JNC technology
銘祥科技實業股份有限公司

JNC

City Weather Detector

CW9



V1.10

Catalogue

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PART 1.PRODUCT INTRODUCTION

1-1 Product Introduction

This product can be used as a sensor for fixed-point monitoring in outdoor environments. The louvered wall-mounted design can prevent direct radiation from the sun to the instrument and counter-radiation from the ground to the instrument, protect the instrument from extreme weather, etc., and enable the sensor to Ventilated and more sensitive to changes in the outdoor environment. This product has 9 measurement items to choose from, including temperature, humidity, CO2, PM2.5, CO, TVOC, O3, HCHO, PM10, and can accurately transmit real-time sensor values back to the The host computer allows you to instantly control the air quality of your outdoor environment. This product is very suitable for weather stations, environmental monitoring, factory independent management, facility agriculture and other places that require environmental monitoring.

1-2 Product Note

1. **Please do not use it in areas with high vibration or strong electromagnetic interference to avoid product damage, ERROR and measurement errors.**
2. **Before performing any repair or maintenance, please remove the power supply to prevent personal injury or product damage caused by accidental contact with the power supply.**
3. **When installed in a polluted environment with conductive substances (such as metal dust, water, etc.), appropriate sealing measures should be taken.**
4. **If any component or module of the product has been removed or disassembled, please do not operate it anymore and contact our company as soon as possible.**
5. **When installed in a polluted environment with conductive substances (such as metal dust, water, etc.), appropriate ventilation, effective filtration or sealing measures should be taken.**
6. **Our company is not responsible for any impact or damage caused to the reliability of this product due to improper use in accordance with this operating manual or exceeding the application or usage environment conditions described in the product specifications.**
7. **Avoid installing this product with electrical appliances that generate heat within 1 meter below, thus affecting the accuracy of the temperature and humidity of this product.**
8. **Avoid installing this product within 1 meter of human activities, as it will affect humidity.**
9. **This product is a precision instrument. Users should not disassemble it by themselves or use corrosive liquids to contact the surface of the instrument to avoid damage.**
10. **Do not perform live wiring. Check that the wiring is correct before powering on.**

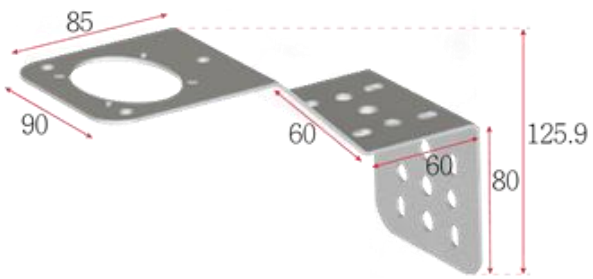
PART 2.PRODUCT DESCRIPTION

2-1 Product Features

- Small in size, light in weight, and waterproof quick connector, it' s easy to install.
- With Automatic Temperature Compensation(ATC).
- RS-485 communication and Bluetooth(optional)
- It has software utility which can set ID/ Baud rate/ calibration and other function.
- Multiple test items can be selected according to the optional code, up to 13 test items.
- Outdoor lightweight louver housing design, accurate sensing, fast response, and high data transmission efficiency.
- The device can instantly calculate the Heat Index (HI) and hazard level for reading. (optional temperature and humidity required)
- With 24VDC and 5VDC power supply modes.
- The device can instantly calculate the Heat Index (HI) and hazard level for reading. (optional temperature and humidity required)
- The optional JNC Cloud Box can directly transmit back to the cloud through NB-IoT.
- Optional JNC BT function can form a 100-point checkers-style wireless monitoring network.
- Passed the Industrial Research Institute type certification and obtained the highest level Level 1, which is extremely accurate.
- Applicable places: weather stations, environmental monitoring, factory independent management, facility agriculture and other places that require environmental monitoring.

