

JNC

Cloud Box

CB



V2.14

Catalogue

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PART 1.PRODUCT INTRODUCTION

1-1 Product Introduction

This product is an excellent tool for fixed-point monitoring and patrol inspections in outdoor environments. It can transmit data to a cloud platform. The product features an IP68 waterproof and UV-resistant casing design, making it suitable for harsh conditions such as humid and hot environments. It has a web interface for real-time remote control, allowing users to remotely download historical data and alarm records from the USB. It also provides power outage and restoration SMS notifications. An alert mechanism ensures that before sending an SMS, the device will ring first, and it will send an SMS notification upon recovery. If the anomaly persists, another SMS will be sent. Users can set channel names, measurement ranges, units, zero offsets, slopes, and alarm points (HH/H/L/LL). Additionally, it can store up to 20 phone numbers, with two-tiered group management, allowing each channel to have designated contacts. This product is highly suitable for environmental monitoring, standalone monitoring stations, flood monitoring, pollution monitoring, sewage treatment plants, and water treatment plants that require remote monitoring and management.

1-2 Product Note

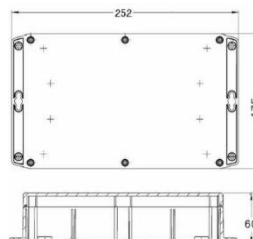
1. Do not use in environments with high vibration or strong electromagnetic interference to avoid product damage, errors, and measurement inaccuracies. Ensure good shielding for sensor signal lines and avoid bundling them with power lines to prevent signal interference.
2. Before performing any maintenance or repairs, remove the power source to prevent injury or product damage due to accidental power contact.
3. If installing in polluted environments with conductive materials (such as metal dust, water, etc.), appropriate sealing measures should be taken.
4. Do not operate if any components or modules of the product have been removed or disassembled, and contact our company for assistance as soon as possible.
5. We are not liable for damage or reliability issues caused by improper use, use beyond the specifications described in this manual, or environmental conditions outside the specified limits.

PART 2.PRODUCT DESCRIPTION

2-1 Product Features

- IP68 waterproof casing, suitable for use in harsh environments, with moisture-proof, heat-resistant, and shock-resistant capabilities.
- Features a web interface that can be accessed via a browser for remote control of the product.
- Tri-network architecture: supports RJ-45 and optional 4G communication and optional Wi-Fi.
- Active alert: optional SMS notification for power outage and alarm notifications (fully in Chinese).
- Firmware can be updated using a USB flash drive.
- Historical data stored on the USB can be downloaded remotely.
- Ideal for small-scale independent monitoring: on-site USB recording/SMS notifications/4G communication or NB-IoT/power-saving design.
- The product features a power-saving design, compatible with solar panel charging to reduce site limitations.
- Capable of measuring battery level, solar charging voltage, and charging current to monitor the charging status in real-time.
- Intelligent power supply scheduling prioritizes grid power, then solar power, and finally battery power to optimize power usage.
- Equipped with a 0.96-inch color LCD screen to directly display on-site values, USB status, and date.
- Can receive GPS signals to determine the device's location.
- Provides 5V, 12V, or 24V power output for sensors, with a jumper to select the output voltage (5V, 12V, or 24V).
- Sleep function: allows scheduling of the device's operating time according to sleep settings.
- Can read 4G signal strength.
- Suitable applications: environmental monitoring, weather monitoring, independent monitoring stations, flood monitoring, pollution monitoring, wastewater treatment plants, waterworks.

2-2 Product Size (mm)



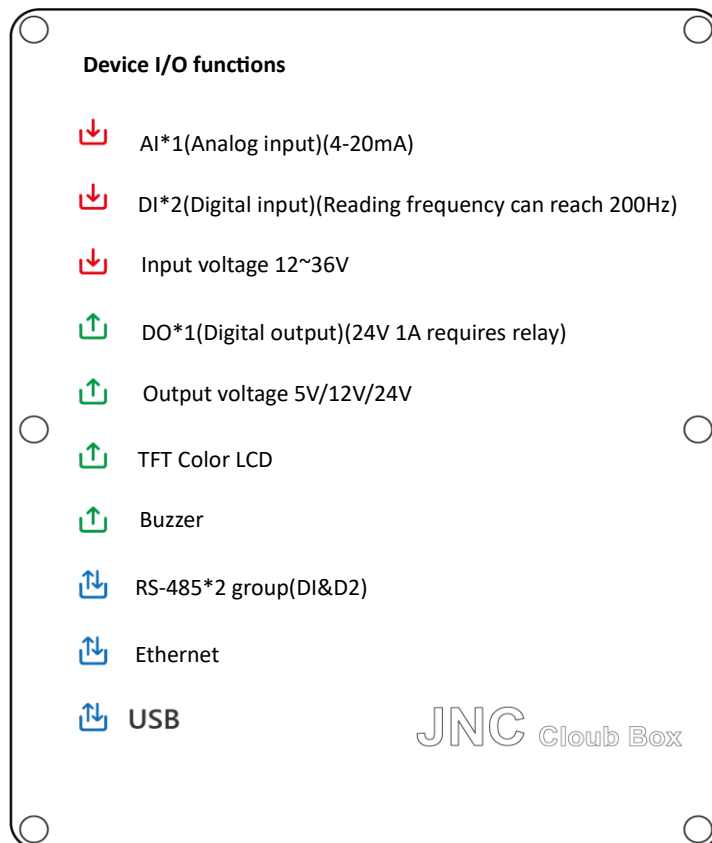
PART 3.PRODUCT SPECIFICATIONS

3-1 CB Specifications

Model	CB	
Power Supply	Adapter	Input: AC 100-240V / Output: DC 12V Maximum current 2A
	Equipment	DC12 ~ 36V Power consumption: 6.2W
Environment	Operating temp.	-20~70°C / 0 ~ 95%RH non-condensing (WiFi 0~70°C)
	Storage temp.	-30~70°C
Communication function	Ethernet communication	Interface: RJ-45 Ethernet jack, Web Service function
		Protocol: Modbus TCP protocol, MQTT, HTTPS
	RS485 communication	Interface: RS-485 X2 group (Master and Slave can be modified freely)
		Protocol: Modbus RTU
	Wi-Fi communication	Protocol: MQTT 、Https
Analog/Digital Signals	4G communication	Protocol: MQTT 、Https
	Signal input	Number of analog input points (AI*1, 4-20mA)/Number of digital input points (DI*2, capable of counting 200Hz)
	Signal output	Number of digital output points (DO*1, 24V 1A needs to be connected to a relay)
Display	0.96 inch, TFT-LCD	
Physical Conditions	Product size (mm)	252 x 175 x 60 (W× H× D)
	Product weight	<0.7kg
Housing	Material	PC + Anti-UV
Waterproof level	IP68	
Recording	USB flash drive record · maximum to 64G	
Safety Certifications	CE ,FCC	
Patents	R.O.C. Patent No M429156 / M474956 / M594326	
	China Patent No. 2514208 / 3968342	

3-2 CB Function diagram

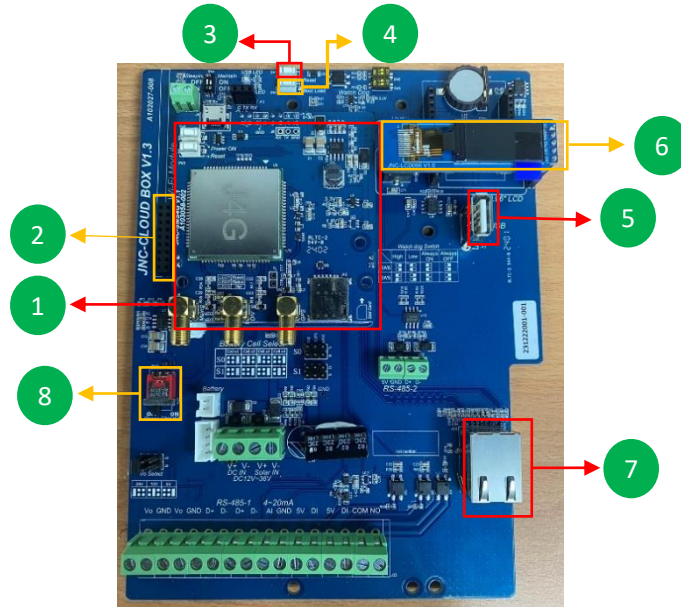
Icon Illustration:  **Input**  **Output**  **Bidirectional output/input**



Optional :  SMS module
features  Wifi(Modbus TCP/ MQTT/Https/Web)

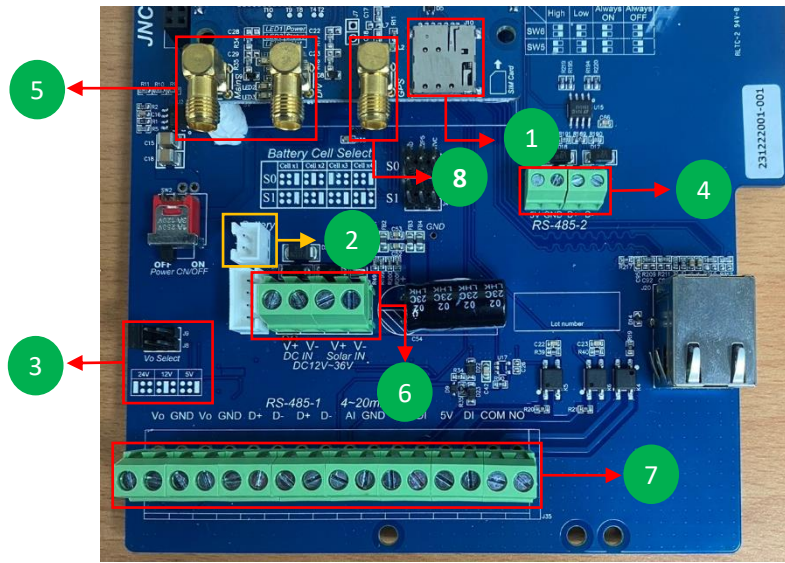
PART 4.Product Description

4-1 Equipment component location description



Code	Name/Image	Function Description
1	4G/NB-IOT module	It supports 4G and NB-IOT, wireless communication, transmits device data to the cloud platform, and connects to the cloud platform through a mobile phone or computer to view the device data.
2	WiFi module	After installing this module, you can connect to Wifi communication. Your mobile phone can connect to the Wifi of this device, connect to the web page to view data, and can bridge the device. This device has network functions.
3	SW1 key	Click to restart the device (restart).
4	SW3 key	Keep pressing to view the IP and current firmware version. ※If you continue to press and hold for 10 seconds, the system will reset and all internal parameters will be restored to factory values. ※※ Firmware update: Press and hold the SW3 button, then click SW1 (the SW3 button will continue to be pressed at this time). After clicking SW1, release the SW3 button. At this time, the product will update the firmware. Please update the firmware for details. To 4-4 ※
5	USB slot	A USB flash drive can be inserted, and the USB flash drive will record historical data, alarm data and alarm processes.
6	LCD screen	It can display the current channel real-time value, the IP, version, date and time of the device.
7	RJ45 socket	It can be connected to Ethernet, and the computer can be connected to the network cable through the RJ45 slot. At this time, the computer can view the real-time data of this product.
8	Switch	When turned ON (dial to the right), the power can be turned on.

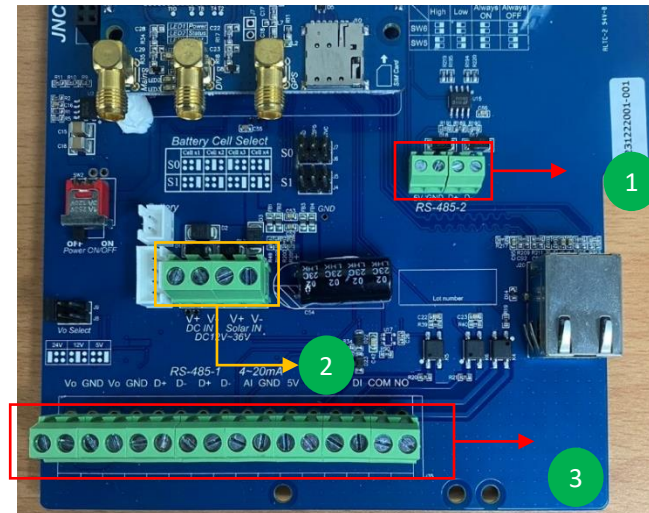
4-2 Hardware I/O side description



Code	Name/Image	Function Description
1	SIM slot	It can be used for SIM card insertion. When the SIM card is inserted, the SMS function can be enabled and the values can be uploaded to the platform.
2	Lithium battery slot	Where the lithium battery is connected, the battery capacity can be selected from 10000mV/50000mV.
3	Power output again	 Use the jumper cap to adjust the output voltage type. As shown on the left, there are three options: 24V, 12V or 5V, and the J24/J25 European terminal output voltage is at the bottom.
4	RS485-2 terminal block	5V GND D2+ D2- 5V/GND : Output 5V power . D2+/D2- : Connection point for RS485 . The connection type can be set to Master/Slave . ● Master : Standard RS485 Sensor can be connected externally. ● Slave : Provide data output on CB to other devices.
5	External antenna connector	The external antenna connector can enhance the signal strength (the left side is the main antenna, the right side is the auxiliary antenna, and the left side is the main one).
6	Power terminal block	V+ V- V+ V- There are two sets of input 12~36V DC power connections.
7	RS485-1 terminal block	Vo GND Vo GND D+ D- D+ D- AI GND 5V DI 5V DI COM NO ● Vo/GND: Two sets of Vo contacts (output voltage). ● D+/D-: Provides RS485 connection points (two groups), the connection type can be set Master/Slave: ➢ Master : Can be connected to a standard RS485 Sensor. ➢ Slave : Provides data output on CB to other devices. ● AI/GND: 4~20mA input contact.

		● 5V/DI: Two sets of DI contacts. ● COM/NO: DO output contact.
8	GPS antenna connector	External GPS antenna connector can locate the location.

4-3 Hardware wiring instructions

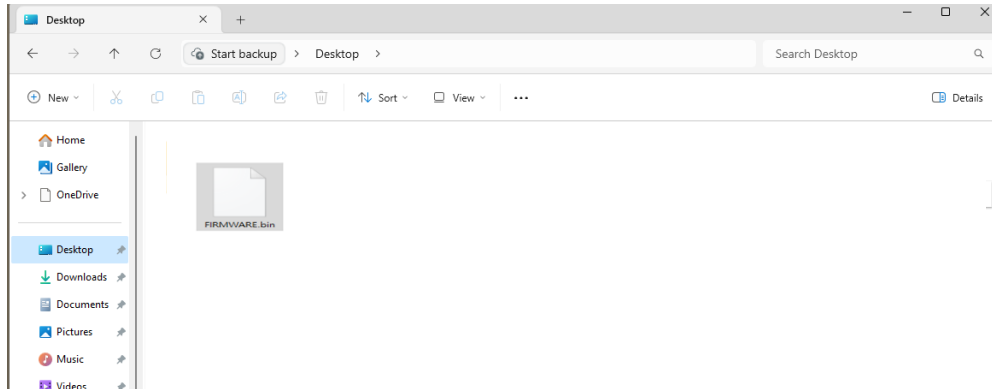


Code	Name/Image	Function Description
4	RS485-2 terminal block	5V GND D2+ D2- 5V/GND: Output 5V power supply. D2+/D2-: RS485 connection point. The connection type can be set to Master/Slave. ● Master : Can be connected to a standard RS485 Sensor. ● Slave : Provides data output on CB to other devices.
6	Power terminal block	V+ V- V+ V- There are two sets of input 12~36V DC power connections.
7	RS485-1 terminal block	Vo GND Vo GND D+ D- D+ D- AI GND 5V DI 5V DI COM NO ● Vo/GND: Two sets of Vo contacts (output voltage). ● D+/D-: Provides RS485 connection points (two groups), the connection type can be set ➢ Master: Can be connected to a standard RS485 Sensor. ➢ Slave: Provides data output on CB to other devices. ● AI/GND: 4~20mA input contact. ● 5V/DI: Two sets of DI contacts. ● COM/NO: DO output contact.

4-4 Firmware update step-by-step instructions

4-4-1 Firmware update steps

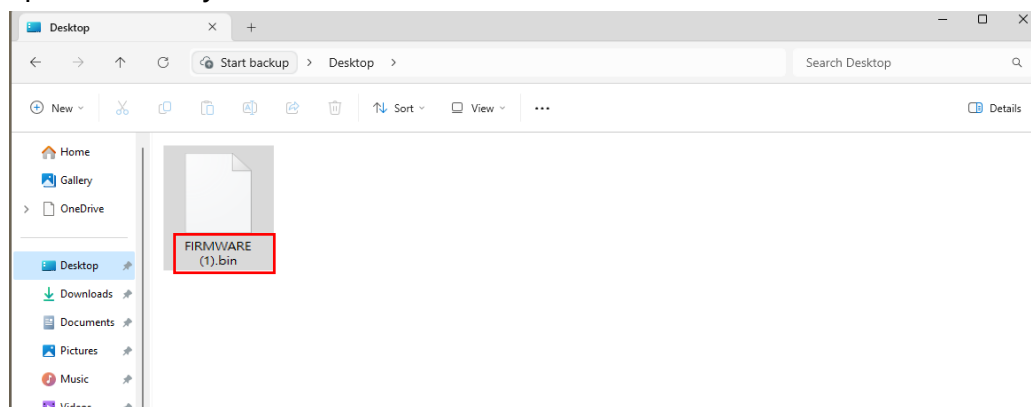
- Step 1: Place the firmware file (.bin file) to be updated in the flash drive, as shown in the figure below.



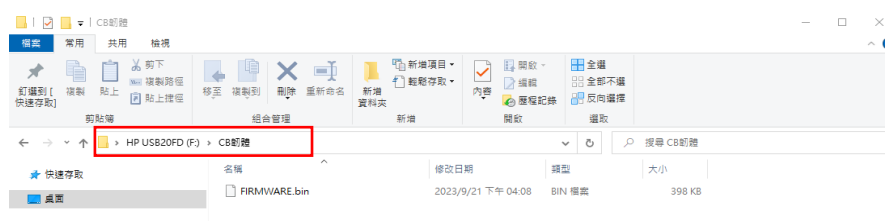
※※ Please note when updating ※※

1. The file name of the bin file must be the same as FIRMWARE.bin in order to be updated normally.
2. The updated firmware file must be in the root directory of the flash drive for normal update.

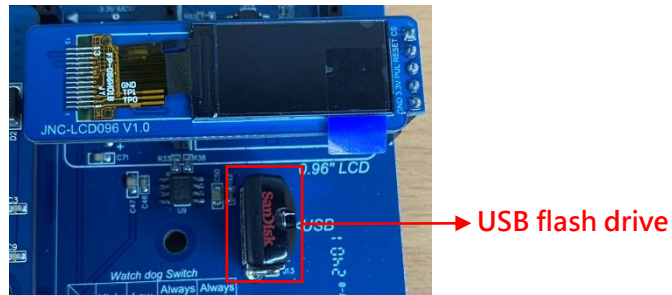
※The picture below cannot be updated normally because the file name is FIRMWARE (1).bin. The file name of the .bin file must be the same as FIRMWARE.bin in order to be updated normally.



