

# T/H controller TH-E series Catalogue

## TH-E series



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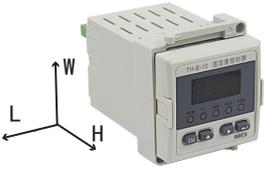
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# T/H controller TH-E series

## Product overview



### Temperature and humidity controller TH-E series

#### Product application scene and features

- This series is used for the detection and control of temperature and humidity in control cabinet and switch cabinet.
- Using LED real-time display temperature and relative humidity.
- With abnormal alarm function, can monitor working condition of product in real time.
- Comply with EMC level IV.
- It has the alarm locking function for temperature mutation.  
(temperature change > 2°C within 3s)
- Installation size: Embedded installation: 49mm(L)×59mm(W)×90mm(H)  
DIN guide rail/rack mounted: 50mm(L)×92mm(W)×51.5mm(H)

## Product overview

### TH-E series naming rules

Typical model	TH	-E	-10	/LED
<b>Controller type</b> T=temperature controller TH=temperature and humidity controller				
<b>Structure type</b> E=structure series number				
<b>Installation method</b> 10=embedded installation 11=DIN guide rail / rack mounted method				
<b>Display mode</b> LED=LED display mode				

### TH-E series conventional models

Conventional model
TH-E-10/LED
TH-E-11/LED

# T/H controller TH-E series

## Human-machine interface

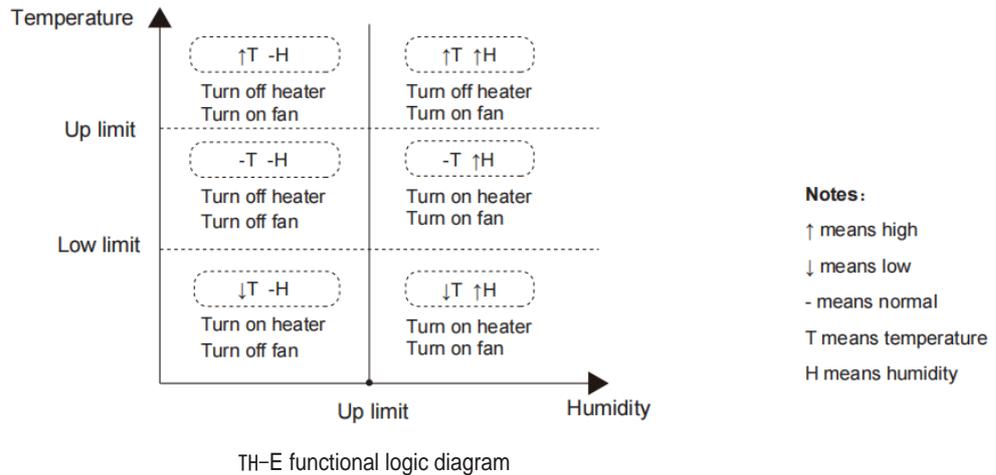


	Definition	Explain
Indicator light	RUN	The indicator light is always on during normal operation; and the indicator light flashes in the forced button state.
	°C	Showing the current temperature, unit °C
	%RH	Showing the current humidity, unit %RH
	HEAT	Heater action indicator light. The indicator light is on when the heater is turned on; off when the heater is closed.
	FAN	Fan action indicator light. The indicator light is on when the fan is turned on; off when the fan is closed.
Button	▲	Select button, for 0 ~ 9 adjustment parameters.
	▶	Shift button, for selecting digits left and right.
	◀	Determine button, for determining the currently selected operation.
	ESC	Return or save button

# T/H controller TH-E series

## Product features

### 1、 Functional control logic



### 2、 Force button function

" " and " ► " have reuse function.

When the temperature and humidity are displayed normally, if the start button is pressed " ► " and wait for 3s, when "SUCC" appears, the controller does not control the heater and fan contacts in an automatic way, and immediately unconditionally closes the heater and fan contacts. When the temperature reaches the upper limit of the temperature alarm, the heater contacts automatically open. Under this condition, no parameter setting is performed; If you press the stop key "▲" and wait for 3s, "SUCC" appears, and the controller controls the closing and opening of the heater and fan contacts according to the automatic control mode, and the parameters can be set.

Parameter setting: see the human-machine interface operation demonstration steps of the temperature and humidity controller.

### 3、 High priority exception logic

3. 1	When the sensor of the action reference is abnormal or the temperature suddenly changes (temperature change > 2°C within 3s), heater and fan action contacts are disconnected.
3. 2	When the EEPROM is wrong, the heater and fan action contacts are disconnected.

