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CONOTEC®

ISO 9001:2008

CONOTEC CO., LTD.

Digital Humidity Controller

www.conotec.co.kr

Operating manual

CNT-2SHA(R)

- ◆ Digital humidity controller
- ◆ Temperature display
- ◆ Temp./humi sensor application
- ◆ Auxiliary output select
  - 2 ouputs or Alarm ouput
- ◆ Applicable in the high temperature upto 80℃

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

Regarding the English - language manual, please download it at our homepage.

1 Model composition

Model	Output	Sensor	Range	RS485
CNT-2SHA	Main:1a 250Vac2A	DS-SH series	0.0%~100.0%Rh	-
CNT-2SHAR	Aux:1a 250Vac2A			support

2 Safety and Hazard instructions

Read carefully this instruction manual before use and use the product properly.

※ The specifications, appearance and dimension may be changed for improvement of performance without a prior notice

⚠ WARNING

1. This product is not made as a safety device, so when it is used for a control of devices feared to cause casualties, damages to the peripheral devices or huge property loss, the double safety devices should be arranged before use.
2. Avoid connecting lines, checking and repairing the products while power is supplied.
3. Connect power after making sure the terminal number.
4. Never disassemble modify, improve or repair the product.

⚠ Safety

- Be well-informed of how to use, safety regulations, warnings, etc before installation of this device and apply it to the extent of the defined specifications and relevant capacity without fail.
- Avoid wiring or installation to a motor or solenoid with a large inductive load.
- Use a shiled cable for extention of the sensor and ensure not to make it longer than the necessity.
- Ensure not to use the parts generating arc when switching at the same power source or near to it.
- Keep the power cable away from a high-tention power line and ensure not to install it at a place with serious oil and dirt.
- Avoid strong magnetic field or serious noise, vibration or impact.
- Keep away from the place where strong alkaline or acid material is directly released and use an independent pipe line.
- When it is installed at kitchen, ensure not to pour water directly over the product for cleaning.
- Keep the sensor cable away from signal line, power source, power line or loaded line and use an independent pipe line.
- Note that the mark of ⚠ in terminal connection diagram is the safety expression for warnings or cautions.
- Avoid using the product close to the device generating noises(high frequency welder, high frequency sewing machine, high frequency radio, large capacity SCR Controller, etc).
- The use in any way other than what is instructed by the manufacturer may cause injury or property loss.
- It is not a toy and keep it out of reach of children's hand.
- The installation of the device should be performed by an expert or a qualified personnel without fail.
- We shall not take any responsibility for the damage caused by non-compliance with the above-mentioned warnings or cautions or by any consumer's mistake.

⚠ Danger

■ Attention, Danger related to electric shock

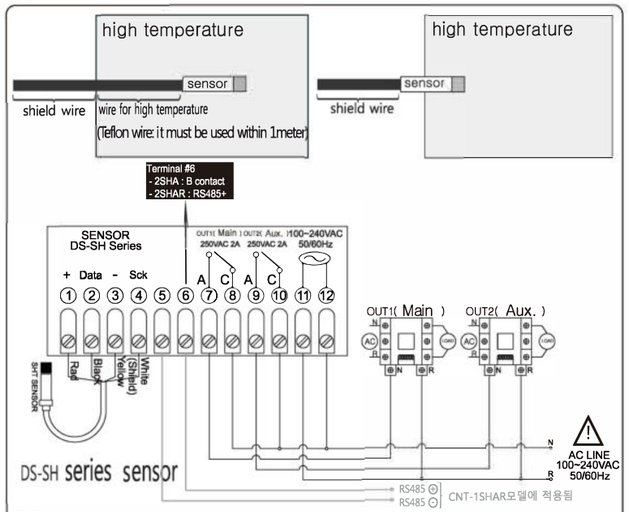
- Electric shock -Do not touch AC terminal during application of electric current. It may cause electric shock.
- Cut the power supply without fail during checking the input power.