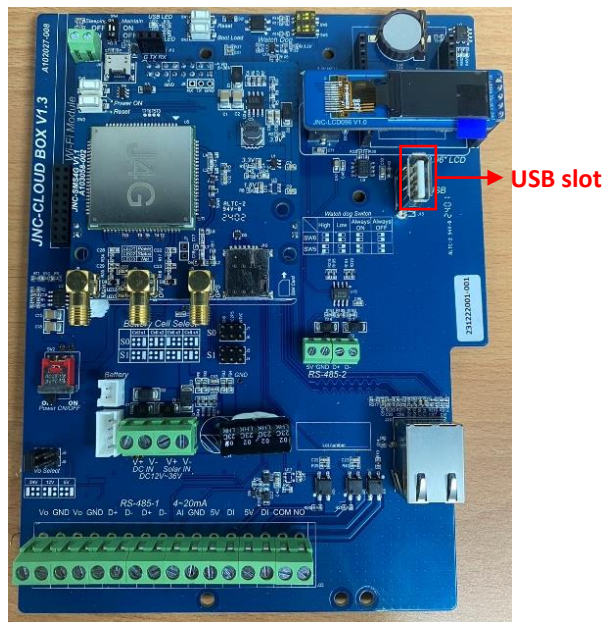
※ The picture below cannot be updated normally because FIRMWARE.bin is not in the root directory ; The .bin file must be in the root directory of the flash drive for normal updates.



- Step 2: Put the firmware file to be updated (FIRMWARE.bin) into the USB flash drive, and then put the USB flash drive into the USB slot, as shown in the figure below.

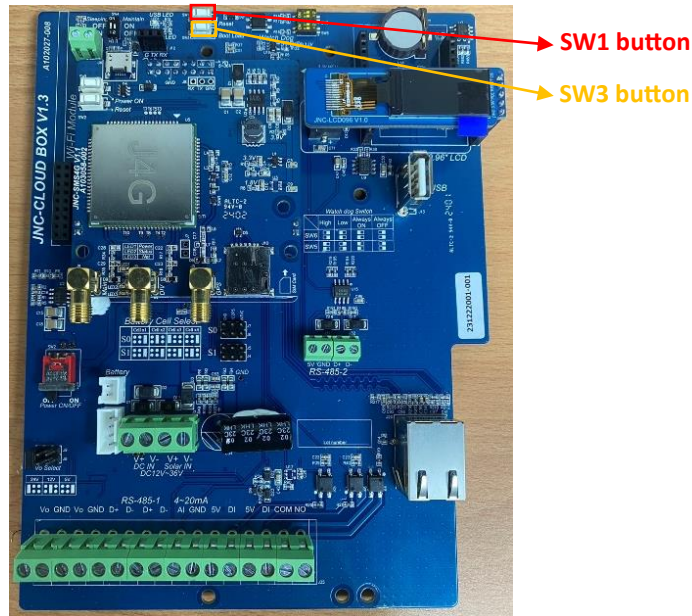


The picture below shows the location of the USB slot:



- Step 3: After placing the USB into the slot, **press and hold** the SW3 button (Boot Load), then click SW1 (the SW3 button will continue to be pressed at this time), click SW1 (Reset), then release the SW3 button, and wait After a few seconds, the firmware file burning will be completed.

The figure below shows the location of the SW1 button (Reset) and SW3 button (Boot Load):



The picture below shows the pressing method for updating firmware:

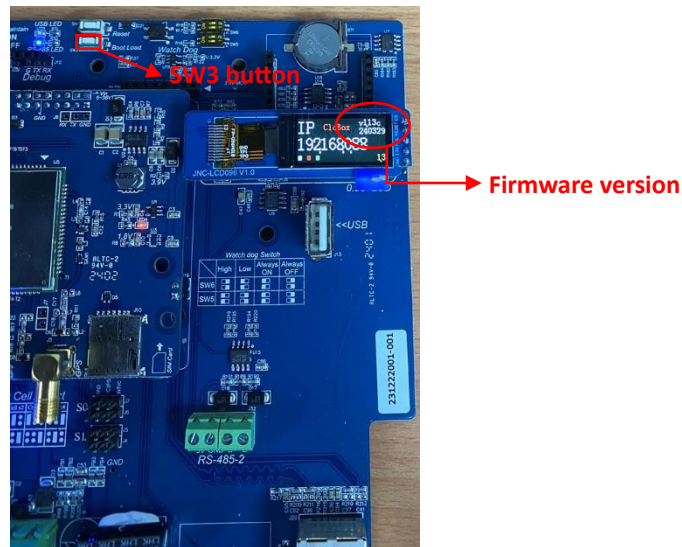


Quick press method to update firmware:

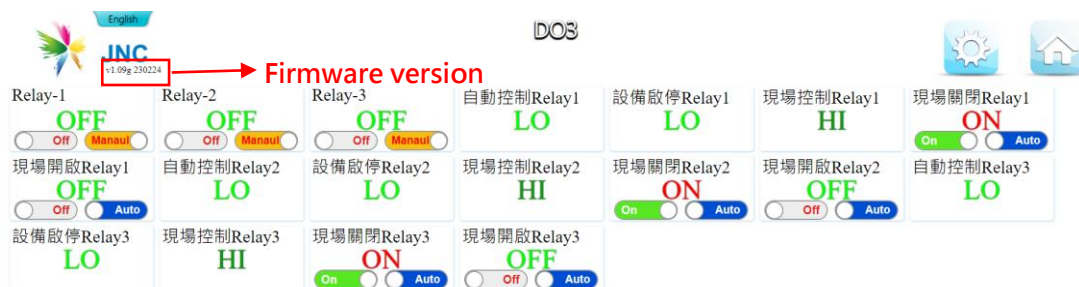
- Step 1. Press and hold the SW3 key (continue to hold it).
- Step 2. Click the SW1 button again (keep pressing the SW3 button).
- Step 3. After pressing the SW1 button and releasing it, continue to press the SW3 button and release it.
- Step 4. At this time, CB starts to update the firmware.

4-4-2 Confirm firmware version

- Method 1: Know the firmware version through the LCD screen
 - Step 1: Press the SW3 button (Boot Load), the IP and firmware version will be displayed at the top of the LCD screen (in the upper right corner of the screen), as shown in the figure below, the red circle is the firmware version.
- ※If the SW3 button (Boot Load) is **pressed for 10 seconds, the system will be reset** and all internal parameters will be restored to factory values.



- Method 2: Check the firmware version on the CB website
 - Step 1: According to the method of connecting the computer to the CB web page (5-1) in Chapter 5, you can know how to connect to the CB web page; you can know the firmware version in the upper left corner of the CB web page, as shown in the red box in the figure below.

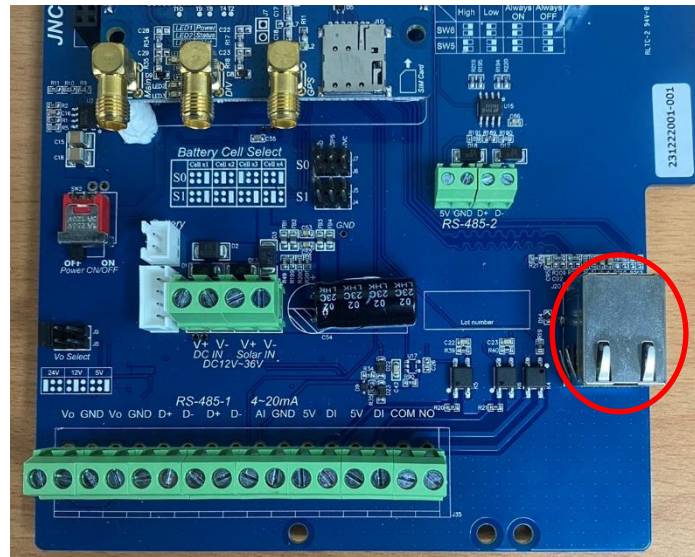


PART 5.CB Web Page Function Description

5-1 How to connect to CB webpage using computer

5-1-1 Steps

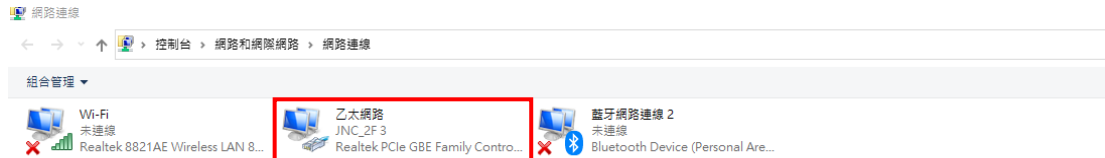
- Step 1: Connect the network cable to the RJ48 slot of the CB. The position of the RJ48 slot is shown in the red circle in the picture below, and connect the network cable to the network hole of the computer.



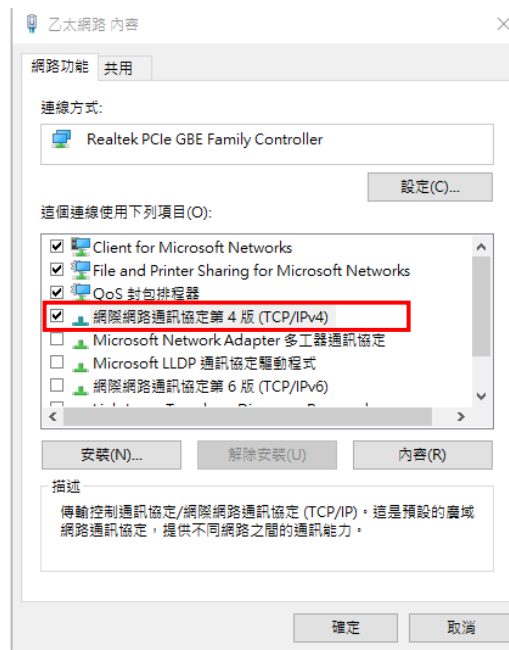
- Step 2: Click the SW3 button (Bootload) (shown in the red box in the picture below). At this time, the screen will display the IP of CB, as shown in the red circle in the picture below, the IP is 192.168.0.88.



- Step 3: Use your computer to go to the console, click Network and Internet, and then click Network Connection.



- Step 4: Click Ethernet, right-click and select the content, as shown in the figure below, and then click Internet Protocol Version 4 (TCP/IPv4).



- Step 5: Click to set the IP to 192.168.0.66. At this time, the computer IP must be in the same network domain as the CB, but the last digit of the computer IP cannot be the same as the last digit of the CB IP. For example: Because the CB IP is 192.168.0.88, Then the last digit is 88. The last digit of the computer IP cannot be 88, so 66 is selected; the subnet mask is 255.255.255.0; the default gateway is 192.168.0.1.



Cannot be the same as CB IP

- Step 6: After setting, open your computer' s browser and enter CB' s IP 192.168.0.88, you will be connected to the CB homepage.

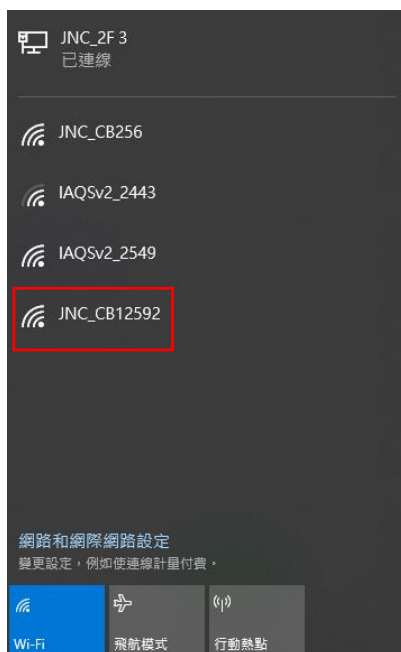


2024/06/04
14:31:41

5-2 How to connect to CB webpage using Wifi (requires Wifi board)

5-2-1 Steps

- Step 1: Turn on the WiFi function of the mobile device and click JNC_CBXXXXX to connect.



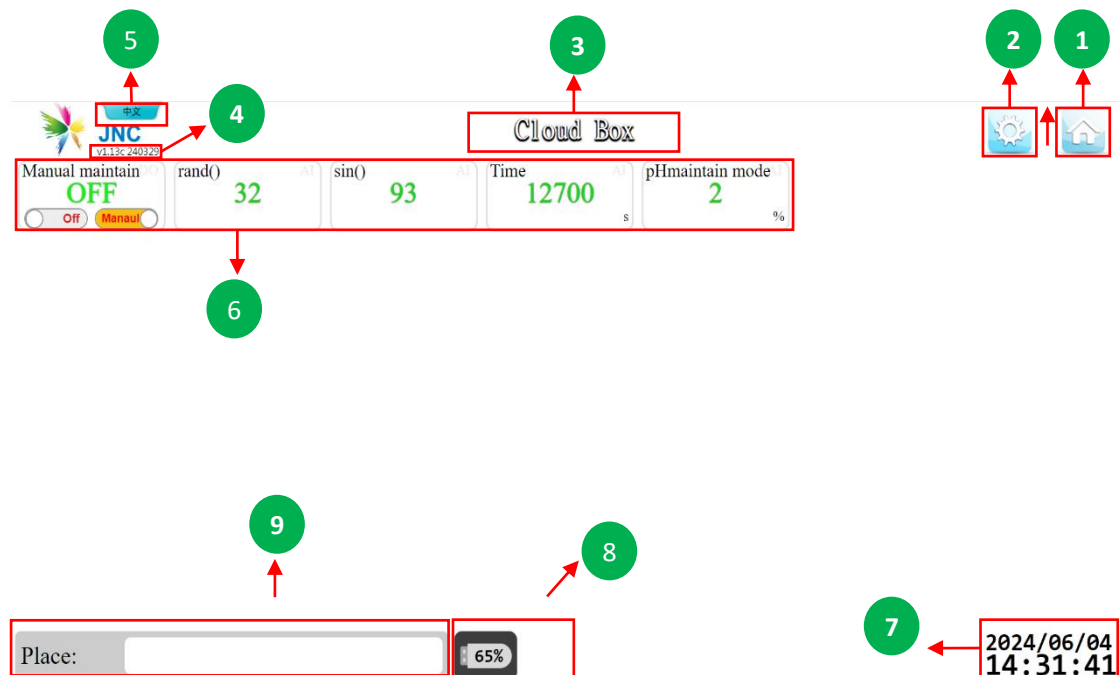
- Step 2: After successful connection, open the browser and enter CB' s IP 192.168.0.88, you will be connected to the CB homepage.



2024/06/04
14:31:41

5-3 Web page main screen description

Default IP: 192.168.0.88, login password: 1234



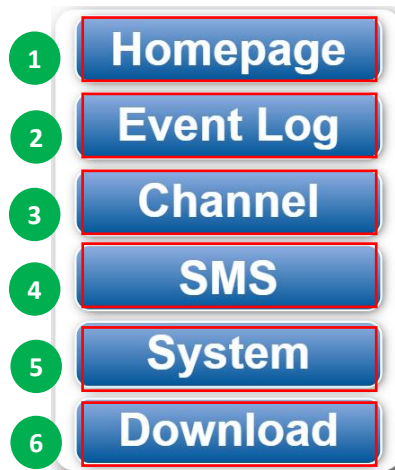
Code	Name/Image	Function Description
1	Home button	You can return to the home page.
2	Setting button	There are 6 options to choose from, including real-time values, alarm records, channel settings, SMS settings, system settings, and downloads. For details, please see 5-4 .

3	Device name	The device name can be displayed, and the device name can be modified in the basic settings in the system settings.
4	System version	The current system version can be displayed.
5	Language switch	You can switch between Chinese interface and English interface.
6	Channel status	The channel status can display the channel name and real-time value.
7	Time	Display system date and time.
8	Status column	Shows whether USB is plugged in  /unplugged  Shows SIM no signal 
9	Place	The name of the monitoring location can be set.

※Connection method 1: Connect to the Ethernet hole, go to Ethernet content settings → Internet Protocol version 4 (TCP/IPv4) → The host IP must be **the same area network 192.168.0.XX (cannot be used with Device IP conflict)**, mask 255.255.255.0, open the browser, **enter 192.168.0.88** in the address bar to open the system page.

※Connection method 2 (optional): Turn on the WiFi function of the mobile device, **search for JNC_CBXXXXX connection**, open the browser after the connection is successful, **enter 192.168.0.88** in the address bar to open the system page.

5-4 Setting button options



Code	Name/Image	Function Description
1	Homepage	Return to the main screen and display real-time values.
2	Event Log	A hundred recent alarm records, alarm information, and alarm processes will be displayed. For details, please see 5-5 .
3	Channel	Channel name, channel name/unit, numerical parameters and control settings can be set. For details, please see 5-7 .
4	SMS	You can set the alarm notification function, power outage notification function, phone book and location alarm, etc. For details, please see 5-13 .

5	System	You can set the local IP, time, password, communication settings, basic settings, transmission settings, WiFi, screen settings, sleep settings and configuration settings. For details, please see 5-14 .
6	Download	Historical records, alarm records and real-time value records can be downloaded. For details, please see 5-15 .

5-5 Alarm record

ID	Sensor Name	Value	Status
[1]	RH-8	71.1	Discon.
[2]	TEMP-8	27.6	Discon.
[3]	RH-7	74.5	Discon.
[4]	TEMP-7	27.8	Discon.
[5]	RH-6	71.0	Discon.

As shown in the green box in the picture above, it can be known that the humidity has exceeded the alarm threshold. The humidity value at this time is 71.1, and the time when the alarm is issued is displayed.

5-6 Main screen of channel settings

Manual maintain	rand()	sin()	Time	pHmaintain mode
OFF	32	93	12700	2

The picture above is the main screen of channel settings. Click on a channel individually to enter the channel settings, as shown in the picture below:

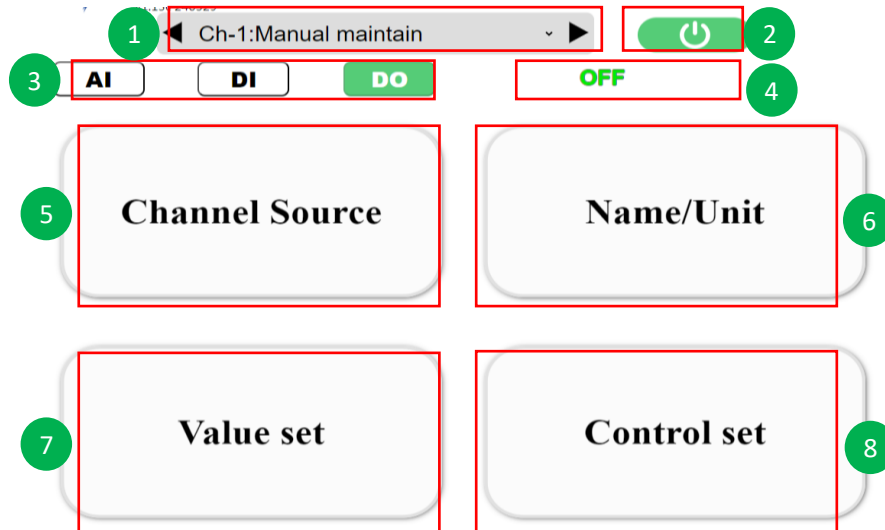
Ch-1:Manual maintain

Channel Source Name/Unit

Value set Control set

5-7 Channel settings

- Channel source path: Channel Settings → Select a channel



Code	Name/Image	Function Description
1	Current channel/switch channel	The current channel, click ◀ or ▶ to select the channel.
2	Enable	Whether the channel is enabled, the real-time value will be displayed when enabled, otherwise the real-time value will not be displayed and the channel will be closed when it is not enabled.
3	Type setting	Selectable signal types AI, DI, DO
4	Instant value	Displays the current real-time value of the channel.
5	Channel source	Set the data source of the channel value. Please see 5-8 for details.
6	Name/unit	Set the channel name, channel unit, whether the screen is displayed and the screen display name. For details, please see 5-9 .
7	Numeric parameters	Set the gain value, offset and decimal point, see 5-10 for details.
8	Alarm settings	Set the HH/HI/LO/LL alarm value, alarm dead zone and alarm delay (seconds). For details, please see 5-11 .

