JNC technology
銘祥科技實業股份有限公司

JNC

Outdoor Gas Detector

OA4



V1.03

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 optional measurement items, including temperature, humidity, CO2, PM2.5, O2, NH3, H2S, dB, PR, 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 orchid gardens, greenhouses, animal husbandry, environmental monitoring, factory independent management, industrial safety and other places that require environmental monitoring.

1-2 Product Notes

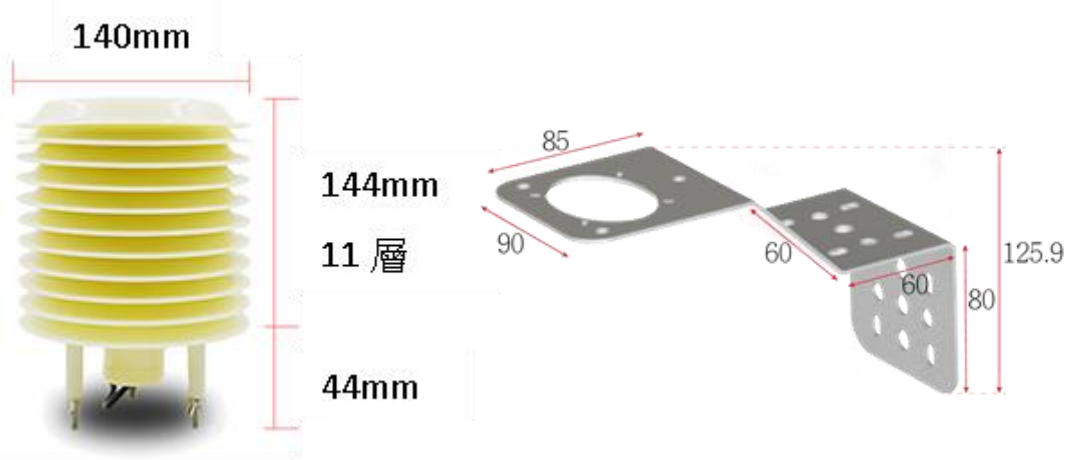
1. Please do not use it in areas with high vibration or strong electromagnetic interference to avoid product damage, ERROR and measurement errors.
2. Before performing any repair or maintenance, please remove the power supply to prevent personal injury or product damage caused by accidental contact with 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 applying power.

PART 2.PRODUCT DESCRIPTION

2-1 Product Features

- Compact size, light weight, waterproof quick connector, easy to install.
- With automatic temperature compensation.
- With RS-485 communication, optional Bluetooth communication.
- Equipped with public software, you can set ID/baud rate/calibration and other functions.
- Outdoor lightweight louver housing design, accurate sensing, fast response, and high data transmission efficiency.
- With 24VDC and 5VDC power supply modes.
- Can be selected through options: TR / CO_2 / PM2.5 / PM10 / O_2 / NH_3 / H_2S / dB / PR。
- 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.
- Applicable places: orchid gardens, greenhouses, animal husbandry, environmental monitoring, factory independent management, industrial safety and other places that require environmental monitoring.

2-2 Product Size(mm)



PART 3. PRODUCT SPECIFICATIONS

3-1 Product Specifications

Model	OA4	
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)	140x188 (W x H) (Unit:mm)
	Product weight	≦2Kg
	Installation method	Venetian wall hanging
	Product line length	3 meters
	Mounting Bracket Dimensions	90x195x125.9 (L x W x H)(Unit:mm)
Shell	Material	ABS anti-UV
Safety certification	CE、FCC	

3-2 OA4 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)	0~10,000 ppm	<120S	0~50℃	1ppm	±30ppm±3% of Reading	10sec
PM2.5 (Laser)	0~1000 μg / m^3	<90S	-10~65℃	0.1μg / m^3	±10 μg / m^3±5% of Reading	5min
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)	0-100ppm	<60S	-10~50℃	0.01ppm	±2%	5min
H_2S (Electrochemical)	0~100ppm	<60S	-10~50℃	0.01ppm	±2%	5min