2-2 PRODUCT DESCRIPTION (mm)





PART 3.PRODUCT SPECIFICATIONS

3-1 Product Specifications

Model	CW9	
Power supply	◆DC input：9～36VDC ◆Power consumption：1.8W	
Environment	-10~60℃，0%~100%(non-condensing)	
Communication function	Communication interface	RS-485(optional Bluetooth communication)
	Communication protocol	Modbus RTU
Physical conditions	Product size (mm)	140x236 (W x H) (Unit:mm)
	Product weight	≦2Kg
	Installation method	Venetian wall hanging
	Product line length	3 meters
	Installation rack size	90x195x125.9 (L x W x H)(Unit:mm)
Shell	Material	ABS anti-UV
Safety certification	CE、FCC	

3-2 CW9 Measurement Range

Sensors Principle	Range	T90	Operating temperature	Resolution	Accuracy	Environmental Equilibrium Time
Temp (Resistance)	-40~125℃	<60S	-20~60℃	0.1℃	±0.4℃	10min
RH (Capacitive)	0~100%	<60S	-20~60℃	0.1%	±3%	10min
CO_2 (Infrared)	0~10,000ppm	<120S	0~50℃	1ppm	±30ppm±3% of Reading	10sec
PM2.5 (Laser)	0~1000μg /m^3	<90S	-10~65℃	0.1μg / m^3	±10 μg / m^3±5% of Reading	5min
HCHO (Electrochemical)	0.01~2.00ppm	<120S	-10~50℃	0.01ppm	≦±0.02ppm±2% of Reading	10min
CO (Electrochemical)	0~100ppm	<180S	0~50℃	0.1ppm	±5ppm	10min
TVOC (Semiconductor)	0~60ppm	<90 S	0~40℃	Range: <2.008ppm; Resolution: 1ppb Range: <11.11ppm; Resolution: 6ppb Range: <60ppm; Resolution: 32ppb	±10%	5min
O_3 (Semiconductor)	0.01~2.00ppm	<120S	0~40℃	0.01ppm	±10%	10min
PM10 (algorithm)	0~1200 μg / m^3	<90S	-10~65℃	0.1μg/ m^3	±10 μg / m^3 ±5% of Reading	5min
O_2 (Electrochemical)	0-30%	<60S	-10~55℃	0.05%	±1 of Readimg	5min
NH3 (Electrochemical)	0-100 ppm	<60S	-10~50℃	0.01ppm	±2%	5min
H_2S (Electrochemical)	0~100 ppm	<60S	-10~50℃	0.01 ppm	±2%	5min
SO_2 (Electrochemical)	0-20ppm	<60S	-0~50°C	0.01ppm	±2%	5min

CH_4 (Semiconductor)	0-100ppm	<90 S	0℃~40℃	0.1ppm	±10%	10min
PID100 (Photoionization)	0-100ppm	≦5S	-10~60℃	25ppb	±2% (Reproducibility)	≦60 sec

Sensors Principle	Range	Frequency range	Operating temperature	Resolution	Accuracy
Noise	30~120dB	20~20K HZ	-20~60℃	0.1dB	3% Fs

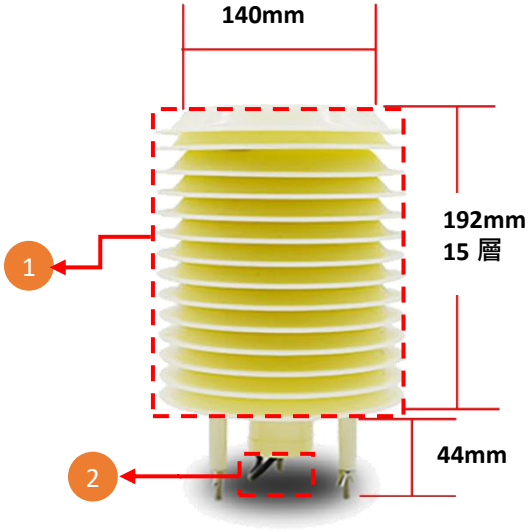
Sensors Principle	Range	Operating temperature	Resolution	Accuracy
Atmospheric pressure	300~1100 hPa	-40~85℃	1 hPa	±1 hPa

