



CONOTEC CO., LTD.  
DIGITAL TEMPERATURE CONTROLLER



CNT-TM100

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 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

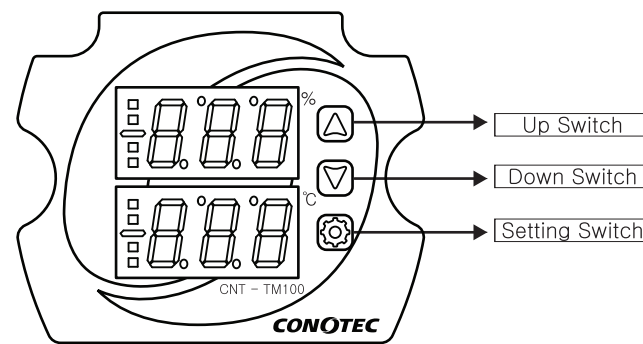
Caution: Risk of electric shock

- Electric shock – Do not touch the AC terminal while the current is flowing. It may cause an electric shock.
- You must disconnect the input power when servicing it.

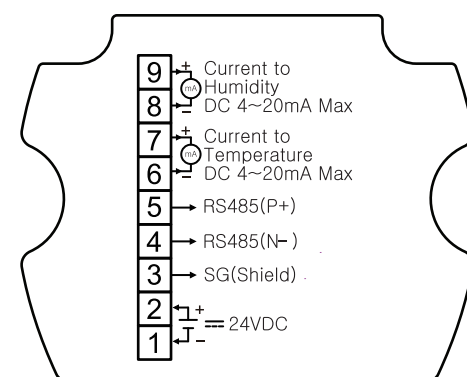
### 02 Model Types

Input Power	More than 24VDC 100mA	Display accuracy	±1% rdg ± 1 digit
Display Method	7 segment 0.51inch 4Digit 2Line		
Output	(Temp and Humid) current output 4~20mA		
Sensor	Sensor Name	Temp. Range	Humid Range
	SHT30	-20.0℃~80.0℃	0%~100%Rh
Communication	RS485, MODBUS RTU, Data 8 bit, Parity None, Stop bit 1		
Ambient Range	-20.0~80.0℃, 0~100%Rh		