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

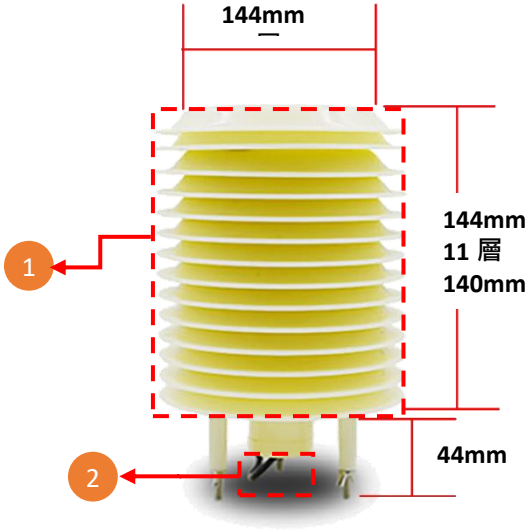
Sensors Principle	Range	Operating temperature	Resolution	Accuracy
Pressure	300~1100 hPa(hPa)	-40~85℃	1 hPa	±1 hPa

3-3 Thermal Hazard Risk Level

Level 1 Attention	26.7~32.2	Level 3 Dangerous	40.6~54.4
Level 2 Pay special attention	32.2~40.6	Level 4 Extremely Dangerous	>54.4

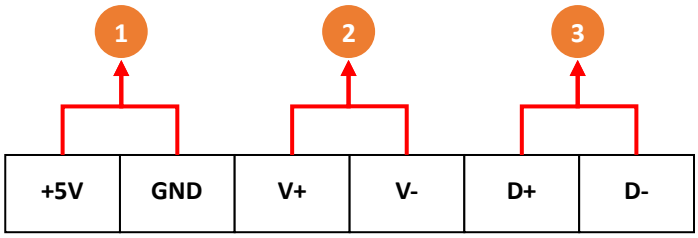
PART 4.PRODUCT INSTRUCTIONS

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 pole GND White=>RS485 D+ Green=>RS 485D- ※Wiring must be done in the correct way to establish communication normally.