5-8 Channel source

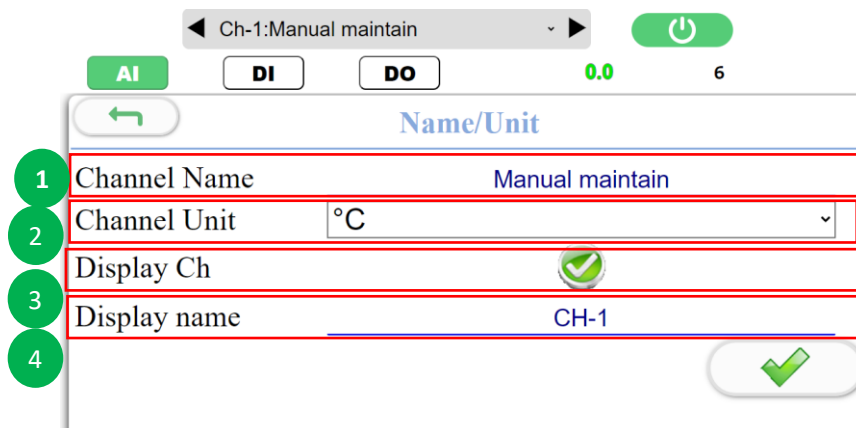
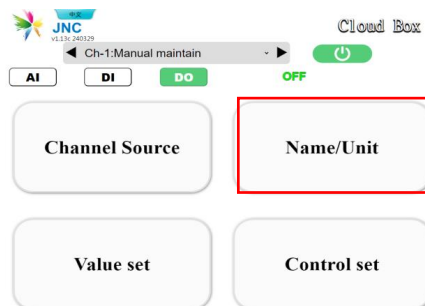
- Path to channel source: Channel Settings → Select a channel → Channel Source.

Code	Name/Image	Function Description
1	Interface	Select the device' s connection interface: ● LOCAL: Set the source of this unit. ● RTU: Connect the Sensor externally via RS485 to read the real-time value of the Sensor. ● TCP: Through network external connection, the real-time value of the Sensor can be read. ● BT: The second set of RS485 can read the real-time value of the Sensor.
2	Station No	The station number refers to the Sensor ID, and the Sensor ID cannot be repeated to avoid ID conflicts.

3	Address	The address where the Sensor data is located. If you fill in the address, you can read the data at that address.
4	Data type	The data types are INT16, INT32, UINT16, UINT32, and FLOAT; INT16: signed, INT32: signed, UINT16: unsigned, UINT32: unsigned, and FLOAT: string structure.
5	Original range	The corresponding range and the original range are set to 0~100. In addition, the decimal places to be displayed on the screen are based on the decimal places in the corresponding range.
6	Corresponding range	Read real-time values continuously.

5-9 Name/unit

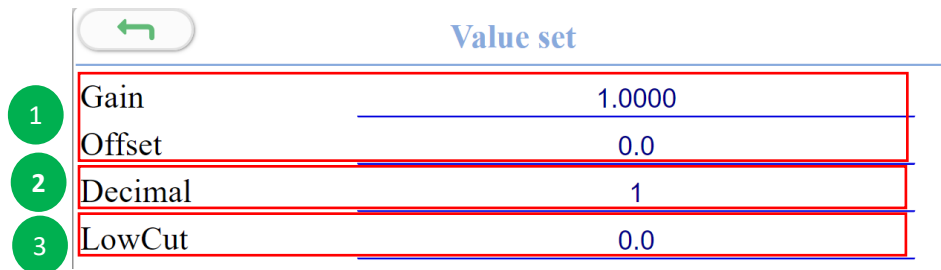
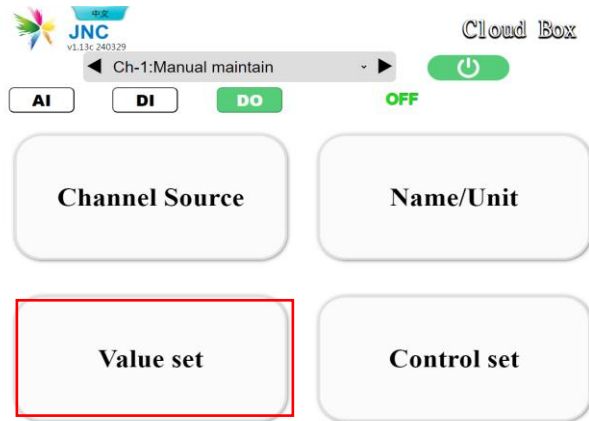
- Path to channel source: Channel Settings → Select a channel → Channel Source



Code	Name/Image	Function Description
1	Channel name	Channel name, used to display the channel name and alarm SMS name on the web page, and can be set to Chinese.
2	Channel unit	AI channel is limited. The unit of channel value can be selected from the drop-down content or customized.
3	Display channel	When checked, the name and value of the channel will be displayed on the local screen.
4	Display name	When displaying the channel name and value, only the ASCII code (English part) can be displayed, and the Chinese part cannot be displayed.

5-10 Numeric parameters

- Path of numerical parameters: Channel Settings→Select a channel→Numerical parameters

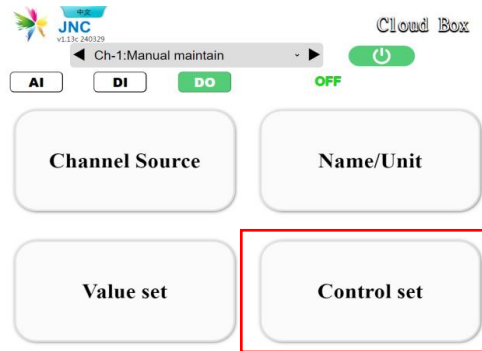


Code	Name/Image	Function Description
1	Gain/Offset	AI channel limited: Gain value: Used as a multiplication method for correction. Offset: used for correction in addition and subtraction. $V=ax+b$, V=corrected value, a=gain value, x=original value, b=offset
2	Decimal	AI channel limit , set the number of decimal places to display the value.
3	LowCut	Values within a certain range smaller than the minimum corresponding range (4-3-3.6) are equal to the minimum corresponding range. Ex: LowCut:5, corresponding range: 0~100 Values from 0 ~ -5 will all display 0

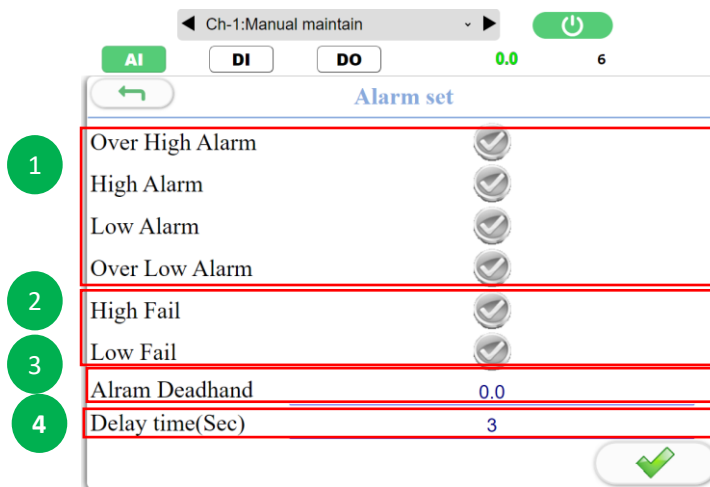
5-11 Alarm settings

- Alarm setting path: Channel Settings → Select a channel → Alarm Settings

The alarm settings distinguish between AI alarms and DI alarms, which are explained separately in [5-11-1](#) and [5-11-2](#) respectively:



5-11-1 AI alarm settings



Code	Name/Image	Function Description
1	Alarm settings	♦High high alarm (HH): The second section of high point alarm. If the value is higher than the high high point alarm, a high point alarm will be issued. ♦High alarm (HI): the first high point alarm, the value is higher than HI The alarm will sound a high point alert. ♦Low alarm (LO): The first segment of low alarm. If the value is lower than the low alarm, a low alarm will be issued. ♦Low Low Alarm (LL): The second segment of low point alarm. If the value is lower

		than the low low alarm, a low point alarm will be issued.
2	Fault setting	◆Fault high point: fault high point alarm. ◆Fault low point: fault low point alarm.
3	Alert insensible zone	The alarm recovery must be lower than the value reached after subtracting the hysteresis band before it will reset. For example, if the HI alarm value is 80 and the hysteresis band is set to 3, then $80-3=77$, and the value must be lower than 77 before the alarm will reset.
4	Alarm delay	Alarm delay: When an alarm occurs, if the limit continues to be exceeded for more than this number of seconds, the alarm will be triggered (range: 0~32,767).

5-11-2 DI alarm settings

Ch-1:Manual maintain

AI DI DO LO

Alarm set

1 Digital Input Alarm

2 Delay time(Sec) 3

3 Resetting Delay(Sec) 3

✓

Code	Name/Image	Function Description
1	Alarm activated	Checking this will activate the alert.
2	Alert insensible zone	The alarm recovery must be lower than the value reached after subtracting the hysteresis band before it will reset. For example, if the HI alarm value is 80 and the hysteresis band is set to 3, then $80-3=77$, and the value must be lower than 77 before the alarm will reset.
3	Alarm delay	Alarm delay: When an alarm occurs, if the limit continues to be exceeded for more than this number of seconds, the alarm will be triggered (range: 0-32,767).

5-12 DO control settings

- Path of DO control setting: Channel setting → Select a DO channel → Control setting

Ch-1:Manual maintain

AI DI DO OFF

Channel Source Name/Unit

Value set Control set

1 Manual / Automatic Automatic

2 Open Record

3 Independent control

4 Logic control

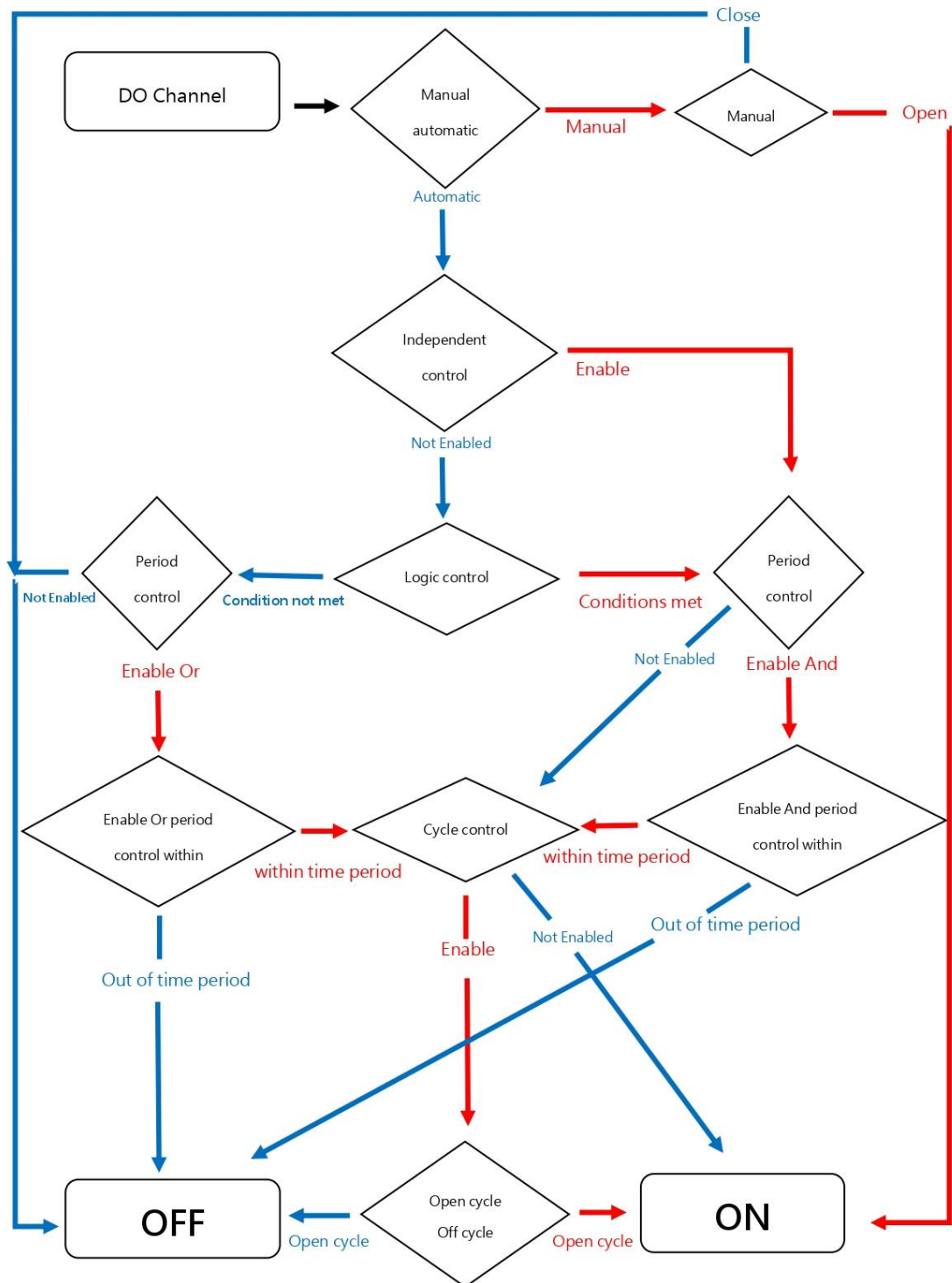
5 Periodic Control

6 Cycle Control

7 Auto Wash

Code	Name/Image	Function Description
1	Manual / Automatic	- Automatic: This channel will be controlled by other ADIO. - Manual: Channel switch can be switched manually.
2	Open Record	After enabling, the channel starts and stops will be recorded in Event.csv.
3	Independent control	After enabling, the channel will not be controlled by ADIO in automatic mode, and the channel will be turned on.
4	Logic control	Set the control conditions of this channel. For details, please view 5-12-2 DO logic control .
5	Periodic Control	Set time period control, see 5-12-3 DO time period control for details.
6	Cycle Control	Set cycle control, see 5-12-4 DO cycle control for details.
7	Auto Wash	Set the automatic cleaning mode. For details, please see 5-12-5 DO automatic cleaning mode .

5-12-1 DO control flow chart



5-12-2 DO logic control

- Path of DO logic control: Channel setting → Select a DO channel → Control setting → Logic control

The screenshot shows the 'Logic control' configuration window. It includes an 'Enable' checkbox (1), a 'Judgment type' section with 'Formula', 'Or' (selected), and 'And' options (2), a table for 'Condition settings' (3), and a 'Reset data' button (4). Below the window are three buttons: 'Periodic Control', 'Cycle Control', and 'Auto Wash'.

Enable	If	Open delay	Close delay	Deadband
☒	DO-1:Manual	OFF	0 Sec	0 Sec
				0.000

Code	Name/Image	Function Description
1	Enable	This option needs to be enabled for logical judgment to be made.
2	Judgment type	● Or: When Or is selected, DO will be started when one of the following conditions is checked and enabled. ● And: When And is selected, all the following checked conditions must be met before DO can be started.
3	Condition settings	Enable: You need to check enable to judge whether the conditions are met or not. ● AI can choose =, ≠, ≥, ≤ to compare with numerical values. ● DI can be selected to be equal to LO or HI. ● DO can be selected to be equal to ON or OFF. ● Enable delay: This time will be maintained after reaching the judgment condition. ● Shutdown delay: After DO is enabled and the conditions are lifted, DO will continue to run for this time. ● Alarm insensitive zone: only useful under DI channel. For details, please refer to 5-11-2.
4	Initialization parameters	Pressing it will initialize the parameters.

5-12-3 DO period control

- Path of DO period control: Channel setting → Select a DO channel → Control setting → Period control

Code	Name/Image	Function Description
1	Enable time period control	This option needs to be enabled (ticked) before the following two conditions will be judged and the time period control function will be activated.
2	Periodic control Type	● Or: If the "or" device is started during the period, DO will be started. ● And: DO will only be started if the device is started within the period.
3	Time period selection	There are five groups of time periods that can be selected and set, and each group of time periods can be set from start to end time and day of the week to start.

5-12-4 DO cycle control

- Path of DO cycle control: Channel setting → Select a DO channel → Control setting → Cycle control

Code	Name/Image	Function Description
1	Enable cycle control	After the cycle control function is enabled and the channel is activated, the channel will turn on for the set on time and then turn off for the set off time. °

5-12-5 DO automatic cleaning mode

- The path of DO automatic cleaning mode: channel setting → select a DO channel → control setting → automatic cleaning mode

Code	Name/Image	Function Description
1	Enable	Enable automatic cleaning mode.
2	Cleaning process	● Cleaning frequency: Use whether the difference between the current time and the last cleaning time is greater than the cleaning channel to determine whether to enable DO. (Input limit ≥ 60 points) ● Cleaning time: the number of seconds that cleaning (DO) is enabled. (Input limit ≤ 300 seconds) ● Keep time: After turning off cleaning (DO), the value will continue to be fixed at this number of seconds because the value is not yet stable. (Input limit ≥ 10 seconds)
3	Detect channel	When cleaning the sensor, the value may be unstable or incorrect. Therefore, during the cleaning time and Keep time, the selected channel will pause the value update until the Keep time is over.
4	Default parameters	Click the button to change the cleaning process to preset parameters.

5-13 SMS Settings

- The path of SMS settings: Setting button → SMS settings

The text message settings include text message settings, phone book and location alerts, which are explained separately in [5-13-1](#), [5-13-2](#) and [5-13-3](#) respectively.

