Version 1.0(2021.06.17)



Digital Temperature Controller

CONOTEC CO., LTD.

www.conotec.co.kr

Registration of Design 0316273

ISO 9001:2008

Operating manual







CNT-2SH-1 (temperature/humidity)

CNT-2H (humidity

CNT-2H-2 (humidity)

* Thank you for selecting our products. please read carefully this instruction to reduce any damages or operation mistakes.

1 Model composition

Model	Output	Sensor	Humidity range	RS485
	Main:1c 250Vac2A Aux:1a 250Vac2A	HCPV-220H	0.0%~100.0%Rh	**
CNT-2SH-1	Main:1a 250Vac2A	DS-SH series	0.0%~100.0%Rh	*
CNT-2SHR	Aux:1a 250Vac2A	DS-SH series	0.0%~100.0%Rh	support

Safety and Hazard instructions

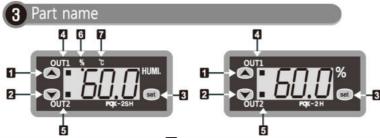
Please use this item after installing the duplex safety device in which is applied at dangerous factors such as serious human injury or serious damages of property & important machine because this item is not designed as safety device.

safety instruction and hazard warnings

- 1. Please read the operating manual through completely before putting the device into operation.
- 2. We will not assume any responsibility for damage to assets or persons caused by improper handling or failure to observe the safety instructions or hazard warnings
- 3. For safety and licensing reason, unauthorized conversion and/or modification of the device is not permitted.
- 4. Do not exceed the maximum permissible current in case of higher loads. use a contactor of adequate power. Make sure that the supplied voltage matches the values specified for the instrument.
- 5. The device must be adequately protected from water and dust as per the application and must be accessible via the use of appropriate tools.
- 6. The device must not be exposed to extreme temperature, sunlight, strong vibrations or high levels of humidity.
- 7. Operation or installation in not permitted under unfavorable ambient conditions such as wetness or excessive induction loads or solenoid and dust. combustible gases, vapors or solvents, especially hugh-frequency noise
- 8. Avoid operation or installation close to high-frequency fields such as welding devices, sewing machines, wireless transmitter, radio systems,
- SCR controller, etc 9. Do not install the sensor cable nearby signal cable, power cable, load cable.
- 10. Please use the shield cable when the sensor cable's lengthen, however do not make it too much longer.
- 11. Please use the sensor cable without any cutting or flaw, blemish 12. The device is not a toy and should be kept away from children.
- 13 installation work must only be carried out by suitably qualified personnel who are familiar with the hazards involved and with the relevant regulations
- 14. you shouldn't tinker with anything or the product may not be opened or disassembled unless you know what you're doing. Please ask us about this questioning



Attention! Never work on electrical connections when the machine is switched on



1 Setting up(UP) 2 Setting down(DN)

4 Main ouput

5 Auxiliary ouput 6 Humidity display(CNT-2SH(R)) 3 setting switch(SET)

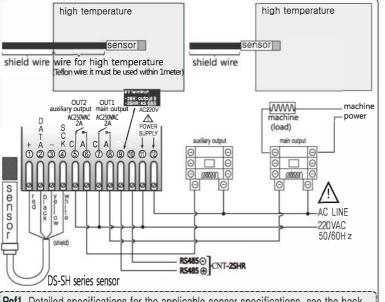
7 Temperature display(CNT-2SH(R))

CNT-2SH(R): humidity display and cotrol + temperature display for the currency status display, there're 3 kinds of mode, as a switch of <UP(increase), DN(decrease)>, you can change the display like "Humidity/Humi&Temp/Temp".

CNT-2H, CNT-2H-2: humidity display and control

(4) Connection

< CNT-2SH-1/CNT-2SHR>



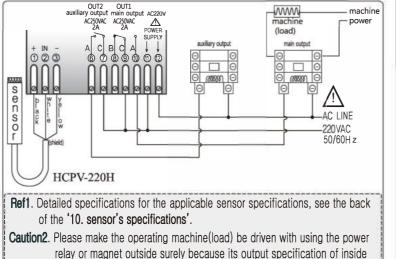
Ref1. Detailed specifications for the applicable sensor specifications, see the back of the '10. sensor's specifications'

