

# Operating manual



CNT-2SH(R)  
(temperature/humidity)



CNT-2H  
(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   |
|----------|-------------------------------------|--------------|----------------|---------|
| CNT-2H   | Main:1c 250Vac2A<br>Aux:1a 250Vac2A | HCPV-220H    | 0.0%~100.0%Rh  | -       |
| CNT-2SH  | 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 |

## 2 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.

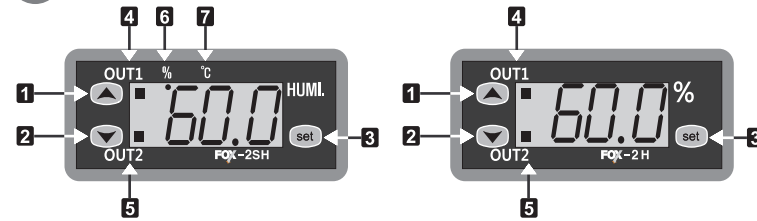
 safety instruction and hazard warnings

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 is not permitted under unfavorable ambient conditions such as wetness or excessive induction loads or solenoid and dust, combustible gases, vapors or solvents, especially high-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.

 **Danger**

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

### 3 Part name

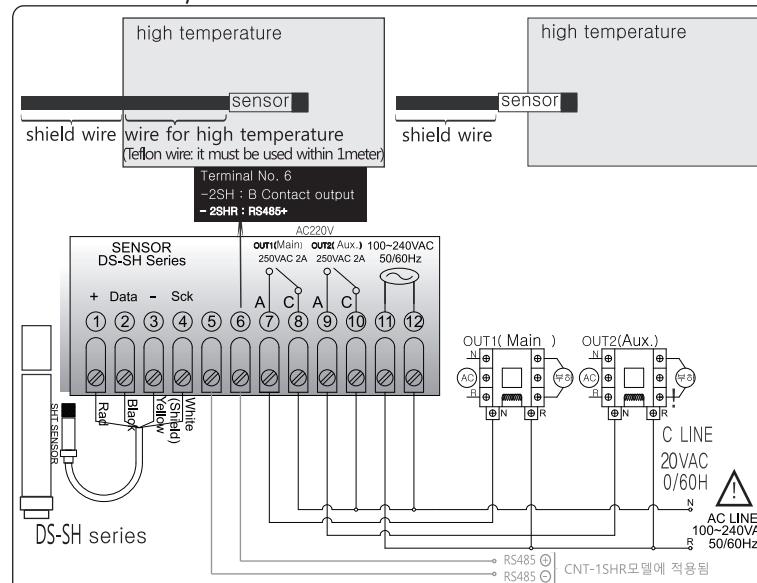


- |                              |                                          |
|------------------------------|------------------------------------------|
| <b>1</b> Setting up(UP)      | <b>5</b> Auxiliary output                |
| <b>2</b> Setting down(DN)    | <b>6</b> Humidity display (CNT-2SH(R))   |
| <b>3</b> setting switch(SET) | <b>7</b> Temperature display(CNT-2SH(R)) |
| <b>4</b> Main output         |                                          |

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

## 4 Connection

< CNT-2SH /CNT-2SHR >

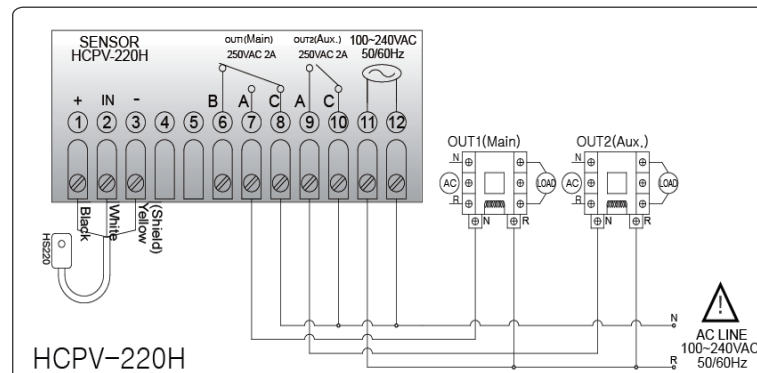


**Ref1.** Detailed specifications for the applicable sensor specifications, see the back of the '10. sensor's specifications'.

