JNC technology
銘祥科技實業股份有限公司

JNC

Outdoor Temp/Humidity & Light Sensor

OP4



For firmware v10.1 or later

V1.00

Contents

Symbols Used in This Manual 5

Product Overview and Features 6

[Before Use]

PART 1.SAFETY INFORMATION 7

1-1 Before You Read: Terms 7

1-2 Safety Message Levels 8

1-3 Safety Precautions 8

1-4 Pre-Operation Labels 9

PART 2.PRODUCT INTRODUCTION 10

2-1 What This Device Solves 10

2-2 What It Can Do 10

2-3 Identify Your Model 11

2-4 Specifications 11

PART 3.PART NAMES 13

3-1 Exterior Parts 13

3-2 Cable 14

PART 4.INSTALLATION 15

4-1 Installation Requirements 15

4-2 Mounting Bracket and Installation 16

4-3 Wiring 17

4-4 First Power-On 17

[Basic Operation]

PART 5.BASIC OPERATION 18

5-1 Read Real-Time Values 18

5-2 Check the Model and Firmware Version 19

[Settings]

PART 6.SETTINGS 20

6-1 RS-485 Communication Parameters 20

[Troubleshooting]

PART 7.MAINTENANCE AND TROUBLESHOOTING 22

7-1 Symptoms and Checks 22

7-2 Not a Malfunction 23

7-3 Factory Defaults 23

7-4 Calibration 23

APPENDIX A.MODBUS REGISTER TABLE 25

A-1 Direction of Communication 25

A-2 Default Communication Settings 25

A-3 Register Tables 25

Symbols Used in This Manual

What you see	Meaning
WARNING (gray box)	Failure to comply may result in personal injury or equipment damage
CAUTION (gray box)	Failure to comply will result in recoverable problems such as incorrect settings or data loss
Power off first	Disconnect power to this unit before proceeding (see 1-4 Pre-Operation Labels (p. 9))
Factory setting – do not change	Set up by JNC at the factory; changing it may cause the device to lose its connection
No label	You can complete the task yourself by following the steps in this manual
Red text	Key point
1 2	Corresponds to the same number in the photo above
Blue underlined text (p. N)	Another section of this manual. Click it in the electronic file; in the printed manual, turn to that page

Product Overview and Features

This product is the Outdoor Temp/Humidity & Light Sensor (OP4).

This product is a louvered sensor for outdoor installation. It measures temperature, humidity, and light in one housing, and sends real-time values to the host system via RS-485 (Modbus RTU). The louvered radiation shield blocks direct sunlight and ground-reflected heat, making the product suitable for long-term outdoor installation. Typical applications include greenhouses, protected agriculture, livestock farms, microclimate stations, and outdoor environmental monitoring.

Features:

- **Louvered radiation shield blocks direct sunlight and ground-reflected heat.**
- **UV-stabilized, anti-aging louvers for long-term outdoor installation.**
- **Temperature, humidity, and light in one housing, wired with one cable.**
- **Light measurement range of 0–200,000 lx for bright outdoor sites.**
- **RS-485 Modbus RTU communication with a wide DC 9–30 V power input.**
- **Supplied mounting bracket; installation is completed with screws.**
- **Applications: greenhouses, protected agriculture, livestock farms, microclimate stations, and outdoor environmental monitoring.**

PART 1.SAFETY INFORMATION

Questions Answered in This Chapter

- Which terms should I understand before use?
- How many levels of warning boxes does this manual use?
- Which operations require powering off first, and which settings must not be changed?