3-3 Thermal Hazard Risk Level

First level notice	26.7~32.2	Third level danger	40.6~54.4
Second level extra attention	32.2~40.6	Fourth level extremely dangerous	>54.4

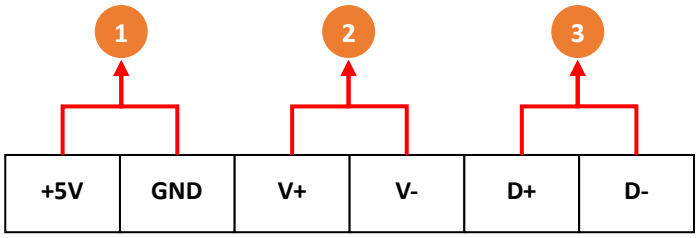
PART 4.PRODUCT INSTRUCTIONS

4-1 Equipment Component Location Description



Code	Name	Function Description
1	Louver box shell	ABS anti-UV material blinds
2	Thin core cable (four cores)	Red=>Power supply positive 24V Black => Power supply negative GND White =>RS485 D+ Green =>RS 485D- ※Wiring must be done in the correct way to establish communication normally. ※

4-2 Wiring Instructions

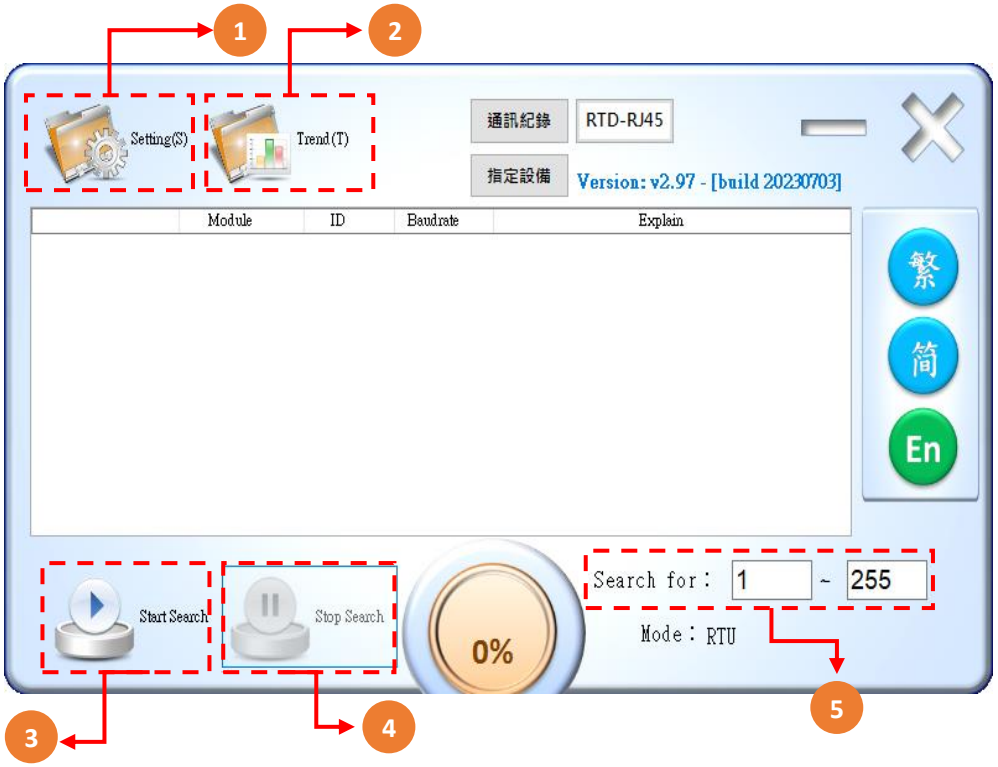


Code	Name	Function Description
1	+5V/GND	Power supply 5VDC
2	V+/V-	Power supply 24VDC
3	D+/D-	RS-485 communication