3 Part name

1 Setting up(UP)
2 Setting down(DN)
3 Setting switch(SET)
4 Main output display
5 Auxiliary output display
6 Humidity display
7 Temperature display

Current status display has 2 kinds of mode, can be change with the keys UP(increase)/DN(decrease) to " Humidity display /temperature display".

4 Connection

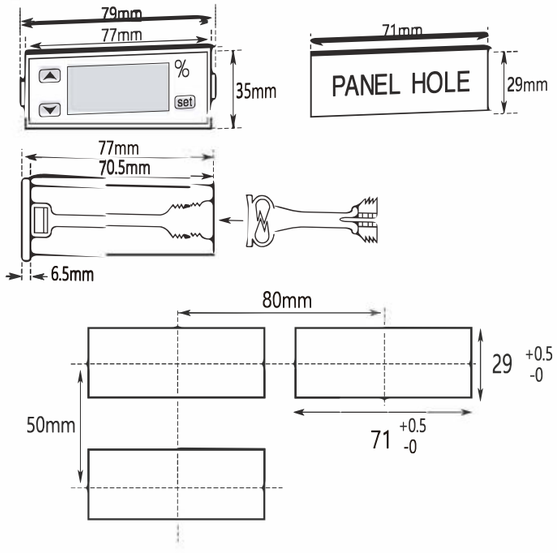


Ref1. Detailed specifications for the applicable sensor specifications, see the back of the '9 . sensor's specifications'.

Caution1. 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 less than 250VAC 2A

