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CONOTEC

CONOTEC CO., LTD.

DIGITAL TEMPERATURE CONTROLLER

ISO 9001:2008

CNT-WJ24 , CNT-WJ24-1 Instruction Manual

- A user manual for this product is posted on the company website.
- Please download the technical document and communications manual on the company website

01 Safety precautions

Please read the safety precautions carefully for correct operation of the product.

※ The specifications and dimensions specified in this instruction manual may be changed without any notice for performance enhancement.

⚠ Warning

1. This product was not made as a safe device. Therefore, this product should be attached with dual safety devices if it is used for the control purposes (e.g. a device vulnerable to accident and property damage, etc.).
2. Do not wire, inspect or service this product while the power is being supplied.
3. You must attach this product to a panel. Otherwise, it may cause an electric shock.
4. When connecting the power, you must check the terminal number.
5. Do not ever disassemble, process, modify or repair this product.

⚠ Caution

1. Please make yourself familiar with all the operation instructions, safety precautions and warnings before using this product. Comply with related specifications and capacity requirements
2. Do not wire or install this product to any unit with high inductive load (e.g. motor, solenoid, etc.).
3. Use a shielded cable with a proper length when extending a sensor.
4. Do not use any part that generates an arc when used in the same power or directly switched in close proximity.
5. Keep the power cable away from a high-voltage cable and do not install this product in any place that is full of water, oil and dust.
6. Do not install this product in any place that is exposed to direct sunlight or rain.
7. Do not install this product in any place that is subject to strong magnetic power, noise, vibration or shock.
8. Keep this product away from any place that generates strong alkaline or acid substances. Use a separate pipe.
9. Do not sprinkle water onto this product for cleaning when installing it in the kitchen.
10. Do not install this product in any place where the temperature/ humidity ratings are exceeded
11. The sensor cable should not be cut or cracked..
12. Keep the sensor cable away from a signal cable, a power cable or a load cable. Use a separate pipe.
13. Keep in mind that the follow-up service will not be available if this product has been arbitrarily disassembled and modified
14. ⚠ symbol on the terminal wiring diagram indicates a safety statement that alerts a warning or caution.
15. Do not use this product near any device generating strong high-frequency noise (e.g. high-frequency welding machine high-frequency sewing machine, high-frequency radio, large-capacity SCR controller, etc.).
16. Using this product in any method other than those specified by by the manufacturer may lead an injury or a property damage
17. The product is not a toy. Keep it away from children.
18. The product should be installed only by an expert or a qualified person.
19. The company will not be liable for any damage caused by the violation of the above warnings and cautions or by a consumer's fault

⚠ Danger

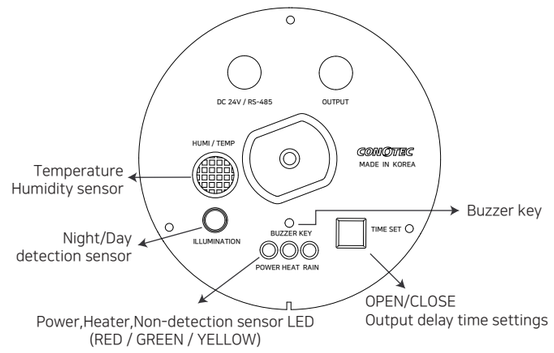
Caution: Risk of electric shock

- Electric shock - Do not touch the AC terminal while the current is flowing. It may cause an electric shock.
- Please intercept input power surely when input power check

02 Model Types

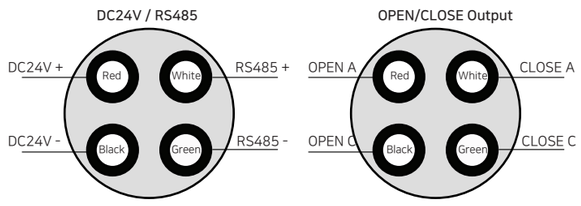
Model	Sensor	Control Output	Temp.Humi Range	Power	Function
CNT-WJ24	NTC 10K, SHT 30	Relay Contact (2EA)	- 55.0 ℃ ~ + 99.9 ℃ 10 % ~ 90% Rh	AC / DC 22 ~ 36V 500mA or more	Rain detection Output Control RS485 communication
CNT-WJ24-1		Relay Contact (1EA)			Rain detection Output Control