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PART 5.UTILITY SOFTWARE OPERATING INSTRUCONS

5-1 Utility Home screen

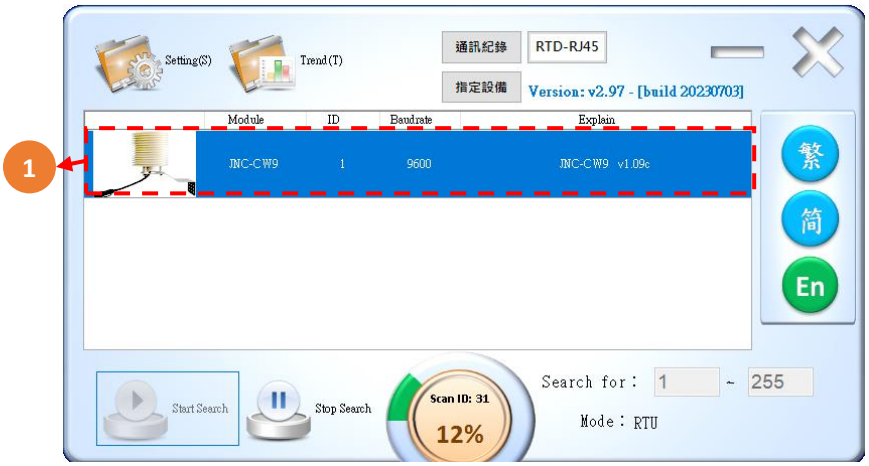


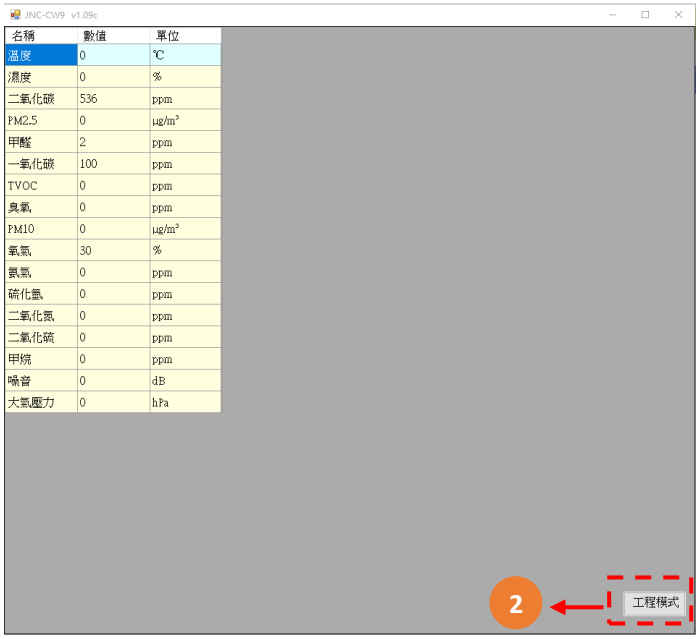
Code	Name/Image	Function Description
1	Setting(S)	Comport and Baudrate settings
2	Trend(T)	USB output value trend chart
3	Start Search	Start searching for the station number (ID) of the device connected to the RS-485 connection
4	Stop Search	Stop searching for the device station number (ID) of the RS-485 connection
5	Seach for	You can set the search starting and ending station number range by yourself (Mode: RTU)

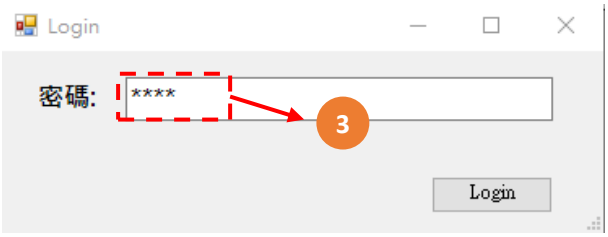
※Connection method: Connect the host to the USB-485, and connect the D+/D- of the USB-485 to the 485 communication D+/D- of the device. Open the Utility to set the COM port and transmission rate, and search for the CW9 device. It will be opened after the search is successful. Device page.

※USB-485 needs to be purchased separately.

