

JNC

485 Gas Detector

ICW



V1.00

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 of outdoor environments. The wall-mounted design makes installation easy, and the streamlined hole design allows the sensor to be ventilated and more sensitive to changes in the outdoor environment. This product has 13 optional measurement items, including temperature, humidity, CO₂, PM_{2.5}, CO, TVOC, O₃, HCHO, PM₁₀, O₂, NH₃, H₂S, NO₂, SO₂, CH₄, PID, noise, atmospheric pressure, illuminance, heat index, and the sensor's instant time values can be accurately transmitted back to the host computer through the Modbus communication protocol, allowing you to instantly grasp the air quality of your outdoor environment. This product is very suitable for environmental monitoring, independent factory management, facility agriculture, manufacturing processes, special pollution 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 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. The 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 may 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

- All-in-one design, easy to install.
- With automatic temperature compensation.
- With RS-485 communication, optional Bluetooth communication.
- With public software, you can set ID/ baud rate/calibration and other functions.
- Wall-mounted housing design, accurate sensing, fast response, and high data transmission efficiency.
- Multiple test items can be selected according to the optional code, up to 13 test items. °
- 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.
- Applicable places: weather stations, environmental monitoring, factory independent management, facility agriculture, manufacturing processes and special pollution, etc. places that require environmental monitoring.

2-2 Product Size (mm)



2-3 Installation hole position (mm)



PART 3.PRODUCT SPECIFICATIONS

3-1 Product Specifications

Model	ICW	
Power supply	Transformer	◆AC input: 100~240V (50/60Hz) ◆DC output: 12V Maximum current: 2A
	Equipment	◆DC input: 9~36V ◆Power consumption: 1.8W
Environment	-10~60℃ · 0%~100%(non-condensing state)	
Communication function	Communication interface	RS-485 (optional Bluetooth communication)
	Communication protocol	Modbus RTU
Physical conditions	Product size (mm)	220 * 85.7 * 54.2 (unit: mm)
		220 * 99.65 * 54.2 (unit: mm) (including photomask)
	Product weight	≤ 2.3Kg
	Installation method	Wall hanging
	Product line length	3 meters
Shell	Material	Galvanized steel painted
Safety certification	CE/FCC	

3-2 ICW Measurement Range

Project detection principle	Range	T90	Working temperature	Resolution		Accuracy	Environmental equilibrium time
Temp (Resistive)	-40~125°C	<60S	-20~60°C	0.1°C		±0.4°C	10min
RH (Capacitive)	0~100%	<60S	-20~60°C	0.1%		±3%	10min
CO2 (Infrared)	0~10,000ppm	<90S	0~50°C	1ppm		±30 ppm ± 3% of Reading	10sec
PM2.5 (Laser)	0~1000µg / m³	<90S	-10~65°C	0.1µg / m³		±10µg / m³ ± 5% of Reading	5min
HCHO (Electrochemical formula)	0.01~2.00ppm	<120S	-10~50°C	0.01ppm		≤ ±0.02ppm ± 2% of Reading	10min
CO (Electrochemical formula)	0~100ppm	<180S	0~50°C	0.1ppm		±5ppm	10min
TVOC (Semiconductor)	0~60ppm	<90 S	0~40°C	Range	Resolution	±10%	5min
				≤ 2.008 ppm	1ppb		
				≤ 11.11 ppm	6ppb		
				≤ 60 ppm	32ppb		
O3 (Semiconductor)	0.01~2.00ppm	<120S	0~40°C	0.01ppm		±10%	10min
PM10 (Algorithm)	0~1200µg / m³	<90S	-10~65°C	0.1µg / m³		±10µg / m³ ± 5% of Reading	5min
O2 (Electrochemical)	0-30%	<60S	-10~55°C	0.05%		±1of Reading	5min

formula)						
NH3 (Electrochemical formula)	0-100ppm	<60S	-10~50°C	0.01ppm	±2%	5min
H2S (Electrochemical formula)	0~100ppm	<60S	-10~50°C	0.01ppm	±2%	5min
NO2 (Electrochemical formula)	0-20ppm	<60S	-0~50°C	0.01ppm	±2%	5min
SO2 (Electrochemical formula)	0-20ppm	<60S	-0~50°C	0.01ppm	±2%	5min
CH4 (Semiconductor type)	0-100ppm	<90 S	0°C~40°C	0.1ppm	±10%	10min
PID100 (Photoionization)	0-100ppm	≤5S	-10~60°C	25ppb	±2% (reproduci bility)	≤60 sec