Not Covered in This Chapter

- Installation location requirements → 4-1 Installation Requirements (p. 15)

1-1 Before You Read: Terms

Term	Meaning	On-site example
Measurement item	A quantity this unit measures. It depends on the model ordered (see 2-3 Identify Your Model (p. 11))	Temperature, humidity, light
Host system	The device or system that reads values from this unit via RS-485	PLC, central control computer, JNC Cloud Box
Slave ID, baud rate	RS-485 communication parameters; this unit and the host system must use the same settings to communicate	Slave ID 79, 9600 bps
Register address	The register number the host system specifies when reading or writing data on this unit, written in hexadecimal	0x0020
Function code	The type of Modbus command: Function 04 reads real-time values, Function 03 reads settings, Function 06 writes the slave ID and baud rate, and Function 16 writes calibration values	Function 04
Gain, offset	The two parameters used to calibrate readings: the gain corrects by multiplication, and the offset corrects by addition or subtraction	Gain 1, offset 0

1-2 Safety Message Levels

This manual uses two types of boxes to indicate risk. The level is identified by "WARNING/CAUTION" on the first line of the box:

WARNING

Failure to comply may result in personal injury or equipment damage.

CAUTION

Failure to comply will result in recoverable problems such as incorrect settings or data loss.

1-3 Safety Precautions

1. **Do not use this product at sites with strong vibration or strong electromagnetic interference; doing so may damage the product or cause measurement errors.**
2. **Before any repair or maintenance, disconnect the power first to prevent personal injury or product damage from accidental contact with live parts.**
3. **When installing in an environment containing conductive contaminants (metal dust and so on), provide suitable sealing, ventilation, or filtering.**
4. **Do not operate the product if any component or module has been removed or disassembled, and contact JNC as soon as possible.**
5. **This product is a precision instrument. Do not disassemble it yourself, and do not let corrosive liquids contact the instrument surface; otherwise it may be damaged.**
6. **JNC is not liable for any effects or damage caused by failure to use the product according to this manual, or by use beyond the applications and environmental conditions stated in the specifications.**

For installation location requirements, see 4-1 Installation Requirements (p. 15); for wiring precautions, see 4-3 Wiring (p. 17).

1-4 Pre-Operation Labels

Operations without a label can be completed by following the steps in this manual. Operations requiring attention are marked with one of the following labels:

Label	Meaning	Example
Power off first	Disconnect power to this unit (at the host system or power supply) before proceeding	Wiring
Factory setting – do not change	Set up by JNC at the factory; changing it may cause the device to lose its connection	Slave ID, baud rate

PART 2.PRODUCT INTRODUCTION

Questions Answered in This Chapter

- What problem does this device solve? What can it do?
- How do I tell which model I have?
- What do the specification values mean?

Not Covered in This Chapter

- Names of the parts → PART 3.PART NAMES (p. 13)

2-1 What This Device Solves

This unit is a louvered sensor installed outdoors: it measures temperature, humidity, and light at the same time, and provides the real-time values to the host system via RS-485 (Modbus RTU).

- Louvered radiation shield: 7 louver layers block direct sunlight and ground-reflected heat while keeping air flowing, so the sensor measures the ambient air.
- Light: the TRL model has a light sensor on top of the shield, with a measurement range of 0–200,000 lx.
- Data for the host system: a PLC, central control computer, or JNC Cloud Box reads the values via RS-485 for logging, uploading to the cloud, or controlling other equipment. This unit has no display, Wi-Fi, or device web page; all readings and settings go through RS-485.

Applications: greenhouses, protected agriculture, livestock farms, microclimate stations, and outdoor environmental monitoring.

2-2 What It Can Do

Function	Description	See
Real-time values	The host system reads temperature, humidity, and light via Modbus	5-1 Read Real-Time Values (p. 18)
Communication settings	The host system changes the slave ID and baud rate via Modbus	6-1 RS-485 Communication Parameters (p. 20)
Calibration	The host system writes the gain and offset of each measurement item via Modbus	7-4 Calibration (p. 23)

2-3 Identify Your Model

This unit comes in different models depending on the options ordered. The model number format is OP4-Code1-Code2.

Code 1	Measurement items	How to identify
TR	Temperature / humidity	No light sensor on top of the shield
TRL	Temperature / humidity / light	Light sensor on top of the shield (see 3-1 Exterior Parts (p. 13) 1)

Code 2	Connector	How to identify
N	Bare wire	The cable ends in 4 bare wires
C	Quick connector	The cable ends in a waterproof quick connector

The TR model has no light measurement; the host system does not need to read the light register addresses.