5-2 Device page

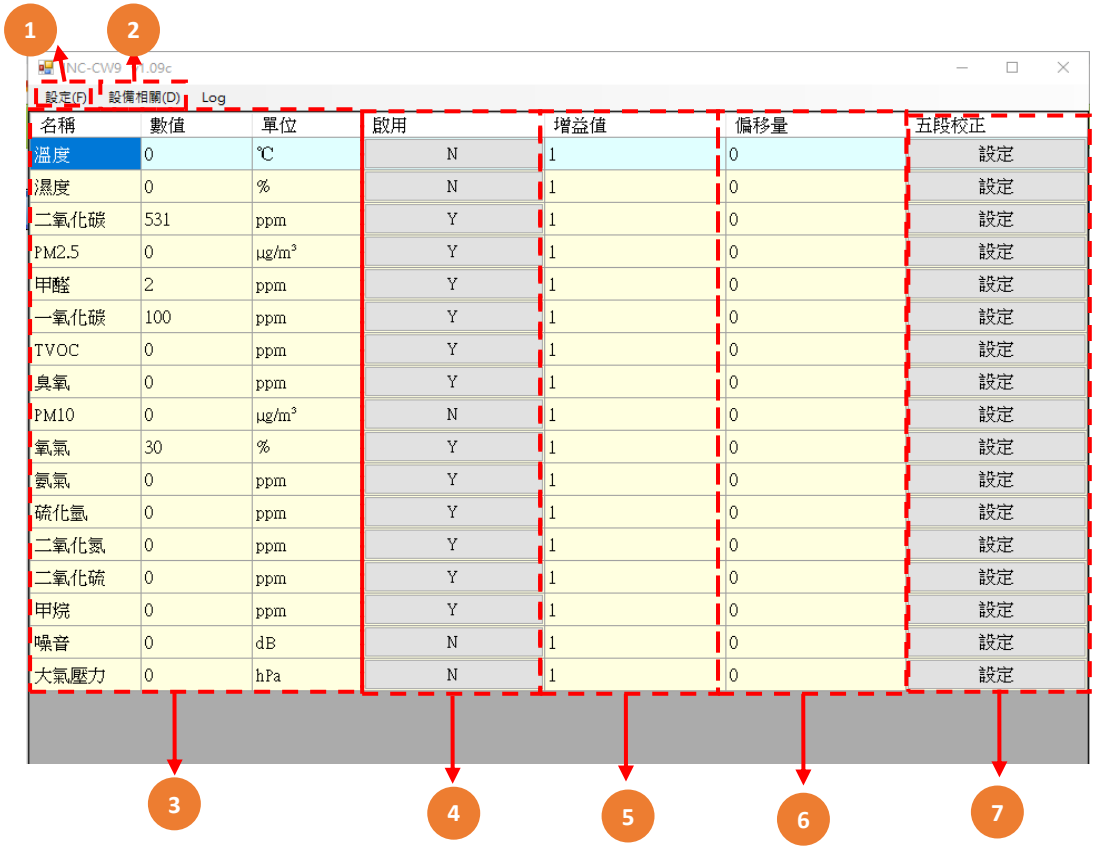






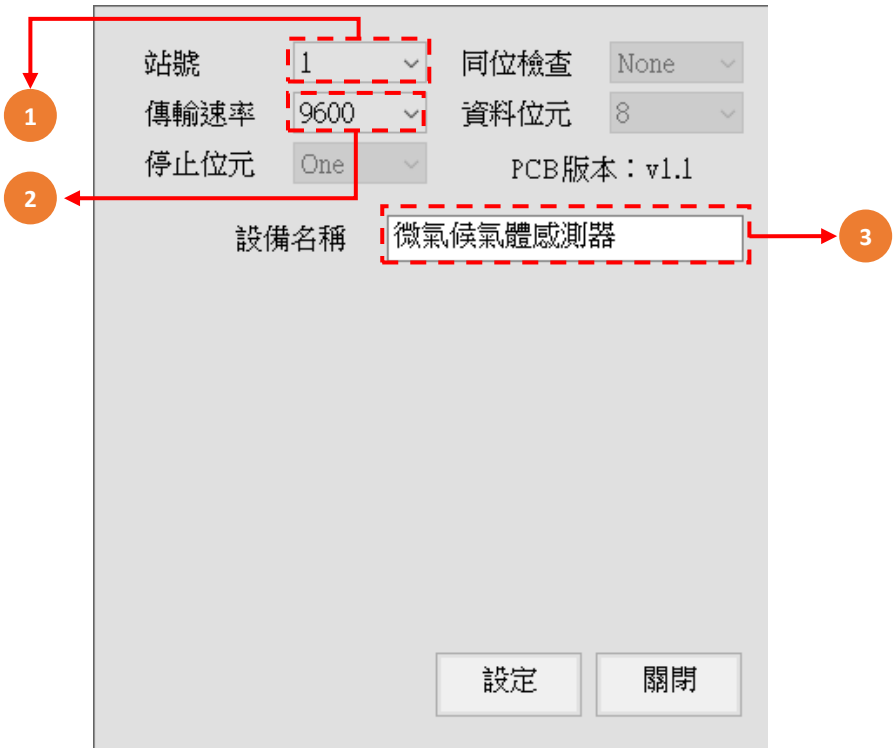
Code	Name/Image	Function Description
1	**JNC-CW9 equipment**	**RS-485 search for CW9 devices can be accessed by clicking on the page**
2	**Engineering mode**	**Enter device engineering mode**
3	**password**	**Login password:1234**

5-3 Page settings



Code	Name/Image	Function Description
1	**Setting(F)**	The station number, transmission rate and device name can be set by the system
2	**Equipment related (D)**	Restartable devices and initialized devices
3	**name/value/unit**	Each sensor name displays instant time value and unit
4	**enable**	You can set the sensor to be enabled or disabled. When it is disabled, it will not be displayed.
5	**Gain value**	Calibrated by multiplying
6	**Offset**	Calibrated by addition and subtraction
7	**Five-step calibration**	Modify the sensing value curve with fifth-order gain value and offset

5-4 Settings-System Settings



Code	Name/Image	Function Description
1	**Station No**	**Set the device station number (range 1~254)**
2	**Transmission rate**	**Set the device transmission rate (2400.4800.9600.19200.38400.57600.115200)**
3	**Device name**	**Set device name**

PART 6.Modbus COMMUNICATION PROTOCOL FORMAT DESCRIPTION

6-1 INT16 Read Instant Value (Function 04)

Protocol format description								