03 Components

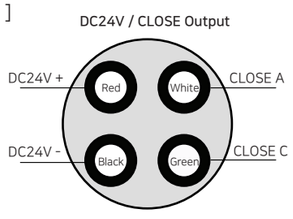


04 Terminal wiring diagram

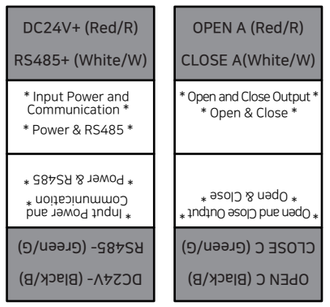
[CNT - WJ24]



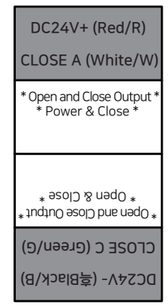
[CNT - WJ24 - 1]



[CNT - WJ24]



[CNT - WJ24 - 1]



※ A connection sticker is attached to the end of the cable. Connection to specification. For input power, it can be used in both AC and DC.

05 Function details

■ Time Set

※ Set delay time of OPEN/CLOSE output operated according to rain detection

OPEN delay time		CLOSE delay time	OPEN delay time		CLOSE delay time
0	0 SEC	0 SEC	4	2 MIN	10 SEC
1	10 SEC	10 SEC	5	0 SEC	30 SEC
2	30 SEC	10 SEC	6	10 SEC	1 MIN
3	1 MIN	10 SEC	7	30 SEC	2 MIN

■ Principle of Operation

1. If rain is detected on only one side of the sensing plate, the green LED is lit and the heater on the sensing plate operates
2. If rain is detected on at least two sides of the sensing panel, an amber LED will illuminate and open If the sensor panel is detected to be dry on at least two sides, the yellow LED will turn off and close
3. If rain is not detected on all three sides of the sensing plate and only one or two sides are detected, it is determined that dirt or foreign substances are stained on the sensing plate and dirt detection occurs.
4. If dirt or foreign substances appear on the detection panel, or if it is not dried well for a long time, the buzzer will be automatically returned and the buzzer will disappear.
5. Day/night is judged by day/night detection sensors to prevent dew formation on the sensing plate at night by heater heating.
6. The heater temperature of the sensing plate is automatically controlled according to the operating principles of the room temperature sensor and the day/night sensor.
7. If you press the buzzer key for more than 3 seconds, you can switch to the buzzer on/off mode. (There's a beep sound when changing the mode.)
8. The cause of the alarm is if there is an abnormality in the internal sensor element or part, or if dirt and foreign substances occur in the detection panel
9. If an ER1 error is detected during the communication data, it will be temporarily booted to its initial value and make an A/S request to us.

■ Precautions

1. If there is a foreign object on the sensing panel, the cause of the malfunction is So, please clean it regularly.
2. If abnormal substances, including bird droppings, are buried on the detection plate, it may cause corrosion, so wipe it off as soon as possible.
3. Please avoid installing in places with strong lighting, including streetlights.
4. If water enters the product, it may cause failure, so do not let water enter the product.
5. The mute function (booster OFF) prevents buzzing when an alarm is raised (see operating principle for the buzzer on/off method)
6. If the condition LED blinks on the lower plate of the product and the buzzer continues to sound, there is an abnormality in the internal sensor element or part, so please request an after-sales service to us.
7. Wiring in accordance with the single self-determination line.

06 Communication interface

* Equipped with bulit in protocols RS485 MODBUS RTU.
* Asynchronous 2-wire half-duplex communication method.
* Communication distance : 1.2Km
* Communication Speed : 1200 / 2400 / 4800 / 9600 / 19200BPS
* Start Bit : 1Bit, Stop Bit : 1Bit, Parity Bit : None, Data Bit : 8Bit

■ Interface

Applicable specification	EIA RS485
Max. Number of Connections	32units(Address setting can be from 1~99)
Communications method	2Wired Half-Duplex, Asynchronous
Communications speed	1200/2400/4800/9600/19200bps(Selectable)
Communications distance	Within 1.2Km
Communications Protocol	Modbus
Start Bit, Stop Bit	Fixed 1Bit
Parity Bit , Data Bit	Parity Bit : None , Data Bit : Fixed 8Bit

[Func 0x02 : Read Discrete Inputs] - Simple information, E.G. status, can be received in the from of bits.