### 5、 Parameter setting rules

5. 1	Control temperature setting range	-30°C ~ +70°C upper limit ≥ lower limit + 10°C
		Default value: upper temperature limit 40°C, lower temperature limit 5°C
5. 2	Control humidity setting range	20%RH ~ 90%RH only have upper limit set value
		Default value: upper humidity limit 85%RH
5. 3	Alarm temperature setting range	-30°C ~ +70°C upper alarm limit ≥ lower alarm limit + 10°C
		Default value: upper limit 55°C, lower limit 0°C
5. 4	Alarm humidity setting range	20%RH ~ 90%RH only have upper limit set value
		Default value: 90%RH
5. 5	Temperature backlash setting	The return difference of temperature control is within 1°C ~ 20°C
		The upper limit default value return is 10°C, and the lower limit default value return is 10°C
5. 6	Humidity backlash setting	The return difference of humidity control is within 5% ~ 20%RH
		Default value: 10%RH
5. 7	Control setting limit	Upper temperature limit - upper temperature limit return ≥ lower temperature limit + lower temperature limit return

Note: 1. Each set value exceeds the range and will not be saved. It can only work normally after all abnormal states are eliminated. 2. Please refer to the video on the company website for specific parameter settings.

### 6、 Alarm function

6. 1	Display alarm	Sensor is abnormal: "Err1" is displayed
		EEPROM exception: "Err3" is displayed
		Temperature out of limit alarm: "Err6" is displayed
		Humidity out of limit alarm: "Err7" is displayed
		Temperature mutation alarm: "Err8" is displayed