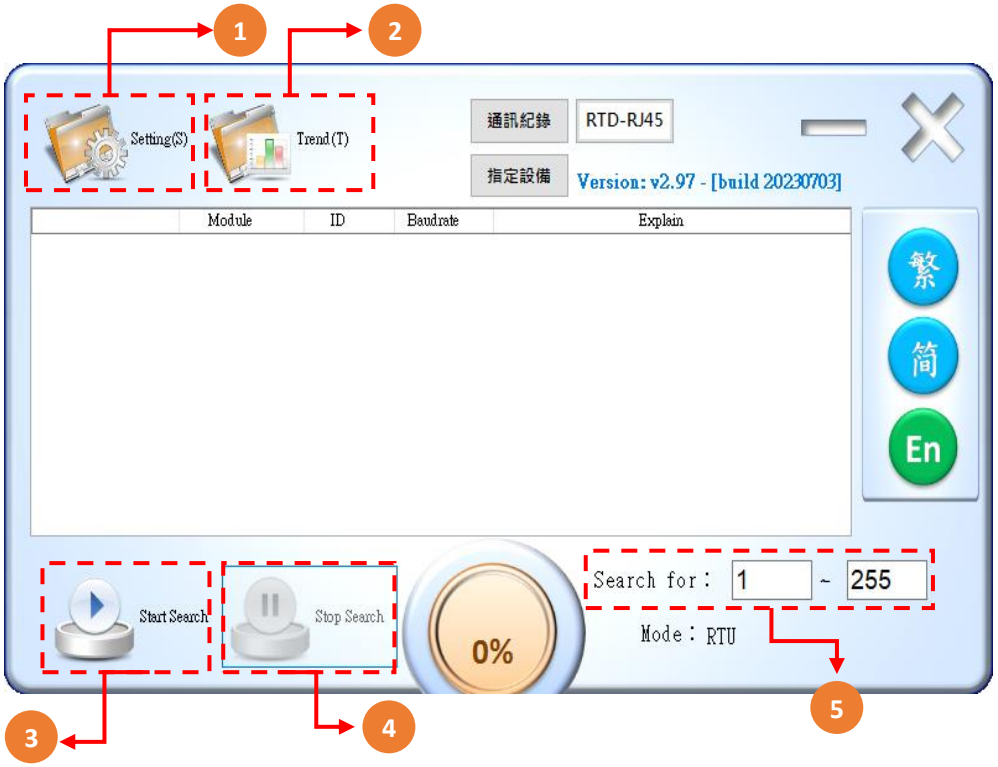
4-2 Wiring Instructions



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

PART 5.UTILITY SOFTWARE OPERATING INSTRUCTIONS

5-1 Utility Home screen

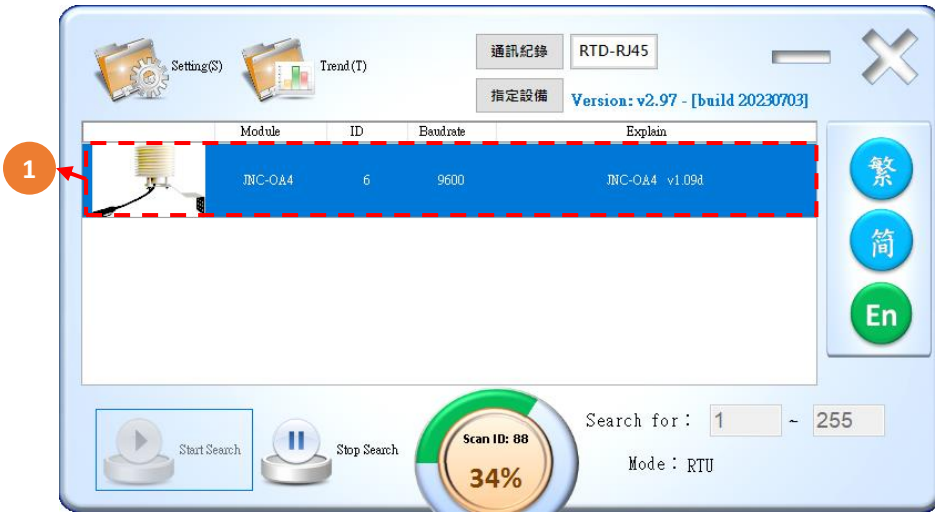


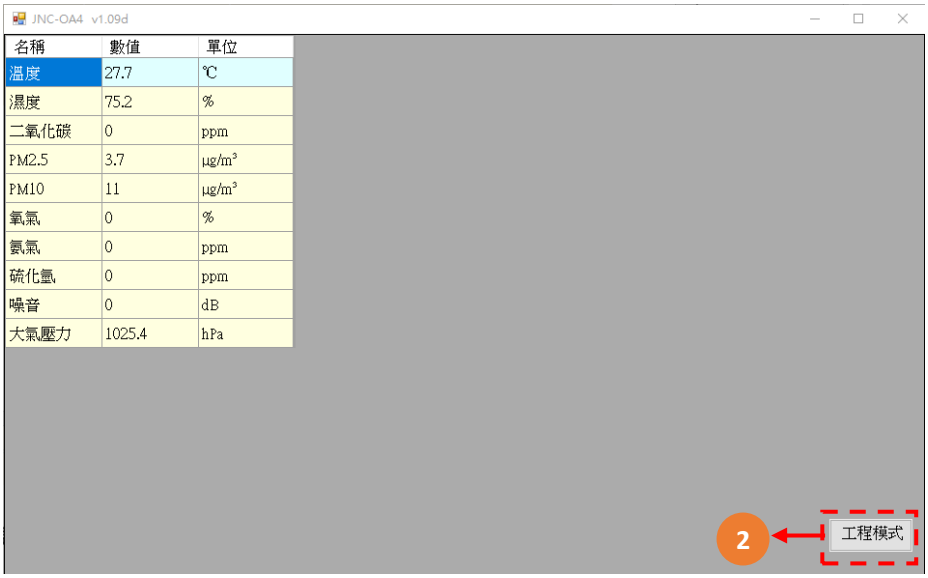
Code	Name/icon	Function Description
1	Setting(S)	Comport and Baudrate settings
2	Trend(T)	USB output value trend chart
3	Start Search	Start searching for the station number (ID) of the device connected to the RS-485 connection
4	Stop Search	Stop searching for the device station number (ID) of the RS-485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

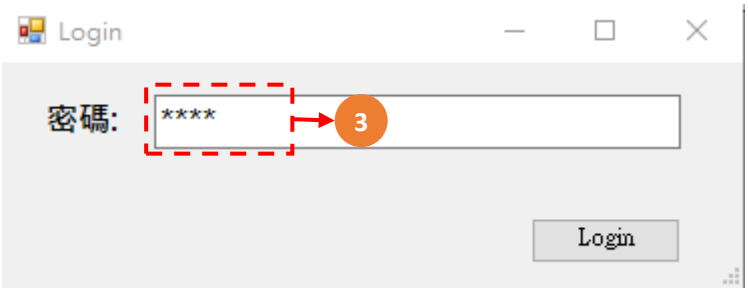
※Connection method: Connect the host to the USB-485, and connect the D+/D- of the USB-485 to the 485 communication D+/D- of the device. Open the Utility to set the COM port and transmission rate, and search for the CW9 device. It will be opened after the search is successful. Device page.

※USB-485 needs to be purchased separately.