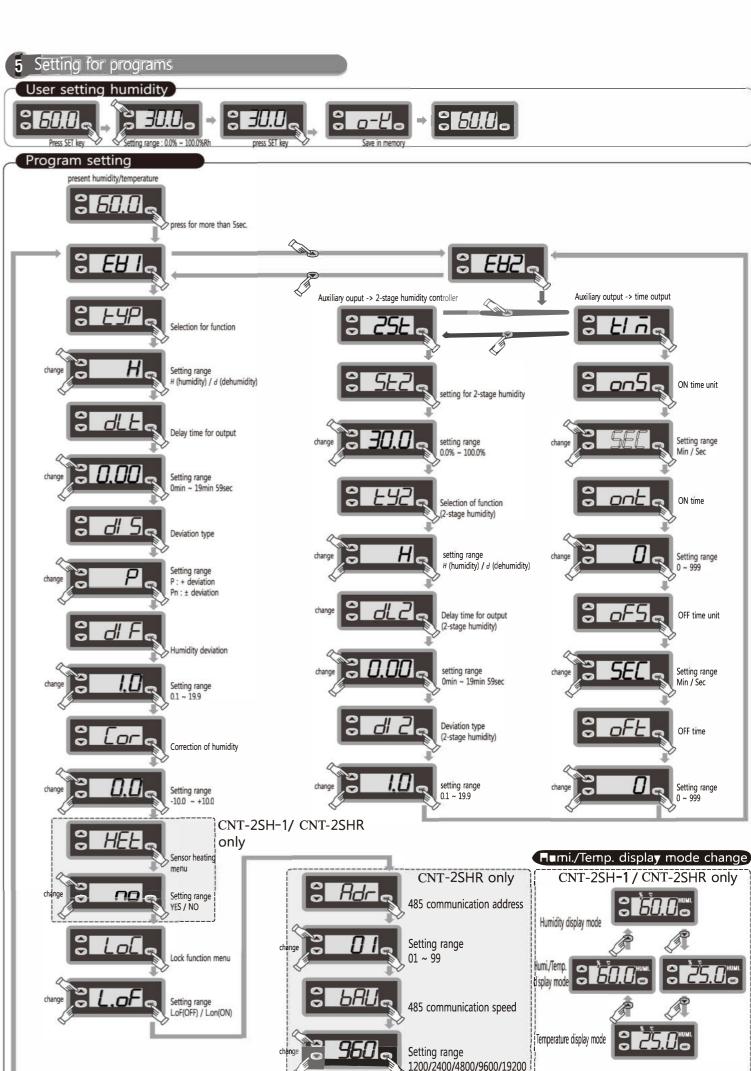
Caution 1. Please make use of the shield wire when lengthening of the sensor wire, and in case of using in the high temperature range of 65℃~80℃, surely use the high temperature using wire(Teflon wiring).

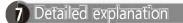
Caution2. Please make the operating machine(load) be driven with using the power relay or magnet outside surely because its output specification of inside relay is Jess than 250VAC 2A

<CNT-2H, CNT-2H-2 >

relay is less than 250VAC 2A







1 FH | Set value of the main output

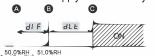
2 F4P Selection for function

H: humidity d: dehumidity

3 dLE Delay time of the output - It is widely used as the followings

• in case of operating the ON/OFF control very often

• to protect the operation machinery when re-input of the power supply or momentary stoppage of power supply



ex) if the set value is 1.30,

from **B** until **G** time -> the relay is ON in the point after as delay as the DLT setting time(1min 30sec).

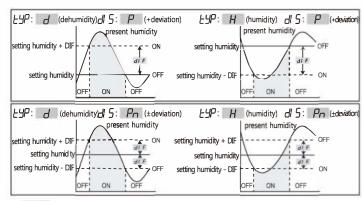
(flickering the output lamp during the time)

4 4 5 Selection of the deviation for a main output

P: + deviation $P_n: \pm deviation$

5 H F Setting for temperature deviation

In the ON/OFF control, it needs at regular interval between ON and OFF. By operating the ON/OFF control frequently, the relay or its output contact can be damaged quickly and it also occurs the hunting(oscillating, chattering) by virtue of external noise. You can make use of the temperature deviation in order to protect its relay or contact and so on.



6 Correction of the present humidity

Correction function for an discrepancy between the present's display value and the actual value(accurate value)

ex) An actual humidity value is 55.5%RH only, but the present humidity's display value was 57.5%RH

=> You may use this function and can correct the display's humidity value by -2.0%RH

Caution. Actual humidity is validated the performance and accurately calibrated by using the equipment to produce. If an inaccurate equipment calculated on the basis of the actual humidity calibration, it can be caused problems with product operation.