Project detection principle	Range	Frequency range	Working temperature	Resolution	Accuracy
Noise	30~120dB	20~20K HZ	-20~60°C	0.1dB	3% Fs

Project detection principle	Range	Working temperature	Resolution	Accuracy
Atmospheric pressure	300~1100 hPa	-40~85°C	1 hPa	±1 hPa

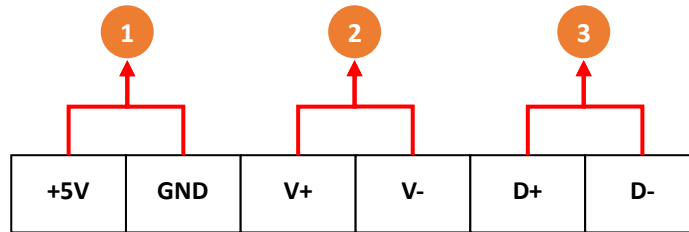
Project detection principle	Range	Spectral range	Working environment	T90 time	Accuracy	Repeat ability
Light Illuminance	0~200000(Lux)	380~730(nm)	Temperature:- 40~85°C Humidity: ≤ 94%RH	≤60S	±5% Fs(25 °C)	<1%FS

3-3 Thermal Hazard Risk Level

First level attention	26.7~32.2	Level 3 danger	40.6~54.4
Level 2 Pay special attention	32.2~40.6	Level 4 extremely dangerous	>54.4