5-2 Device Page

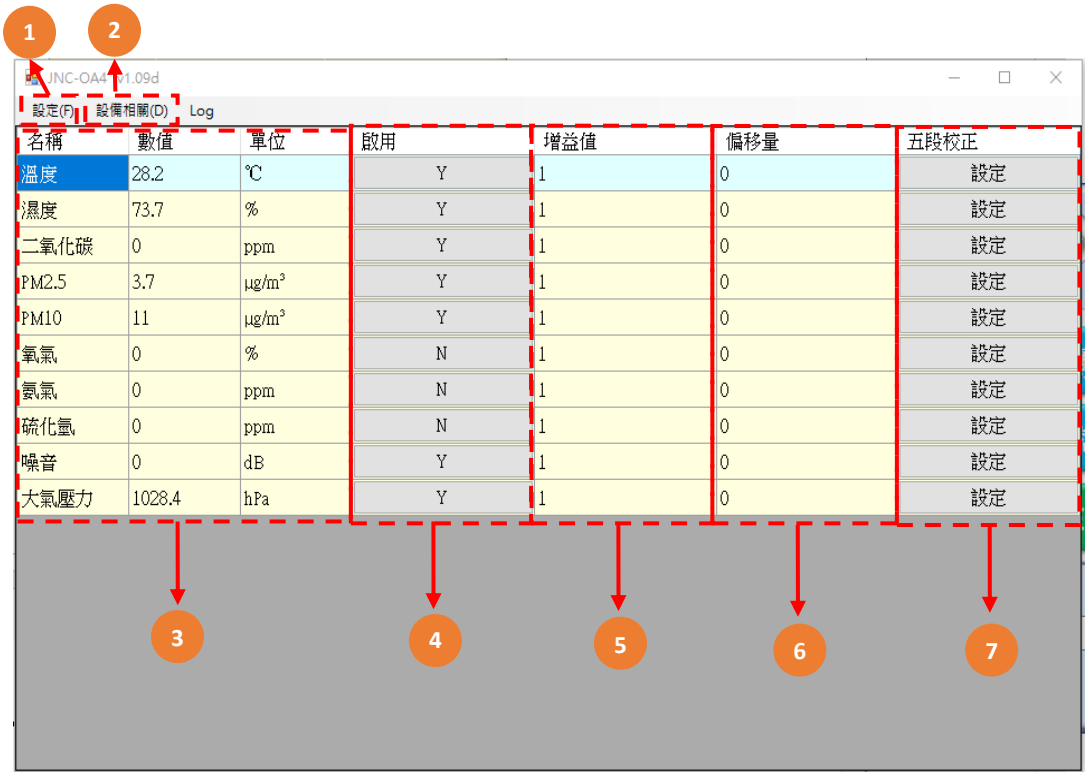






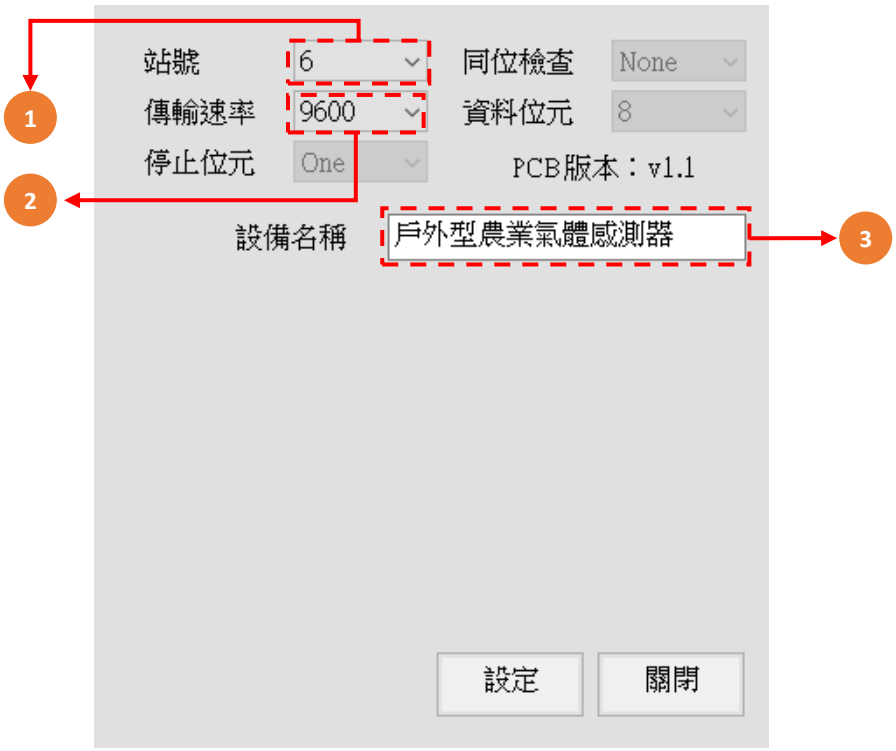
Code	Name/icon	Function Description
1	JNC-OA4 equipment	RS-485 search for OA4 devices can be accessed by clicking on the page
2	Engineering mode	Enter device engineering mode
3	Password	Login password:1234