7 HFF Heating element for humidity sensor (only CNT-2SH-1) It is possible to be covered with dew when the humidity is high, If the present humidity is 95%RH, it is generated heat inner its sensor in order to prevention of dewy.

45 It is operated the heating function automatically if the humidity is more than 95%RH. It is removed it if the humidity is less than 95%RH

The heating function will be prohibited.

* Caution-It must be set up "NO" because the heating function can not be used for more than 95%RH

* R.F) The present temperature's display can be increased a little while operating of the humidity sensor's heating function

8 / of Lock function of setting data

As a safety device, it is used in orser not to change the set value except for an main user

L.or Setting for lock function L.oF removal for lock function

9 Pdr RS485-communication address setting

The product FOX-2SHR supports RS485 communications, when communicating with the master device for mutual recognition is the ability to set the communication address.

IN LA!! RS485-communication speed setting

when communicating with the master device to the exchange of accurate data must match the communication speed.

II FH? Set values for an auxiliary

12 75+ auxiliary output -> 2-stage output

13 5/-2 change of the setting humidity for an auxiliary output

14 F47 Output type for an auxiliary output

H: humidity d: dehumidity

II dL ≥ Delay time of the auxiliary output see the 3. dLt menu

16 d 2 Humidity deviation of the auxiliary output see the 5. d F menu

17 El n auxiliary output -> time output

18 on 5 auxiliary output on time

ala: setting for a minute unit 550: setting for a second unit

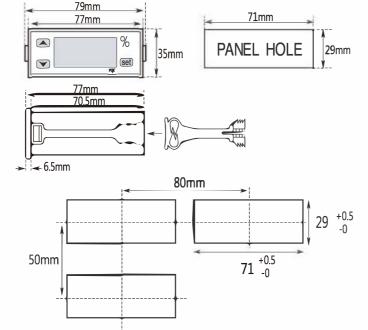
19 ont auxiliary output -> on time

20 nFS auxiliary output off time

n setting for a minute unit 5EC: setting for a second unit

21 nFL auxiliary output -> off time

8) Size & dimension



g Setting range & Set value when deliver

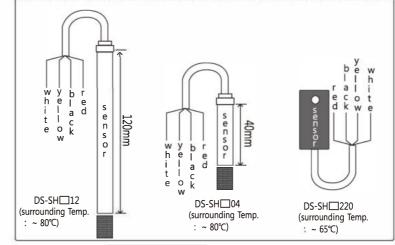
Model Divisi		Division	Function		Range	set value when deliver		
				5EŁ	setting for humidity	0.0~100.0%Rh	30.0%Rh	
		c	Main	LYP	selection for function	H / d	H (humidity)	
		N	output	dLE	delay time for output	0.0~19min 59sec	0min 0sec	
	T		di F	humidity deviation	0.1 ~ 19.9	0.1		
c c		-	main /2-stage	di 5	deviation type	P / Pn	P(+deviation)	
N	1 N 2		Sensor	Cor	correction of humidity	-10.0 ~ +10.0℃	0.0℃	
Т	r T <u>t</u>	H	main /2-stage	LoC	lock function	L.on/L.oF	L.oF	
2 2 S S H H R -	c	auvilian.	5£2	setting humidity 0.0~100.0		30.0%Rh		
	_	N	auxiliary output	F72	selection for function	H / G	H(humidity)	
		۱т∣ ۹	(2-stage)	dL2	delay time for output	0.0~19min 59sec	0min 0sec	
	<u>-</u>	2		ď 2	humidity deviation	0.1 ~ 19.9	0.1	
	1	H	auxiliary	on5	ON time unit $\sqrt{5}$		<i>5EE</i> (sec)	
		l'il	output	onE	setting for ON time	0 ~ 999	0	
	2	(time)	oF5	setting for OFF time unit	nl n/58E	5EE (sec)		
				oFŁ	setting for OFF time	0 ~ 999	0	
		Sensor		HEL	heating function for the humidity sensor	YES/no	no	
	communication		Rdr	485 communication address	01 ~ 99	01		
					485 communication speed	120 (12008ps) 240 (24008ps) 480 (48008ps) 960 (96008ps) 4920 (192008ps)	950 (9600Bps)	

10 Sensor's specifications

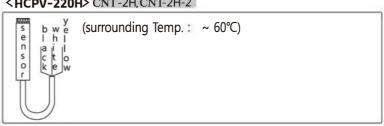
< DS-SH series > CNT-2SH-1 CNT-2SHR

Model: DS-SHATH **A**(Humidity Accuracy) **H**(Housing Type) - 0: ±4.5% - 04 : Stainless Body Length 40mm(To the ambient temperature is 80°C) - 1: ±3.0% - 12: Stainless Body Length 120mm(To the ambient temperature is 80°C) - 5: ±2.0% - 220 : Plastic Case Caution 1. When using a communication shield wire, the distance sensor installation is within 20m.

