconnection recovery. After the network disconnection time expires, the receiving end output can be reset;
- Supports encrypted transmission to prevent mutual interference between networking devices;
- Equipped with 8 -bit DIP switch, which can configure 32 communication channels and 8 working modes ;
- Multiple indicator lights show working status;
- Multiple local buttons for real-time control;
- Using flame-retardant plastic shell, safe and reliable;
- Supports different power supply options : DC 8 ~ 28V , AC 85 ~ 265V ;
- Multiple protection functions such as power supply anti-reverse connection protection, over-current and over-voltage protection ;
- Supports standard 35mm guide rail installation, making installation convenient and efficient;

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2.Technical indicators

2.1 Specifications

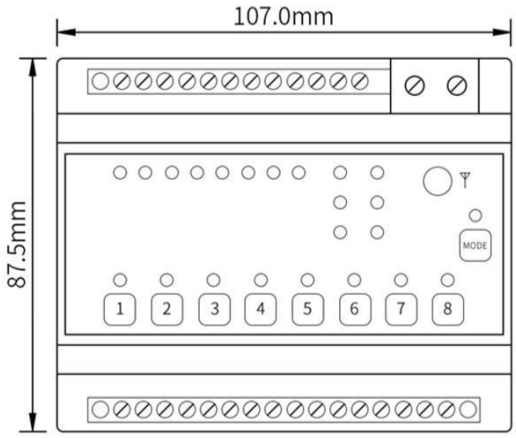
category	name	parameter
power supply	Operating Voltage	DC 8 ~ 28V : E860-DTU (x0x0-400SL) AC 85 ~ 265 V : E860-DTU (x0x0-400SL) -A
	Power indicator	Green LED indication
Wireless parameters	Working frequency	410.125-493.125MHz (supports ISM frequency band)
	Transmit power	30dBm (maximum power about 1W)
	Receive sensitivity	-148dBm@2.4Kbps
	Transmission distance	10 kilometers (clear and open environment, maximum power, antenna gain 5 dBi, height 2m)
	channel	DIP switch, configurable 32 communication channels
	airspeed	Distance priority (default) , balanced mode , response priority
	Antenna options	SMA antenna base (external screw inner hole)
DI input	Number of DI channels	2/4/8 way (optional)
	input type	Dry contact /NPN type
	Input instructions	Green LED indicator light
DO output	Number of DO channels	2/4/8 way (optional)
	DO output type	Type A relay
	DO output mode	Jog mode, self-locking mode
	Relay contact capacity	7A 30VDC, 7A 250VAC
	Output instructions	Red LED indicator light
Power consumption	Emission current consumption	290mA@DC12V

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	average current consumption	70mA@DC12V
	Current consumption of relay all the way	15mA@DC12V
other	Product Size	108mm * 87.5mm * 65mm (length * width * height)
	Product weight	DTU (2020-400SL): 184g ± 5g E860-DTU (4 0 4 0-400SL): 196 g ± 5 g E860-DTU (8080-400SL) : 226g ± 5g E860-DTU(2020-400SL)-A: 194 ± 5 g E860-DTU (4 0 4 0-400SL)-A: 206 ± 5 g E860-DTU (8 0 8 0-400SL)-A: 236 ± 5 g
	Working temperature and humidity	-40 ~ +85℃, 5% ~ 95%RH (no condensation)
	Storage temperature and humidity	-60 ~ +125℃, 5% ~ 95%RH (no condensation)
	Installation method	Standard 35mm guide rail installation