[Request]

Sub products address	command	start address		number of data		CRC16	
		high byte	low byte	high byte	low byte	low byte	high byte
1BYTE	0x02	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

Request 01 02 00 00 00 01 B9 CA
Response 01 02 01 00 A1 88
00000000
100001 (0000) sensor openend error

[Response]

Sub products address	command	Number of data	Data	CRC16	
				low byte	high byte
1BYTE	0x02	1BYTE	1BYTE	1BYTE	1BYTE

[MAP]

NO	Address	Description	Range		Unit	Value at shipment
100001	0000	Temperature sensor open error	bit0	0:No error, 1:open error		
		Temperature sensor short error	bit1	0:No error, 1:short error		
		Humidity sensor open error	bit2	0:No error, 1:open error		
		Humidity sensor short error	bit3	0:No error, 1:short error		
		Product Abnormality	bit4	0:No error, 1:Error occurred		
		Filth Detection	bit5	0:No error, 1:the generation of filth		

[Func 0x03 : Read Holding Registers] - You can read the settings.

[Request]

Sub products address	command	start address		number of data		CRC16	
		high byte	low byte	high byte	low byte	low byte	high byte
1BYTE	0x04	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

byte numbers = data numbers * 2
data numbers = if 23 receive total 23 data, 46 bytes

[Response]

Sub products address	command	Byte numbers	DATA1		...	DATA n		CRC16	
			high byte	low byte		high byte	low byte	low byte	high byte
1BYTE	0x04	1BYTE	1BYTE	1BYTE		1BYTE	1BYTE	1BYTE	1BYTE

[Func 0x06 : Write Single Register] - You can change the setting one by one.

[Request]

Sub products address	command	writing address		number of data		CRC16	
		high byte	low byte	high byte	low byte	low byte	high byte
1BYTE	0x06	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

Func.06 Write Single Register is written correctly, the contents of Repuest and Response is same.

[Response]

Sub products address	command	writing address		number of data		CRC16	
		high byte	low byte	high byte	low byte	low byte	high byte
1BYTE	0x06	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

[Func 0x10 : Write Multiple Registers]

Several items of the setting values can be changed at a time.
When writing multiple registers, if any of the data has errors, all of them will not be written.
Use Func 0x06, as the Func 0x10 command is not available during autotuning.

[Request]

Sub products address	command	writing address		number of data		Byte numbers	DATA1		...	DATA n		CRC16	
		high byte	low byte	high byte	low byte		low byte	high byte		high byte	low byte	low byte	high byte
1BYTE	0x10	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE		1BYTE	1BYTE	1BYTE	1BYTE

[Response]

Sub products address	command	writing address		number of data		Byte numbers	DATA1	
		high byte	low byte	high byte	low byte		low byte	high byte
1BYTE	0x10	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

data numbers = byte number * 2

[MAP] Func 0x03, 0x06, 0x10

NO	Address	Description	Range	Unit	Value at shipment
400001	0000	Temperature1 setting value	-20.0 ~ 80.0℃	℃	20.0℃
400002	0001	Temperature2 setting value	-20.0 ~ 80.0℃	℃	20.0℃
400003	0002	Temperature3 setting value	-20.0 ~ 80.0℃	℃	20.0℃
400004	0003	Temperature4 setting value	-20.0 ~ 80.0℃	℃	20.0℃
400005	0004	Humidity1 setting value	0.0 ~ 100.0%	%	20.0%

[Func 0x04 : Read Input Registers]

- Current temperature, sensor status, decimal point, output status, etc
  You can try receiving simple information.

