CE
TTH 8M1

CE
TTH 8M2

CE
TTH 8M3

CE
TTH 8M4

Cooling

Lock

Setting
temperature

Room
Temperature

Clock

Fan speed
Auto, Hi, Med low

Run in
programmable
mode

4 periods
programable

Increase

Turn
on/off

Setting

Decrease

Fan speed

Features

• All thermostats in TTH 8M-series
(TTH 8M1, TTH 8M2, TTH 8M3 and TTH 8M4)
have the same functions,
the difference is the front appearance.

• Touch Screen

• Large LCD display

• 3-speed (high, med, low, auto)

• Output 0-10 Vdc

• Key lock function

• Power supply 24 Vac/dc

• Heating/Cooling,
2-pipe systems for modulating valve

• Setting point range +5 to +35°C

• Rated current 5A

• NTC 10K thermistor sensing element

• Accuracy +/-0.5 °C

• Working environment -10 to +60°C

• Display temperature range 0 to +70°C

• Storage temperature 0 to +50°C

• Dimensions 86x86x14 mm

• Protection class IP20

• Housing PC+ABS

• Approval CE

Description / Application

TTH 8M-series fan coil units touch screen thermostat is used for control room temperature in central air conditioning fan coil units system.

By comparing room temperature with setting temperature to open and close fan coil units and motorized valve in the end of air conditioning system, to achieve purpose of adjusting room temperature, comfort and saving energy.

TTH 8M-series touch screen thermostat uses microprogrammed control unit, large LCD display,
LCD display mode: working mode
(cooling, heating, ventilation),
fan speed (high, med, low, auto).

Room temperature, setting temperature, time,
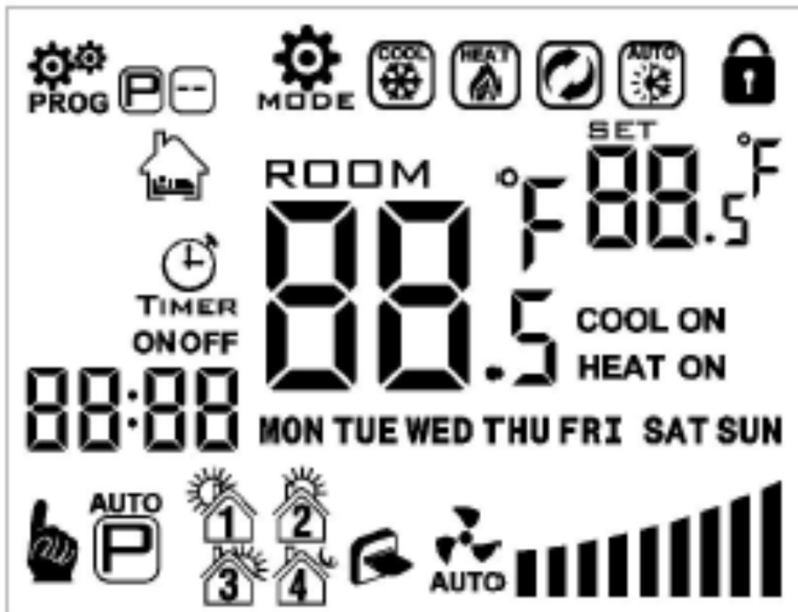7 days 4 period program, timing turn on/off etc.

Ordering Codes

Standard types without Modbus

TTH 8M1
TTH 8M2
TTH 8M3
TTH 8M4

Modbus types ends type number with MOD

TTH 8M1 MOD
TTH 8M2 MOD
TTH 8M3 MOD
TTH 8M4 MOD

VCP
Ventilation Control Products

Display and buttons

Buttons

Icon	Description
▲	Increase key: short press to adjust data, long press to check external senor temperature (When the sensor type is 2 in the advanced option)
SET	Mode switching key: short press to switch between manual mode and program mode, long press to set special function parameters
▼	Decrease key: short press to adjust data, long press to lock/unlock keys
🌀	Fan speed selection key: short press to set fan speed (confirm key when setting parameters), long press to enter sleep function setting
⏻	Power key