2.2 Mechanical Dimensional Drawing

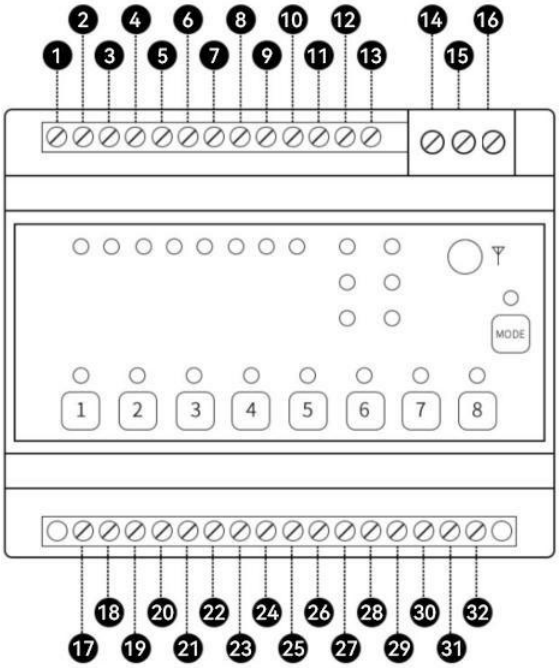




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2.3 Port description



serial number	(E860-DTU (x0x0-400SL)) device) port	Description (E860-DTU (x0x0-400SL))-A device)
1	Switch common terminal	Switch common terminal
2	Switch input port 1	Switch input port 1
3	Switch input port 2	Switch input port 2
4	Switch input port 3	Switch input port 3
5	Switch input port 4	Switch input port 4
6	Switch common terminal	Switch common terminal
7	Switch input port 5	Switch input port 5
8	Switch input port 6	Switch input port 6
9	Switch input port 7	Switch input port 7
10	Switch input port 8	Switch input port 8
11	GND	GND
12	RS485-A	RS485-A
13	RS485-B	RS485-B
14	PE	Ground wire
15	DC 8 ~ 28V(V+)	AC 85 ~ 265V(N)
16	DC 8 ~ 28V(V-)	AC 85 ~ 265V(L)
17	Relay output COM port 1	Relay output COM port 1
18	Relay output normally open port 1	Relay output normally open port 1
19	Relay output COM port 2	Relay output COM port 2
20	Relay output normally open port 2	Relay output normally open port 2

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twenty one	Relay output COM port 3	Relay output COM port 3
twenty two	Relay output normally open port 3	Relay output normally open port 3
twenty three	Relay output COM port 4	Relay output COM port 4
twenty four	Relay output normally open port 4	Relay output normally open port 4
25	Relay output COM port 5	Relay output COM port 5
26	Relay output normally open port 5	Relay output normally open port 5
27	Relay output COM port 6	Relay output COM port 6
28	Relay output normally open port 6	Relay output normally open port 6
29	Relay output COM port 7	Relay output COM port 7
30	Relay output normally open port 7	Relay output normally open port 7
31	Relay output COM port 8	Relay output COM port 8
3 2	Relay output normally open port 8	Relay output normally open port 8

Note: Except for the number of switching input and relay output ports, there is no difference in other ports between 2/4-channel products.

2.4 Local control button description



Label	Function	illustrate
1	The first local control button	Same function as switch input port 1
2	Second local control button	Same function as switch input port 2
3	The third local control button	Same function as switch input port 3
4	The fourth local control button	Same function as switch input port 4
5	Fifth channel local control button	Same function as switch input port 5
6	Sixth channel local control button	Same function as switch input port 6
7	The seventh local control button	Same function as switch input port 7
8	Eighth local control button	Same function as switch input port 8
MODE	Encrypted mode local control button device restarts local control button	Encrypted mode local control buttons Device restart local control button

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2.5 LED indicator light description



OUT1-OUT8: red LEDs, respectively corresponding to 8 relay output switch instructions;

POWER: green LED, power indicator;

TXD: Green LED, device sends data indication;

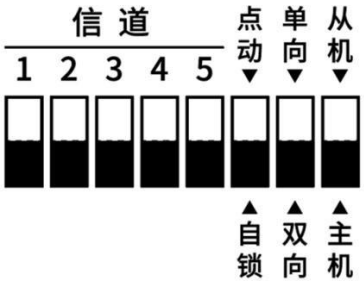
RXD: Green LED, device receiving data indication;

RSSI1-RSSI3: Green LED, device signal strength indication;

MODE: blue LED ;

Note: Above the local control buttons are instructions for the corresponding functions .