[Request]

Sub products address	command	start address		number of data		CRC16	
		high byte	low byte	high byte	low byte	low byte	high byte
1BYTE	0x04	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

byte numbers
= data numbers * 2

data numbers = if 5
total 5 numbers data,
10 numbers byte receiving

[Response]

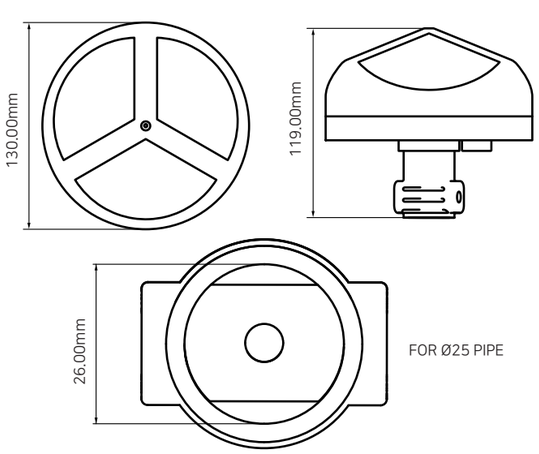
Sub products address	command	Byte numbers	DATA1		...	DATA n		CRC16	
			high byte	low byte		high byte	low byte	low byte	high byte
1BYTE	0x04	1BYTE	1BYTE	1BYTE		1BYTE	1BYTE	1BYTE	1BYTE

[MAP]

NO	Address	Description	Range		Unit	Value at shipment
30101	0064	Current Temperature	-55.0~99.9		℃	
30102	0065	Current Humidity	10~90		%	
30103	0066	Temperature Sensor	bit0	0:No error, 1:open error		
			bit1	0:No error, 1:short error		
		Humidity Sensor	bit2	0:No error, 1:open error		
			bit3	0:No error, 1:short error		
		Output Status	bit4	CLOSE , 0:OFF,1:ON		
			bit5	OPEN , 0:OFF,1:ON		
		Illumination Condition	bit6	0: Day , 1: Night		
		Non-detection Sensor	bit7	Plate 1 0: Not detected 1: detected		
			bit8	Plate 2 0: Not detected 1: detected		
			bit9	Plate 3 0: Not detected 1: detected		
		Product Abnormality	bit10	0:No error, 1:Error occurred		
		Filth Detection	bit11	0: No filth, 1: filth generation		
		ER1 Occurrence	bit12	0:No error, 1:Error occurred		

07 Diemension and panel hole sizes

(Unit : mm / error : ±0.5)



※ The above specifications may be changed without any notice for performance enhancement. Please make yourself fully familiar with and follow the above precautions.

- ■ Warranty period: One year from the date of purchase
- ■ Address : (Street address) 56, Ballyongsandan 1-rp, Jangan-eup, Gijang-gun, Busan, ROK
  (Land-lot address) 901-1, Ballyong-ri, Jangan-eup, Gijang-gun, Busan, ROK (46034)

- • Product service : 070-7815-8289
- • Customer service : 051-819-0425 ~ 0427
- • FAX : 051-819-4562
- • Email : conotec@conotec.co.kr
- • SNS : Facebook, Instagram, Twitter, YouTube ▶ 'Search for '**Conotec**'
- • Website : www.conotec.co.kr

◈ **Installation precautions**

- ■ This device sholuld be connected to a protective earth terminal and a power supply in order to prevent an electric shock.
- ■ Do not block the air outlet.

◈ **Operation precautions**

※ An operating environment of this device is as follows.

- ■ Ambient temperature : 0 ~ 60℃
- ■ Ambient humidity : 80%RH or less
- ■ Indoor uses only
- ■ Pollution class 2
- ■ Altitude under 2000m
- ■ Installation category : II
- ■ This device should be laid out in a way that its power cord is easy to handle.
- ■ Using this product in any method other than those specified by the manufacturer may damage its protection function

■ **Major products and development**

- • Temperature/humidity controller
- • Counter and timer controller
- • Current and voltage panel meter
- • Temperature/humidity indicator
- • Oven controller
- • CO2 controller
- • PID controller
- • Unit cooler controller
- • Heat pump controller
- • Chiller controller
- • Thermo-hygrostat controller
- • Short message alarm
- • Temperature/ humidity transmitter
- • Smartphone app and monitoring system

※ This manual was prepared in the Naver Nanum fonts.