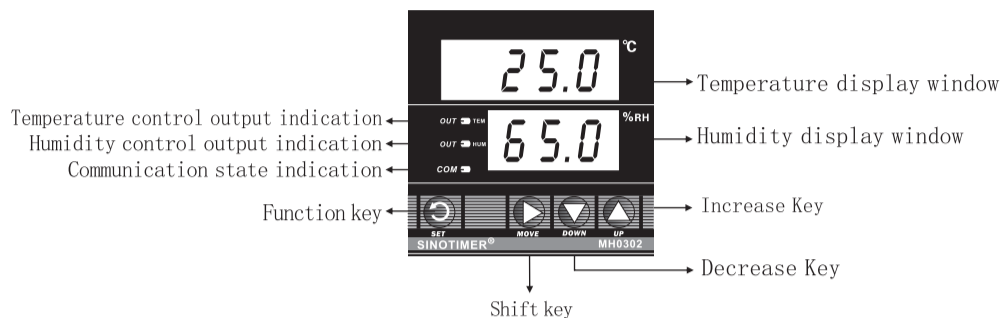


# MH0302 Instruction Manual

## I Main Technical Specification

- Working power: AC85~250V 50/60Hz
- Power consumption:  $\leq 2W$
- Resolution ratio: 0.1
- Setting temperature: -40.0~120°C
- Setting humidity: 0~99.9%
- Basic error: temperature ( $\pm 0.5\%FS$ ), humidity ( $\pm 4.5\%FS$ )
- Display device: LED (0.56 inch)
- Control output: AC250V 3A (Resistive load)
- Outline dimension: 72×72×80 (mm)
- Hole size: 68×68 (mm)
- Working environment: -10°C~50°C, 45~85%RH

## II Panel Description



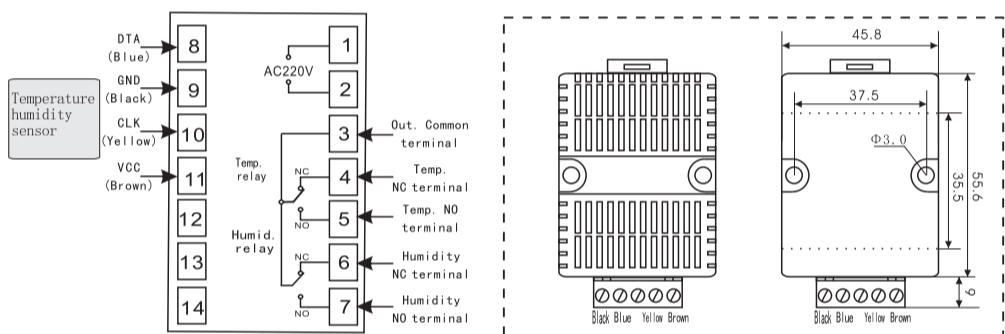
Function key: press key a time, the nixie tube is flickering. Press the other three keys to set temperature and humidity. Press SET key for 3 seconds to enter into control parameter setting mode.

Shift key: In the parameter setting state, it is shift key; press together with function key to enter into function parameter setting mode.

Decrease Key: In the parameter setting mode, it is decrease key; in the temperature and humidity display mode it is used as temperature manually output.

Increase Key: In the parameter setting mode, it is increase key; in the temperature and humidity display mode, it is used as humidity manually output.

## III Wiring Diagram



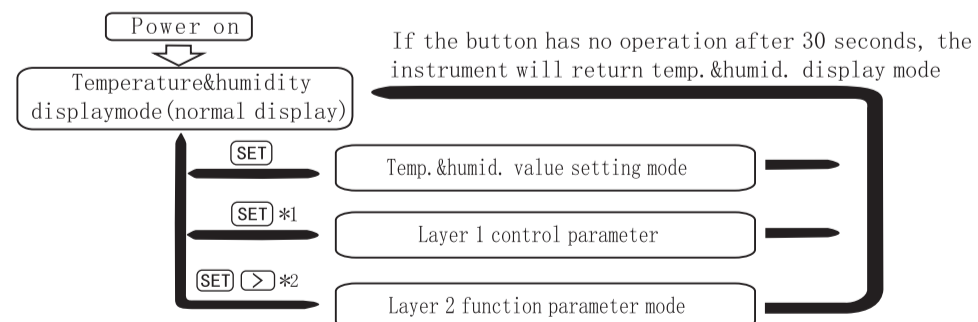
- Connecting instrument terminal "8" ("DAT" wire) with sensor terminal "blue".
- Connecting instrument terminal "9" ("GND" ground wire) with sensor terminal "black".
- Connecting instrument terminal "10" ("CLK" wire) with sensor terminal "yellow".
- Connecting instrument terminal "11" ("VCC" power wire) with sensor terminal "brown".