# T/H controller TH-E series

## Product terminal definition

TH-E product terminal definition

FAN		HEAT	
6	5	4	3
— / —		— / —	
1	1	2	2
+KM		-KM	
Power+		Power-	

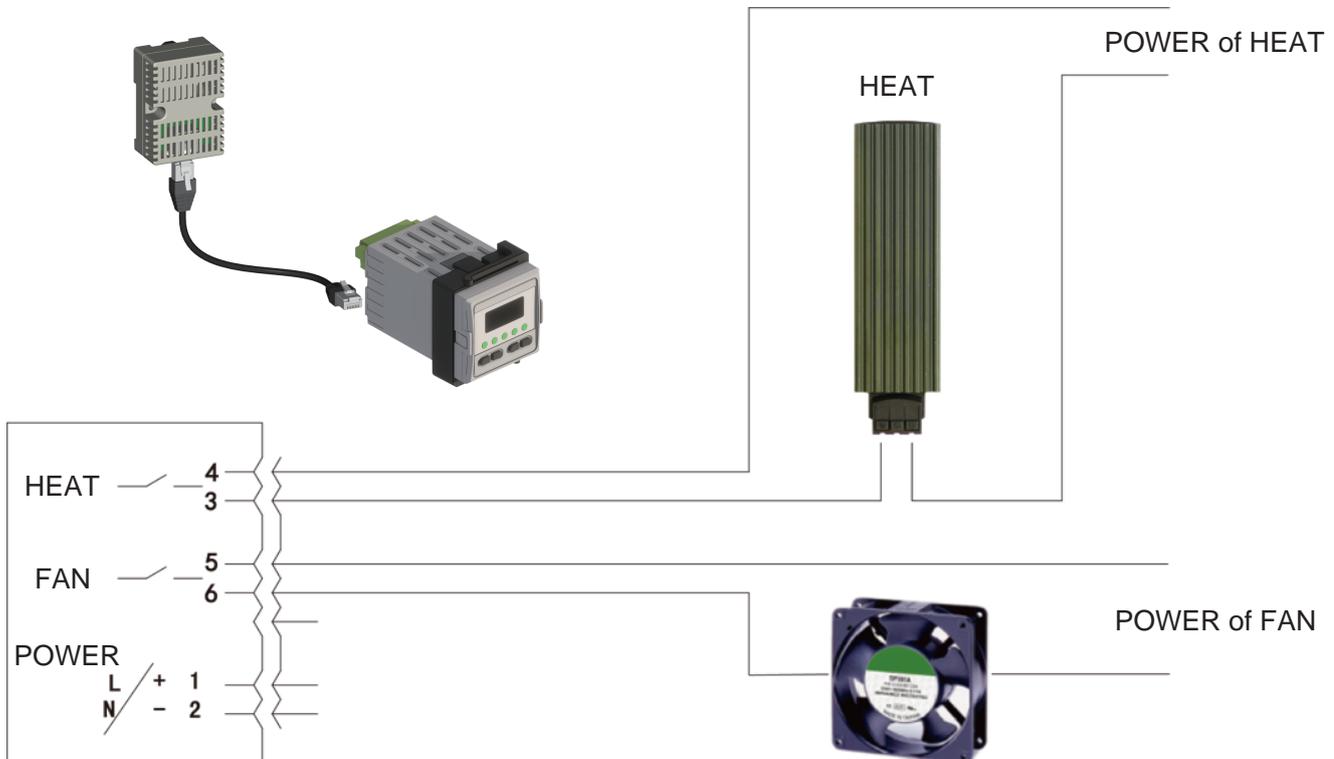
TH-E-11 terminal definition

6	5	4	3	2	1
— / —		— / —		-KM	+KM
FAN		HEAT		Power-	Power+

TH-E-10 terminal definition

## Product wiring schematic diagram

TH-E wiring schematic diagram



# T/H controller TH-E series

## Product technical parameters and execution standards

### Input loop-auxiliary supply

Rated voltage DC 88~370V, AC 85~265V, 47~63Hz

### Sensor temperature measurement range

-40°C~+85°C, accuracy  $\pm 0.5^{\circ}\text{C}$  (0~60°C),  $\pm 1^{\circ}\text{C}$  (-40°C~0°C or 60°C~85°C), resolution 0.1°C

### Sensor humidity measurement range

Accuracy  $\pm 3\%\text{RH}$  (10~90%RH),  $\pm 10\%\text{RH}$  (0~10%RH or 90~99.9%RH), resolution 0.1%RH

### Controller working/storage environment

Temperature -40°C~+70°C, humidity  $\leq 95\%\text{RH}$  without condensation/-40°C~+70°C

### Output loop-contact

Heater(NO)	Fan(NO)	Power of heater	
Load: 5A@250VAC	Load: 5A@250VAC	DC 88V~370V, AC 85V~265V	

### Protection requirement

Product protection level IP20

Power consumption  $\leq 3\text{W}$

### Isolation parameter

Insulation resistance Each loop to ground, each loop  $\geq 20\text{M}\Omega$

Medium strength  $>60\text{V}$  loop: AC, 2kV, 1min  $\leq 60\text{V}$  loop: AC, 0.5kV, 1min

Shock voltage  $>60\text{V}$  loop: 1.2/50us, 5kV, 3 times  $\leq 60\text{V}$  loop: 1.2/50us, 1kV, 3 times

### Damp heat test

40°C 93%RH 2 days The insulation resistance between the exposed non-electric conductive parts and the shell of each loop  $\geq 1.5\text{M}\Omega$

### Salt-spray test

Salt-spray alternation GB/T 2423.18 specified severity level 2 NaCl solution concentration: 5%, PH 6.8, 96h

### EMC

ESD GB/T 17626.2-2018 Level 4,  $\pm 15\text{kV}$ /air discharge,  $\pm 8\text{kV}$ /contact discharge

EFT GB/T 17626.4-2018 Level 4,  $\pm 4\text{kV}$ (power),  $\pm 2\text{kV}$ (open,shielded line)

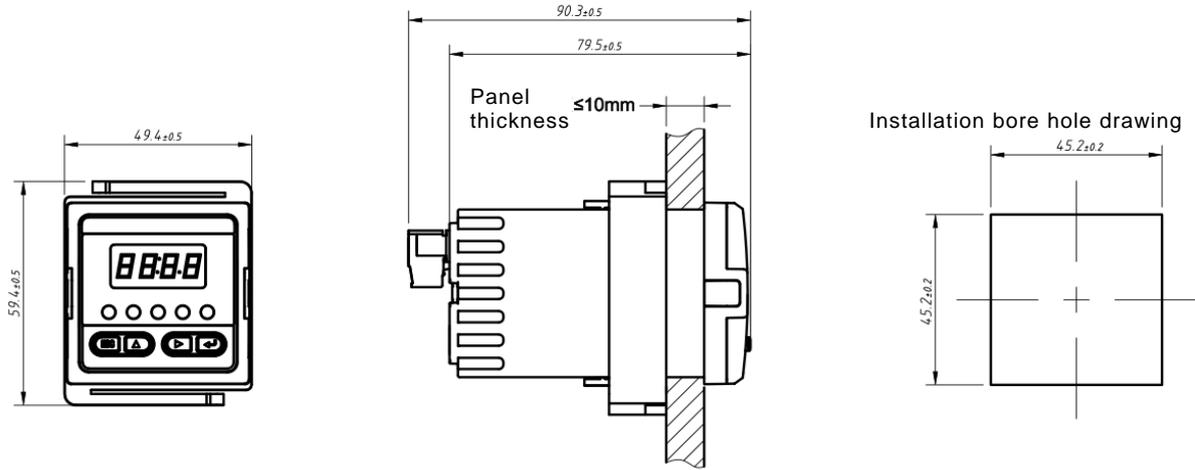
Surge(shock) GB/T 17626.5-2008 Level 4, common mode:  $\pm 4\text{kV}$ , differential mode:  $\pm 2\text{kV}$