5-13-1 SMS settings instructions

Code	Name/Image	Function Description
1	Alert notification function	When an alarm occurs, an SMS notification will be sent.
	Ring before sending	A phone call will be made before sending the SMS; the SMS notification will be sent after the call is answered, disconnected, or missed.
	Notice of return	When the alarm ends and the values return to normal, an SMS notification will be sent. *The power outage notification function requires the SMS module to be powered on.
2	Power outage notification function	When the device loses power, an SMS notification will be sent.
	Ring before sending	A phone call will be made before sending the SMS; the power outage SMS notification will be sent after the call is answered, disconnected, or missed.
	Notice of return	Send SMS notification when the device is powered off and then powered on again. *The power outage notification function requires turning on the power of the SMS module.
3	Do not disturb mode	Within the set time, no SMS notification will be sent.
	SMS resend interval (minutes)	When the alarm continues to occur, SMS notification will be

		sent again after the minute has passed.
	Prepaid card expiration date	When using a prepaid card, there is usually a period of use after recharging the value. After the expiration, the value must be recharged before it can be used (each telecommunications industry may have different processing methods); this function can remind the user to recharge the value again and send the time Send SMS notification 14 days and 1 day before expiration. ※Please be sure to activate the SIM card first.
	SIM signal	Select the signal used by the SIM card, Auto/4G/3G/2G.
	APN	The country code of the Sim card, for example: internet for Taiwan.
	Number of SMS	The number of text messages sent.
	Strange call	Select the channel where you want to send SMS alerts to the mobile phones of unknown callers.
	Channel disconnection notification	When the channel is disconnected, send SMS notification.

5-13-2 Phone book setting instructions

Code	Name/Image	Function Description
1	Alarm stage settings	First paragraph alarm 1 : Both the first and second paragraphs of alerts will be received. Second paragraph alarm 2 : You will only receive the second alert.
2	Send text messages to the channel corresponding to the mobile phone	Select the channel to send alert text messages to mobile phones.
3	phone number	You can enter the mobile phone number to which the text message is to be sent.

5-13-3 Location alert setting instructions

The screenshot shows the 'Gps Alarm' settings page. It has three tabs: 'SMS Setting', 'Phone Book', and 'Gps Alarm'. The 'Gps Alarm' tab is selected. The settings are as follows:

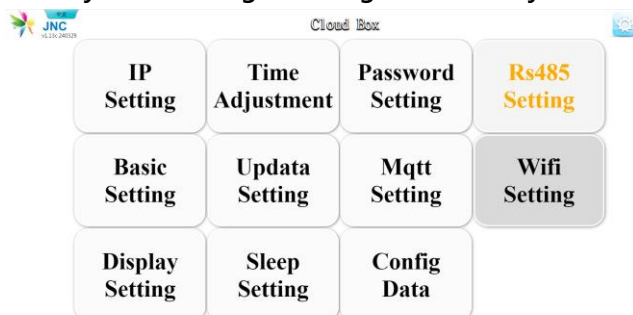
- 1. 'Enable gps' checkbox is checked.
- 2. 'gps alarm' checkbox is checked.
- 3. 'delay' is set to 3 min.
- 4. 'Interval of sending SMS' is set to 10 min.
- 5. 'latitude' is set to 0.
- 6. 'longitude' is set to 0.

At the bottom, there is a 'Get gps' button and a green checkmark icon.

Code	Name/Image	Function Description
1	Enable GPS	Enable positioning to locate the device.
2	GPS alarm	Activate the positioning alarm.
3	Delay time	When a positioning alarm occurs, if the threshold is exceeded for the specified number of seconds (range: 0~32,767), the alarm will be triggered.
4	Resend interval	If the alarm continues, an SMS notification will be sent again after the specified number of minutes.
5	Latitude and longitude	You can set the device's latitude and longitude.
6	Get current coordinates	By clicking, you can obtain the current coordinates of the device's location.

5-14 System Settings

- The path of system settings: Setting button → System Settings



Code	Name/Image	Function Description
1	IP Setting	Network settings for IP, Subnet Mask, Gateway, and MAC: - IP Address: 192.168.0.88 (default). - Subnet Mask: 255.255.255.0 (default). - Default Gateway: 192.168.0.1 (default). For more details, refer to section 5-14-1.
2	Time Adjustment	☒ When the update time is started, it will be synchronized with the computer time. ☐ Close the update time setting, see 5-14-2 for details.
3	Password Setting	You can set the password to change the device. For details, please see 5-14-3 .
4	Rs485 Setting	RTU communication settings (transmission settings, parity check, data bits, stop bits, connection type, communication interval), please view 5-14-4 for details.
5	Basic Setting	The number of channels (up to 60 channels can be set), recording interval, device name, location name settings, please see 5-14-5 for details.
6	Updata Setting	Http upload settings can be enabled or cloud platform upload settings can be enabled and Ethernet or SMS upload methods can be selected. For details, please see 5-14-6 .
7	Mqtt Setting	Use MQTT protocol to upload device parameters. For details, please view 5-14-7 .
8	Wifi Setting	SSID name, encryption mode, Wifi mode AP or Client settings.
9	Display Setting	Set the screen switching frequency, display time and voltage, see 5-14-8 for details.
10	Sleep Setting	Set the device to sleep regularly and other functions. For details, please see 5-14-9 .
11	Config Data	The parameter configuration of the device can be imported and exported via USB or network. For details, please see 5-14-10 .

5-14-1 IP setting instructions

- The path of IP settings: Setting button → System Settings → IP Settings
 - IP, Mask, Gateway, Mac network settings:
 - IP address: 192.168.0.88 (factory value)
 - Subnet mask: 255.255.255.0 (factory value)
 - Default gateway 192.168.0.1 (factory default)

IP Setting

Cloud Box

IP: 192.168.7.88

Mask: 255.255.240.0

Gateway: 192.168.0.253

Mac: 02:1A:CB:87:0A:00

✓

5-14-2 Time adjustment instructions

- Time adjustment path: Setting button → System settings → Time adjustment

Time Adjustment

Cloud Box

1 Renewal Time

2024 / 6 / 5

15 : 22 : 19

Wed

✓

Code	Name/Image	Function Description
1	Update time	Start update time Turn off the update time setting and synchronize the computer time.
2	Change time	The time can be changed manually.

5-14-3 Password setting instructions

- Password setting path: Setting button → System Settings → Password Settings

Cloud Box

1 Old password

2 New password

3 Confirm password

Password Setting

Code	Name/Image	Function Description
1	Old password	Enter your old password.
2	New password	Enter a new password.
3	Confirm password	Enter the new password again.

5-14-4 Communication device instructions

- Path of communication device: Setting button → System settings → Communication device

Cloud Box

1 Baudrate 9600

2 Parity None

3 Data bits 8

4 Stop bits One

5 Connect type Master

6 Interval(ms) 200

Rs485 Setting

Code	Name/Image	Function Description
1	Transfer settings	There are 2400bps, 4800bps, 9600bps (default), 19200bps, 38400bps, 57600bps, and 115200bps transmission settings to choose from.
2	Parity check	The parity check default is None.
3	data bits	The data bits are preset to 8.

4	Stop bit	The stop bit is preset to One.
5	Connection type	The connection types are Master and Slave: ● Master: Can be connected to a standard RS485 Sensor. ● Slave: Provides data output on CB to other devices.
6	Communication interval	The communication interval is preset to 300(ms).

5-14-5 Basic setup instructions

- Path to basic setting instructions: Setting button → System Settings → Basic Settings

The screenshot shows the 'Cloud Box' Basic Setting window. It contains the following fields and controls:

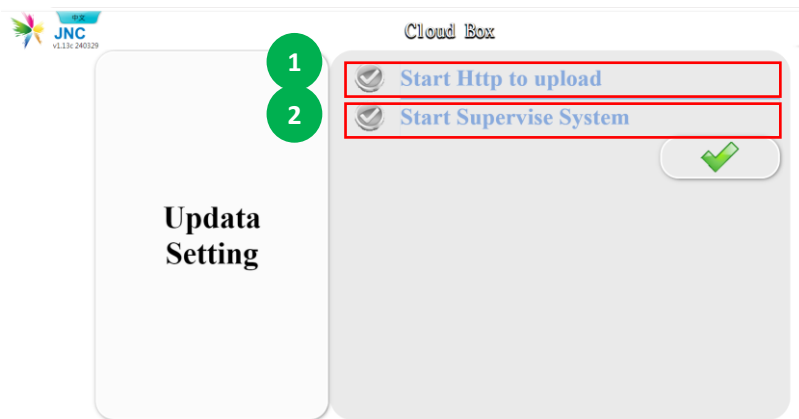
- 1**: Usage amount of Channel (dropdown menu, value 5)
- 2**: Recording interval (text input, value 60, unit sec)
- 3**: Name of Device (text input, value Cloud Box)
- 4**: Place of Device (text input)
- 5**: COM1 (dropdown menu, value none)
- 6**: COM2 (dropdown menu, value none)
- 7**: Rst (dropdown menu, value none)
- 8**: Wind speed for Ch (dropdown menu, value None)
- 9**: Wind direction for Ch (dropdown menu, value None)
- Temperature for Ch (dropdown menu, value None)
- Humidity for Ch (dropdown menu, value None)

There are two green checkmark buttons at the bottom right of the form.

Code	Name/Image	Function Description
1	Number of channels	The number of selectable channels (up to 30 channels can be set).
2	Record interval	The time the data was recorded.
3	Device name	The name of the device.
4	Place	The location where the device is placed.
5	COM1	Channels can be selected as COM1, COM2 and Rst.
6	COM2	One channel can be set as the wind speed channel.
7	Rst	One channel can be set as the wind direction channel.
8	Wind speed channel	One channel can be set as the temperature channel.
9	Wind direction channel	One channel can be set as the humidity channel.

5-14-6 Transmission settings instructions

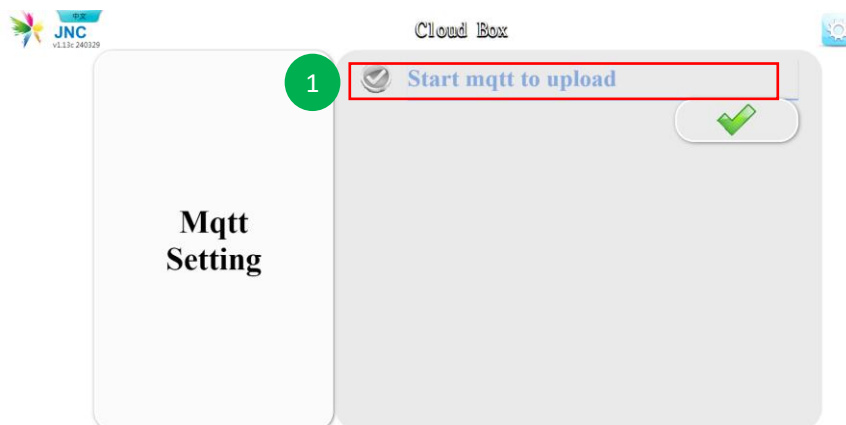
- The path to transfer setting instructions: Setting button → System Settings → Transfer Settings



Code	Name/Image	Function Description
1	Enable HTTP upload	Enable Http upload to the cloud platform.
2	Enable cloud platform	Enable uploading to the cloud platform.

5-14-7 Mqtt setting instructions

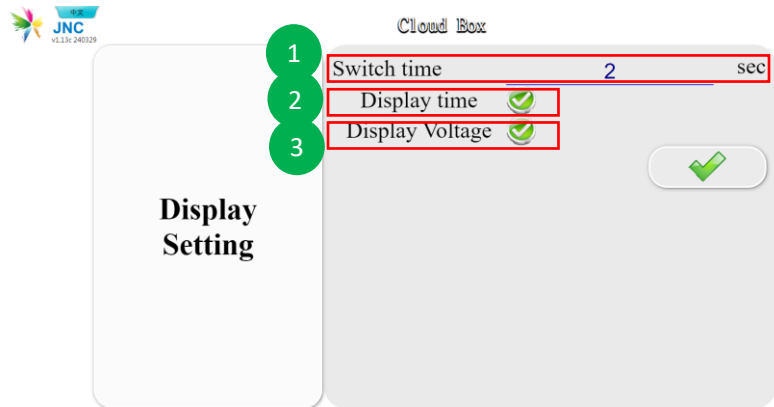
- The path of Mqtt setting instructions: Setting button → System Settings → Mqtt Settings



Code	Name/Image	Function Description
1	Enable Mqtt upload	Enable Mqtt to upload to the cloud platform.

5-14-8 Screen settings instructions

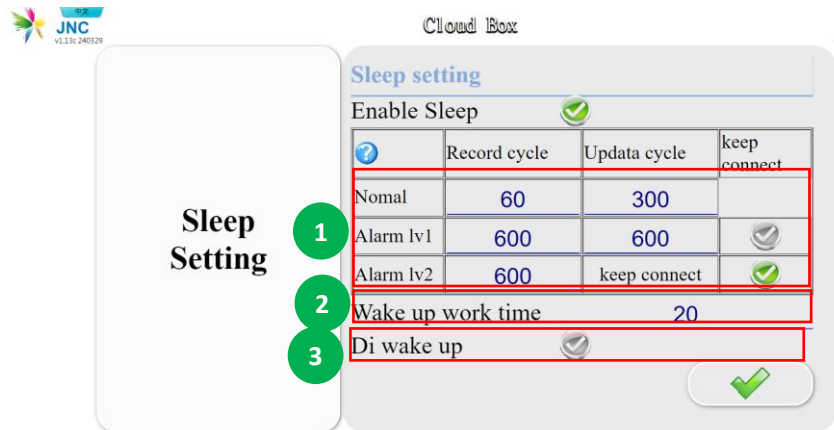
- Path of screen setting instructions: Setting button → System Settings → Screen Settings



Code	Name/Image	Function Description
1	Switching frequency	Set the number of seconds for switching frequency.
2	Display time	When checked, the time is displayed on the screen.
3	Display voltage	When checked, the voltage is displayed on the screen.

5-14-9 Hibernation setting instructions

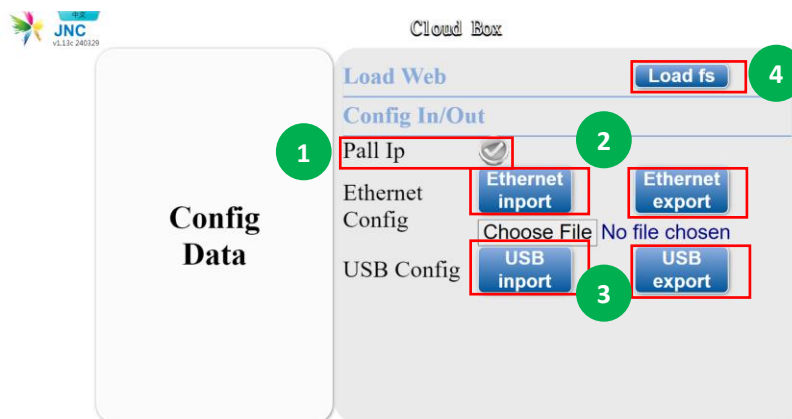
- Path to sleep setting instructions: Setting button → System Settings → Hibernation Settings



Code	Name/Image	Function Description
1	Enable hibernation	● Sleep cycle: Every time the set number of seconds passes, it will wake up in advance and record the value. ● Upload cycle: The recorded values will be uploaded to the platform every time the set seconds pass.
2	Run time after waking up	This parameter is the early wake-up time of the sleep cycle. For details, please see the figure above.
3	DI wake up	When this option is enabled, DI will be evoked.

5-14-10 Configuration settings instructions

- The path of configuration setting instructions: Setting button→System Settings→Configuration Settings
- ※ Configuration refers to the setting contents of all CB channels combined into one file.
 - Export configuration: Export the settings of all channels of CB.
 - Import configuration: Import the configuration to CB, then the channel settings of CB will become the channel settings in the configuration.



Code	Name/Image	Function Description
1	Cover IP	Overwrite previous IP
2	Network configuration	● Network import: Use the network to import configuration ● Network export: Use the network to export configuration
3	USB configuration	● USB import: Use USB to import configuration ● USB export: Use USB to export configuration
4	Web page burning	Use the web page to load the fs file

5-15 Download

- Download path: Setting button → Download

There are real-time records and alarm records that you can click on.



5-15-1 Instant time record

- The path of real-time recording: Setting button → Download → Real-time recording

Record : Selection period
下載檔案時間長度最長為
24小時

Start time
2024-6-6 8:16:0

Stop time
2024-6-6 9:16:0

Interval of Sampling
1 Sec

Download Close

Select the start time and end time of the record to be downloaded. The maximum download time is 24 hours. The record will be presented in Excel format, as shown in the figure below.

1	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X
2	Date	Time	太陽光電	太陽光電	充電電流	電池電量	手動保潔	pH	水溫(°C)	pH	耗電	pH	耗電	pH	耗電	時間一	時間二	時間三	時間四	時間五	時間六	時間七	時間八	時間九
3	2023/4/20	07:31:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
4	2023/4/20	07:32:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
5	2023/4/20	07:33:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
6	2023/4/20	07:34:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
7	2023/4/20	07:35:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
8	2023/4/20	07:36:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
9	2023/4/20	07:37:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
10	2023/4/20	07:38:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
11	2023/4/20	07:39:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
12	2023/4/20	07:40:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
13	2023/4/20	07:41:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
14	2023/4/20	07:42:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
15	2023/4/20	07:43:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
16	2023/4/20	07:44:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
17	2023/4/20	07:45:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
18	2023/4/20	07:46:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
19	2023/4/20	07:47:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
20	2023/4/20	07:48:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
21	2023/4/20	07:49:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
22	2023/4/20	07:50:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
23	2023/4/20	07:51:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
24	2023/4/20	07:52:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
25	2023/4/20	07:53:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
26	2023/4/20	07:54:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
27	2023/4/20	07:55:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
28	2023/4/20	07:56:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
29	2023/4/20	07:57:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
30	2023/4/20	07:58:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
31	2023/4/20	07:59:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
32	2023/4/20	08:00:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
33	2023/4/20	08:01:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0
34	2023/4/20	08:02:00	23.6	0.1	0	100	0	0	0	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0

5-15-2 Alarm record

- Alarm record path: Settings button → Download → Alarm record

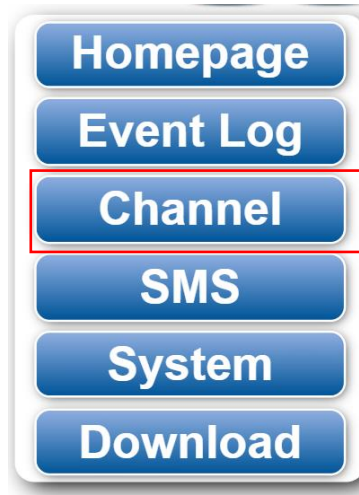
Click the alarm record and the alarm record will be displayed in Excel, as shown in the figure below

1	Date	Time	Manual ma	rand()	sin()	Time(s)	pHmaintair
2	6/6/2024	8:17:00	0	87	2	163015	2
3	6/6/2024	8:18:00	0	86	2	163075	2
4	6/6/2024	8:19:00	0	74	20	163135	2
5	6/6/2024	8:20:00	0	82	49	163195	2
6	6/6/2024	8:21:00	0	42	78	163255	2
7	6/6/2024	8:22:00	0	96	97	163315	2
8	6/6/2024	8:23:00	0	38	97	163375	2
9	6/6/2024	8:24:00	0	95	79	163435	2
10	6/6/2024	8:25:00	0	42	50	163495	2
11	6/6/2024	8:26:00	0	11	21	163555	2
12	6/6/2024	8:27:00	0	80	2	163615	2
13	6/6/2024	8:28:00	0	98	2	163675	2
14	6/6/2024	8:29:00	0	49	20	163735	2
15	6/6/2024	8:30:00	0	93	49	163795	2
16	6/6/2024	8:31:00	0	0	78	163855	2
17	6/6/2024	8:32:00	0	56	97	163915	2
18	6/6/2024	8:33:00	0	68	97	163975	2
19	6/6/2024	8:34:00	0	55	79	164035	2
20	6/6/2024	8:35:00	0	33	50	164095	2
21	6/6/2024	8:36:00	0	39	21	164155	2
22	6/6/2024	8:37:00	0	38	2	164215	2
23	6/6/2024	8:38:00	0	14	2	164275	2
24	6/6/2024	8:39:00	0	24	20	164335	2
25	6/6/2024	8:40:00	0	60	49	164395	2
26	6/6/2024	8:41:00	0	40	78	164455	2
27	6/6/2024	8:42:00	0	7	97	164515	2
28	6/6/2024	8:43:00	0	63	97	164575	2
29	6/6/2024	8:44:00	0	49	79	164635	2
30	6/6/2024	8:45:00	0	59	50	164695	2
31	6/6/2024	8:46:00	0	66	21	164755	2
32	6/6/2024	8:47:00	0	39	2	164815	2

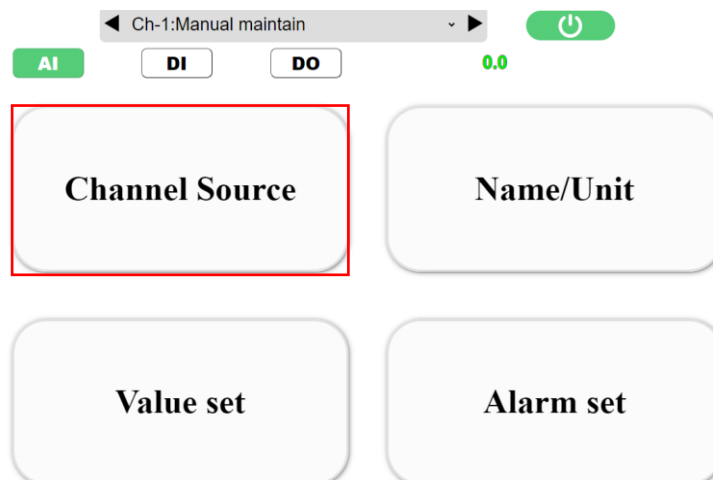
PART 6.CB Special Function Application

6-1 Special function application

- Step 1: Click Settings, then click Channel Settings, as shown in the red box below



- Step 2: After entering the channel, click on the channel source, as shown in the red box in the figure below



- Step 3: After entering the channel source, change the interface to Local, change the station number to 0, and fill in the address of the desired function according to the table below. For example: if the address is 300100, the function is mathematics. Formula 1, as shown in the red box in the figure below

You can select the channels to be calculated (as shown in the figure below). Because the summing function is selected (as shown in the red circle in the figure above), all the selected channels will be added up.