2-4 Specifications

Description:

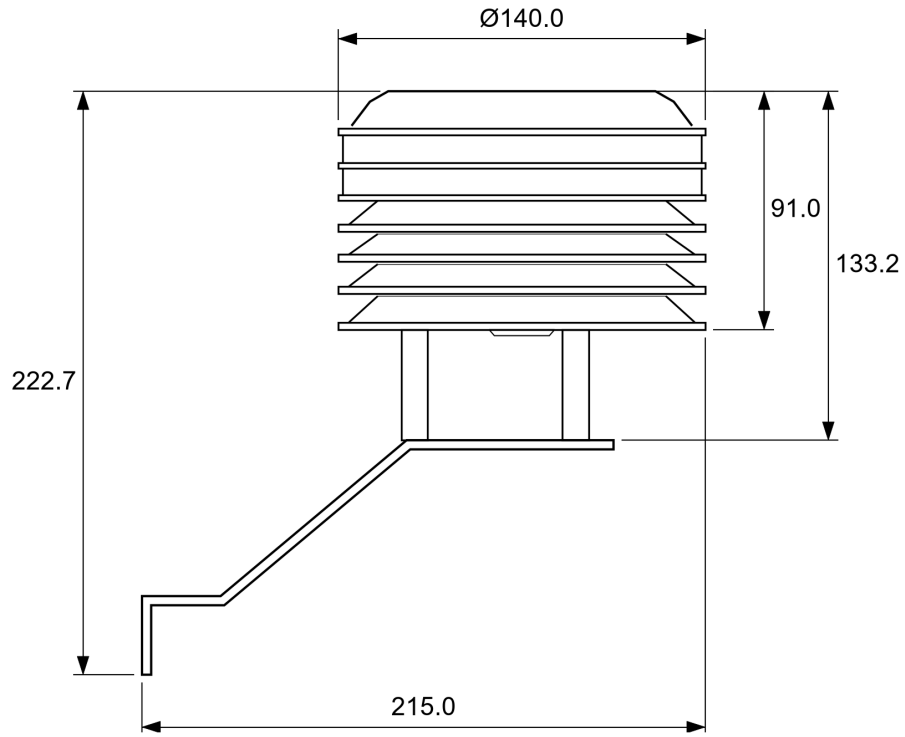
Item	Specification	Remarks
Power supply	DC 9–30 V	
Power consumption	0.2 W	
Operating temperature	–40 to 75 °C	
Communication	RS-485 Modbus RTU	
Housing material	UV-proof plastic louvered radiation shield (7 layers)	
Mounting	Mounting bracket	See 4-2 Mounting Bracket and Installation (p. 16)
Product dimensions	Ø140 × 133 mm	Excluding the mounting bracket
Cable length	10 m	

Sensor Specifications:

Measurement item	Range	Accuracy	Resolution	Models
Temperature	−40 to 100 °C	±0.2 °C	0.1 °C	TR, TRL
Humidity	0–100 %RH	±3 %RH	0.1 %RH	TR, TRL
Light	0–200,000 lx	±3 %	1 lx	TRL

The operating temperature of the unit is −40 to 75 °C; the upper temperature measurement limit of 100 °C is a sensor specification. Use this unit within its operating temperature range.

Product Dimensions (mm, side view, with mounting bracket):