2.6 DIP switch definition

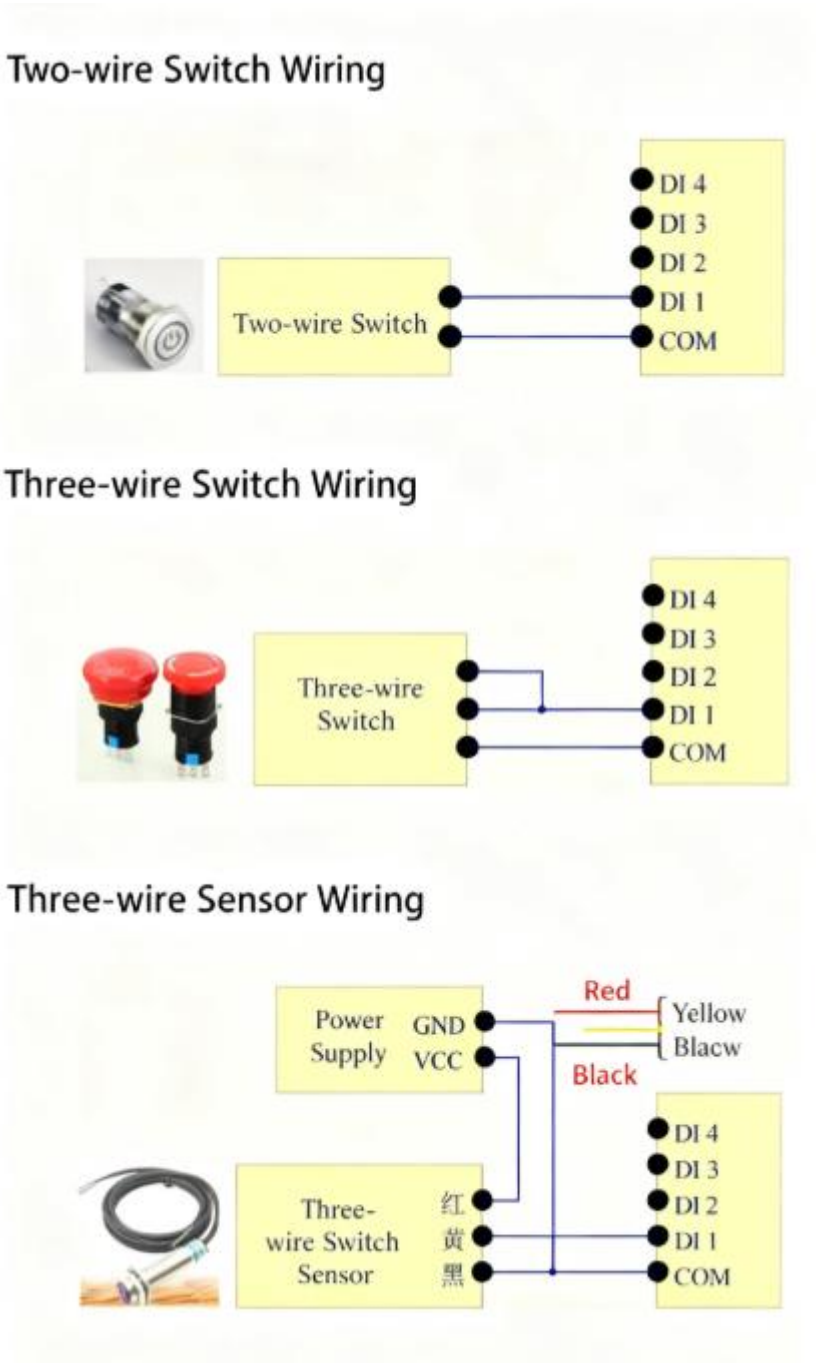


Dial number	Function introduction
1 ~ 5	32 communication channels can be configured to ensure that the dialing codes 1 to 5 of the communication equipment required are consistent.
Inching/self-locking	Jog: follow the input (or press the input button) to output, the device will output for at least 1s; Self-locking: input a pulse (or press the input button), the device self-locks the output;
One-way/two-way	One-way: hardware feedback output; Bidirectional: Follow the input and output of the remote device;
slave/master	A communication network has one and only one host

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2.7Wiring Instructions



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3.Quick to use

3.1 Equipment preparation

		
E86 0 -DTU(8080-400SL) * 2	DC12V power supply*2	Antenna (TX433)*2

Note: The demonstration case uses E860- DTU (8080-400SL) and E860-DTU (8 0 8 0-400SL)-A . Only the power supply method is different , and there is no difference in function .