The following table shows all the special functions, which will be introduced one after another ([6-1-1](#)~[6-1-23](#))

Address	Function	Address	Function
300001	4-20mA	300061	Maximum wind speed in minutes
300011	DI1 speed calculation	300062	Minute average wind speed
300012	DI2 speed calculation (none)	300063	The most frequent wind direction per minute
300030	Battery voltage/100 (V)	300064	Minute average temperature
300031	External input voltage/100 (V)	300065	Minute average humidity
300032	IC output voltage/100 (V)	300066	Minute average angle
300033	Battery charging current/100 (A)	300100	Math formula 1
300034	External supply current/100 (A)	300101	Math formula 2
300035	Battery power %	300102	Math formula 3
300051	Hourly maximum wind speed	300103	Math formula 4
300052	hourly average wind speed	300200	Addition, subtraction, multiplication and division 1
300053	The most frequent wind direction of the hour	300201	Addition, subtraction, multiplication and division 2
300054	Hourly average temperature	300202	Addition, subtraction, multiplication and division 3
300055	Hourly average humidity	300203	Addition, subtraction, multiplication and division 4
300056	Hourly average angle	301000	Demo numerical sin wave

※Select local source to set different addresses to obtain different functions

6-1-1 Read 4-20 mA value

- Read the value of 4-20 mA connected to CB

Ch-1:Manual maintain

AI DI DO 0.0

Channel Source

Item	AI	Style of information	UINT16
Interface	RTU	Original range	0.0 ~ 100.0
ID	1	Corresponding range	0.0 ~ 100.0
Address	300001	Gain	1.0000
Interval of sampling	0	Offset	0.0
Read multiple	☒	High BYTE first	☒ Low BYTE first ☐
		High WORD first	☒ Low WORD first ☒

✓

As shown in the picture above, when the address is entered as 300001 (circled in the red box), the function is to measure 4-20mA

6-1-2 Read the calculated value of DI 1 speed

- Read the Sensor speed value connected to DI 1

Ch-1:Manual maintain

AI DI DO 0.0

Channel Source

Item	AI	Style of information	UINT16
Interface	RTU	Original range	0.0 ~ 100.0
ID	1	Corresponding range	0.0 ~ 100.0
Address	300001	Gain	1.0000
Interval of sampling	0	Offset	0.0
Read multiple	☒	High BYTE first	☒ Low BYTE first ☐
		High WORD first	☒ Low WORD first ☒

✓

As shown in the picture above, when the address is entered as 300011 (circled in the red box), the function is to measure the DI 1 speed

6-1-3 Read battery voltage value

- Read the voltage value of the connected CB battery

Ch-1:Manual maintain

AI DI DO 0.0

Channel Source

Item	AI	Style of information	UINT16
Interface	RTU	Original range	0.0 ~ 100.0
ID	1	Corresponding range	0.0 ~ 100.0
Address	300001	Gain	1.0000
Interval of sampling	0	Offset	0.0
Read multiple	☒	High BYTE first	☒
		Low BYTE first	☒
		High WORD first	☒
		Low WORD first	☒

✓

As shown in the picture above, when the address is entered as 300030 (circled in the red box), the function is to measure the battery voltage.

6-1-4 Read the external input voltage value

- Read the voltage value connected to the external input of CB

Ch-1:Manual maintain

AI DI DO 0.0

Channel Source

Item	AI	Style of information	UINT16
Interface	RTU	Original range	0.0 ~ 100.0
ID	1	Corresponding range	0.0 ~ 100.0
Address	300001	Gain	1.0000
Interval of sampling	0	Offset	0.0
Read multiple	☒	High BYTE first	☒
		Low BYTE first	☒
		High WORD first	☒
		Low WORD first	☒

✓

As shown in the figure above, when the address is entered as 300031 (circled in the red box), the function is to measure the external output voltage.

6-1-5 Read IC output voltage value

- Read the voltage value connected to CB IC

Ch-1:Manual maintain

AI DI DO 0.0

Channel Source

Item	AI	Style of information	UINT16
Interface	RTU	Original range	0.0 ~ 100.0
ID	1	Corresponding range	0.0 ~ 100.0
Address	300001	Gain	1.0000
Interval of sampling	0	Offset	0.0
Read multiple	☒	High BYTE first	☒ Low BYTE first
		High WORD first	☒ Low WORD first

✓

As shown in the figure above, when the address is entered as 300032 (circled in the red box), the function is to measure the IC output voltage.

6-1-6 Read battery charging current value

- Read the charging current value of the connected CB battery

Ch-1:Manual maintain

AI DI DO 0.0

Channel Source

Item	AI	Style of information	UINT16
Interface	RTU	Original range	0.0 ~ 100.0
ID	1	Corresponding range	0.0 ~ 100.0
Address	300001	Gain	1.0000
Interval of sampling	0	Offset	0.0
Read multiple	☒	High BYTE first	☒ Low BYTE first
		High WORD first	☒ Low WORD first

✓

As shown in the picture above, when the address is entered as 300033 (circled in the red box), the function is to measure the battery charging current.

6-1-7 Read external supply current value

- Read the current value of the external supply connected to CB

Ch-1:Manual maintain

AI DI DO 0.0

Channel Source

Item	AI	Style of information	UINT16
Interface	RTU	Original range	0.0 ~ 100.0
ID	1	Corresponding range	0.0 ~ 100.0
Address	300001	Gain	1.0000
Interval of sampling	0	Offset	0.0
Read multiple	☒	High BYTE first	☒ Low BYTE first
		High WORD first	☒ Low WORD first

✓

As shown in the picture above, when the address is entered as 300034 (circled in the red box), the function is to measure the externally supplied current.

6-1-8 Read battery power value

- Read the power value of the connected CB battery

Ch-1:Manual maintain

AI DI DO 0.0

Channel Source

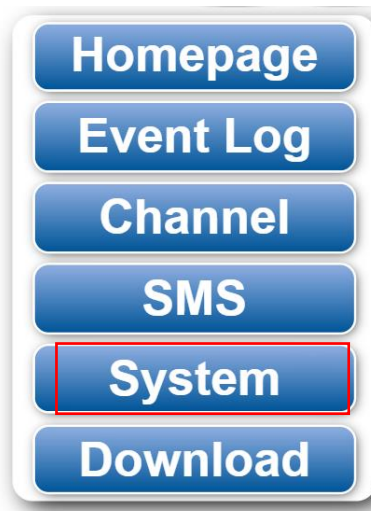
Item	AI	Style of information	UINT16
Interface	RTU	Original range	0.0 ~ 100.0
ID	1	Corresponding range	0.0 ~ 100.0
Address	300001	Gain	1.0000
Interval of sampling	0	Offset	0.0
Read multiple	☒	High BYTE first	☒ Low BYTE first
		High WORD first	☒ Low WORD first

✓

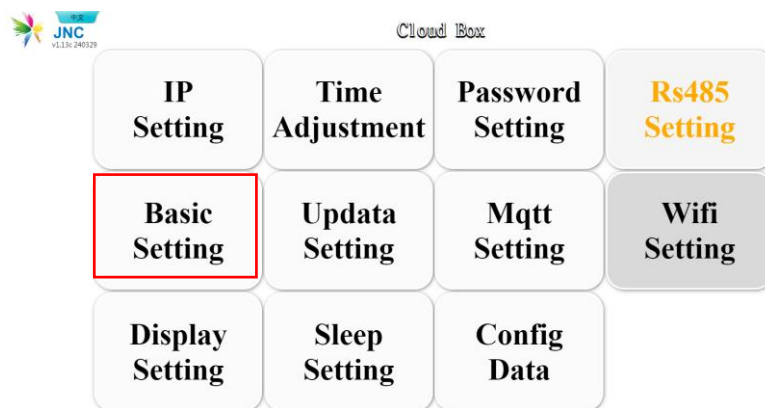
As shown in the picture above, when the address is entered as 300035 (circled in the red box), the function is to measure battery power.

6-1-9 Read the maximum wind speed value per hour

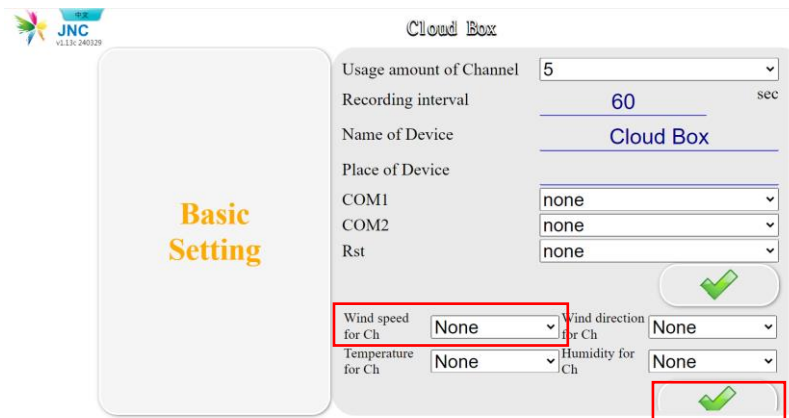
- Step 1: Click System Settings



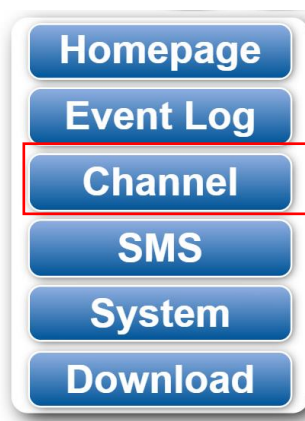
- Step 2: After entering the system settings page, click Basic Settings



- Step 3: After entering the basic setting page, select the channel with the maximum wind speed value per hour in the wind speed channel, and then click the confirmation button



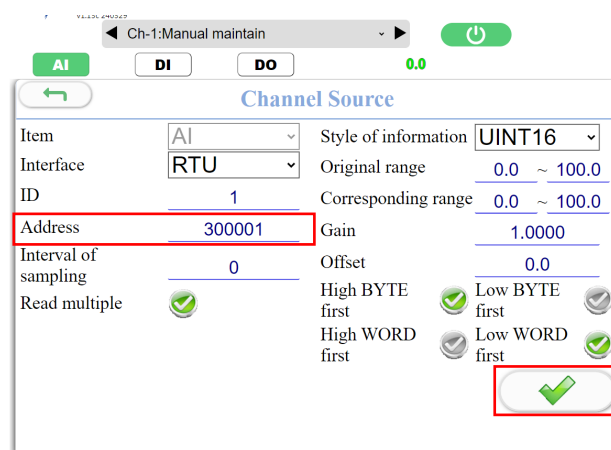
- Step 4: Click Channel Settings



- Step 5: Select the channel with the maximum wind speed per hour



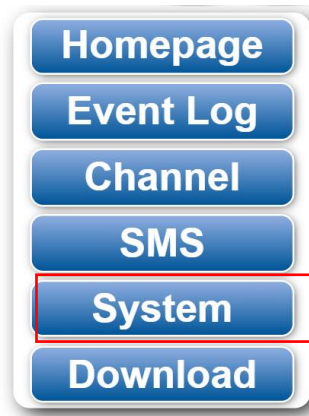
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



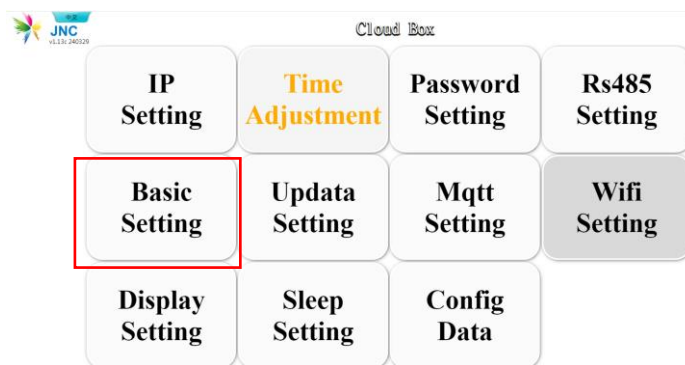
As shown in the picture above, when the address is entered as 300051 (circled in the red box), the function is to measure the maximum wind speed per hour

6-1-10 Read the hourly average wind speed value

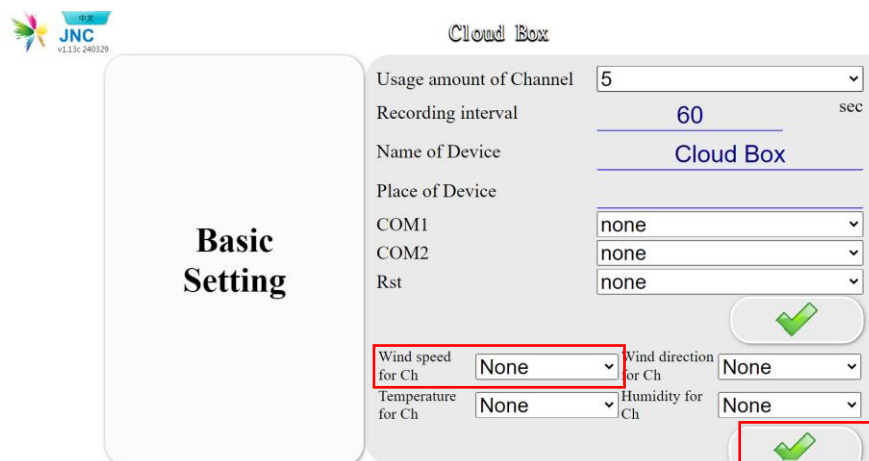
- Step 1: Click System Settings



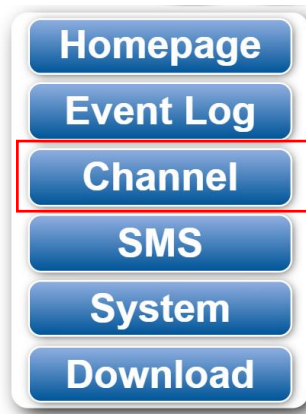
- Step 2: After entering the system settings page, click Basic Settings



- Step 3: After entering the basic setting page, select the channel with the maximum wind speed value per hour in the wind speed channel, and then click the confirmation button



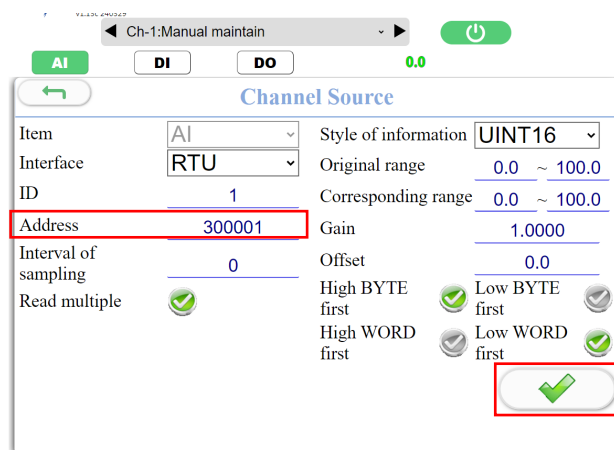
- Step 4: Click Channel Settings



- Step 5: Select the hourly average wind speed channel



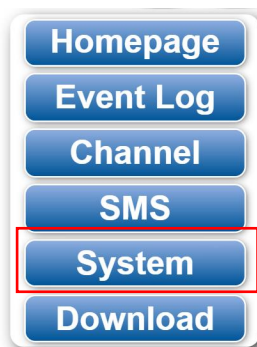
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



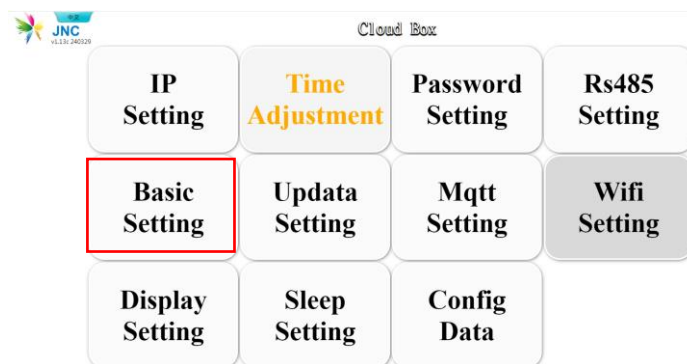
As shown in the picture above, when the address is entered as 300052 (circled in red box), the function is to measure the average wind speed per hour