### 03 Name of Each Part



### 04 Terminal connection diagram



### 05 Order of setting Value Changes

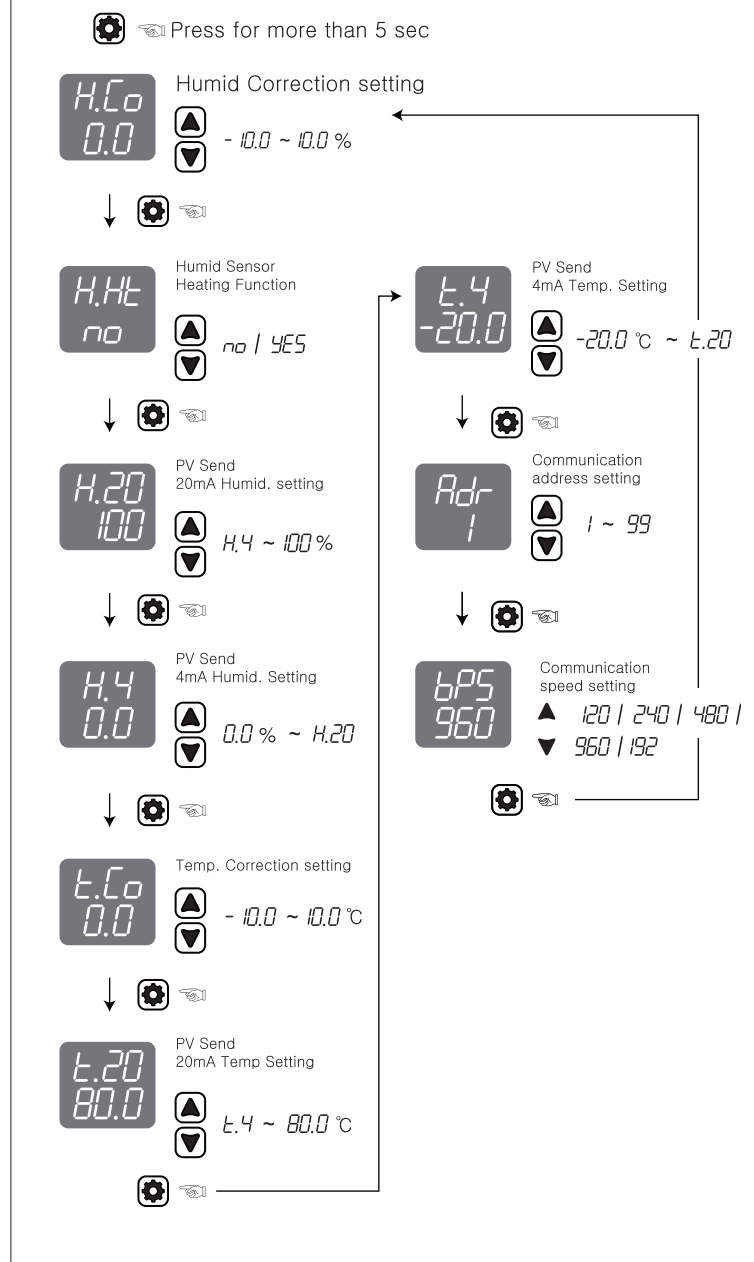
#### Setting Method

Name	Image	Content
Setting Key	⚙️	Program Setting Change Data Value Selection and Storage
Up & Down Key	▲ / ▼	Selected Menu Data Up/Down

#### ■ Installer Mode Function Setting (Program Settings)

- 1) ⚙️ Press and hold the key for more than 5 seconds to enter installer Mode.
- 2) Set the program settings by following the diagram
- 3) ⚙️ Press and hold the key for 5 seconds to save the settings.

#### Program Setting (The value of each item is the factory setting.)



### 06 Detail Description of the Function

#### H.Co : Humidity Correction

- The product works fine but corrects errors from the input sensor or humidity deviations.

Ex) Actual Humid. : 10.0%  
Display output : 12.0%  
→ H.Co Change 0.0 to -2.0  
→ Display as 10.0 (corrected current humidity)

#### H.Ht : Humid Sensor Heating Function

- When humidity is very high, condensation can form around the sensor. To prevent this, the sensor generates heat internally when the humidity exceeds 95%.
- **YES Setting** : When the current humidity exceeds 95%, the heating function activates automatically. It turns off when the humidity drops below 95%.
- **no Setting** : The automatic heating function is not used.

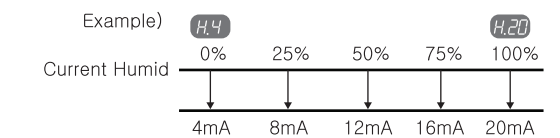
⚠ Caution : When the humidity sensor heating function is active, the current temperature on the display may slightly increase.

#### H.20 : Set humidity for PV transmission at 20mA.

- Set the humidity corresponding to a 20mA current output in the PV transmission output.

#### H.4 : Set the humidity for a 4mA output in the PV transmission.

- Set the humidity for a 4mA current in the PV output.
- The current humidity is sent as a 4~20mA output, with the humidity range set between H.20 and H.4 divided evenly.



#### T.Co : Temp. Correction Setting

- The product itself is fine, but it has a correction function for errors in the input sensor or when the temperature differs from the reference temperature.

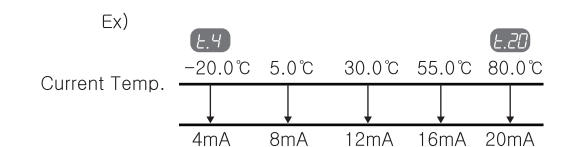
Ex) Current Temp. : 10.0℃  
Display output : 12.0℃  
→ T.Co Change 0.0 to -2.0  
→ Display as 10.0 (corrected current humidity)

#### T.20 : Set the temperature for a 20mA PV output.

- Set the temperature corresponding to a 20mA output in the PV transmission.