3.2 Equipment wiring

The DC version (E860-DTU (8 0 8 0-400SL)) is wired as follows:

DC8 ~ 28V is connected to the equipment DC 8 ~ 28V (V+), and the negative pole of DC8-28V is connected to the equipment DC 8 ~ 28V (V-).



The AC version (E860-DTU (8 0 8 0-400SL)-A) is wired as follows:

AC 85 ~ 265 V (neutral line) is connected to the equipment AC 85 ~ 265V (N), AC 85~ 265V (live wire) is connected to the equipment AC 85~265V(L).

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3.3 Mode configuration

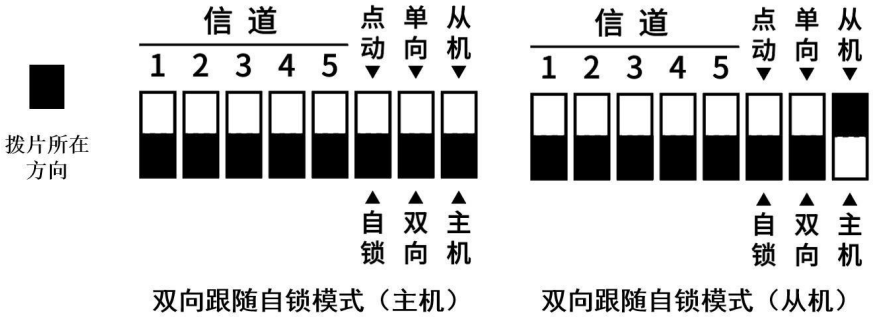
3.3.1 Two-way following self-locking mode

Step 1: Configure the two devices as master and slave respectively (there is only one master in a communication network);

Step 2: Set the working mode configuration dial to the "two-way" side;

Step 3: Set the output mode configuration dial to the "self-locking" side;

Step 4: Keep the DIP switches No. 1, 2, 3, 4, and 5 (channel) of the two devices consistent;



Step 5: Reconnect the power of the two devices. The RSSI indicator LED will light up according to the connection signal strength (there are 3 signal level indicators in total), and the connection failure signal indicators will all go out.

Test phenomenon: Click the No. 1 button of the slave machine, the first output channel of the host machine, click the No. 1 button of the host machine, the first channel output of the slave machine.

3.3.2 One-way feedback self-locking mode

Step 1: Configure the two devices as master and slave respectively (there is only one master in a communication network);

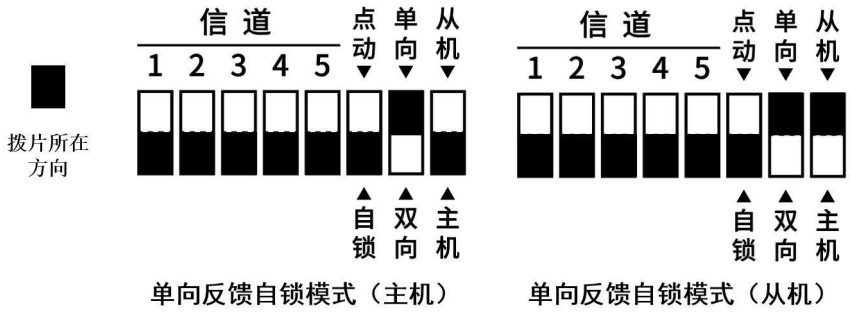
Step 2: Set the working mode configuration dial to the "one-way" side;

Step 3: Set the output mode configuration dial to the "self-locking" side;

Step 4: Keep the DIP switches No. 1, 2, 3, 4, and 5 (channel) of the two devices consistent;

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Step 5: Reconnect the power of the two devices. The RSSI indicator LED will light up according to the connection signal strength (there are 3 signal level indicators in total), and the connection failure signal indicators will all go out.