6-1-11 Read the most frequent wind direction value every hour

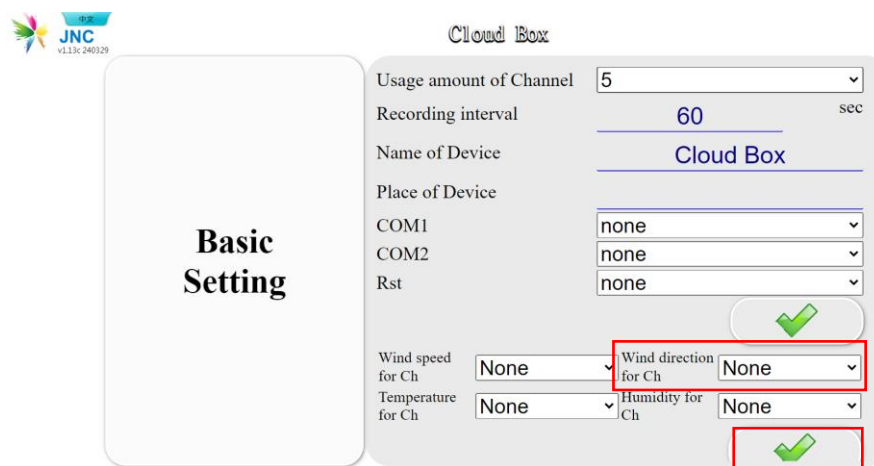
- Step 1: Click System Settings



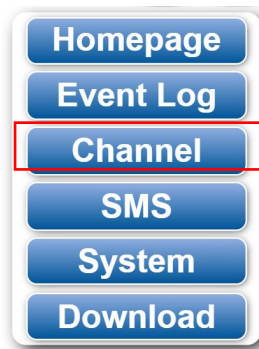
- Step 2: After entering the system settings page, click Basic Settings



- Step 3: After entering the basic setting page, select the channel with the most frequent wind direction per hour in the wind direction channel, and then click the confirmation button



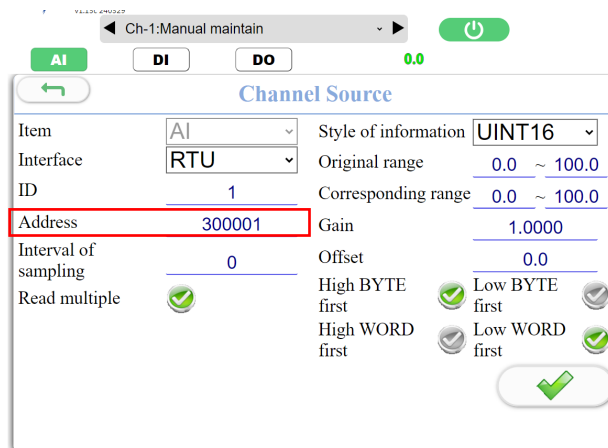
- Step 4: Click Channel Settings



- Step 5: Select the channel with the most frequent wind direction every hour



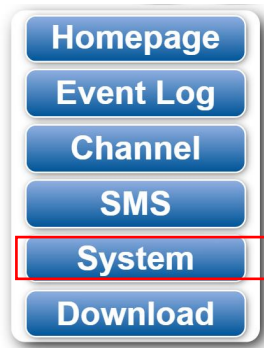
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



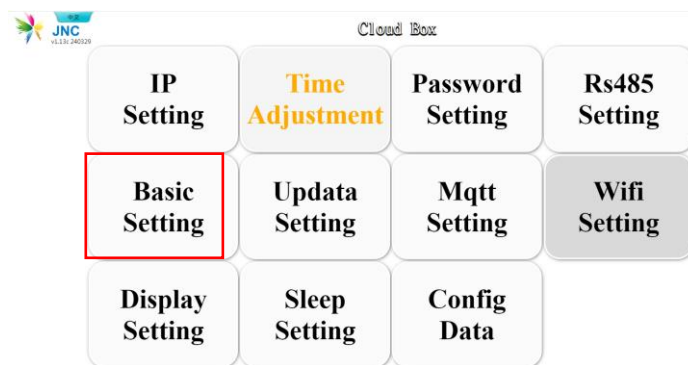
As shown in the picture above, when the address is entered as 300053 (circled in the red box), the function is to measure the most frequent wind direction every hour

6-1-12 Read hourly average temperature value

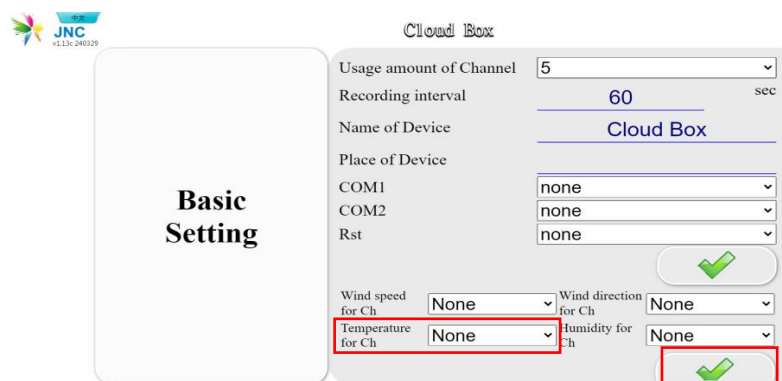
- Step 1: Click System Settings



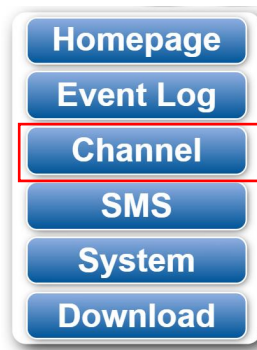
- Step 2: After entering the system settings page, click Basic Settings



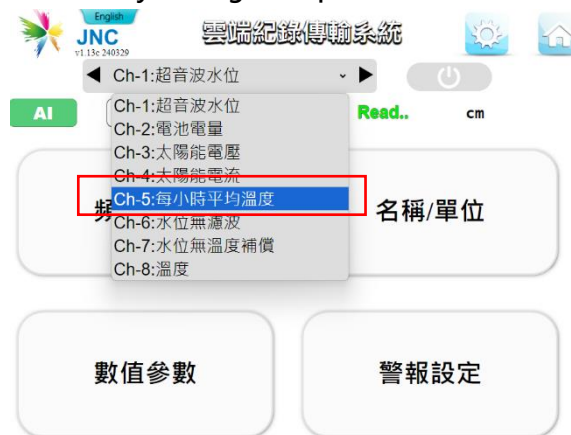
- Step 3: After entering the basic setting page, select the hourly average temperature channel in the temperature channel, and then click the confirmation button



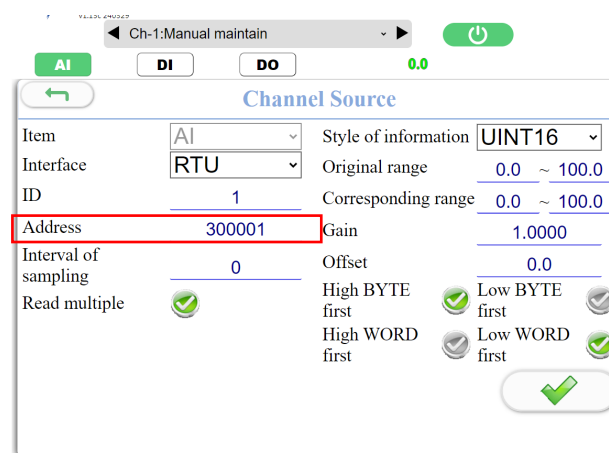
- Step 4: Click Channel Settings



- Step 5: Select the hourly average temperature channel



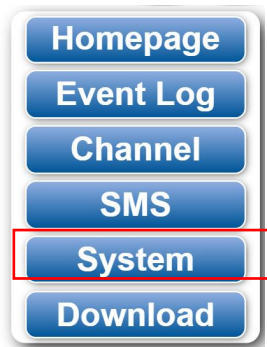
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



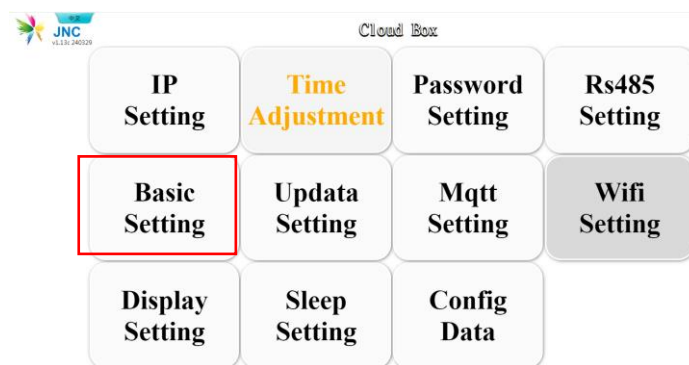
As shown in the picture above, when the address is entered as 300054 (circled in the red box), the function is to measure the hourly average temperature.

6-1-13 Read hourly average humidity value

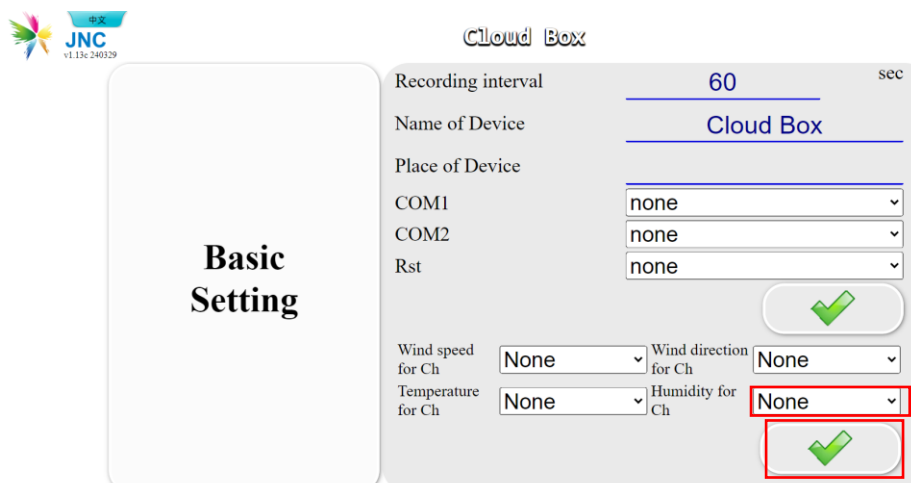
- Step 1: Click System Settings



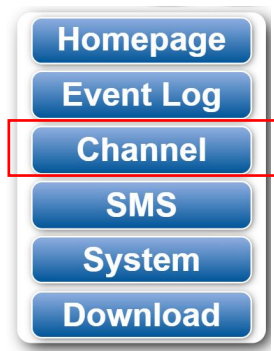
- Step 2: After entering the system settings page, click Basic Settings



- Step 3: After entering the basic setting page, select the hourly average humidity channel in the humidity channel, and then click the confirmation button



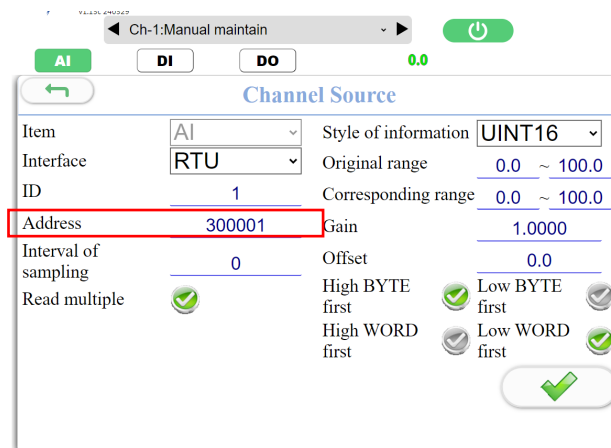
- Step 4: Click Channel Settings



- Step 5: Select the hourly average humidity channel



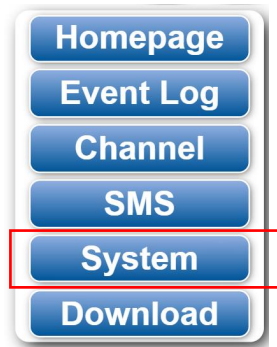
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



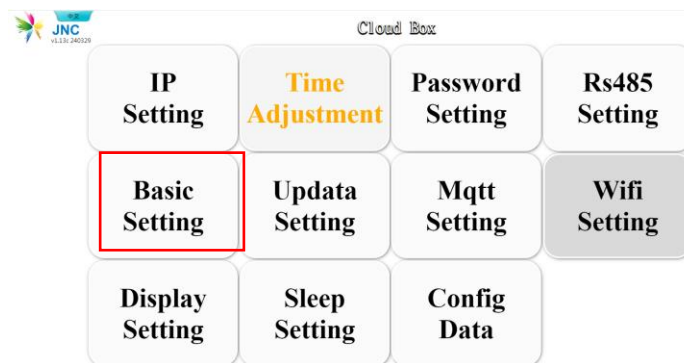
As shown in the picture above, when the address is entered as 300055 (circled in the red box), the function is to measure the hourly average humidity.

6-1-14 Read the hourly average wind direction angle

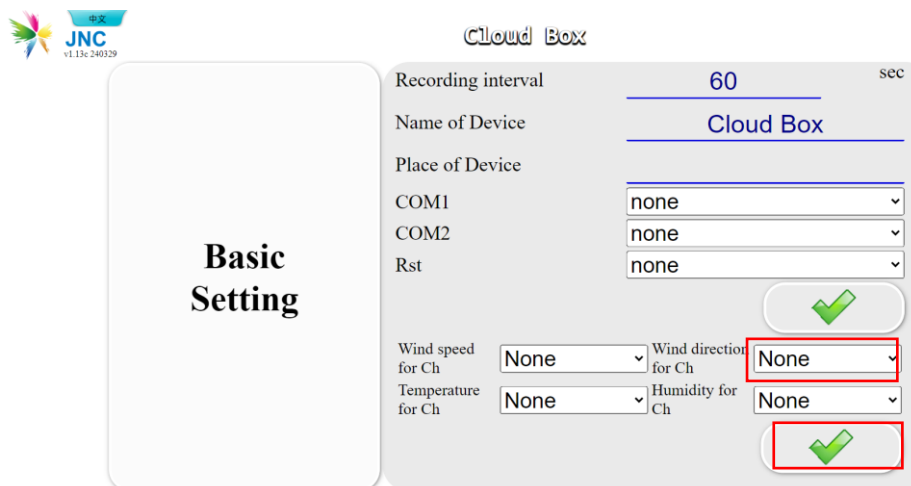
- Step 1: Click System Settings



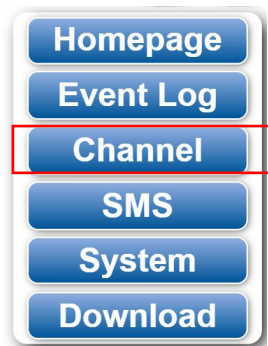
- Step 2: After entering the system settings page, click Basic Settings



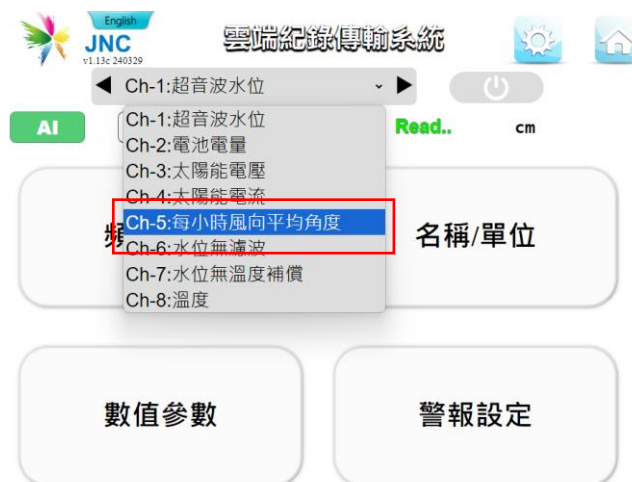
- Step 3: After entering the basic setting page, select the channel with the average hourly wind direction angle in the wind direction channel, and then click the OK button



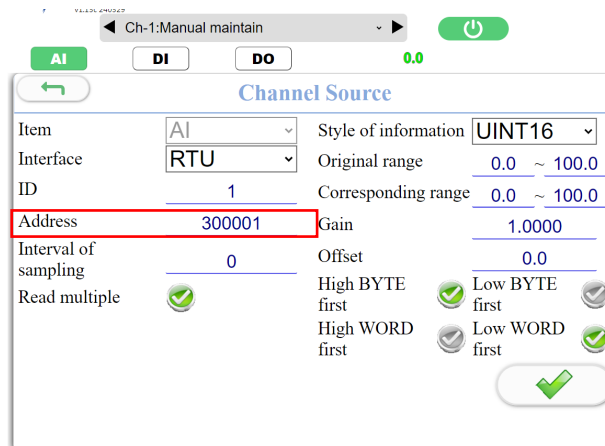
- Step 4: Click Channel Settings



- Step 5: Select the channel with the average hourly wind direction angle



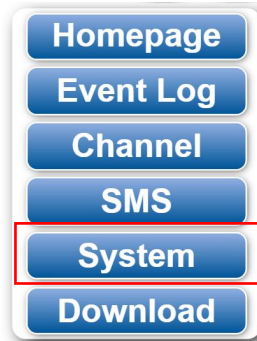
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



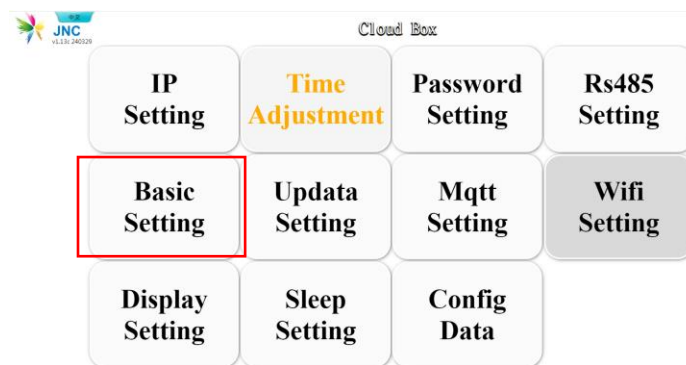
As shown in the picture above, when the address is entered as 300056 (circled in the red box), the function is to measure the average angle per hour

6-1-15 Read the maximum wind speed value per minute

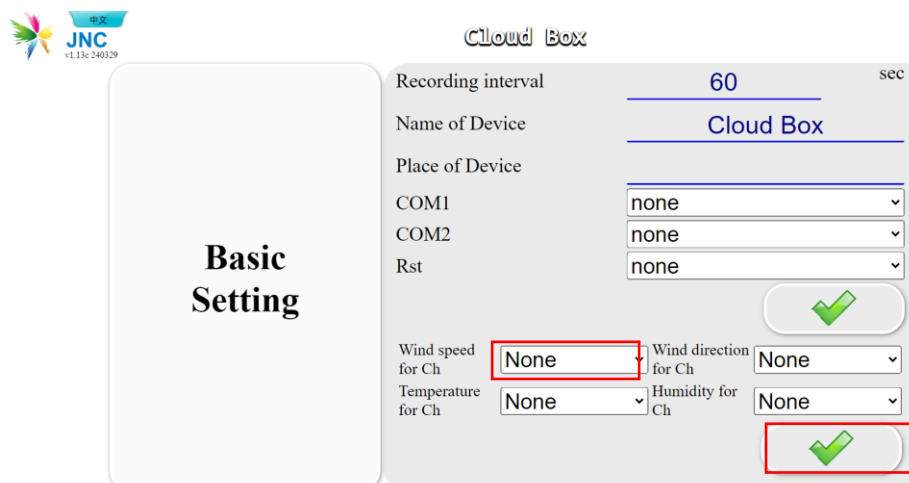
- Step 1: Click System Settings



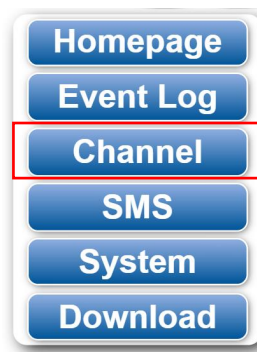
- Step 2: After entering the system settings page, click Basic Settings