## IV Instrument Menu Code Meaning

TABLE 1 Code Meaning

Parameter Code	Parameter Code Meaning	Setting Range	Initial Value		
Control Parameter Mode	tHc	Thc	Temperature difference value	0~99.9	10.0
	hHc	Hhc	Humidity difference value	0~99.9	10.0
	tSc	Tsc	Temperature correction value	-9.9~9.9	0.0
	hSc	Hsc	Humidity correction value	-9.9~9.9	0.0
	out	out	Output mode	1~4	2
Function Parameter Mode	Addr	Addr	Communication address	1~247	1
	bAud	bAud	Communication baud rate	0~2	2
	obty	obty	Transmission type	0~2	2
	tBL	TbL	Temperature transmission low-end	0~99.9	0.0
	tBH	TbH	Temperature transmission high-end	0~99.9	99.9
	hBL	hbL	Humidity transmission low-end	0~99.9	0.0
	hBH	hbH	Humidity transmission high-end	0~99.9	99.9
	Init	Init	Initialization	0~1	0

## V Operation Flow Chart



\*1 press "SET" more than 3 sec.

\*2 press "SET" and ">" at the same time for more than 3 sec.

When power on, the instrument will enter into Temperature&humidity display mode. Entrance to other 3 modes requires to press keys.

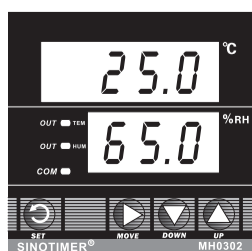
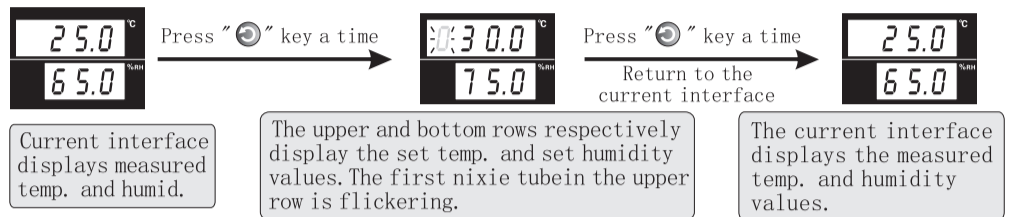


TABLE 2 Panel Description

Key symbol	Key description	Key function description
	<b>SET</b>	Press SET key a time, the nixie tube is flickering. Press the other three keys to set Temperature and humidity. Press SET key for 3 seconds to enter into control parameter setting mode.
	<b>MOVE</b>	In the parameter setting state, it is shift key; press together with SET key to enter into function parameter setting mode
	<b>DOWN</b>	In the parameter setting mode, it is decrease key; in the Temperature and humidity display mode it is used as temp. manually output
	<b>UP</b>	In the parameter setting mode, it is increase key; in the Temperature and humidity display mode, it is used as humid. manually output