	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	Address	0x04	0x00	0x01	0x00	0x01	CRC0	CRC1
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	Address	0x04	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	0x04	0x00	0x01	0x00	0x01	0x60	0x0A
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	0x01	0x04	0x02		0x02	0x8F	0xF8	0xD5

Convert the sensor data bit 0x028F (hexadecimal) to decimal format to be 655. Since Value/10, the real-time value of humidity (RH) is 655/10=65.5%.

6-2 Float Read Instant Value (Function 04)

Protocol format description								
	Equipment station number	Function	Starting address		Number of data (Word)		16 CRC code	
Host command	Address	0x04	0x00	0x82	0x00	0x02	CRC0	CRC1
	Equipment station number	Function	Data bytes		Sensor data		16 CRC code	
Reply from machine	Address	0x04	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	0x04	0x00	0x82	0x00		0x02		0xD1	0xE3
	Equipment station number	Function	Data bytes		Sensor data				16 CRC code	
Reply from machine	0x01	0x04	0x04		0x28	0xF6	0x42	0x83	0xE6	0x7D

In the slave reply, you can see that the "sensor data" is 0x28F6 4283.

Replace the low word "42 83" to the front and the high word "28 F6" to the back, then "42 83 28 F6", and then directly switch to Float is 65.58, and the real-time value of humidity (RH) is 65.58%.