**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°C~80°C, 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

<CNT-2H>



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

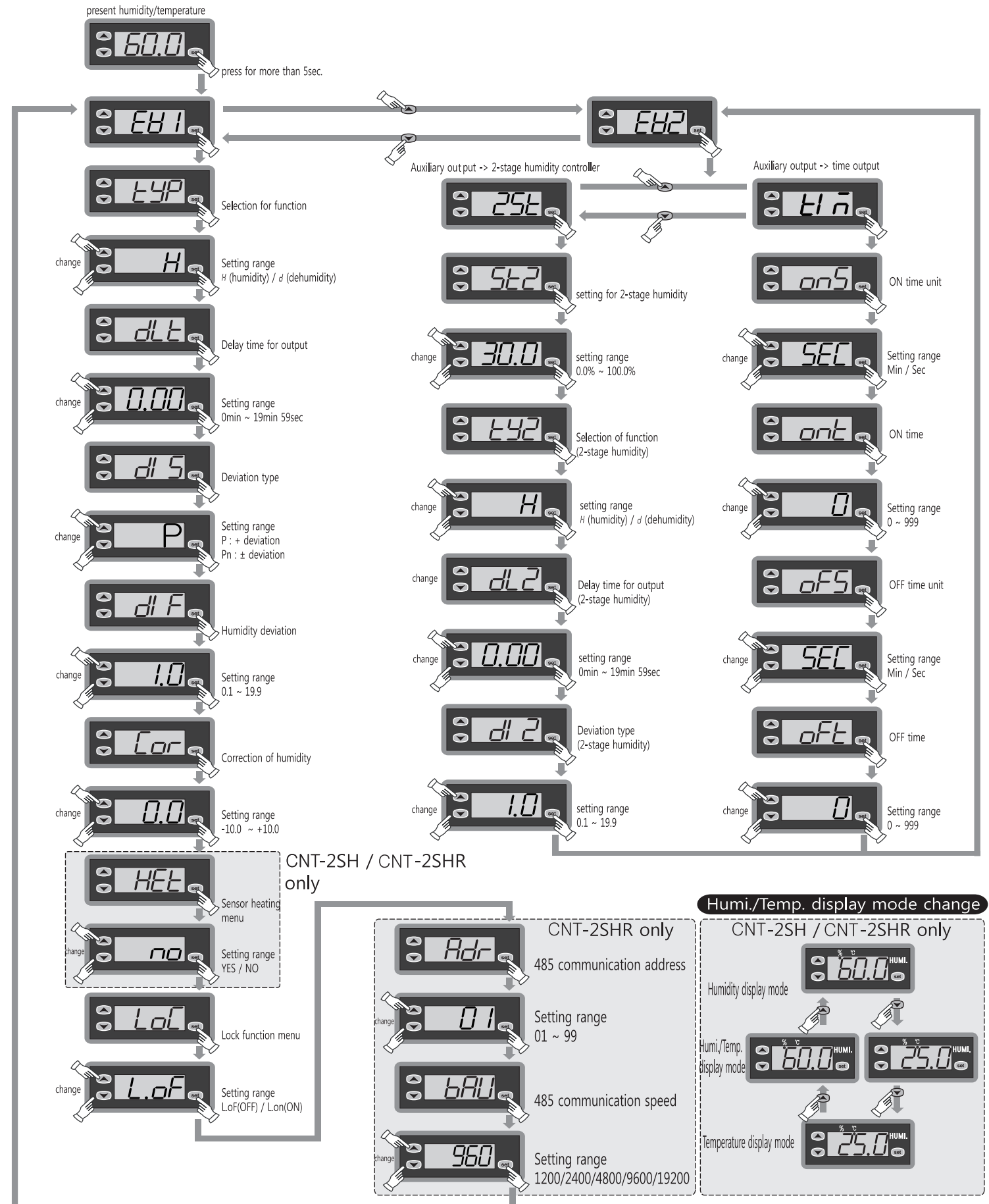
**Caution2.** Please make the operating machine(load) be driven with using the power relay or magnet outside surely because its output specification of inside relay is less than 250VAC 2A

