SC-TH89
Thermostat

Introduction

SC-TH89 fan coil thermostat is an intelligent thermostat for indoor temperature control. The equipment is mainly used in 2-pipes/4-pipes fan coil system of central air conditioning. Through the comparison of the ambient temperature and the set temperature, the working state of the fan coil unit and the electric valve terminal of the air conditioning system is controlled to achieve the purpose of adjusting the ambient temperature, comfort and energy saving. The product adopts microcomputer control technology, LCD screen and touch button, safe and reliable, beautiful and practical.

Features

• Super modern appearance design, suitable for offices, hotels, home furnishing

• Ultra-wide VA liquid crystal display, touch button, delicate and beautiful

• Stainless steel metal texture frame, ultra-thin design

• 2.5D glass edge, tempered glass, silver treatment

• Small rear box design, can be installed in European bottom box, 86 bottom box

• Non-volatile Memory, working state saved even power failure

• Intelligent on/off control of 3-speed fan, electric (ball) valve or air-valve

• Easily steel frame back plate installation

Specification

• Power Supply：AC85V-260V, 50/60Hz（Main control board provides）

• Resistive Load: ≤3A

• Self Consumption：< 1W

• Temperature Sensor: NTC 10K

• Appearance material: tempered glass + PC

• Working Environment：0 ～ 55℃；<95% RH（Non-condensation）

• Temp. Setting：5 ～ 37 ℃

• Dimension：86* 86*14mm

• Hole Pitch：60-65mm（86/European standard junction box）

Safety Information

To protect yourself and others from danger and to protect the device from damage, please read the safety information before using it.

Important!

• A qualified electrician with the understanding of wiring diagrams and knowledge of electrical safety should complete installation following the instructions.

• Before installation, please confirm the real voltage complying with the device's specification. Cut off any power supply to secure the safety of people and device.

• During installation, protect the device from any physical damage by dropping or bumping. If happens, please contact the supplier for maintenance.

• Keep the device away from acid-base and other corrosive solids, liquids, gases, to avoid damage.

• Avoid overexertion during operation, to protect device from mechanical damage.

• Read all instructions and documentation and save for future reference.

Installation & Wiring

Location:

Thermostat is suggested to be installed indoor, a place with around 1.5m height above the floor where represents the average room temperature. It should be away from direct sunlight, any cover, or any heat source, to avoid false signal for temperature control.

CAUTION: Cut off power supply at circuit breaker or fuse before installation to avoid fire, shock or death!
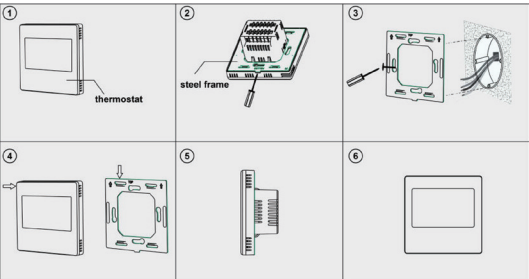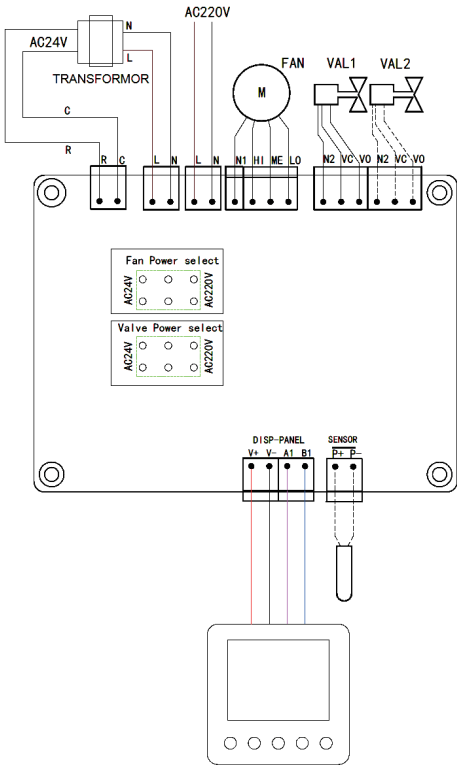

Step 1: Remove the steel frame from the device, and secure it onto the junction box with two screws.
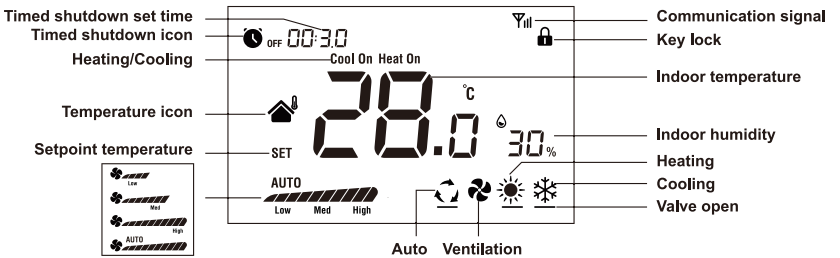
Step 2: Insert all wires into the right terminals and tighten screws. The wiring diagram is shown below.