Please refer to the online replacement tool : https://gregstoll.com/~gregstoll/floattohex/。

PART 7.Modbus Table

7-1 Instant Value Of Modbus Table

Function 04 to Read					
Address	Setting Value	Item	Type	R/W	Remarks
0x0000	300001	TEMP instant time value (Value/10)	INT16	R	Unit : °C
0x0001	300002	RH instant time value (Value/10)	INT16	R	Unit : %
0x0002	300003	CO_2 instant time value (Value/10)	INT16	R	Unit : ppm
0x0003	300004	PM2.5 instant time value (Value/10)	INT16	R	Unit : μg/m³
0x0004	300005	HCHO instant time value (Value/10)	INT16	R	Unit : ppm
0x0005	300006	CO instant time value (Value/10)	INT16	R	Unit : ppm
0x0006	300007	TVOC instant time value (Value/10)	INT16	R	Unit : ppm
0x0007	300008	O_3 instant time value (Value/10)	INT16	R	Unit : ppm
0x0008	300009	PM10 instant time value (Value/10)	INT16	R	Unit : μg/m³
0x0009	300010	O_2 instant time value (Value/10)	INT16	R	Unit : ppm
0x000A	300011	NH_3 instant time value (Value/10)	INT16	R	Unit : ppm
0x000B	300012	H_2S instant time value (Value/10)	INT16	R	Unit : ppm
0x000C	300013	NO_2 instant time value (Value/10)	INT16	R	Unit : ppm
0x000D	300014	SO_2 instant time value (Value/10)	INT16	R	Unit : ppm
0x000E	300015	CH_4 instant time value (Value/10)	INT16	R	Unit : ppm
0x000F	300016	dB instant time value (Value/10)	INT16	R	Unit : dB
0x004E	300079	Device power-on time (Long low word)	UINT32	R	Unit : s

0x004F	300080	Device power-on time (Long high word)	UINT32	R	Unit : s
0x0080	300129	TEMP instant time value (Float low word)	FLOAT	R	Unit : °C
0x0081	300130	TEMP instant time value (Float high word)	FLOAT	R	Unit : °C
0x0082	300131	RH instant time value (Float low word)	FLOAT	R	Unit : %
0x0083	300132	RH instant time value (Float high word)	FLOAT	R	Unit : %
0x0084	300133	CO_2 instant time value (Float low word)	FLOAT	R	Unit : ppm
0x0085	300134	CO_2 instant time value (Float high word)	FLOAT	R	Unit : ppm
0x0086	300135	PM2.5 instant time value (Float low word)	FLOAT	R	Unit : μg/m³
0x0087	300136	PM2.5 instant time value (Float high word)	FLOAT	R	Unit : μg/m³
0x0088	300137	HCHO instant time value (Float low word)	FLOAT	R	Unit : ppm
0x0089	300138	HCHO instant time value (Float high word)	FLOAT	R	Unit : ppm
0x008A	300139	CO instant time value (Float low word)	FLOAT	R	Unit : ppm
0x008B	300140	CO instant time value (Float high word)	FLOAT	R	Unit : ppm
0x008C	300141	TVOC instant time value (Float low word)	FLOAT	R	Unit : ppm
0x008D	300142	TVOC instant time value (Float high word)	FLOAT	R	Unit : ppm
0x008E	300143	O_3 instant time value (Float low word)	FLOAT	R	Unit : ppm
0x008F	300144	O_3 instant time value (Float high word)	FLOAT	R	Unit : ppm
0x0090	300145	PM10 instant time value (Float low word)	FLOAT	R	Unit : μg/m³
0x0091	300146	PM10 instant time value (Float high word)	FLOAT	R	Unit : μg/m³
0x0092	300147	O_2 instant time value (Float low word)	FLOAT	R	Unit : ppm
0x0093	300148	O_2 instant time value (Float high word)	FLOAT	R	Unit : ppm
0x0094	300149	NH_3 instant time value	FLOAT	R	Unit : ppm