## 5 Setting for programs

## User setting humidity



## Program setting



## 7 Detailed explanation

1 **EH1** Set value of the main output

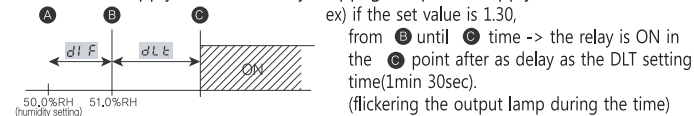
2 **LYP** Selection for function

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

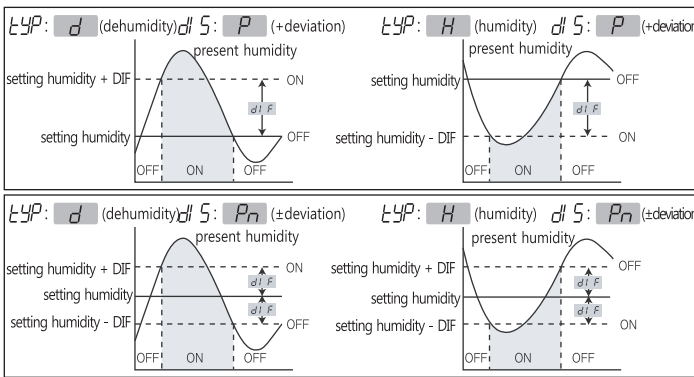


4 **dLS** Selection of the deviation for a main output

P : + deviation Pn : ± deviation

5 **dLF** 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 **Cor** 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 **HEE** Heating element for humidity sensor (only CNT-2SH)

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%RH. It is removed it if the humidity is less than 95%RH

**no** 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 **LoC** 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.on** Setting for lock function **L.oF** removal for lock function

9 **Adr** 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.