### 1. Check temperature&humidity setting value:



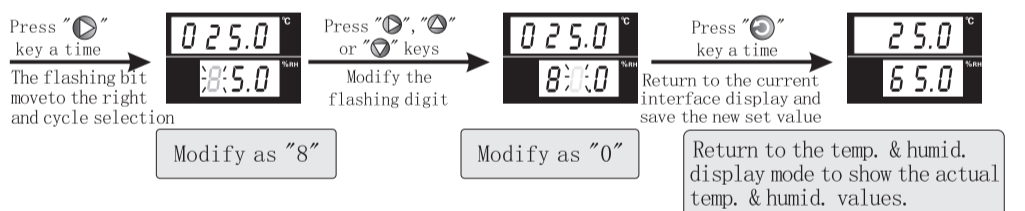
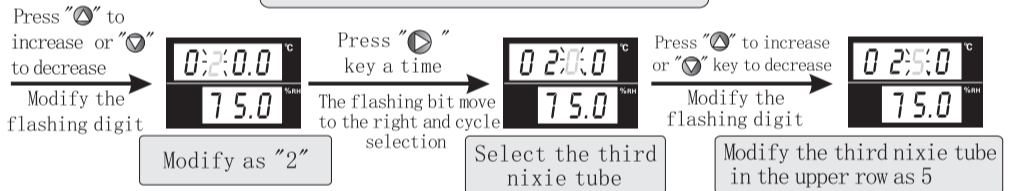
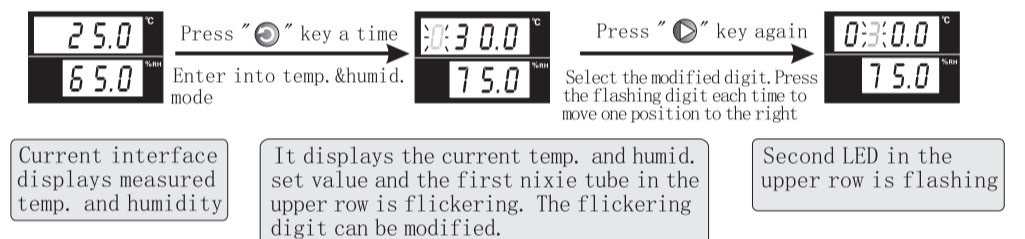
### 2. Modify Temperature&Humidity Control Parameter Process:

For example the incubator current Temperature is 25.0°C, humidity is 65%RH. Customers control the incubator Temperature and humidity by the electric panel and humidifier. It is required to stop heating when the Temperature is higher than 25.0°C, and to start heating when Temperature is lower than 15.0°C. When the humidity is below 50.0%RH, it humidifies and when the humidity is higher than 80.0%RH, it stops humidifying. Customer control electric board and humidifier by heating and humidification. The requirement can be done by the following two steps to set the instrument control parameters:

(1) In the Temperature&humidity setting mode, modify the Temperature value as 25.0°C, humidity value as 80.0%RH.

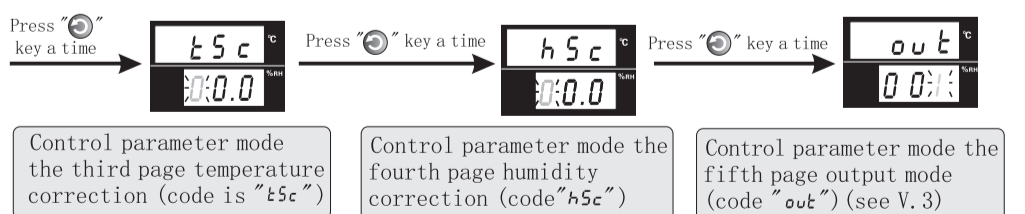
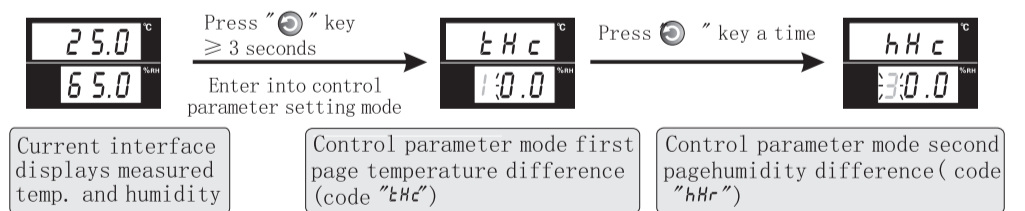
(2) In the control parameter setting mode, modify Temperature difference (Thc) as 25-15=10.0°C; modify humidity difference (Hhc) as 80-50=30.0%RH; modify output mode (OUT) setting value as heating and humidification mode 001 (see table 1)

Step 1: enter temperature&humidity setting mode to modify temperature&humidity setting value.