#### T.4 : Set the temperature for a 4mA PV output.

- Set the temperature for a 4mA output in the PV transmission.
- The current temperature is sent as a 4~20mA output, with the temperature range set between T.20 and T.4 divided evenly



#### Adr : Set the communication code

- When using RS485 communication, you need to set a station number from 1 to 99.

#### bPS : Set the communication speed

- 1200BPS / 2400BPS / 4800BPS / 9600BPS / 19200BPS

## 07 Communication Description

### Interface

Applicable Standards	EIA RS485 Standard Compliance
Maximum Number of Connections	32 units (Address Setting is available from 1 to 99)
Communication Method	2-wire half-duplex, asynchronous
Communication Speed	1200/2400/4800/9600/19200bps(Selectable)
Communication Distance	Within 1.2Km
Communication Protocol	Modbus
Start Bit, Stop Bit	Fixed at 1 Bit
Parity Bit, Data Bit	Parity Bit: None, Data Bit: Fixed at 8 Bit

#### [ Func 0x02 : Read Discrete Inputs ]

Simple information, such as status indicators, can be received in bit form

##### [ Request ]

Sub-product address	Command	Starting Address		Number of Data		CRC16	
		Upper Byte	Lower Byte	Upper Byte	Lower Byte	Lower Byte	Upper Byte
1BYTE	0x02	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

##### [ Response ]

Sub-product address	Command	Number of Byte	Data	CRC16	
				Lower Byte	Upper Byte
1BYTE	0x02	1BYTE	1BYTE	1BYTE	1BYTE

Request 01 02 00 00 00 01 B9 CA  
Response 01 02 01 00 A1 88

00000000  
10001 (0000)  
Sensor Open Error

##### [ MAP ]

NO	Address	Description	Range	Unit	Open Value
10001	0000	Sensor open error	bit0 0:No Error, 1: Open Error		

#### [ Func 0x04 : Read Inputs Registers ]

You can receive simple information, such as current temperature, current humidity, sensor, and output status.

##### [ Request ]

Sub-product address	Command	Start Number		Number of Data		CRC16	
		Upper Byte	Lower Byte	Upper Byte	Lower Byte	Lower Byte	Upper Byte
1BYTE	0x04	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

Number of Bytes = Number of data \* 2  
Number of data = Five data if five, receive 10 bytes

##### [ Response ]

Sub-product address	Command	Number of Bytes	Data 1		...	Data n		CRC16	
			Upper Byte	Lower Byte		Upper Byte	Lower Byte	Lower Byte	Upper Byte
1BYTE	0x04	1BYTE	1BYTE	1BYTE		1BYTE	1BYTE	1BYTE	1BYTE

##### [ MAP ]

NO	Address	Description	Range	Unit	Output Value
30001	0000	Current Temperature	-20.0 ~ 80.0℃		
30002	0001	Current Humidity	0 ~ 100.0%		
30003	0002	Sensor open error	bit0 0:No Error, 1: Open Error		
30004	0003	Temp. PV transmission output current	4.0mA~20.0mA		
30005	0004	Humid. PV transmission output current	4.0mA~20.0mA		

#### [ Func 0x03 : Read Holding Registers ]

You can read the setting menu

##### [ Request ]

Sub-product address	Command	Start Number		Number of Data		CRC16	
		Upper Byte	Lower Byte	Upper Byte	Lower Byte	Lower Byte	Upper Byte
1BYTE	0x03	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

Number of Bytes = Number of data \* 2  
Number of data = 23 data if 23, receive 46 bytes

##### [ Response ]

Sub-product address	Command	Number of Bytes	Data 1		...	Data n		CRC16	
			Upper Byte	Lower Byte		Upper Byte	Lower Byte	Lower Byte	Upper Byte
1BYTE	0x03	1BYTE	1BYTE	1BYTE		1BYTE	1BYTE	1BYTE	1BYTE

#### [ Func 0x06 : Write Single Registers ]

You can change the setting menu by one item.