Test phenomenon: Short press the No. 1 input button of the host, the slave No. 1 coil outputs, and feeds the output signal to the host. The host No. 1 coil outputs, click the No. 1 input button again, the slave releases the No. 1 coil, and feeds back to the host. The host is releasing coil No. 1, and so on for other channels.

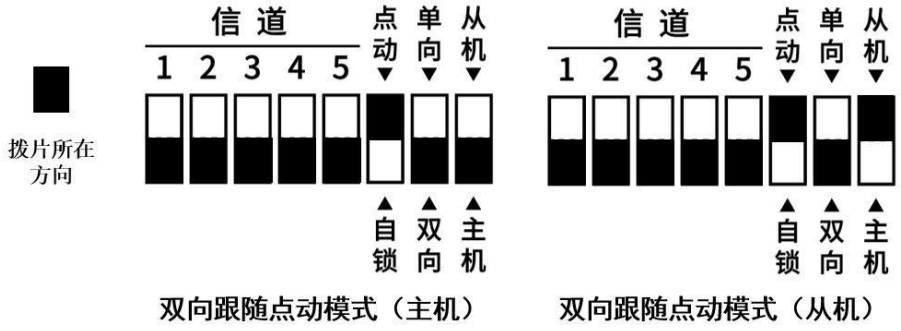
3.3.3 Two-way following jog mode

Step 1: Configure the two devices as master and slave respectively (there is only one master in a communication network);

Step 2: Set the working mode configuration dial to the "two-way" side;

Step 3: Set the output mode configuration dial to the "jog" side;

Step 4: Keep the DIP switches No. 1, 2, 3, 4, and 5 (channel) of the two devices consistent;



Step 5: Reconnect the power of the two devices. The RSSI indicator LED will light up according to the connection signal strength (there are 3 signal level indicators in total), and the connection failure signal indicators will all go out.

Test phenomenon: long press the No. 1 input button of the slave machine, the host outputs the first channel, release the button, the host stops output, long press the host input button No. 1, the slave machine outputs the first channel, release the button, the slave output stops.

3.3.4 One-way feedback jog mode

Step 1: Configure the two devices as master and slave respectively (there is only one master in a communication network);

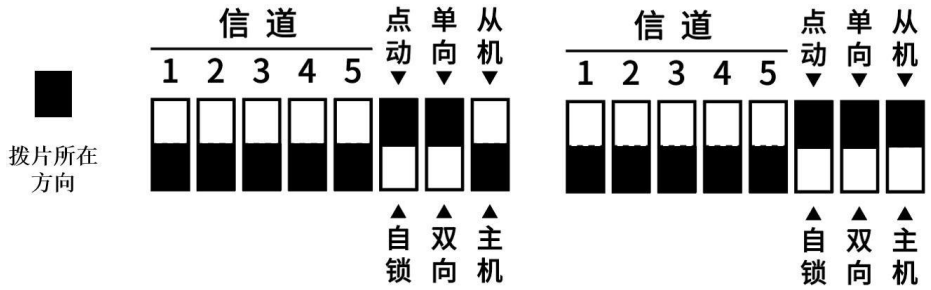
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Step 2: Set the working mode configuration dial to the "one-way" side;

Step 3: Set the output mode configuration dial to the "jog" side;

Step 4: Keep the DIP switches No. 1, 2, 3, 4, and 5 (channel) of the two devices consistent;



单向反馈点动模式（主机） 单向反馈点动模式（从机）

Step 5: Reconnect the power of the two devices. The RSSI indicator LED will light up according to the connection signal strength (there are 3 signal level indicators in total), and the connection failure signal indicators will all go out.

Test phenomenon: The host long presses the No. 1 input button, the slave No. 1 coil outputs, and the output signal is fed back to the host. The host No. 1 coil outputs, and the No. 1 input button is released, the slave machine will also release the No. 1 coil and send the signal Feedback to the host, the host releases coil No. 1, and so on for other channels.

4. Detailed function explanation

4.1 follow mode

Two-way following: The master follows the input control of the slave, and the slave follows the input control of the master.