5-3 Page Settings



Code	Name/icon	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 real-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	Calibrate by multiplying
6	Offset	Calibrate 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 response from the slave device, the "sensor data" is 0x28F6 4283. By swapping the lower word "42 83" to the front and the higher word "28 F6" to the back, you get "42 83 28 F6". After directly converting this value to a float, you get 65.58, which represents the instant time humidity (RH) value of 65.58%.

Can refer to an online conversion tool:

https://gregstoll.com/~gregstoll/floattohex/

PART 7.Modbus Table

7-1 Modbus Table of instant time values

Function 04 to Read					
Address	Setting Value	Item	Type	R/W	Remarks
0x0000	300001	TEMP instant value (Value/10)	INT16	R	Unit : °C
0x0001	300002	RH instant value (Value/10)	INT16	R	Unit : %
0x0002	300003	CO_2 instant value (Value/10)	INT16	R	Unit : ppm
0x0003	300004	PM2.5 instant value (Value/10)	INT16	R	Unit : μg/m³
0x0004	300005	PM10 instant value (Value/10)	INT16	R	Unit : μg/m³
0x0005	300006	O_2 instant value (Value/10)	INT16	R	Unit : %
0x0006	300007	NH_3 instant value (Value/1000)	INT16	R	Unit : ppm
0x0007	300008	H_2S instant value (Value/1000)	INT16	R	Unit : ppm
0x0008	300009	db instant value (Value/10)	INT16	R	Unit : dB
0x0009	300010	PR instant value (Value/10)	INT16	R	Unit : hPa
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 value (Float low word)	FLOAT	R	Unit : °C
0x0081	300130	TEMP instant value (Float high word)	FLOAT	R	Unit : °C
0x0082	300131	RH instant value (Float low word)	FLOAT	R	Unit : %
0x0083	300132	RH instant value (Float high word)	FLOAT	R	Unit : %
0x0084	300133	CO_2 instant value (Float low word)	FLOAT	R	Unit : ppm
0x0085	300134	CO_2 instant value (Float high word)	FLOAT	R	Unit : ppm
0x0086	300135	PM2.5 instant value (Float low word)	FLOAT	R	Unit : μg/m³
0x0087	300136	PM2.5 instant value (Float high word)	FLOAT	R	Unit : μg/m³
0x0090	300145	PM10 instant value	FLOAT	R	Unit : μg/m³

		(Float low word)			
0x0091	300146	PM10 instant value (Float high word)	FLOAT	R	Unit : μg/m³
0x0092	300147	O_2 instant value (Float low word)	FLOAT	R	Unit : %
0x0093	300148	O_2 instant value (Float high word)	FLOAT	R	Unit : %
0x0094	300149	NH_3 instant value (Float low word)	FLOAT	R	Unit : ppm
0x0095	300150	NH_3 instant value (Float high word)	FLOAT	R	Unit : ppm
0x0096	300151	H_2S instant value (Float low word)	FLOAT	R	Unit : ppm
0x0097	300152	H_2S instant value (Float high word)	FLOAT	R	Unit : ppm
0x009E	300159	db instant value (Float low word)	FLOAT	R	Unit : dB
0x009F	300160	db instant value (Float high word)	FLOAT	R	Unit : dB
0x00A0	300161	PR instant value (Float low word) (Unit:hPa)	FLOAT	R	Unit : hPa
0x00A1	300162	PR instant value (Float high word) (Unit:hPa)	FLOAT	R	Unit : hPa
0x0220	300545	PR instant value (Float low word) (Unit:mmHg)	FLOAT	R	Unit : mmHg
0x0221	300546	PR instant value (Float high word) (Unit:mmHg)	FLOAT	R	Unit : mmHg
0x0222	300547	Heat index instant 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 - second	UINT16	R/W	

7-3 Modbus Table of 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
V1.02	2023/08/18	Update new format	denny
V1.03	2024/01/15	Added heat index related and AI channel settings	denny

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