If the button has no operation for more than 30 seconds, the instrument will automatically return to the measured interface and don't save the modified value.

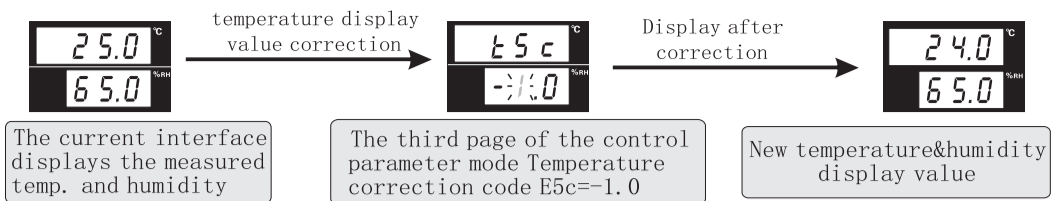
Step 2: enter into control parameter setting mode to modify Temperature difference (tHc), humidity difference (hHc), and output mode (out).



### 3. Control Mode Parameter Modification Instructions

1) All parameters modification in this mode is similar to (V.2). Modification range refers to (table 1); after modification, long press SET key to return to the display mode.

2) The instrument display value should be corrected in a standard reference. Instrument new display value=current display value+correction value.

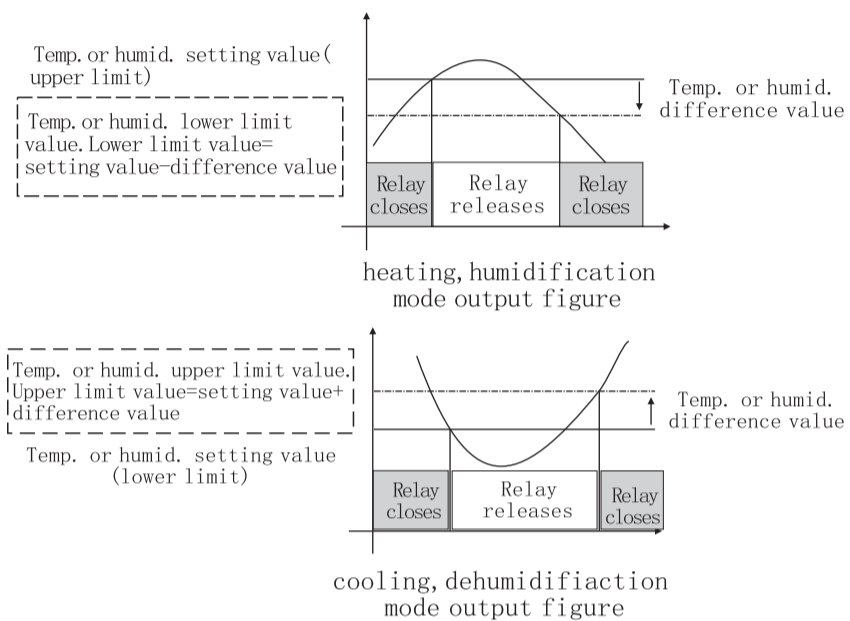


3) Any Temperature&humidity system can be controlled via different ways. The common control methods are:heating by electric hot plate,cooling by compressor, humidification by humidifier, dehumidification by the fan etc.. Users must set the appropriate Temperature and humidity output mode according to the selected control method. The instrument provides 4 different output modes for users to choose.

TABLE 3 Output Mode

Output mode setting value	001	002	003	004
Output mode type	heating, humidification	heating, dehumidification	cooling, humidification	cooling, dehumidification

Setting different output modes enable the control process has a clear upper and lower limits. Users should know the impact of different modes to the control effectiveness. The following figure shows two different control processes.