PART 3.PART NAMES

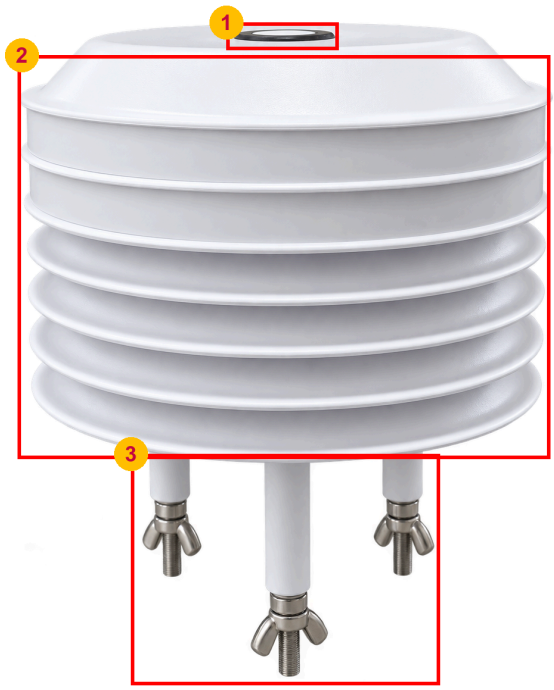
Questions Answered in This Chapter

- What are the louvered radiation shield, light sensor, and threaded rods on the exterior?
- What does each of the four cable wires connect to?

Not Covered in This Chapter

- Installation and wiring → PART 4.INSTALLATION (p. 15)

3-1 Exterior Parts



Description:

No.	Name	Function
1	Light sensor	Round light-receiving surface on top of the shield; measures light. TRL model only
2	Louvered radiation shield	7 UV-proof plastic louver layers; the temperature and humidity sensor is inside
3	Threaded rods and wing nuts	3 rods at the bottom of the shield; they pass through the mounting bracket and are tightened with wing nuts (see 4-2 Mounting Bracket and Installation (p. 16))

3-2 Cable

This unit comes with a 10 m four-core cable that exits from the bottom of the shield and connects to the host system and power supply (for wiring, see 4-3 Wiring (p. 17)). Depending on the model, the cable ends in bare wires or a waterproof quick connector (see 2-3 Identify Your Model (p. 11)).

The Four Cable Wires:

Wire color	Connects to
Red	Power supply positive V+
Black	Power supply negative V-
White	RS-485 D+
Green	RS-485 D-

The wires must be connected correctly for communication to work.

PART 4.INSTALLATION

Questions Answered in This Chapter

- Where should it be installed, and what should be avoided?
- How are the mounting bracket and shield fixed?
- How is the cable wired? How do I check the unit after the first power-on?

Not Covered in This Chapter

- Names of the parts → PART 3.PART NAMES (p. 13)
- Register addresses for the host system → PART 5.BASIC OPERATION (p. 18)