PART 4.PRODUCT INSTRUCTIONS

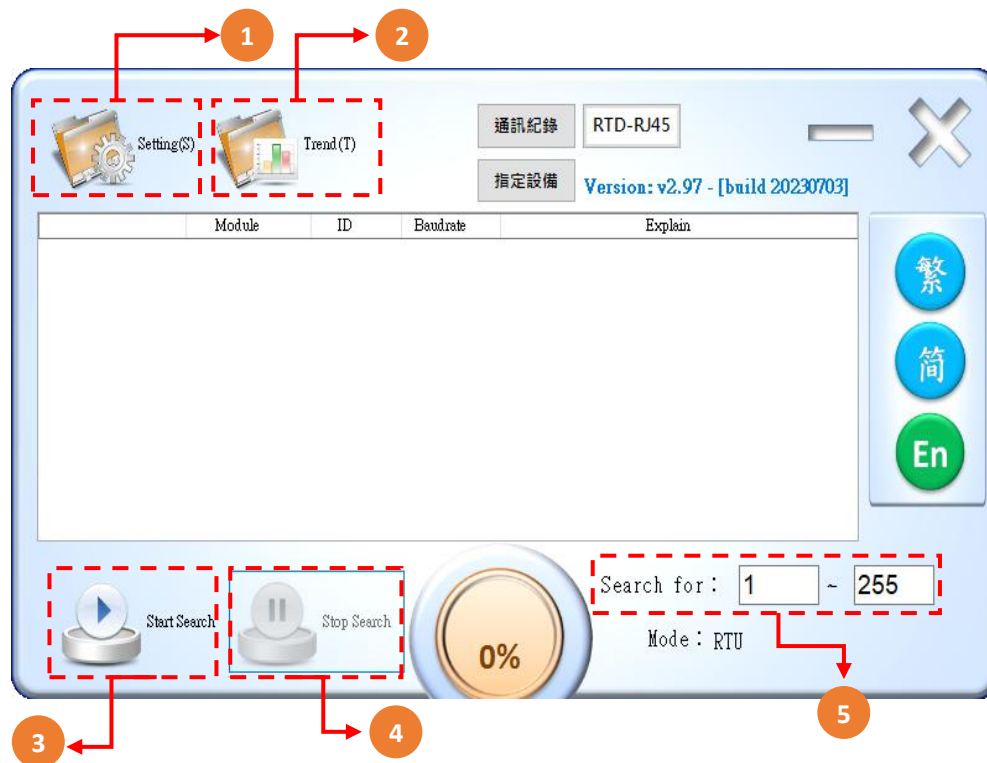
4-1 Wiring Instructions



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 main screen

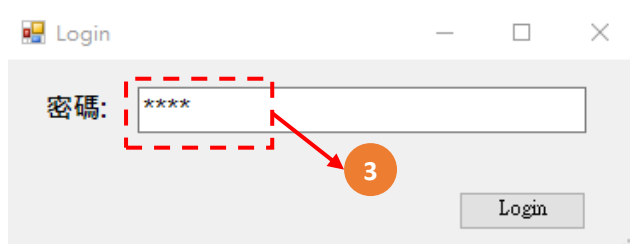
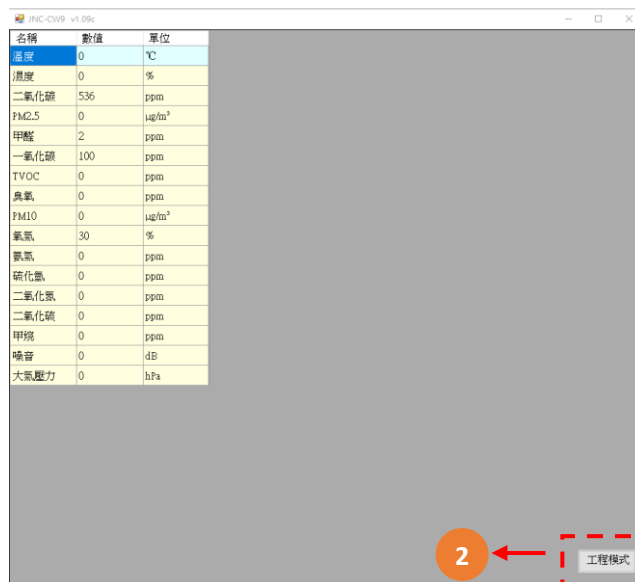


Code	Name/icon	Function description
1	Setting(S)	Comport and Baudrate settings
2	Trend(T)	USB output value trend chart
3	Start Search	Start searching for the station number (ID) of the device connected to the RS-485 connection
4	Stop Search	Stop searching for the device station number (ID) of the RS-485 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 ICW device. Device page will be opened after the search is successful.

※USB-485 needs to be purchased separately.

5-2 Device page



Code	Name/icon	Function description
1	JNC-ICW	RS-485 search for ICW 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

名稱	數值	單位	啟用	增益值	偏移量	五段校正
溫度	0	℃	N	1	0	設定
濕度	0	%	N	1	0	設定
二氧化碳	531	ppm	Y	1	0	設定
PM2.5	0	μg/m³	Y	1	0	設定
甲醛	2	ppm	Y	1	0	設定
一氧化碳	100	ppm	Y	1	0	設定
TVOC	0	ppm	Y	1	0	設定
臭氧	0	ppm	Y	1	0	設定
PM10	0	μg/m³	N	1	0	設定
氧氣	30	%	Y	1	0	設定
氨氣	0	ppm	Y	1	0	設定
硫化氫	0	ppm	Y	1	0	設定
二氧化氮	0	ppm	Y	1	0	設定
二氧化硫	0	ppm	Y	1	0	設定
甲烷	0	ppm	Y	1	0	設定
噪音	0	dB	N	1	0	設定
大氣壓力	0	hPa	N	1	0	設定

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 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	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

站號 1 同位檢查 None

傳輸速率 9600 資料位元 8

停止位元 One PCB版本：v1.1

設備名稱 微氣候氣體感測器

設定 關閉

Code	Name/icon	Function description
1	Station number	Set the device station number (range 1~254)
2	Transmission rate	Set 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 instant 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

instant 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 Modbus Table of instant time values

Function 04 to Read					
Address	Set value	Item	Type	R/W	Remark
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/m ³
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/m ³
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 ₂ S 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/m ³
0x0087	300136	PM2.5 instant time value (Float high word)	FLOAT	R	Unit : µg/m ³
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/m ³
0x0091	300146	PM10 instant time value (Float high word)	FLOAT	R	Unit : µg/m ³
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 low word)	FLOAT	R	Unit : ppm
0x0095	300150	NH ₃ instant time value (Float high word)	FLOAT	R	Unit : ppm
0x0096	300151	H ₂ S instant time value (Float low word)	FLOAT	R	Unit : ppm
0x0097	300152	H ₂ S 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	Atmospheric pressure instant time value(Float low word) (Unit: mmHg)	FLOAT	R	Unit : mmHg
0x0221	300546	Atmospheric pressure 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	Set value	Item	Type	R/W	Remark
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 device model	UINT16	R	0xAABB,AA=4,BB=3
0x0002	400003	The fifth and sixth characters of the device 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	Set value	Item	Type	R/W	Remark
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	

[illegible]

717 No. 33, Lane 428, Section 3, Wenhua Road, Rende District, Tainan City
Tel : +886-6-311-0008
Fax : +886-6-311-0522
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Tax ID 28529427
<https://www.jnc-tec.com.tw>
Email : jnc.jnc@msa.hinet.net



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