Step 3: Confirm the device is well mounted, power on and it is ready to operate.

Wiring diagram:

Button & Display

Operation

On/Off Setting

When power on, thermostat will display "OFF", press ⏻ to enter working interface.

When normal working, press ⏻ to turn off the device, "OFF" displays and all outputs are off.

Timed Shutdown

In normal working interface, press & hold "⏻ + M" for 3s to enter timing setting interface. Press ∧ or ∨ to set the parameters. Press "M" to save the setting and return to the homepage. ⏲OFF will be shown in the interface. Setting range is 00-12, set the step to 0.5 hour, min unit: hour.

Panel Lock

In normal working interface or shutdown interface, press ∧ & ∨ hold+for 3s to lock/unlock the device. When the interface shows 🔒, it means the buttons are locked and invalid. When 🔒 disappears, it means the buttons are unlocked and all buttons back to work in normal.

Working Mode Setting

Under normal working interface, press "M" to enter working mode setting and switch among Cooling ❄ , Heating ☀ , Ventilation 🌀 and Auto ↻ .

Temperature Setting

Under normal working interface, short press ∧ or ∨ to set local temperature value. The setting range is 5.0-37.0, setting step is 0.5. Press "M" to save the setting , or wait for 8s to save and return to room temperature display.

Fan Speed Setting

In normal display, press 🌀 to switch among the fan Speed: "Low, Medium, High, Auto" .

Notice: In ventilation mode, fan speed can be switched among "Low, Medium, High", no Auto speed choice.

Fan Manually Control

In manual mode, the fan runs according to the manually fan speed setting.

Cooling Mode:

Room temperature ≤ setting temperature, valve closes and fan stops;Room temperature ≥ setting temperature +1℃ , valve and fan opens.

Heating Mode：

Room temperature ≥ setting temperature, valve closes and fan stops;Room temperature ≤ setting temperature -1℃ , valve and fan opens.

Ventilation Mode：

When fan runs according to the set fan speed, valve force to be closed. (Note: Under ventilation mode, fan's output is not related to the set temperature)

Auto Mode：

Room temperature ≥ setting temperature+1℃ , heating valve closes, cooling valve opens and fan opens;
Room temperature ≤ setting temperature -1℃ , heating valve opens, cooling valve closes and fan opens

Note: This mode is only valid in 4-pipes system.

Fan Automation

Cooling Mode	a.Room temperature ≤ setting temperature, valve closes automatically, fan stops; b.Room temperature ≥ setting temperature +1℃ , fan turns on in low speed; c. Room temperature ≥ setting temperature +2℃ , fan turns on in medium speed; d. Room temperature ≥ setting temperature +3℃ , fan turns on in high speed;
Heating Mode	a. Room temperature ≥ setting temperature, valve closes automatically, fan stops; b. Room temperature ≤ setting temperature -1℃ , fan turns on in low speed; c. Room temperature ≤ setting temperature -2℃ , fan turns on in medium speed; d. Room temperature ≤ setting temperature -3℃ , fan turns on in high speed;

Note: Fan will operate only when the valve opens. The automatic fan speed in Auto mode is controlled according to the automatic fan speed in cooling or heating mode.

Temp. Sensor Error

If temperature sensor does not work, "0.0" .

Parameter Setting

Under the shutdown state, press & hold M + 🌀 to enter parameter setting menu. The password is 5138 and press "M" to enter. Press 🌀 to switch among the parameter, press ∨ or ∧ to modify the setting, press M to save the setting and back to homepage.