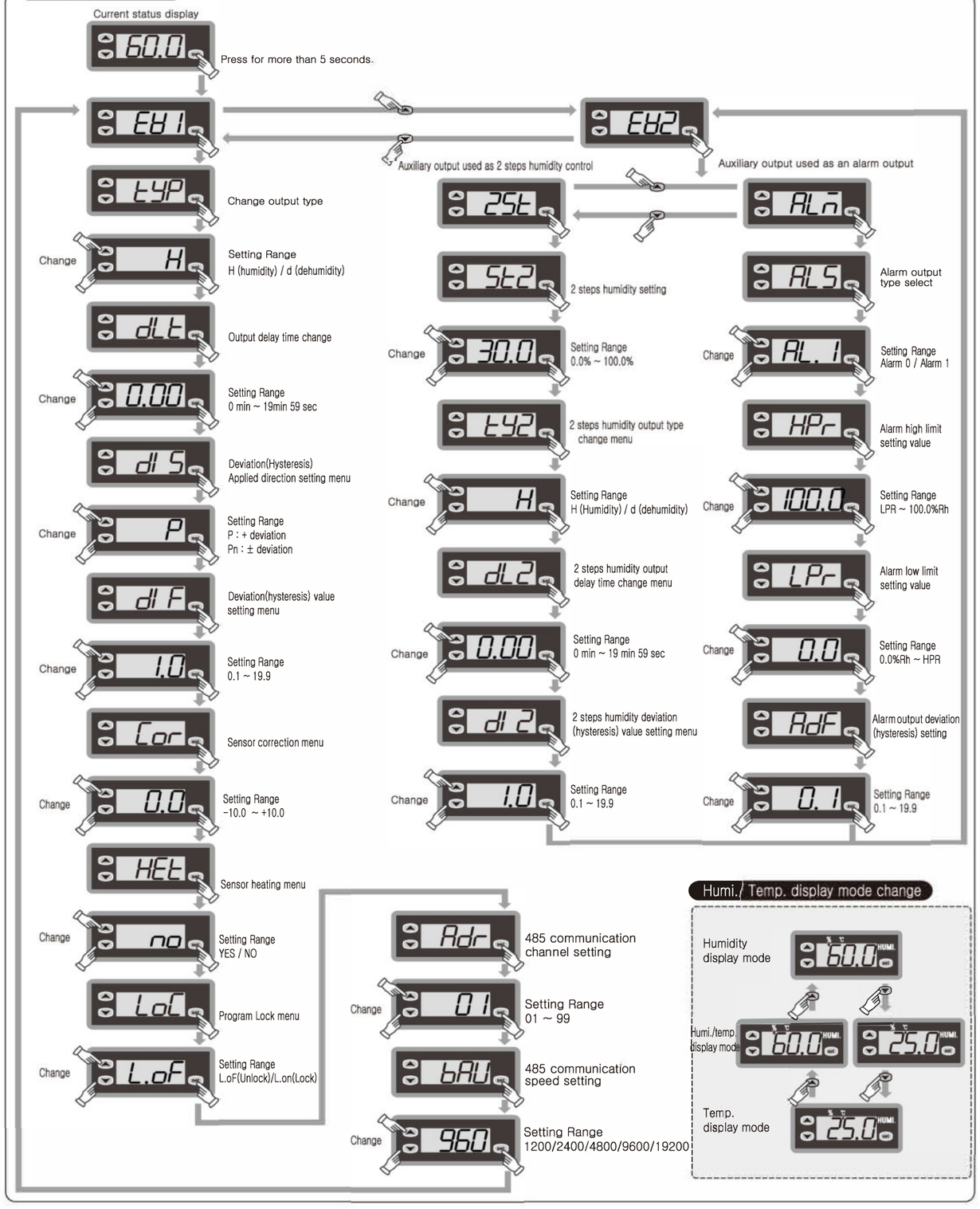
5 External size & panel size



6 Setting for programs

User setting humidity changing

Program setting



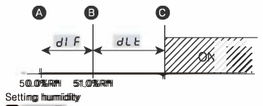
7 Detailed explanation

1 EU1 Display the setting for Main output(1 step output)

2 tYP Setting the output type for main output(1 step output)
H : humidity operation d : dehumidity operation

3 dLt Output delay time setting for main output(1 step output)

-Used when the control object repeats the ON/OFF frequently creating troubles. (Freezer, Compressor & etc.)
-Function protecting product from instantaneous power outage, or when re-engaging the power supply.

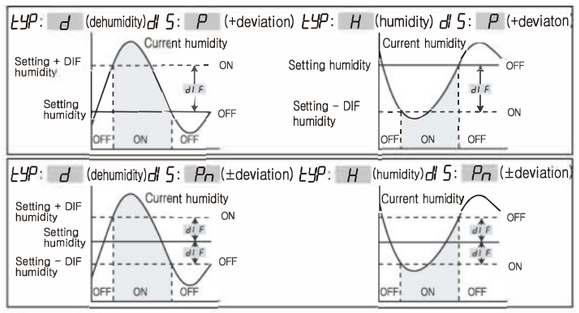


- Set humi. : 50%Rh, dLt: 1.30, tYP: d, dIF: 1.0
When is the output turned ON?
In increasing current humidity, if passes 51.0% at 'B' , after 1 min 30sec as DLT setting time, Relay is to be ON at 'C'.

4 dIS Setting the type of humidity deviation(Hysteresis) for main output(1 step output)
P : +deviaton Pn : ± deviation

5 dIF Setting output deviation for main output(1 step output)

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.
To avoid such phenomenon, by setting between ON and OFF at regular intervals, this function is able to protect the contacts of devices,and so on.



6 Cor Correction of the present humidity

Correction function for a 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 correctthe 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 HEt Heating element for humidity sensor

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

YES It is operated the heating function automatically if the humidity is more than 95.0 %RH. It is removed it if the humidity is less than 95.0 %RH

no The heating function will be prohibited.

Caution 1-It must be set up" NO" because the heating function can not be used for more than 95%RH

Caution 2-The present temperature's display can be increased a little while operating of the humidity sensor's heating function

8 LoC Setting data lock function

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

L.on Lock on L.oF Lock off

9 Adr RS485 Communication address setting

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

10 bAU RS485 Communication speed setting

The product FOX-2SHAR supports RS485 communications.
When communicating with the master device to the exchange of accurate data must match the communication speed.