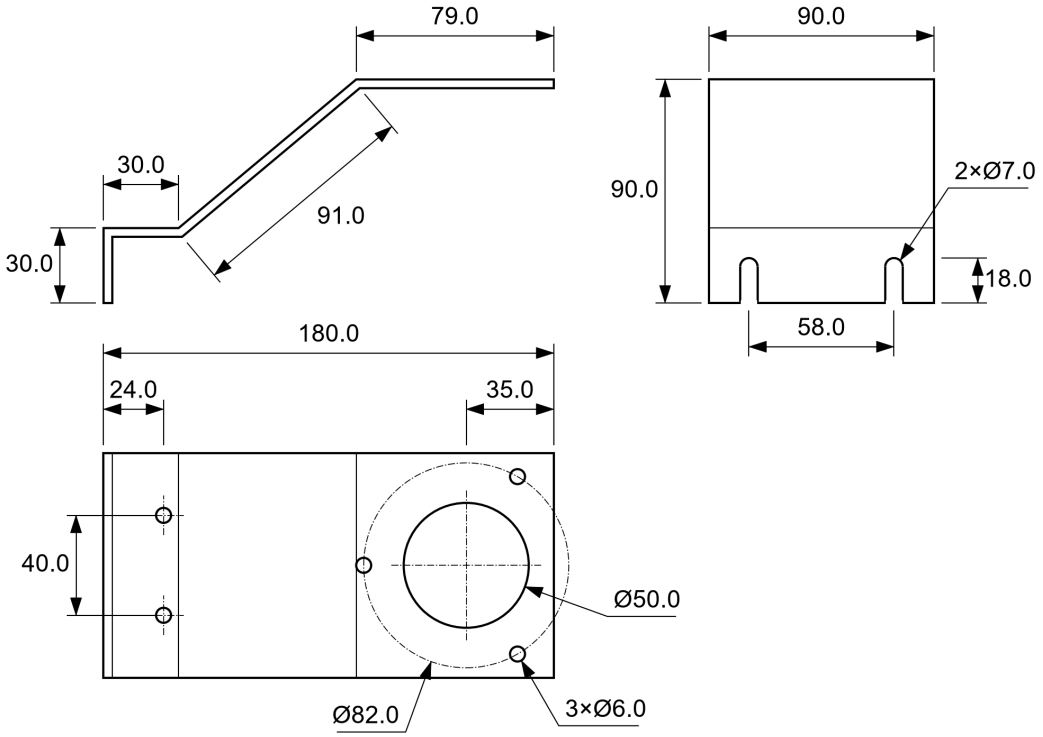
4-1 Installation Requirements

Condition	Requirement	Consequence of violation
Air circulation	Install at a location with good air circulation all around	Slower temperature and humidity response; temperature reads high in sunlight
Avoid heat sources and exhaust	Keep away from exhaust vents, motors, and other equipment that produces heat or exhaust	Temperature reads high and humidity reads low
Avoid water sources	Keep away from standing water, fountains, sprinklers, and similar areas	Humidity reads high
No obstruction above the light sensor (TRL model)	Keep the top of the louvered radiation shield level, with no eaves, trees, or other obstructions above it	Light reads low
Avoid strong vibration and strong electromagnetic interference	Do not install at sites with strong vibration or strong electromagnetic interference	Product damage or measurement errors
Environments with conductive contaminants	Where conductive contaminants such as metal dust are present, provide suitable sealing, ventilation, or filtering	Short circuits or corrosion causing device failure
Operating temperature	−40 to 75 °C	Reading deviation or device failure

4-2 Mounting Bracket and Installation

This unit is fixed with the supplied mounting bracket: one end of the bracket is fixed to the mounting surface on site, and the unit sits on top of the other end with the cable facing down.

Mounting Bracket Dimensions (mm; top row: side view and front view; bottom row: top view):



- **End of the bracket that holds the unit: the central Ø50 hole lets the cable pass downward; the 3 threaded rods of the shield pass through the 3 Ø6 holes around it (on a Ø82 circle).**

Installation Steps:

1. **Fix the mounting bracket to the mounting surface on site with 2 M6 screws through the 2 Ø7 open slots (58 mm apart) on the vertical section of the bracket.**
2. **Remove the wing nuts from the 3 threaded rods at the bottom of the shield.**
3. **Pass the cable downward through the Ø50 hole of the bracket, then place the shield on the bracket with the 3 threaded rods passing down through the bracket holes.**
4. **Refit the wing nuts under the bracket and tighten them. Check that the shield is secure and the cable faces down.**

4-3 Wiring

Power off first

Never wire with the power on. After wiring, check that all connections are correct before applying power.

1. **Check that the power at the host system or power supply is off.**
2. **Connect the four cable wires to the host system and power supply according to the table below (for wire colors, see 3-2 Cable (p. 14)).**
3. **Check that all connections are correct, and then apply power.**

Wire color	Connects to
Red	Power supply positive V+ (DC 9–30 V)
Black	Power supply negative V-
White	D+ of the host system RS-485
Green	D- of the host system RS-485

4-4 First Power-On

1. **Connect the cable according to 4-3 Wiring (p. 17), and then apply power.**
2. **Set the communication parameters for this unit on the host system: slave ID 79, baud rate 9600 bps, data bits 8, no parity, stop bits 1.**
3. **Read the model (Function 03, addresses 0x0000–0x0002) from the host system. If OP4 is read, communication is working (see 5-2 Check the Model and Firmware Version (p. 19)).**
4. **Read the real-time values and check that temperature and humidity (and light on the TRL model) have readings (see 5-1 Read Real-Time Values (p. 18)).**

If the host system cannot read this unit, see 7-1 Symptoms and Checks (p. 22).