### Flame retardant

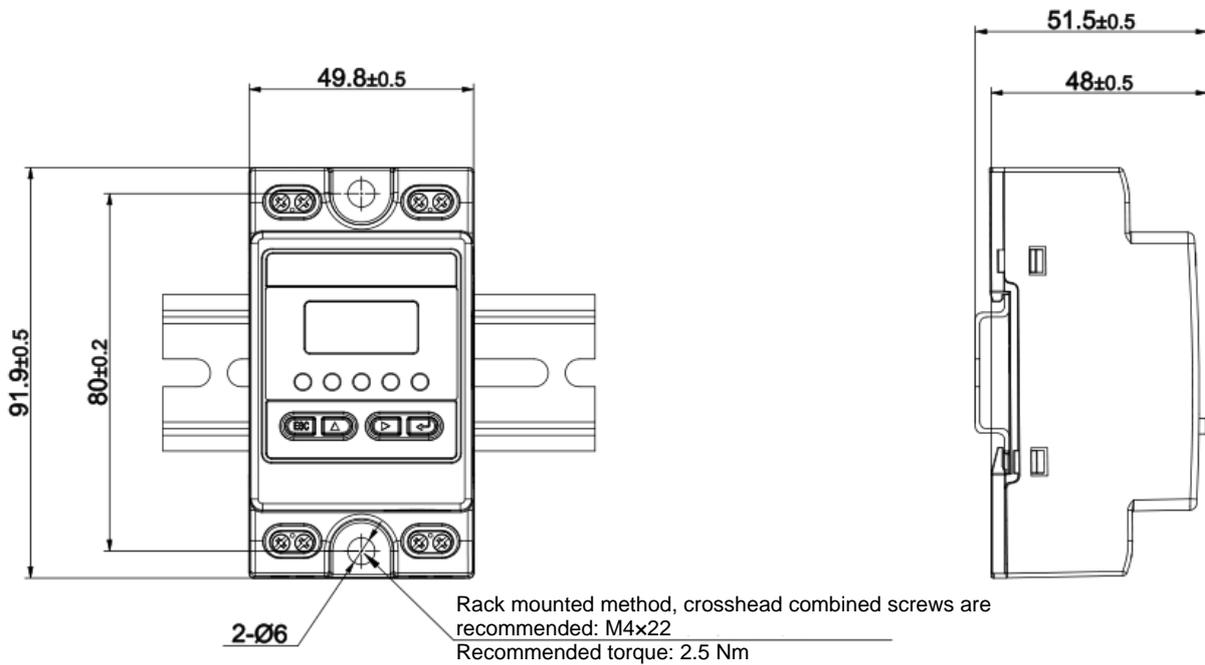
Anti-abnormal heat and fire hazard test UL94V-0 level(750, 30s)

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## Product installation dimension(mm)



Embedded installation

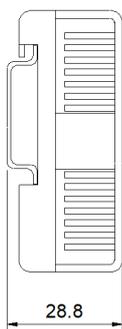
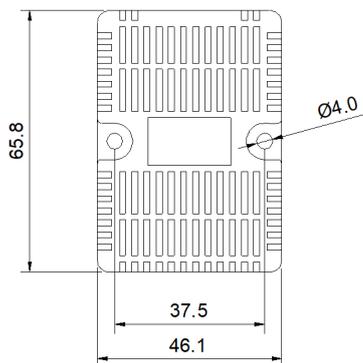


DIN guide rail / Rack Mounted

# T/H controller TH-E series

## Sensor installation dimension(mm)

DIN guide rail installation:



The length of the wire: 1m, 3m, 5m(optional),  
all are flame retardant wire.

## Human-machine interface operation demonstration steps

For all settings, press the " " key to select, press the " ► " key to shift, press the "OK" key to confirm, and press the "ESC" key to return or save.

A、 Press "OK" to enter the Device Settings screen. Select "ACt", press "OK" to enter the specific parameter setting, select "tU", press "OK" to enter; use " ► " to shift, use " " to set the specific value of "tU(temperature upper limit) = 040.0". After setting, press "OK" to return to the previous menu.

B. Follow the preceding steps to set "tL(lower temperature limit) = 005.0" and "HU(upper humidity limit) = 70.0".

C、 After the configuration, press "ESC" key, "0000" interface is displayed, enter "1111", complete the configuration.

D、 Go to the "AlAr"(Alarm Value) page and set the alarm value.

E、 Go to the "bAc"(Return Value) page, set the upper and lower bounds for action return value & upper and lower bounds for out-of-limit alarm return value.

F、 Press the "ESC" key, and the "0000" interface appears. Enter "1111" to complete setting.

G、 During the whole setting process, if there is no key operation within one minute, the controller does not save the current setting value, and automatically exits the setting interface.