11 EU2 Display as shown of auxiliary output

12 2St Use as 2 steps humidity output with an auxiliary output

13 St2 Change the set humidity of an auxiliary output (2 steps humidity output)

14 tY2 Output type setting of an auxiliary output (2 steps humidity output)
h : humidity d : dehumidity

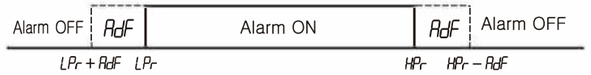
15 dL2 Output delay time setting of an auxiliary output (2 steps humidity output) 3. dlt Refer to the menu

16 dI2 Output deviation setting of an auxiliary output(2 steps humidity output) 5. diF Refer to the menu

17 ALn Setting as an alarm output with an auxiliary output

18 ALS Auxiliary output(alarm output) type setting
al.0 : Alarm output type out of range
Alarm will be ON when humidity displays out of setting range.

al.1 : Alarm output type within range
Alarm will be ON when humidity displays within setting range.



19 HPr Auxiliary output(alarm output) high limit alarm value setting

20 LPr Auxiliary o output(alarm o output) low limit alarm value setting

21 AdF Auxiliary output(alarm output) deviation(hysteresis) setting

8 Setting range & Set value when deliver

Model	Section	Setting menu		Range	Value when delivery
CNT-2SHAR	CNT-2SHA	Main output	SEt User's humidity setting	0.0~100.0%Rh	30.0%Rh
			tYP Output type setting	H / d	H (humidity)
			dLt Output delay time setting	0.0~19min 59 sec	0 min 0 sec
			dIF Output deviation setting	0.1 ~ 19.9	0.1
		Main/2steps	dIS Deviation type select	P / Pn	P (+deviation)
		Sensor	Cor Humidity sensor correction value	-10.0 ~ +10.0℃	0.0℃
		Main/2steps	LoC Program Lock function	L.on/L.oF	L.oF
		Auxiliary output (2 steps output)	St2 Auxiliary output humidity setting	0.0~100.0%Rh	30.0%Rh
			tY2 Output type setting	H / d	H (humidity)
			dL2 Ouput delay time setting	0.0~19min 59sec	0 min 0 sec
			dI2 Output deviation setting	0.1 ~ 19.9	0.1
		Auxiliary output (alarm output)	ALS Alarm type select	AL.0/AL.1	AL.0
			HPr High limit alarm value setting	LPr ~100.0%Rh	100.0%Rh
			LPr Low limit alarm value setting	0.0%Rh ~ HPr	0.0%Rh
			AdF Alarm deviation setting	0.1 ~ 19.9%Rh	0.1%Rh
		Sensor	HEt Humidity sensor heating function	YES / no	no
	Communication		Adr 485 comm. address setting	01 ~ 99	01
	Communication		bAU 485 communication velocity setting	120 (1200Bps) 240 (2400Bps) 480 (4800Bps) 960 (9600Bps) 1920 (19200Bps)	960 (9600Bps)

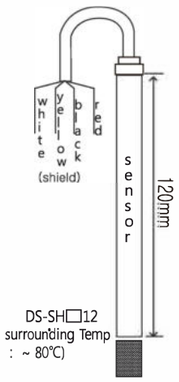
9 Sensor's specifications

< DS-SH series >

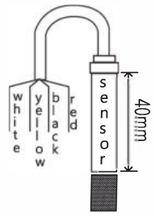
Model : DS-SH[A][H]

A(Humidity Accuracy)
- 0 : ±4.5%
- 1 : ±3.0%
- 5 : ±2.0%

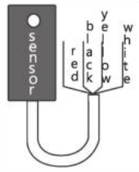
H(Housing Type)
- 04 :Stainless Body Length 40mm(Ambient temp. : to 80℃)
- 12 :Stainless Body Length 120mm(Ambient temp. : 80℃)
- 220 : Plastic Case



DS-SH□12 surrounding Temp : ~ 80℃)



DS-SH□04 (surrounding Temp. : ~ 80℃)



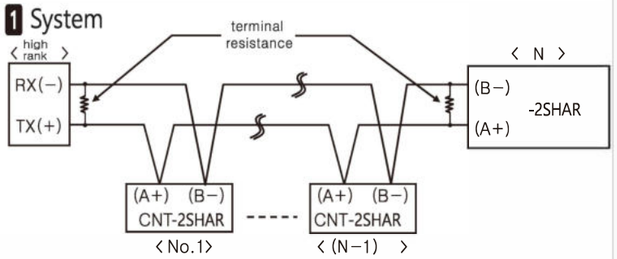
DS-SH□220 (surrounding Temp : ~ 65℃)

Caution1. 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 3
Caution3. Installation direction refers to the shown.