If Func.06 Write Single Register is written normally, the details of Request and Response are the same.

##### [ Request ]

Sub-product address	Command	Writing Address		Number of Data		CRC16	
		Upper Byte	Lower Byte	Upper Byte	Lower Byte	Lower Byte	Upper Byte
1BYTE	0x06	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

##### [ Response ]

Sub-product address	Command	Writing Address		Number of Data		CRC16	
		Upper Byte	Lower Byte	Upper Byte	Lower Byte	Lower Byte	Upper Byte
1BYTE	0x06	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

#### [ Func 0x10 : Write Multiple Registers ]

You can change the setting menu by multiple items.

[ Request ] A multiple number of registers may not be written if there is an error in one of the data.

Sub-product address	Command	Start Number		Number of Data		Data 1		...	Data n		CRC16	
		Upper Byte	Lower Byte	Upper Byte	Lower Byte	Number of Byte	Lower Byte		Upper Byte	Upper Byte	Lower Byte	Upper Byte
1BYTE	0x10	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE		1BYTE	1BYTE	1BYTE	1BYTE

[ Response ] Number of Data = Number of Bytes \* 2

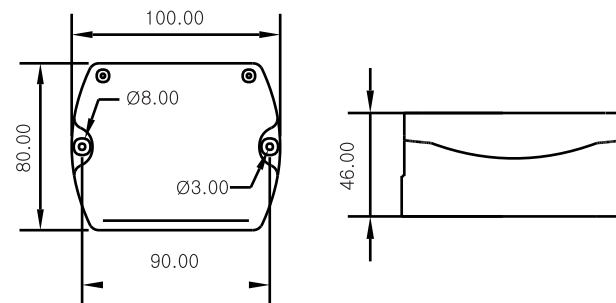
Sub-product address	Command	Start Number		Number of Data		CRC16	
		Upper Byte	Lower Byte	Upper Byte	Lower Byte	Lower Byte	Upper Byte
1BYTE	0x10	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE	1BYTE

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

NO	Address	Description	Range	Unit	Output Value
40001	0000	Humidity COR	-10.0 ~ 10.0%	%	0.0%
40002	0001	Whether to use sensor heating	0 : NO, 1 : YES		NO
40003	0002	PV transmission 20mA humidity	H.4 ~ 100%	%	100.0%
40004	0003	PV transmission 4mA humidity	0.0 ~ H.20%	%	0.0%
40005	0004	RS485 communication address	1~99		1
40006	0005	RS485 communication speed	1200/2400/4800/9600/19200	bP5	9600
40007	0006	Temperature COR	-10.0 ~ 10.0℃	℃	0.0℃
40008	0007	PV transmission 20mA temperature	T.4 ~ 80.0℃	℃	80.0℃
40009	0008	PV transmission 4mA temperature	-20.0 ~ T.20℃	℃	-20.0℃

## 08 Dimension and Panel Hole Sizes

(Unit : mm / Error : ±0.5)



## 09 Easy error diagnosis instructions

※ If an error is displayed while the product is running

• **E-F**: It is case where the product was subject to a strong external noise and internal data memories have been damaged. In this case, contact us for product service.

• Although this controller was designed to withstand a certain level of external noise, it is not supposed to withstand all levels of noise.

• If the product is subject to a noise greater than 2KV, it could be internally damaged.

• If **G-E** (open error) or **S-E** (short error) is displayed, there is something wrong with a sensor. Please check the sensor.

• If messages like **L-E** or **H-E** appear, it means the humidity or temperature display range has been exceeded. Please check the surrounding temperature and humidity conditions.

※ 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 : overseas-sales@conotec.co.kr  
• SNS : Facebook, Instagram, Twitter, YouTube ▶ 'Search for 'Conotec'  
• Website : www.conotec.co.kr

◆ Installation precautions

■ This device should 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.