PART 5.BASIC OPERATION

Questions Answered in This Chapter

- Which addresses should the host system read to get temperature, humidity, and light?
- How do I check the model and firmware version of this unit?

Not Covered in This Chapter

- Changing the slave ID and baud rate → PART 6.SETTINGS (p. 20)
- Calibration → 7-4 Calibration (p. 23)

This unit has no display or device web page; all readings are read by the host system via RS-485. For all addresses, see APPENDIX A.MODBUS REGISTER TABLE (p. 25).

5-1 Read Real-Time Values

Read with Function 04. Each measurement item occupies 2 addresses and is of type FLOAT (32-bit floating point). On the TRL model, reading 6 addresses starting at 0x0020 returns all three measurement items at once; on the TR model, read 4 addresses starting at 0x0020.

Measurement item	Address	Type	Unit	Models
Temperature	0x0020–0x0021	FLOAT	°C	TR, TRL
Humidity	0x0022–0x0023	FLOAT	%RH	TR, TRL
Light	0x0024–0x0025	FLOAT	lx	TRL

CAUTION: Word order of FLOAT values

Of the 2 addresses for each measurement item, the first holds the low word and the next holds the high word. To assemble the value, place the high word first and then convert; in the reverse order, the value read is abnormally small or large. For a read example, see APPENDIX A.MODBUS REGISTER TABLE (p. 25).

5-2 Check the Model and Firmware Version

Read with Function 03.

Item	Address	Reading
Model	0x0000–0x0002	The 3 addresses together read OP4 followed by 3 spaces; within each address, the low byte is the earlier character
Firmware version	0x0003, 0x0004	0x0003 is the major version and 0x0004 the minor version; for example, readings of 10 and 1 mean firmware 10.1

PART 6.SETTINGS

Questions Answered in This Chapter

- Where do I change the slave ID and baud rate?
- How do I find this unit if I forget its slave ID?

Not Covered in This Chapter

- Calibration → 7-4 Calibration (p. 23)
- Factory defaults → 7-3 Factory Defaults (p. 23)

This unit has no device web page; settings are written by the host system via Modbus. Settings affect communication with the host system; notify other personnel on site before making changes.

What to do	See	Label
Change the slave ID or baud rate	6-1 RS-485 Communication Parameters (p. 20)	Factory setting – do not change
Calibrate readings	7-4 Calibration (p. 23)	

6-1 RS-485 Communication Parameters

Factory setting – do not change

This unit and the host system must use the same communication parameters for the host system to read this unit. When several devices share one RS-485 line, each must have a different slave ID.

Item	Address	Value to write	Factory default
Slave ID	0x0005	1–247	79
Baud rate	0x0006	0: 2400 1: 4800 2: 9600 3: 19200 4: 38400 5: 57600 6: 115200	2 (9600 bps)

Data bits 8, no parity, stop bits 1.

Change Steps:

1. Note the current slave ID and baud rate of this unit.
2. From the host system, write the new value to the address in the table above with Function 06.

3. Read 0x0005 and 0x0006 with Function 03 and check that the readings match the new settings.
4. Power off this unit and then power it on again. The new settings take effect only after this restart.
5. Change the slave ID or baud rate on the host system to the new value, and check that this unit can be read.

CAUTION: Settings take effect after a power restart; change the host system as well

Until this unit is powered off and on again after writing, it keeps communicating with the original slave ID and baud rate. After the restart, if the communication parameters on the host system are not changed accordingly, it cannot read this unit.

If you forget the slave ID or baud rate: from the host system, read the model (Function 03, address 0x0000) with each baud rate and slave IDs 1–247 in turn. The combination that responds is the current setting of this unit.

PART 7.MAINTENANCE AND TROUBLESHOOTING

Questions Answered in This Chapter

- When I see an abnormal condition, what should I check first?
- Which conditions are not malfunctions?
- What are the factory defaults?
- How do I calibrate when the readings differ from a reference instrument?