For example:in heating mode,the Temperature set value is 40°C, the Temperature difference value is 15°C,then according to the above figure,Temperature lower limit value is 25°C .When the actual Temperature is below lower limit 25°C ,Temperature relay closes;when the temperature is above 40°C ,the relay releases.The state does not change when the Temperature is between 25°C and 40°C. (humidification similar).

In cooling mode,the Temperature set value is 40°C, the Temperature difference value is 15°C, then according to the above figure, Temperature upper limit value is 55°C. When the actual Temperature is below lower limit 40°C, Temperature relay releases;when the Temperature is above 55°C, the relay closes. The state does not change when the Temperature is between 40°C and 55°C. (dehumidification similar)

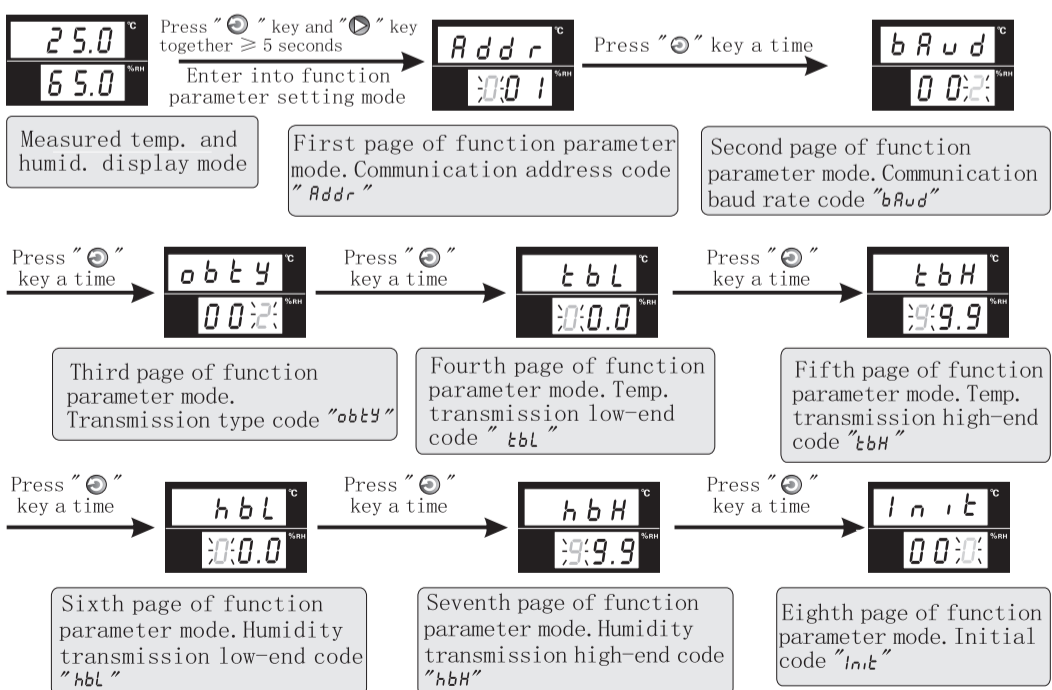
#### 4) Instrument Panel Indicator State Description

TEM is temperature indicator. When TEM is on, temperature control relay NO contact closes.

HUM is humidification indicator. When HUM is on, humidification control relay NO contact closes.

COM is communication indicator. its indicator flashes when data transmit.

#### 4. Extended Function Parameter Instruction (this is an optional function, which need related modules support)



1)Modification to all parameters in this mode is similar to V.2 description. Modification range refers to TABEL 1 description; when the data modification is completed, press SET key to return to Temperature and humidity display mode.

2)Communication baud rate (Baud) setting value:0 indicates 2400; 1 indicates 4800; 2 indicates 9600.

3)Transmission type (obty) setting value: 0 indicates DC 0~10mA; 1 indicates DC 0~20mA; 2 indicates DC 4~20mA.

#### VI Manual Output Function

The instrument provides manual function under special circumstances.

In this function the instrument relay output state can be controlled manually by the panel button.

In instrument Temperature&humidity display mode, press "⊖" key a time to enter Temperature manual control state;press "⊕" key a time to enter humidity manual control state;press "⊙" key to return Temperature&humidity display mode (Below figure)