No	Function	Range	Default	Remark
P-01	Screen Brightness	0 ～ 1	0	0: Auto off 1: Always on
E01	Factory Restore	0-99	53	Write 55
E02	Power On/Off Memory	0-2	01	0: Shutdown 1: Boot 2: Last state
E03	Standby Backlight Brightness Setting	1-5	2	1: Dim down, totally off when standby 2. Dim darker 3. Medium bright4. Brighter5. full bright and no standby
E04	Beep	1-5	5	1 : Mute 2: Low 3. Medium 4. Bit high 5: High
E05	Current Communication Address		02	
E06	Temp. Upper Limit	0.0-55.0℃	37℃	
E07	Temp. Lower Limit	0.0-55.0℃	05.0℃	
E08	Temp. Calibration	-9.0~+9.0	0.0	
E09	Humidity Calibration	-20~+20	07	
E10	External Temp. Calibration	-9.0~+9.0	0.0	
E12	Anti-Freeze Protection Switch	ON/OF	OF	ON: Activate Anti-freeze protection OF: Disabled. Setting range: 5.0℃ ~8.0℃ . Anti-freeze function is only valid in heating mode, when the temperature is under 5.0℃ , it will be activated, when the temperature is over 8.0℃ , it will stop heating.
E13	Fan Mode When Temp. Reach To The Setpoint	ON/OF	OF	ON: keep low fan speedOF: turn off the fan
E14	Fan WorkingMode	0 ～ 3	0	0: fan works in cooling and heating mode; 1: fan works in cooling mode only2: fan works in heating mode only3: fan will not work in both cooling and heating mode.
E15	Panel Lock	ON/OF	ON	ON: EnabledOF: Disabled.
E17	Intermittent Ventilation	ON/OF	OF	ON: EnabledOF: Disabled.
E18	Intermittent Ventilation Time Setting	1-30(min)	02(min)	This function sets the interval ventilation time for each hour
E19	Temp. Deadband	0-9.9	1.0℃ /2.0 F	
E20	Temp. Unit	0-1	0	0: Celsius 1: Fahrenheit
ED21	Tem. Sensor Selection	0-1	0	0: Internal temperature 1: External temperature (PT1000)
E22	2-pipes/4-pipes Setting	0-1	0	0: 2-pipes 1: 4-pipes

Z-Wave Operation

► **Including & Excluding of Z-Wave Network**

Under normal working interface, press & hold "∧ + 🌀 " to enter interface for inclusion or exclusion of Z-Wave network. Before device included into network, "- - -" will display on the screen. Then press M once, device will enter learning mode to get a node ID. If inclusion is success, a node ID will display on the screen in a few seconds.
A node ID can always inform us whether the device is in the network or not.

► **Association Group**

AG identifier	Max Node ID	Command Classes	Trigger situation
0x01	1	COMMAND_CLASS_SENSOR_MULTILEVEL_V5, SENSOR_MULTILEVEL_REPORT_V5	1. When the temp. unit is Celsius: the parameter 2 set to 1, detected temperature change is greater than the value set by parameter 3. 2. When the temp. unit is Fahrenheit: the parameter 2 set to 1, detected temperature change is greater than the value set by parameter 4. 3. The parameter 2 set to 2, when the report is that the interval time is greater than the value set by parameter 5. 4. When the te mp. unit is Celsius: the parameter 2 set to 3, the detected temperature change is greater than the value set by parameter 3 or the reported time is greater than the value set by parameter 5.5. When the temp. unit is Fahrenheit: the parameter 2 set to 3, the detected temperature change is greater than the value set by parameter 4 or the reported time is greater than the value set by parameter 5.
		COMMAND_CLASS_THERMOSTAT_MODE_V2, THERMOSTAT_MODE_REPORT	Device Mode changes
		COMMAND_CLASS_THERMOSTAT_OPERATING STATE, THERMOSTAT_OPERATING_STATE_REPORT	Device Status changes
		COMMAND_CLASS_THERMOSTAT_SETPOINT_V2, THERMOSTAT_SETPOINT_REPORT_V2	Set point value changes
		COMMAND_CLASS_THERMOSTAT_FAN_MODE, THERMOSTAT_FAN_MODE_REPORT	Fan mode changes
		COMMAND_CLASS_THERMOSTAT_FAN_STATE, THERMOSTAT_FAN_STATE_REPORT	Fan status changes
		COMMAND_CLASS_DEVICE_RESET_LOCALLY, DEVICE_RESET_LOCALLY_NOTIFICATION	Restore the factory setting

► Z-Wave Parameter Setting:

Number	Function	Size	Description	Default	Possible Values
1	Secret Menu No. E20：Temp. Unit	1	0: Celsius 1: Fahrenheit	1	0-1
2	Automatic Temp. Value Reporting (Celsius)	2	Unit 0.1℃ 0：OFF： 3-255：n *0.1℃ ,automatically report to gateway when temperature variation greater than this value	5	0，3-255
			Unit 0.1 F：0：OFF： 3-255：n *0.1F,automatically report to gateway when temperature variation greater than this value	10	0,3-255
3	Automatic Humidity Value Reporting	1	0：OFF1-99：automatically report to gateway when humidity variation greater than this value	6	0-99
4	Upload The Difference Of External Temp.	2	Unit: 0.1℃ 0: The change in Celsius temperature does not upload to the gateway. 3-255：n *0.1℃ If the temperature variation exceeds this value, it will actively upload to the gateway.	5	0，3-255
			Unit：0.1 F 0: The change in Fahrenheit temperature does not upload to the gateway. 3-255：n *0.1F If the temperature variation exceeds this value, it will actively upload to the gateway.	10	0，3-255
12	Secret Menu No. E02：Power Failure Memory	1	When power on again: 0:device will be in shutdown state（"OFF"）; 1: device will be in working interface; 2: device will stay the last status before power failure.	1	0-2
13	Secret Menu No. E03： Backlit Brightness	1	1：Dim，dim without key touch 2：Low brightness 3：Medium brightness 4：High brightness 5：Always on	2	1-5
14	Secret Menu No. E04：Beep	1	1：OFF 2：Low Beep 3：Medium Beep 4：High Beep 5：Standard Beep	5	1-5
16	Secret Menu No. E06：Temp. Upper Limit/ Set Upper	1	Upper limit always > lower limit	37（Celsius） 98 (Fahrenheit)	1-99
17	Secret Menu No. E07：Temp. Lower Limit/Set lower	1	Upper limit always > lower limit	5（Celsius） 41 (Fahrenheit)	0-98
18	Secret Menu No. E08：Indoor Temp. Calibration	1	Temperature Calibration Value（℃ or °F）,accuracy 0.1（n *0.1)	0	(-99~+99)（Celsius） (-99~+99)(Fahrenheit)
19	Secret Menu No. E09：Indoor Humidity Calibration	1	Humidity calibration value	0	-20~+20
20	Secret Menu No. E10：External Temp. Calibration	1	Temperature Calibration Value（℃ or °F）,accuracy 0.1（n *0.1)	0	(-99~+99)（Celsius） (-99~+99)(Fahrenheit)
21	Secret Menu No. E11: Function option for External Temp. Sensor	1	0:Outdoor temperature sensor is protection sensor 1:Outdoor temperature sensor is controlled sensor	0	0-1
22	Secret Menu No. E12:Switch For Anti-Freeze Protection	1	1: Turn on 0: Turn off Default protection temperature range:（5.0℃ - 8.0℃） Anti-Freeze feature is available only when heating mode, turn on when temperature decrease to 5.0℃ , turn off when temperature increase to 8.0℃	0	0-1
23	Secret Menu No. E13: Fan Mode Option When Indoor Temp. Reaches To Setting Temp.	1	1：Manual fan speed，keep fan speed，valve turned off Auto fan speed ,keep low fan speed 0: Fan turned off	0	0-1
24	Secret Menu No. E14:Fan Working Mode	1	0：Fan works both for cooling and heating mode 1：Fan works only in cooling mode 2：Fan works only in heating mode 3：Fan not work neither incooling nor heating mode	0	0-3
25	Secret Menu No. E15: Panel Lock Function	1	1:Turn on 0:Turn off	1	0-1
26	Reserve				
27	Secret Menu No. E17: Option For Interval Ventilation Feature	1	1:Turn on 0:Turn off	0	0-1
28	Secret Menu No. E18： Duration For Interval Ventilation	1	Duration for interval ventilation within 1 hour，unit：minute	5	1-30
29	Secret Menu No. E19：Temp. Deadband	1	Temperature deadband（℃ or °F）, accuracy:n* 0.1	15（Celsius） 30 (Fahrenheit)	0-99（Celsius） 0-99（Fahrenheit）

Number	Function	Size	Description	Default	Possible Values
30	Secret Menu No. E21：TemP. Sensor Selection	1	0: Internal temperature from thermostat 1: External temperature from output board (PT1000)	0	0-1
31	Secret Menu No. E22：2-pipes/4-pipes Setting	1	0: 2-pipes 1: 4-pipes	0	0-1
255	Secret Menu No. E01：Factory Restore	1	55:write 55 to restore factory setting and turn to shut down interfaceOther Value: invalid	53	0-99

► Command Class supported by the device:

COMMAND_CLASS_BASIC;
COMMAND_CLASS_THERMOSTAT_SETPOINT;
COMMAND_CLASS_THERMOSTAT_MODE;
COMMAND_CLASS_THERMOSTAT_FAN_MODE;
COMMAND_CLASS_THERMOSTAT_OPERATING_STATE;
COMMAND_CLASS_SENSOR_MULTILEVEL;
COMMAND_CLASS_ASSOCIATION;
COMMAND_CLASS_VERSION;
COMMAND_CLASS_MANUFACTURER_SPECIFIC

1-Year Limited Warranty

We warrant this product to be free from defects in material and workmanship under normal and proper use for one year from purchase date of the original purchaser. We will, at its option, either repair or replace any part of its products that prove defective by reason of improper workmanship or materials. This limited warranty does not cover any damage to this product that results from improper installation, accident, abuse, misuse, natural disaster, insufficient or excessive electrical supply, abnormal mechanical or environmental conditions, or any unauthorized disassembly, repair or modification. This limited warranty shall not apply if: (i) the product was not used in accordance with any accompanying instructions, or (ii) the product was not used for its intended function. This limited warranty also does not apply to any product on which the original identification information has been altered, obliterated or removed, that has not been handled or packaged correctly, that has been sold as second-hand or that has been resold contrary to Country and other applicable export regulations.