		(Float low word)			
0x0095	300150	NH_3 instant time value (Float high word)	FLOAT	R	Unit：ppm
0x0096	300151	H_2S instant time value (Float low word)	FLOAT	R	Unit：ppm
0x0097	300152	H_2S instant time value (Float high word)	FLOAT	R	Unit：ppm
0x0098	300153	NO_2 instant time value (Float low word)	FLOAT	R	Unit：ppm
0x0099	300154	NO_2 instant time value (Float high word)	FLOAT	R	Unit：ppm
0x009A	300155	SO_2 instant time value (Float low word)	FLOAT	R	Unit：ppm
0x009B	300156	SO_2 instant time value (Float high word)	FLOAT	R	Unit：ppm
0x009C	300157	CH_4 instant time value (Float low word)	FLOAT	R	Unit：ppm
0x009D	300158	CH_4 instant time value (Float high word)	FLOAT	R	Unit：ppm
0x009E	300159	dB instant time value (Float low word)	FLOAT	R	Unit：dB
0x009F	300160	dB instant time value (Float high word)	FLOAT	R	Unit：dB
0x00A0	300161	PR instant time value (Float low word) (Unit:hPa)	FLOAT	R	Unit：hPa
0x00A1	300162	PR instant time value (Float high word) (Unit:hPa)	FLOAT	R	Unit：hPa
0x0220	300545	PR instant time value (Float low word) (Unit: mmHg)	FLOAT	R	Unit：mmHg
0x0221	300546	PR instant time value (Float high word) (Unit: mmHg)	FLOAT	R	Unit：mmHg
0x0222	300547	Heat Index instant time value	UINT16	R	
0x0223	300548	Thermal Hazard Risk Level	UINT16	R	

7-2 Modbus Table of system parameters

Function 03 to Read/Function 06,16 to write					
Address	Setting Value	Item	Type	R/W	Remarks
0x0000	400001	The first and second characters of the device model	UINT16	R	0xAABB,AA=2,BB=1
0x0001	400002	The third and fourth characters of the equipment model	UINT16	R	0xAABB,AA=4,BB=3
0x0002	400003	The fifth and sixth characters of the equipment model	UINT16	R	0xAABB,AA=6,BB=5
0x0003	400004	Device version	UINT16	R	
0x0004	400005	Device subversion	UINT16	R	
0x0005	400006	Slave station number	UINT16	R/W	Range:1~254
0x0006	400007	Slave transfer rate	UINT16	R/W	0:2400, 1: 4800, 2: 9600, 3: 19200, 4: 38400, 5: 57600, 6: 115200
0x0010	400017	System time - year	UINT16	R/W	
0x0011	400018	System time - month	UINT16	R/W	
0x0012	400019	System time - day	UINT16	R/W	
0x0013	400020	System time-hour	UINT16	R/W	
0x0014	400021	System time-minutes	UINT16	R/W	
0x0015	400022	System time - seconds	UINT16	R/W	

7-3 Modbus Table for Channel Settings

This table is mainly based on CH1. Each time the address increases by 0x0100, it becomes the next channel. For example: if the gain value address of CH1 is 0x1022, then increase 0x0100 to the gain value of CH2, which is 0x1122. This rule applies to the following tables.

Function 03 to Read/Function 06,16 to write					
Address	Setting Value	Item	Type	R/W	Remarks
0x1022	404131	Gain value	INT16	R/W	Value/(10^ decimal point)
0x1023	404132	Offset	INT16	R/W	Value/(10^ decimal point)
0x1050	404177	Gain value (Float low word)	FLOAT	R/W	
0x1051	404178	Gain value (Float high word)	FLOAT	R/W	
0x1052	404179	Offset (Float low word)	FLOAT	R/W	
0x1053	404180	Offset (Float high word)	FLOAT	R/W	

REVISION HISTORY

Version	Revision date	Revision description	Maintenance personnel
V1.08	2023/08/18	Update new format	Siao jǐng jhou
V1.09	2024/01/09	Modbus Table modification	Siao jǐng jhou
V1.10	2024/01/15	Added heat index related and AI channel settings	Siao jǐng jhou

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