- Step 3: After entering the basic setting page, select the channel with the maximum wind speed value per minute in the wind direction channel, and then click the confirmation button



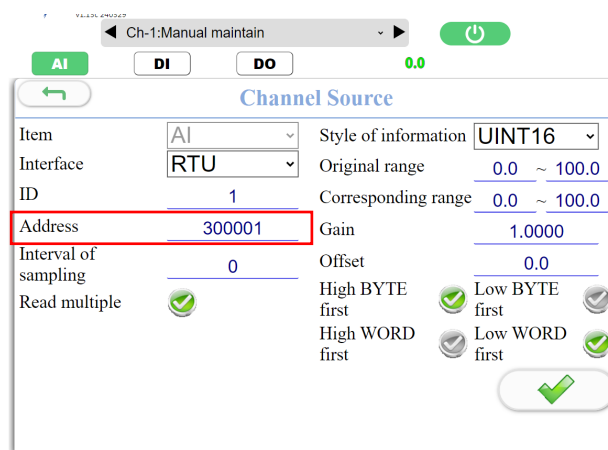
- Step 4: Click Channel Settings



- Step 5: Select the channel with the maximum wind speed per minute



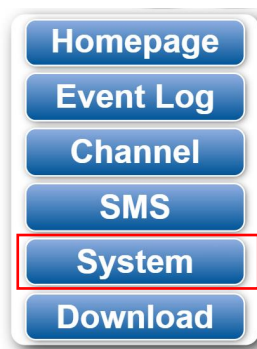
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



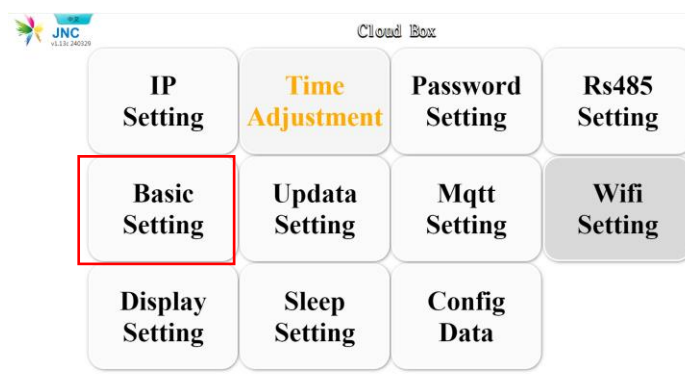
As shown in the picture above, when the address is entered as 300061 (circled in the red box), the function is to measure the maximum wind speed per minute.

6-1-16 Read the average wind speed value per minute

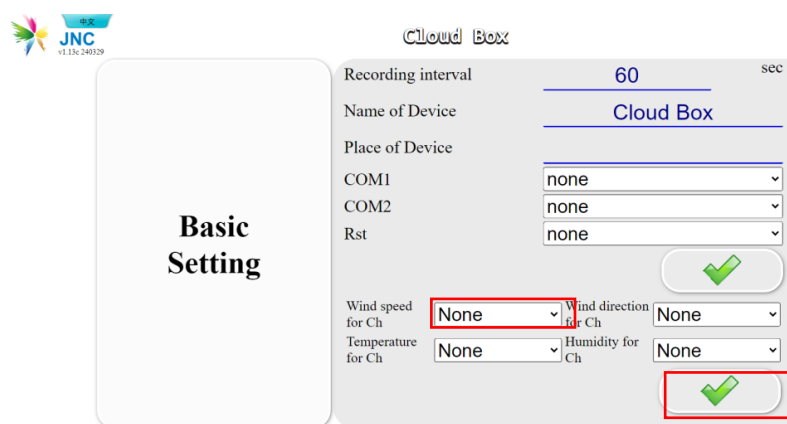
- Step 1: Click System Settings



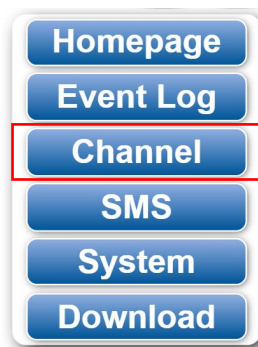
- Step 2: After entering the system settings page, click Basic Settings



- Step 3: After entering the basic setting page, select the average wind speed per minute channel in the wind speed channel, and then click the confirmation button



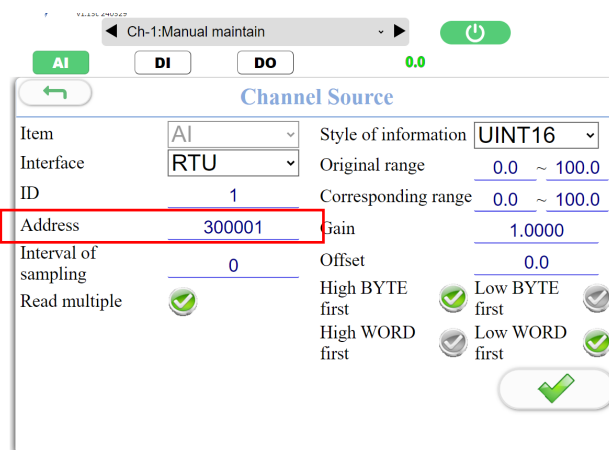
- Step 4: Click Channel Settings



- Step 5: Select the channel with the maximum wind speed per minute



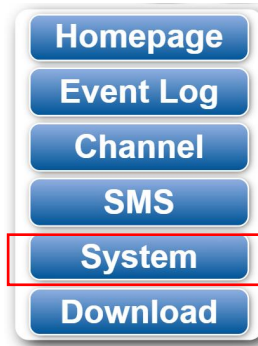
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



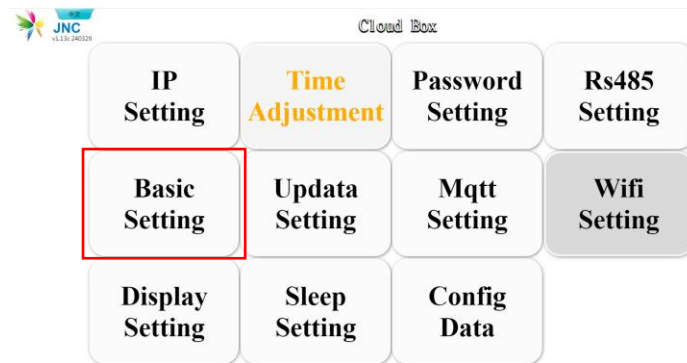
As shown in the picture above, when the address is entered as 300062 (circled in the red box), the function is to measure the average wind speed per minute.

6-1-17 Read the most frequent wind direction every minute

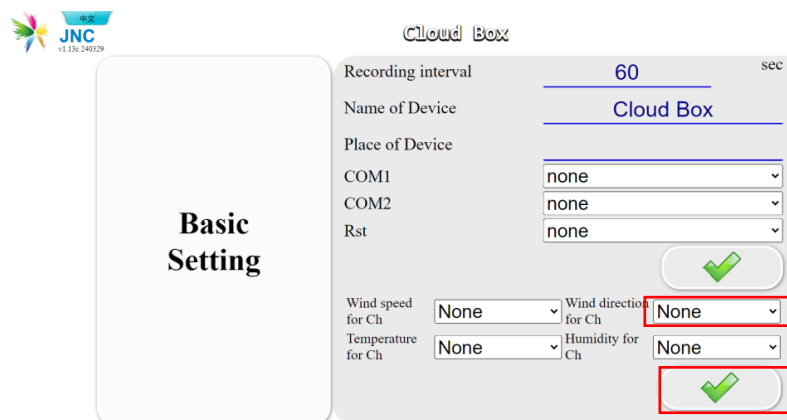
- Step 1: Click System Settings



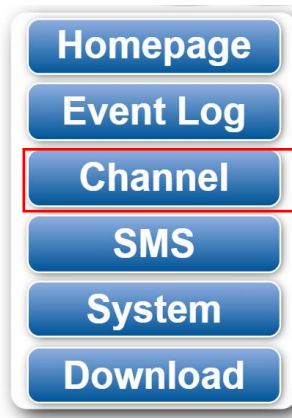
- Step 2: After entering the system settings page, click Basic Settings



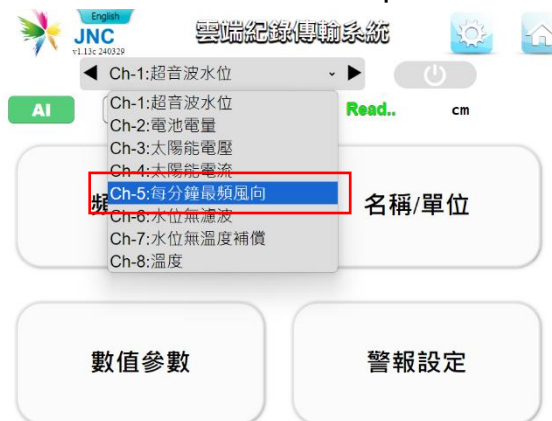
- Step 3: After entering the basic setting page, select the channel with the most frequent wind direction per minute in the wind direction channel, and then click the confirmation button



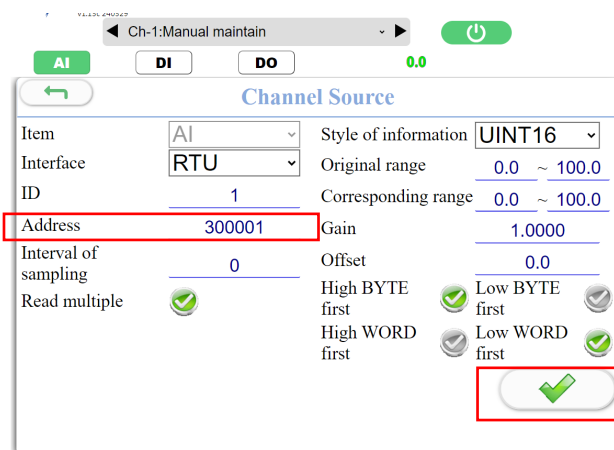
- Step 4: Click Channel Settings



- Step 5: Select the channel with the most frequent wind direction every minute



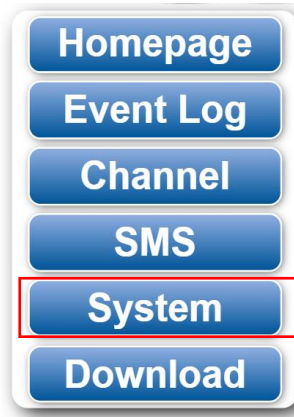
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



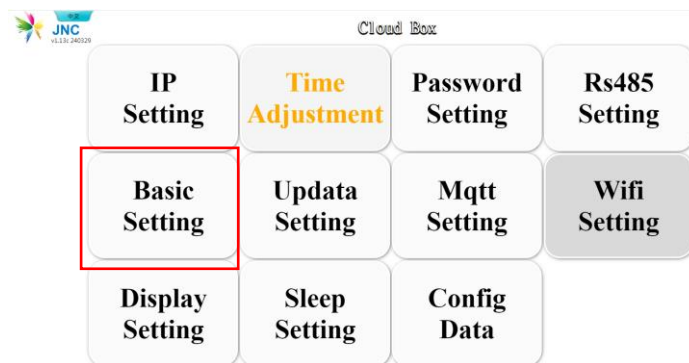
As shown in the picture above, when the address is entered as 300063 (circled in the red box), the function is to measure the most frequent wind direction per minute.

6-1-18 Read the average temperature value per minute

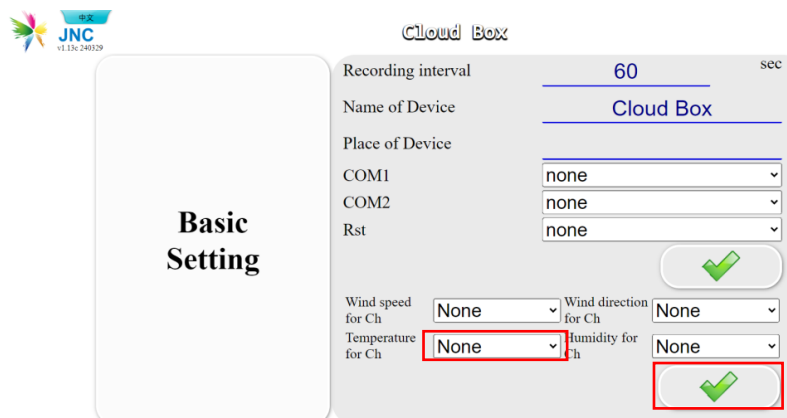
- Read the average temperature value per minute of the connected CB Sensor
- Step 1: Click System Settings



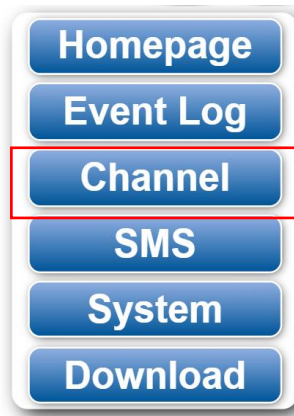
- Step 2: After entering the system settings page, click Basic Settings



- Step 3: After entering the basic setting page, select the average temperature per minute channel in the temperature channel, and then click the confirmation button



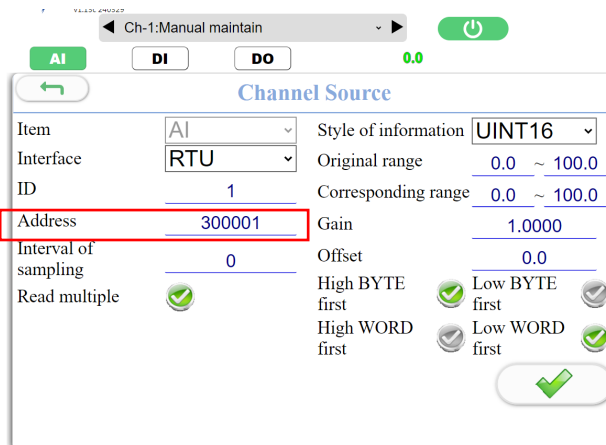
- Step 4: Click Channel Settings



- Step 5: Select the channel with average temperature per minute



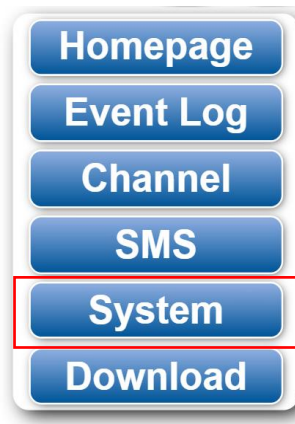
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



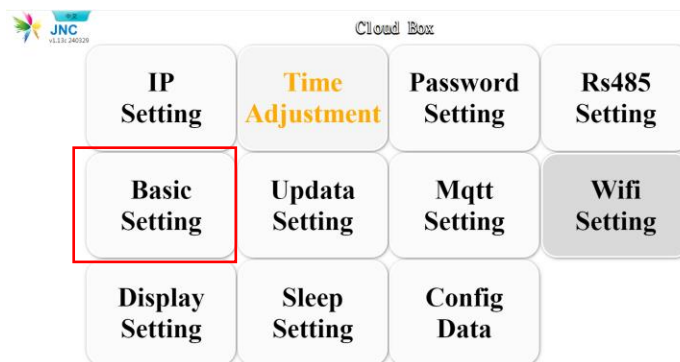
As shown in the picture above, when the address is entered as 300064 (circled in the red box), the function is to measure the average temperature per minute.

6-1-19 Read average humidity value per minute

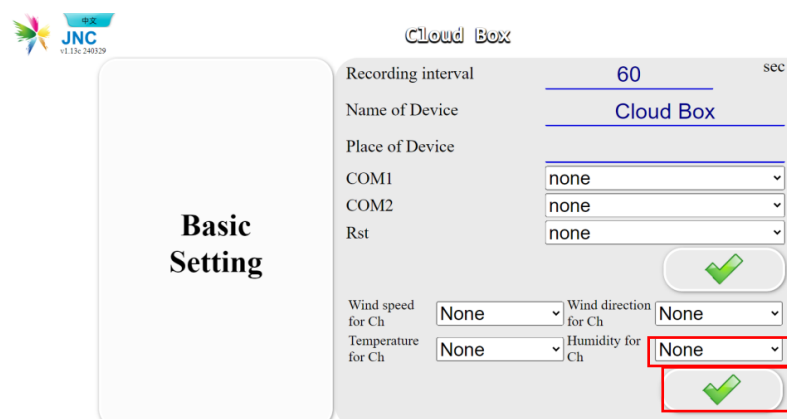
- Step 1: Click System Settings



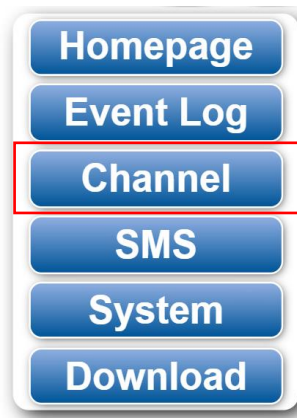
- Step 2: After entering the system settings page, click Basic Settings



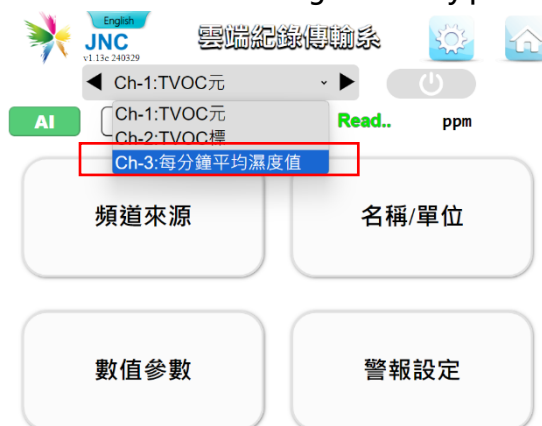
- Step 3: After entering the basic setting page, select the channel with average humidity per minute in the humidity channel, and then click the confirmation button



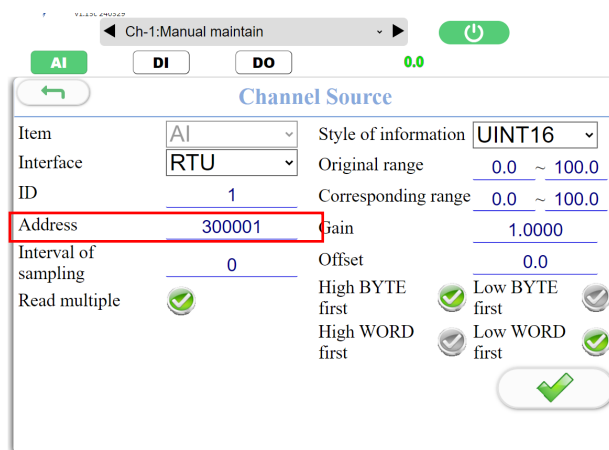
- Step 4: Click Channel Settings



- Step 5: Select the channel with average humidity per minute



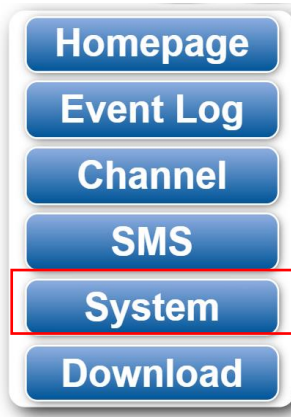
- Step 6: Enter the address and click the confirmation check mark in the lower right corner



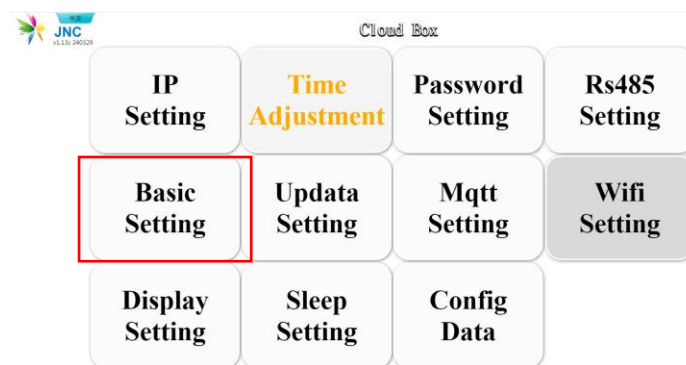
As shown in the picture above, when the address is entered as 300065 (circled in the red box), the function is to measure the average humidity per minute.