10 **bPU** RS485-communication speed setting

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

11 **EH2** Set values for an auxiliary

12 **2St** auxiliary output -> 2-stage output

13 **St2** change of the setting humidity for an auxiliary output

14 **LY2** Output type for an auxiliary output

H : humidity d : dehumidity

15 **dL2** Delay time of the auxiliary output

see the 3. dLE menu

16 **dL2** Humidity deviation of the auxiliary output

see the 5. dLF menu

17 **ELn** auxiliary output -> time output

18 **onS** auxiliary output on time

n : setting for a minute unit SEC : setting for a second unit

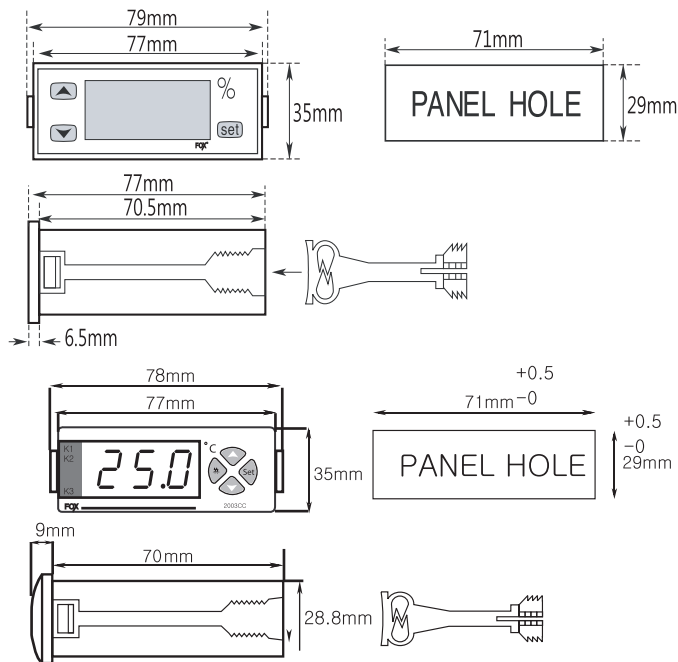
19 **ont** auxiliary output -> on time

20 **oFS** auxiliary output off time

n : setting for a minute unit SEC : setting for a second unit

21 **oFE** auxiliary output -> off time

## 8 Size & dimension



## 9 Setting range & Set value when deliver

| Model         | Division                   | Function | Range                                    | set value when deliver                                                              |
|---------------|----------------------------|----------|------------------------------------------|-------------------------------------------------------------------------------------|
| CNT-2SH       | Main output                | SEt      | setting for humidity                     | 0.0~100.0%Rh                                                                        |
|               |                            | LYP      | selection for function                   | H / d H(humidity)                                                                   |
|               |                            | dLE      | delay time for output                    | 0.0~19min 59sec                                                                     |
|               |                            | dLF      | humidity deviation                       | 0.1 ~ 19.9                                                                          |
|               | Sensor                     | dLS      | deviation type                           | P / Pn P(+deviation)                                                                |
|               |                            | Cor      | correction of humidity                   | -10.0 ~ +10.0°C                                                                     |
|               | main /2-stage              | LoC      | lock function                            | L.on/L.oF L.oF                                                                      |
|               |                            | St2      | setting humidity                         | 0.0~100.0%Rh                                                                        |
|               | auxiliary output (2-stage) | LY2      | selection for function                   | H / d H(humidity)                                                                   |
|               |                            | dL2      | delay time for output                    | 0.0~19min 59sec                                                                     |
|               |                            | dL2      | humidity deviation                       | 0.1 ~ 19.9                                                                          |
|               | auxiliary output (time)    | onS      | ON time unit                             | n / n/SEC SEC (sec)                                                                 |
|               |                            | ont      | setting for ON time                      | 0 ~ 999                                                                             |
|               |                            | oFS      | setting for OFF time unit                | n / n/SEC SEC (sec)                                                                 |
| communication | Sensor                     | HEE      | heating function for the humidity sensor | YES/no no                                                                           |
|               |                            | Adr      | 485 communication address                | 01 ~ 99                                                                             |
| communication |                            | bPU      | 485 communication speed                  | 120 (1200Bps)<br>240 (2400Bps)<br>480 (4800Bps)<br>960 (9600Bps)<br>1920 (19200Bps) |
|               |                            |          |                                          | 960 (9600Bps)                                                                       |

## 10 Sensor's specifications

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

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(To the ambient temperature is 80°C)

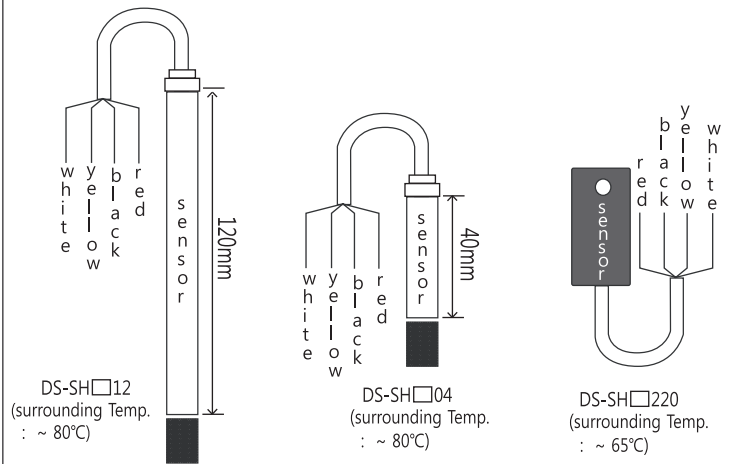
- 12 : Stainless Body Length 120mm(To the ambient temperature is 80°C)

- 220 : Plastic Case

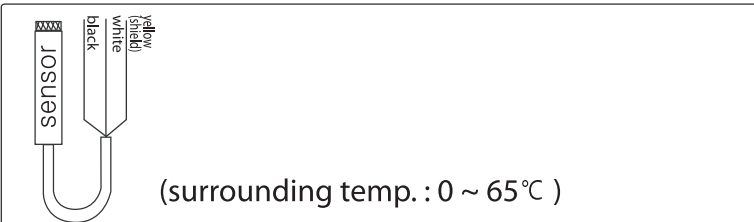
**Caution1.** When using a communication shield wire, the distance sensor installation is within 20m.