Not Covered in This Chapter

- Disassembly and repair → Contact JNC

7-1 Symptoms and Checks

First, check according to the table below.

#	Symptom	Check
1	The host system cannot read this unit	● Is the power supply DC 9–30 V? ● Is the white wire connected to D+ and the green wire to D- (see 4-3 Wiring (p. 17))? ● After changing the slave ID or baud rate, has this unit been powered off and on again? Do the slave ID and baud rate on the host system match this unit (see 6-1 RS-485 Communication Parameters (p. 20))?
2	The value read is extremely small or large and clearly unreasonable	● Is the order of the FLOAT high word and low word correct (see 5-1 Read Real-Time Values (p. 18))?
3	Light is always 0	● Is this unit a TRL model (see 2-3 Identify Your Model (p. 11))? ● Is the light sensor on top covered?
4	Readings differ from a reference instrument	● Does the installation location meet 4-1 Installation Requirements (p. 15)? ● Still different → Calibrate (see 7-4 Calibration (p. 23))

7-2 Not a Malfunction

Symptom	Cause
Light is 0 at night	There is no light in the environment
No light reading on the TR model	The TR model has no light measurement (see 2-3 Identify Your Model (p. 11))

7-3 Factory Defaults

Item	Factory default
Slave ID	79
Baud rate / data bits / parity / stop bits	9600 / 8 / None / 1
Gain / offset	1 / 0 (not calibrated)

7-4 Calibration

When the readings do not match a reference instrument, write the gain and offset of that measurement item from the host system to correct the readings:

Reading = sensor value × gain + offset

Measurement item	Gain address	Offset address
Temperature	0x0100–0x0101	0x0102–0x0103
Humidity	0x0104–0x0105	0x0106–0x0107
Light	0x0108–0x0109	0x010A–0x010B

- Type FLOAT; each value occupies 2 addresses: the first holds the low word and the next holds the high word.
- The offset uses the same unit as the measurement item. Factory defaults: gain 1, offset 0.

Calibration Steps:

1. Place the reference instrument next to this unit. When both readings are stable, compare the difference and calculate the gain and offset to write.
2. From the host system, write the 2 addresses of the value at once with Function 16. The value takes effect immediately.
3. Read back the 2 addresses with Function 03 and check that they match the written value.
4. Read the real-time value and check that it now matches the reference instrument.

If the 2 addresses are written separately with Function 06, this unit responds but the value does not change.

Write example: if the temperature reading is 0.5 °C higher than the reference instrument, write an offset of −0.5 (0xBF000000 as FLOAT); write 2 addresses starting at 0x0102 with Function 16 (slave ID 79):

Master request:

Slave ID	Function code	Start address	Quantity (words)	Byte count	Data	CRC
4F	10	01 02	00 02	04	00 00 BF 00	6E FF

Slave response:

Slave ID	Function code	Start address	Quantity (words)	CRC
4F	10	01 02	00 02	EE 1A

CAUTION: All values in this section are examples

The gain and offset must be set by the user organization based on comparison with a reference instrument and professional judgment.

To clear the calibration, write 4 addresses starting at the gain address of the measurement item with Function 16: 0x0000, 0x3F80, 0x0000, 0x0000 (gain 1, offset 0).

APPENDIX A.MODBUS REGISTER TABLE

Who Should Read This Appendix

System engineers: when a PLC, central control computer, or JNC Cloud Box needs to read the real-time values of this unit. General users do not need to read this appendix.

A-1 Direction of Communication

Situation	Role of this unit	Whose table to use
Another system reads the real-time values of this unit	Slave	This unit's table, i.e., this appendix

A-2 Default Communication Settings

Item	Value
Interface	RS-485 (Modbus RTU); for wire colors, see 3-2 Cable (p. 14)
Factory defaults	Slave ID 79, 9600 bps, data bits 8, no parity (None), stop bits 1
How to change	See 6-1 RS-485 Communication Parameters (p. 20)

A-3 Register Tables

This unit has two types of registers: real-time values (Function 04 read) and setting parameters (Function 03 read; Function 06 writes the slave ID and baud rate, Function 16 writes calibration values). The Register No. column = 300001 + address (Function 04) or 400001 + address (Function 03, 06, 16).