6-1-20 Read the average wind direction angle per minute

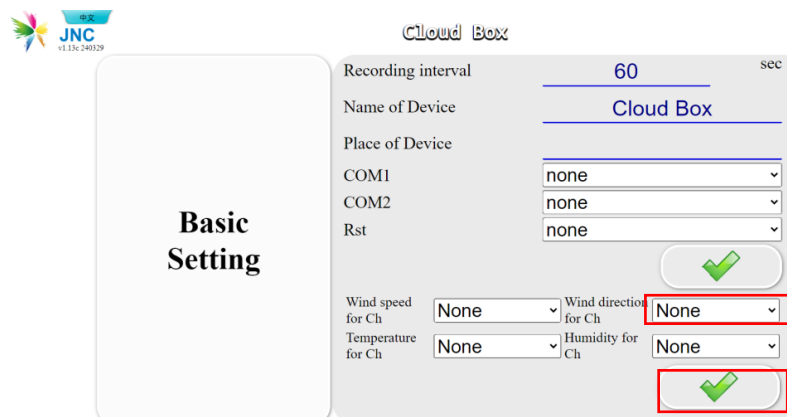
- Step 1: Click System Settings



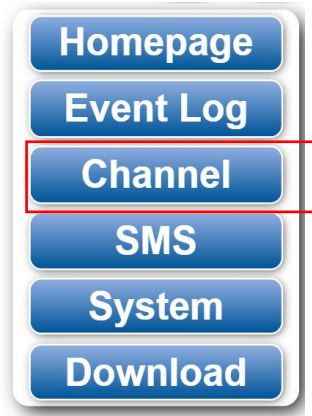
- Step 2: After entering the system settings page, click Basic Settings



- Step 3: After entering the basic setting page, select the channel with the average wind direction angle per minute in the wind direction channel, and then click the OK button



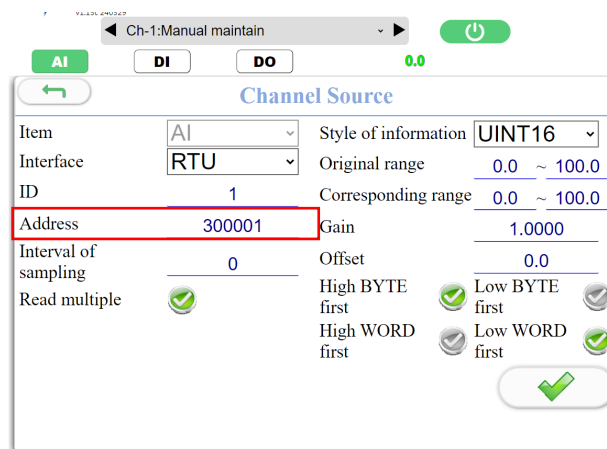
- Step 4: Click Channel Settings



- Step 5: Select the channel with average wind direction angle per minute



- Step 6: Enter the address and click the confirmation check mark in the lower right corner



As shown in the picture above, when the address is entered as 300066 (circled in the red box), the function is to measure the average angle per minute.

6-1-21 Mathematical formula operation function

As shown in the picture above, when the address is input 300100 (circled in red box), this function is a function with mathematical formulas, including summation, average, maximum value, minimum value and difference functions. Example: take the average function as For example, select the channel you want to average, as shown in the figure below, average CH1 and CH1, and the average value obtained is 23.6V.

6-1-22 Addition, subtraction, multiplication and division functions

As shown in the picture above, when the address is input 300200 (circled in red box), this function has the functions of addition, subtraction, multiplication and division between channels. Example: Take the addition function as an example, select the channels to be added, as shown in the picture below , add CH1 and CH1, and the resulting sum is 47.2V.

6-1-23 Demo Sin wave numerical value

- Show the value of CB Sin wave

Channel Source

Item	AI	Style of information	UINT16
Interface	RTU	Original range	0.0 ~ 100.0
ID	1	Corresponding range	0.0 ~ 100.0
Address	300001	Gain	1.0000
Interval of sampling	0	Offset	0.0
Read multiple	☒	High BYTE first	☒ Low BYTE first
		High WORD first	☒ Low WORD first

As shown in the picture above, when the address is input 301000 (circled in red box), this function is the function of Demo Sin wave value, with the value of Sin wave between 0.0 and 100.0.

PART 7.Modbus Communication Protocol Format Description

7-1 INT16 Read Instant Value(Function 03)

Protocol format description								
	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	Address	0x03	0x00	0x00	0x00	0x01	CRC0	CRC1
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	Address	0x03	Number of data *2		ByteL	ByteH	CRC0	CRC1

Communication Examples:

Protocol format description								
	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	0x01	0x03	0x00	0x03	0x00	0x01	0x74	0x0A
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	0x01	0x03	0x02		0x00	0x64	0x84	0x62

If the sensor data bit 0x0064 (hexadecimal) is converted to the decimal format 100, then the instant time value of CH(4) is 100%

7-2 Float Read Instant Value (Function 03)

Protocol format description								
	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	Address	0x03	0x00	0x00	0x00	0x01	CRC0	CRC1
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	Address	0x03	Number of data *2		ByteL	ByteH	CRC0	CRC1

Communication Examples:

Protocol format description								
	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	0x01	0x03	0x01	0x06	0x00	0x02	0x25	0xF6
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	0x01	0x03	0x04	0x00	0x00	0x42	0xC8	0x84

In the response from the slave device, the "sensor data" is 0x000042C8. If we swap the low word "42C8" to the front and the high word "0000" to the back, we get "42C8 0000". Converting this value directly to a float gives 100, which means the real-time value of CH(4) is 100%.

PART 8.Modbus Table

8-1 Instant Value Of Modbus Table

Function 04 to Read					
Address	Setting Value	Item	Type	R/W	Remarks
0x0000	300001	CH(1) instant time value	INT16	R	
0x0001	300002	CH(2) instant time value	INT16	R	
0x0002	300003	CH(3) instant time value	INT16	R	
0x0003	300004	CH(4) instant time value	INT16	R	
0x0004	300005	CH(5) instant time value	INT16	R	
0x0005	300006	CH(6) instant time value	INT16	R	
0x0006	300007	CH(7) instant time value	INT16	R	
0x0007	300008	CH(8) instant time value	INT16	R	
0x0008	300009	CH(9) instant time value	INT16	R	
0x0009	300010	CH(10) instant time value	INT16	R	
0x000A	300011	CH(11) instant time value	INT16	R	
0x000B	300012	CH(12) instant time value	INT16	R	
0x000C	300013	CH(13) instant time value	INT16	R	
0x000D	300014	CH(14) instant time value	INT16	R	
0x000E	300015	CH(15) instant time value	INT16	R	
0x000F	300016	CH(16) instant time value	INT16	R	
0x0010	300017	CH(17) instant time value	INT16	R	
0x0011	300018	CH(18) instant time value	INT16	R	
0x0012	300019	CH(19) instant time value	INT16	R	
0x0013	300020	CH(20) instant time value	INT16	R	
0x0014	300021	CH(21) instant time value	INT16	R	
0x0015	300022	CH(22) instant time value	INT16	R	
0x0016	300023	CH(23) instant time value	INT16	R	
0x0017	300024	CH(24) instant time value	INT16	R	
0x0018	300025	CH(25) instant time value	INT16	R	
0x0019	300026	CH(26) instant time value	INT16	R	
0x001A	300027	CH(27) instant time value	INT16	R	
0x001B	300028	CH(28) instant time value	INT16	R	
0x001C	300029	CH(29) instant time value	INT16	R	
0x001D	300030	CH(30) instant time value	INT16	R	
0x0100	300257	CH(1) instant time value (Float low bit)	FLOAT	R	
0x0101	300258	CH(1) instant time value (Float high bit)	FLOAT	R	
0x0102	300259	CH(2) instant time value (Float low bit)	FLOAT	R	

0x0103	300260	CH(2) instant time value (Float high bit)	FLOAT	R	
0x0104	300261	CH(3) instant time value (Float low bit)	FLOAT	R	
0x0105	300262	CH(3) instant time value (Float high bit)	FLOAT	R	
0x0106	300263	CH(4) instant time value (Float low bit)	FLOAT	R	
0x0107	300264	CH(4) instant time value (Float high bit)	FLOAT	R	
0x0108	300265	CH(5) instant time value (Float low bit)	FLOAT	R	
0x0109	300266	CH(5) instant time value (Float high bit)	FLOAT	R	
0x010A	300267	CH(6) instant time value (Float low bit)	FLOAT	R	
0x010B	300268	CH(6) instant time value (Float high bit)	FLOAT	R	
0x010C	300269	CH(7) instant time value (Float low bit)	FLOAT	R	
0x010D	300270	CH(7) instant time value (Float high bit)	FLOAT	R	
0x010E	300271	CH(8) instant time value (Float low bit)	FLOAT	R	
0x010F	300272	CH(8) instant time value (Float high bit)	FLOAT	R	
0x0110	300273	CH(9) instant time value (Float low bit)	FLOAT	R	
0x0111	300274	CH(9) instant time value (Float high bit)	FLOAT	R	
0x0112	300275	CH(10) instant time value (Float low bit)	FLOAT	R	
0x0113	300276	CH(10) instant time value (Float high bit)	FLOAT	R	
0x0114	300277	CH(11) instant time value (Float low bit)	FLOAT	R	
0x0115	300278	CH(11) instant time value (Float high bit)	FLOAT	R	
0x0116	300279	CH(12) instant time value (Float low bit)	FLOAT	R	
0x0117	300280	CH(12) instant time value (Float high bit)	FLOAT	R	
0x0118	300281	CH(13) instant time value (Float low bit)	FLOAT	R	
0x0119	300282	CH(13) instant time value	FLOAT	R	

		(Float high bit)			
0x011A	300283	CH(14) instant time value (Float low bit)	FLOAT	R	
0x011B	300284	CH(14) instant time value (Float high bit)	FLOAT	R	
0x011C	300285	CH(15) instant time value (Float low bit)	FLOAT	R	
0x011D	300286	CH(15) instant time value (Float high bit)	FLOAT	R	
0x011E	300287	CH(16) instant time value (Float low bit)	FLOAT	R	
0x011F	300288	CH(16) instant time value (Float high bit)	FLOAT	R	
0x0120	300289	CH(17) instant time value (Float low bit)	FLOAT	R	
0x0121	300290	CH(17) instant time value (Float high bit)	FLOAT	R	
0x0122	300291	CH(18) instant time value (Float low bit)	FLOAT	R	
0x0123	300292	CH(18) instant time value (Float high bit)	FLOAT	R	
0x0124	300293	CH(19) instant time value (Float low bit)	FLOAT	R	
0x0125	300294	CH(19) instant time value (Float high bit)	FLOAT	R	
0x0126	300295	CH(20) instant time value (Float low bit)	FLOAT	R	
0x0127	300296	CH(20) instant time value (Float high bit)	FLOAT	R	
0x0128	300297	CH(21) instant time value (Float low bit)	FLOAT	R	
0x0129	300298	CH(21) instant time value (Float high bit)	FLOAT	R	
0x012A	300299	CH(22) instant time value (Float low bit)	FLOAT	R	
0x012B	300300	CH(22) instant time value (Float high bit)	FLOAT	R	
0x012C	300301	CH(23) instant time value (Float low bit)	FLOAT	R	
0x012D	300302	CH(23) instant time value (Float high bit)	FLOAT	R	
0x012E	300303	CH(24) instant time value (Float low bit)	FLOAT	R	
0x012F	300304	CH(24) instant time value (Float high bit)	FLOAT	R	

0x0130	300305	CH(25) instant time value (Float low bit)	FLOAT	R	
0x0131	300306	CH(25) instant time value (Float high bit)	FLOAT	R	
0x0132	300307	CH(26) instant time value (Float low bit)	FLOAT	R	
0x0133	300308	CH(26) instant time value (Float high bit)	FLOAT	R	
0x0134	300309	CH(27) instant time value (Float low bit)	FLOAT	R	
0x0135	300310	CH(27) instant time value (Float high bit)	FLOAT	R	
0x0136	300311	CH(28) instant time value (Float low bit)	FLOAT	R	
0x0137	300312	CH(28) instant time value (Float high bit)	FLOAT	R	
0x0138	300313	CH(29) instant time value (Float low bit)	FLOAT	R	
0x0139	300314	CH(29) instant time value (Float high bit)	FLOAT	R	
0x013A	300315	CH(30) instant time value (Float low bit)	FLOAT	R	
0x013B	300316	CH(30) instant time value (Float high bit)	FLOAT	R	

8-2 Modbus Table of system parameters

Function 03 to Read/Function 06 to write

Address	Setting Value	Item	Type	R/W	Remarks
0x0000	400001	The first and second characters of the machine model	UINT16	R	0xAABB,AA=2,BB=1
0x0001	400002	The third and fourth characters of the machine model	UINT16	R	0xAABB,AA=4,BB=3
0x0002	400003	The fifth and sixth characters of the machine model	UINT16	R	0xAABB,AA=6,BB=5
0x0003	400004	Machine version	UINT16	R	
0x0004	400005	Slave station number	UINT16	R/W	The station number range is 1~254
0x0005	400006	Slave transfer rate	UINT16	R/W	0 : 2400 bps 1 : 4800 bps 2 : 9600 bps (Default) 3 : 19200 bps 4 : 38400 bps 5 : 57600 bps 6 : 115200 bps
0x0006	400007	Stop bit	UINT16	R/W	
0x0007	400008	Parity check	UINT16	R/W	
0x0008	400009	Data bits	UINT16	R/W	
0x0009	400010	Number of channels	UINT16	R/W	
0x0120	400289	Channel type	UINT16	R/W	AI : 0x01, DI : 0x02, DO : 0x04
0x0121	400290	Source : Station No	UINT16	R/W	
0x0122	400291	Source : Data interface	UINT16	R/W	Rtu : 0, Tcp : 1, Local : 2
0x0123	400292	Source : Data function	UINT16	R/W	
0x0124	400293	Source : Data location	UINT16	R/W	
0x0125	400294	Source : Data type	UINT16	R/W	
0x0126	400295	Source : Gain	INT16	R/W	
0x0127	400296	Source :Offset	INT16	R/W	
0x0128	400297	Source : high and low bits first,	INT16	R/W	

		high and low bytes first			
0x0129	400298	Source : IP1 、 IP2	UINT16	R/W	
0x012A	400299	Source : IP3 、 IP4	UINT16	R/W	
0x012B	400300	Source : Port	UINT16	R/W	
0x012C	400301	Source : Intervals	UINT16	R/W	0xAABB,AA=2,BB=1

8-3 Modbus Table of SMS Parameters

Function 03 to Read/Function 06 to write					
Address	Setting Value	Item	Type	R/W	Remarks
0x8010	432785	SMS settings - Reset Enable SMS alerts	UINT16	R/W	
0x8011	432786	SMS settings - Reset Ring before sending	UINT16	R/W	
0x8012	432787	SMS settings - Return Return notice	UINT16	R/W	
0x8013	432788	SMS settings - Reset resend interval	UINT16	R/W	
0x8014	432789	SMS settings - Prepaid card expiration date -Year	UINT16	R/W	
0x8015	432790	SMS settings - Prepaid card expiration date -Month	UINT16	R/W	
0x8016	432791	SMS settings - Prepaid card expiration date -Day	UINT16	R/W	
0x8017	432792	SMS settings - Restore power restoration notice	UINT16	R/W	
0x8018	432793	SMS settings - Restore power Ring before sending	UINT16	R/W	
0x8019	432794	SMS settings - Restore power Enable power outage alert	UINT16	R/W	
0x801A	432795	SMS settings - No sending period Enable/disable	UINT16	R/W	
0x801B	432796	SMS settings - No sending period- Starting time	UINT16	R/W	
0x801C	432797	SMS settings - No sending period- End Time	UINT16	R/W	
0x801D	432798	SMS settings - Check number	UINT16	R/W	
0x801E	432799	SMS settings - Encoding mode	UINT16	R/W	
0x801F	432800	SMS settings -2G/3G channel mode	UINT16	R/W	

PART 9.Troubleshooting

Serial number	Problem	Solution
1	The screen displays "READ" and cannot connect.	First, restore power. If the connection still cannot be established, check if the communication wires (D+, D-) and the power wires (V+, V-) are properly connected.
2	The date and time are incorrect.	You can access the internal interface to reset the date and time, referencing section 5-14-2 . If, after a power outage, the date and time are still incorrect even after reapplying power, it suggests that the button cell battery is depleted and needs to be replaced.
3	Cannot read the SIM card.	1.If it's a prepaid card, please check if it has been activated successfully. 2. Please check if a PIN code has been set. If a PIN code has been set, please cancel it first.
4	Cannot receive SMS.	1.It indicates that the SIM card capacity is full. Please delete old SMS messages. 2. Please go to the phonebook settings page to confirm that the entered phone number is correct. 3.Please confirm within the system settings whether the alarm SMS option is selected. 4.Please confirm if there is sufficient balance on the SIM card.
5	Channel parameter settings.	If setting channel parameters through the network is unsuccessful, please first check if the device screen has not returned to the main screen.

REVISION HISTORY

[illegible]

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