10 Communication interface

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(select)
StartBit	fixed 1bit
StopBit	fixed 1bit
ParityBit	none
DataBit	fixed 8bit
Protocol	BCC

1 System



2 Communication Command and Block's definition

< HOST Query format >

STX	10¹	10⁰	R/W	X/D	T	P	0	ETX	BCC

START CODE · ADDRESS CODE · HEADER CODE · END CODE · BCC CODE

< FOX-2SHAR Response (format) >

STX	10¹	10⁰	R/W	X/D	T	P	0					decimal point	Error	Output	ETX	BCC

START CODE · ADDRESS CODE · HEADER CODE · Humidity Data · END CODE · BCC CODE

Calculation range of the BCC

① START CODE
Show the lead(head) of the block
STX -> [02H]
② ADDRESS CODE
A high rank system can discriminate the channel code number among. FOX-2SHAR . It is available to set between 01 and 99(BCD ASCII)
③ HEADER CODE : Show the command name as an alphabetic letter.

TP0(Temp.value)->T[54H],P[50H],0[30H] RX(reading demand) -> R[52H], X[58H]
HP0(Humi.value)->H[48H],P[50H],0[30H] RD(reading response) -> R[52H], D[44H]
WX(writing demand) -> W[57H], X[58H]
WD(writing response) -> W[57H], D[44H]

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 // 3[33H] : high error

⑦ Output

Output	Auxiliary output		Main output
	Alarm output	2 steps output	
0x30	OFF	OFF	OFF
0x31	OFF	OFF	ON
0x32	OFF	ON	OFF
0x33	OFF	ON	ON

Output	Auxiliary output		Main output
	Alarm output	2 steps output	
0x34	ON	OFF	OFF
0x35	ON	OFF	ON
0x36	ON	ON	OFF
0x37	ON	ON	ON

⑧ END CODE : show the end(close) of the block ETX -> [03H]
⑨ BCC : (Block 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 3 times until recovering nomally
④ change the communication speed in case of bring about the communication's error frequently

11 How to diagnose a breakdown

■ Indicating ERROR on using items

- This Er 1 is the damage of memory data for various of inner-DATA due to be got noised strongly from outside while using this item. Please request us A/S by return in this case. Although our controller is designed as the complementary measures regarding these noise from outside, it is not endurable against these noise with endlessly.
- If noise(2KV) disordering become an inflow, the inner-part will be damaged.
- o-E Sensor error. The sensor is interrupted. Check the cable. If the error message persists, please request us A/S by return.
- L-E or H-E displayed when exceeding the range of humidity. Even if the ambient humidity of environment remaining in the normal by return.
- WARRANTY PERIOD : 1 YEAR FROM THE DATE OF PURCHASE

The products specification can be changed without any notification to improve its quality.

Be sure to familiarize yourself with the above handling instructions outlined in the product information.
Regarding the English-language manual, please download it at our web-site.

- WARNING: TO REDUCE THE RISK OF ELECTRICAL SHOCK, DO NOT REMOVE CONNECT to the protective earth ground and the mains supply. Do not block the vents.

◈Handling Precautions

※This Product is suitable in the following environment:

- Ambient temperature: 0oC~ 60 oC
- Ambient humidity: 80%Rh max.
- Using for indoor only
- Altitude 2000 or less
- Pollution Degree 2
- Installation Category II
- Avoid equipment placement that is difficult to operate power cord If using the equipment in a manner not specified by the equipment manufacturer may impair the protection provided by the equipment.
- Rated power: AC 100~240VAC 50/60Hz 3VA

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■ Main products & Development
Digital temperature/humidity controller
Digital timer, Current/voltage meter
The other development products