Before using the tables, note the following two conventions:

- **FLOAT occupies 2 addresses: the first address holds the low word and the next address holds the high word; to assemble the value, place the high word first and then convert (see the read example at the end of this section); to write, use Function 16 to write both addresses at once.**
- **One read returns at most 16 addresses: when more than 16 addresses are needed, read them in several requests.**

Real-Time Values (Function 04 read)

Address	Register No.	Item	Type	R/W	Remarks
0x0020–0x0021	300033–300034	Temperature real-time value	FLOAT	R	Unit: °C
0x0022–0x0023	300035–300036	Humidity real-time value	FLOAT	R	Unit: %RH
0x0024–0x0025	300037–300038	Light real-time value	FLOAT	R	Unit: lx TRL model only

System Parameters (Function 03 read / Function 06 write)

Address	Register No.	Item	Type	R/W	Remarks
0x0000–0x0002	400001–400003	Device model	WORD	R	The 3 addresses together read OP4 followed by 3 spaces; within each address, the low byte is the earlier character
0x0003	400004	Firmware major version	WORD	R	Example: 10
0x0004	400005	Firmware minor version	WORD	R	Example: 1 (with 0x0003, version 10.1)
0x0005	400006	Slave ID	WORD	R/W	Range: 1–247 Takes effect after a power restart
0x0006	400007	Baud rate	WORD	R/W	0: 2400 1: 4800 2: 9600 3: 19200 4: 38400 5: 57600 6: 115200 Takes effect after a power restart

Calibration Parameters (Function 03 read / Function 16 write)

Address	Register No.	Item	Type	R/W	Remarks
0x0100–0x0101	400257–400258	Temperature gain	FLOAT	R/W	Default 1.0
0x0102–0x0103	400259–400260	Temperature offset	FLOAT	R/W	Default 0.0; unit: °C
0x0104–0x0105	400261–400262	Humidity gain	FLOAT	R/W	Default 1.0
0x0106–0x0107	400263–400264	Humidity offset	FLOAT	R/W	Default 0.0; unit: %RH
0x0108–0x0109	400265–400266	Light gain	FLOAT	R/W	Default 1.0 TRL model only
0x010A–0x010B	400267–400268	Light offset	FLOAT	R/W	Default 0.0; unit: lx TRL model only

Read Example

In the following example, the slave ID is 79 (0x4F), and the CRC is the Modbus RTU 16-bit check code (low byte first).

Example: Read temperature, humidity, and light at once (Function 04, FLOAT)

Master request:

Slave ID	Function code	Start address	Quantity (words)	CRC
4F	04	00 20	00 06	7E 2C

Slave response:

Slave ID	Function code	Byte count	Data	CRC
4F	04	0C	79 A4 41 C4 7F 76 42 36 80 00 44 65	6D 68

Every 4 bytes are one measurement item: the first 2 bytes are the low word and the last 2 bytes the high word. Place the high word first, then convert as FLOAT:

Measurement item	Data	High word first	Value
Temperature	79 A4 41 C4	41 C4 79 A4	24.56 °C
Humidity	7F 76 42 36	42 36 7F 76	45.62 %RH
Light	80 00 44 65	44 65 80 00	918 lx

For conversion, you can use this online tool: https://gregstoll.com/~gregstoll/floattohex/

Revision History

Version	Revision date	Revision description	Maintenance personnel
V1.00	2026/11/10	Initial release	Ran

About us

717 No. 33, Ln. 428, Sec. 3, Wenhua Rd., Rende Dist., Tainan City, Taiwan
TEL: +886-6-311-0008
FAX: +886-6-311-0522
Tax ID number 28529427
https://www.jnc-tec.com.tw
Email: jnc.jnc@msa.hinet.net

JNC reserves the right to modify this manual without prior notice.