**Caution2.** In addition to using the shield, when using a wire, the distance sensor installation is within 3m.

**Caution3.** Installation direction refers to the shown below.



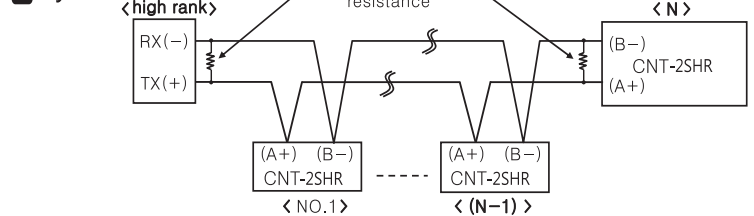
< HCPV-220H > CNT-2H



## 11 Communication interface ( CNT- 2SHR )

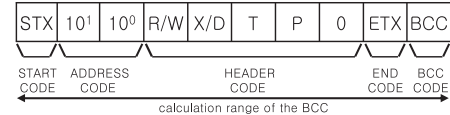
| specification               | in conformity EIA RS485        |
|-----------------------------|--------------------------------|
| The method of communication | two wire half-duplex operation |
| synchronous system          | asynchronous system            |
| communication distance      | within 1.2Km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

### 1 System

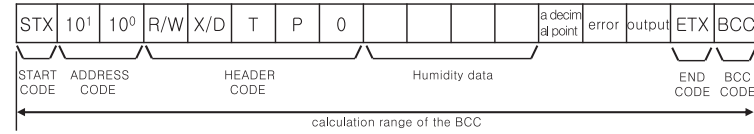


### 2 Definition between communication command and block

< Show the format of the command >



< Show the format of the response >



### ① START CODE

Show the lead(head) of the block

STX -> [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 an 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]

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

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

(negative number : 2's complement)

### 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 time output | 2-stage output | main output |
|--------|-----------------------|----------------|-------------|
| 0x30   | OFF                   | OFF            | OFF         |
| 0x31   | OFF                   | OFF            | ON          |
| 0x32   | OFF                   | ON             | OFF         |
| 0x33   | OFF                   | ON             | ON          |

| output | auxiliary time output | 2-stage output | main 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 receiving 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

## 12 Error message

■ If error message is displayed while using the product

■ **Er1** means damage to the data memory element due to powerful noise impact from outside while using the product. In such a case, contact our company for customer service.

■ While the controller is equipped with supplementary measures for outside noise, the product inside may be damaged if noise in 2KV level is applied to the product.

■ **o-E** display means communication defect with the sensor. Please check connection, wire short, and connection order to the sensor. If the problem persists, please contact our customer service department.

■ **L-E** or **H-E** is shown when humidity display has exceeded the range. If the error is displayed despite maintaining normal surrounding humidity, please contact our customer service department.

■ Warranty Period: One year from the date of purchase

※ To improve the performance of the products, the specifications of this product are subject to change without prior notice. Please well understand the specified contents in the precaution interval when handling this product, and be sure to comply with them.

※ This Manual in English is available on our web site.

■ Address: Conotec Building, 26 Yunsan-ro (Bugok-dong), Geumjeong-gu, Busan, Republic of Korea  
A/S Service: +82-51-819-0425~7  
Direct Line: 070-7815-8277  
e-mail: conotec@conotec.co.kr url: www.conotec.co.kr

### ◆ Installation Precautions

■ 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: 0 C~ 60°C

■ Using for indoor only

■ Altitude 2000 or less

■ 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

■ Major Products Manufactured and Developed

-Digital Temperature/Humidity Controller

-Digital Timer, Current/Voltage Meters

-Variety of products developed available