Caution2. In addition to using the shield, when using a wire, the distance sensor installation is within 3m. Caution3. Installation direction refers to the shown below.

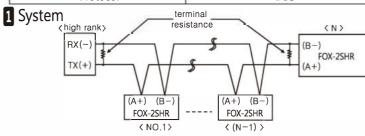


<hCPV-220H> CNT-2H, CNT-2H-2

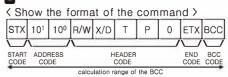


11 Communication interface (CNT- 2SHR)

specification	in conformity EIA RS485				
The method of communication	two wire half-duplex operation				
syncronous system	asyncronous system				
communication distance	within 1.2Km				
communication speed	1200/2400/4800/9600/19200bps				
StartBit	fixed 1bit				
StopBit	fixed 1bit				
ParityBit	none				
DataBit	fixed 8bit				
Protocol	BCC				



2 Definition between communication command and block



/ Chay the format of the response

STX	10 ¹	10º	R/W	X/D	Τ	Р	0		a decirri al point	error	output	ETX	ВСС
	$\overline{}$											\Box	$\overline{}$
START CODE	ADDI CO				EADER CODE			Humidity data				END CODE	BCC
•						C	alculation	range of the BCC					→

① START CODE Show the lead(head) of the block $STX \rightarrow [02H]$

② ADDRESS CODE

A high rank system can discriminates the channel code number among FOX-2SHR. It is available to set between 01 and 99(BCD ASCII)

3 HEADER CODE: Show the command name as a alphabetic letter RX(reading demand)-> R[52H], X[58H]

RD(reading response)> R[52H], D[44H] WX(writing demand)-> W[57H], X[58H] WD(writing response)-> W[57H], D[44H]

TP0(temperature measuring value) -> T[54H], P[50H], 0[30H]

(4) Composition of data: Data is displayed as "Hexa decimal"

⑤ Decimal point - 0[30H] there is no "decimal point" 1[31H] there is "decimal point"

⑥ Error- 0[30H]: there is no "error"

1[31H]: interrupted of the Sensor's cable

2[32H]: low error

	1[33H]	: high e	error					
① Outpu) [OO. 1]	high error		main	0	auxiliary		main
	output	time output	2-stage output	output	ŏutput	time output	2-stage output	output
		OFF	OFF	OFF	0x34	ON	OFF	OFF
	0x30			ON			OFF	ON
	0x31	OFF	OFF		0x35	ON		-
	0x32	OFF	ON	OFF	0x36	ON	ON	OFF
	0x02	OFF	ON	ON	0x37	ON	ON	ON

® END CODE: show the end(close) of the block ETX → [03H]

BCC(Black Check Character)

Show the XOR arithmetic and logic values from the start (STX) to the ETX

• the others: As of no response of the ACK

① in case of not equivalent to the channel after receving STX

2 in case of generating the receive buffer overflow

3 in case of not equivalent to the communication's set values or baud rate

treatment : in case of no response of the ACK

① check the cable

② check the communication's condition(set values)

3 if the main cause of the status is the noise, try to do communication practicing 3times until recovering nomally

4 change the communication speed in case of bring about the communication's error frequently

13 Error message

- Er ! Memory error. Turn the power off and turn it on again. If the error message persists, please request us A/S by return.
- \blacksquare \bigcirc \digamma Sensor error. The sensor is interrupted. Check the cable.
- 5-E Sensor error. The sensor is short-circuited. Check the cable.

X The product's specification can be changed without any notification to improve its quality.

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■ e-mail: conotec@conotec.co.kr ■ URL: www.conotec.co.kr

* This device works proper operation with: Surrounding Temp. : 0°C ~ 60°C Surrounding Humi.: below 80%RH Regular power: 220VAC ± 10% 50/60Hz

■ Main products & Development

- Digital temperature/humidity controller

- Digital timer, Current/voltage meter

- The other development products