One-way feedback: The slave machine follows the input signal of the master machine and outputs it. If the slave machine successfully outputs, the output signal will be fed back to the master machine. The master machine outputs the corresponding coil.

4.2 Self-locking and inching

Self-locking: Just click/DI to detect the input (no more than 2s, if it exceeds 2s, the trigger will be considered invalid, and the input pulse must be greater than 20ms to debounce the input) to invert the current output state.

Jog: follow button and DI input, button pressed/DI input, relay output, release button/no DI input, relay released.

4.3 Cipher mode configuration

Enter the ciphertext mode: By double-clicking the MODE button on the top cover of the host device, the host will send an encryption request to all connected slaves. The slave will double-blink the MODE indicator after receiving the encryption request. The host will also The MODE indicator light will double flash.

Exit the ciphertext mode: long press MODE on the top cover of the device, the device responds to release the

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ciphertext mode. To release encryption, the master and slave devices need to decrypt independently (press and hold the MODE button until the indicator light flashes twice).

Note: If the configuration is correct but communication fails, you can try to release the ciphertext mode, restart and connect again.

4.4 Advanced Features

1-to-1 mode : one master and one slave , one-to-one follow control, supports modification of follow mode, inching self-locking and cipher text mode.

1-to-many mode : One master and multiple slaves , one-to-many follow control, the slave follows the control of the master. The input of the slave cannot control the output of the master. The output of the master is only controlled by its own input. It only supports modification of jog and auto. Lock.

4.5 responding speed

The communication rate can be modified by the host computer to increase the corresponding speed of the equipment. The communication distance is inversely proportional to the corresponding speed. The higher the rate, the closer the distance. The device is factory configured for "distance priority".

"Response priority" : the closest distance, the fastest response ; "Balance mode" : balance distance and response speed.

Note: Keep the devices in the distribution group in the same response mode.

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4.6 One master, many slaves

The device supports the configuration of one master and multiple slaves mode through the host computer. The output of the device in this mode only follows the output of the host (including the host itself). Only the output mode (self-locking and inching output mode) can be configured, and the one-way feedback and The two-way following configuration is invalid (the dialing is invalid).

4.7 Network disconnection timeout reset

That is, communication timeout processing is turned off by default . The receiving end maintains the output state before the communication is disconnected until the communication connection returns to normal; open: 20-57600 seconds (configurable) , that is, after the communication disconnection time exceeds, the receiving end output is reset.
Note: Only versions 9017-0-13 and above support the network disconnection timeout reset function.

4.8 Device restart

Press the MODE button on a single machine, the MODE-LED indicator light flashes quickly, and enters the restart confirmation state. Click the MODE button again within 5 seconds to restart the device. If it exceeds 5 seconds, it will exit the restart confirmation state.
Restart the host computer: After the device successfully establishes a communication connection with the host computer, click Restart the device to complete the device restart.
Note: Only versions 9017-0-13 and above support the device restart function .

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5.Introduction to host computer interface



Software interface language: supports switching between Chinese and English;
Serial port: select the serial port to which the device is connected;
Device version number: After reading the parameters, the version number of the current device is displayed;
Network disconnection reset: off by default, on: supports 20-57600 seconds configuration;
Response speed: distance priority (default), response priority, balanced mode. Modifying this parameter will affect the transmission distance and response speed;
Read parameters: Read the current parameters of the device;
Write parameters: configure user-defined parameters;
Factory reset: Restore basic and advanced functions to factory parameters;
Restart the device: Restart the device;
Mode configuration : 1- to- 1 mode , 1-to-many mode ;
Note: Only versions 9017-0-13 and above support the function of resetting and restarting the device after disconnection .

The final right of interpretation belongs to Chengdu Ebyte Electronic Technology Co., Ltd.

Revise history

Version	Revision date	Revision Notes	Maintenance man
1.0	2021-09-26	initial version	LC
1.1	2022-02-14	Manual revision	XXN
1.2	2023-06-13	Appearance modification	LT
1.3	2024-1-26	Product function upgrade (new network disconnection timeout reset and device restart functions)	LT

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