🔒 Child lock

ᴬᵁᵀᴼℙ Program mode; run preset program

👆ᴬᵁᵀᴼℙ Temporary manual mode

👆 Manual mode

🕐 Clock

Operation

Operation	Description
Fan Speed	Turn on state ,press " 🌀 " to choose fan speed （high ▁▂▃▄▅▆）、（mid ▁▂▃▄）、（low ▁▂▃）、（auto ▁▂▃▄▅▆）
Setting time	Power on state, press " SET " 3-5s ， chose 🕐, then press " 🌀 " to set time：Minute"mm"flashing，press"▲"or"▼"to adjust，press"🌀"to next setting.as same method to set hour and week.finally press 🌀 or wait 10S to exit
Timing Turn on/off Setting	Power on state, long press " SET " to choose " **ONOFF** " icon.press " 🌀 " confirm to timing turn on setting, when it display "ON", press "▲" or "▼" to adjust. If display "--:--" , press"🌀" to cancel timing turn on and enter into timing turn
	off setting. If the "hh mm" flashing, then press "🌀" to confirm and press "▲"or"▼"to adjust the hour, press "🌀" and "▲"or"▼" to adjust minute of turn off.
Working mode	Power on state,long press " SET " 3-5S, short press SET to choose ⚙, next press 🌀 to choose mode: ❄🔥♻❄ " ❄ " is mean cooling mode, " 🔥 " is mean heating mode, " ♻ " is mean ventilation mode；❄ is mean auto mode
Control valve	When cooling mode(heating mode),indoor temperature more （lower) 1℃ than setting temperature, open valve; after equal, closed valve,fan is still running. Ventilation mode （fan is not control by temperature as default） If fan be controlled by temperature,then valve and fan will be closed.
Locked function	long press ▼ to lock/unlock keys
Alarm	E1 ： inner sensor alarm E2 ： external sensor alarm
Sleep mode	Power on state, long press 🌀 ,🌙is flashing, short press ▲to run it，short press▼to cancel **Remark：** Sleep mode is not available when run ventilate mode or auto mode
Manual/ Program mode	Power on state, short press " SET " to switch manual mode/program mode

Operation

Door card energy saving mode	The energy saving mode can be entered through the door card. When the door card is pulled out, the icon ↩ of the room card flashes.
	1. Cooling mode, the temperature is automatically set to 26° C (you can set the cooling temperature after the door card is pulled out through the advanced option). The fan runs at low speed;
	2. Heating mode, the temperature is automatically set to 18℃ (the heating temperature can be set after the advanced option door card is pulled out), and the fan runs at low speed;
MODBUS communication address view	Power on state, long press [SET] enter setting interface, short [SET] to choose 🖎 then press ⚙ **to confirm, display the MODBUS communication address of the current device**

Program Mode Setting

TTH 8M fan coil units thermostat support set different time different temperature;
there is 5+2,6+1,7 days program mode type

Long press [SET] 3-5S，next short press [SET] to choose [P], then short press [⏱] to program mode setting，use▲ and▼ **to adjust value.** After short press [⏱] to set next time section setting

Time section		Icon	Time (default)	Temperature(default)
Monday to Sunday	1	🏠①	06:00	20° C
	2	☀②	8:00	15° C
	3	☀③	17:30	22° C
	4	🌙④	22:00	15° C

Advanced Option A

Turn off thermostat ,long press ⚙5S to enter advance setting option A, Short press 🔧 to set next item, press "▲" or "▼" to set item data

Symbol	Item	Parameter	Default
A1	Temperature Calibration	-9-+9°C	-1°C
A2	Children Lock	0:half lock; （It is available to turn on/off and adjust temperature） 1:full lock 2: disable child lock	0
A3	Setting the lowest limit temperature	5-15°C	5°C
A4	Setting the highest limit temperature	16-50°C	35°C
A5	Fan energy saving control	0: valve off,fan off 1: valve off,fan always on	0
A6	Program mode type	0=5+2　　　1=6+1 2=7 (everyday all the same) 3=disable program mode	0
A7	Choose valve output	2:2pipe 4:4 pipe	4
A8	Timing switch operation mode	0: Only run once 1: Cycle run	0
A9	Set temperature for external sensor	20-60°C	38°C
AA	Backlight sleep time	5-30S	20S
AB	Reset	Display Ao, press ⚙ key until whole show	Ao

Advanced Option B

Turn off thermostat ,long press[SET]5S to enter advance setting options, Short press [SET] to set next item, press"▲"or"▼"to set item data
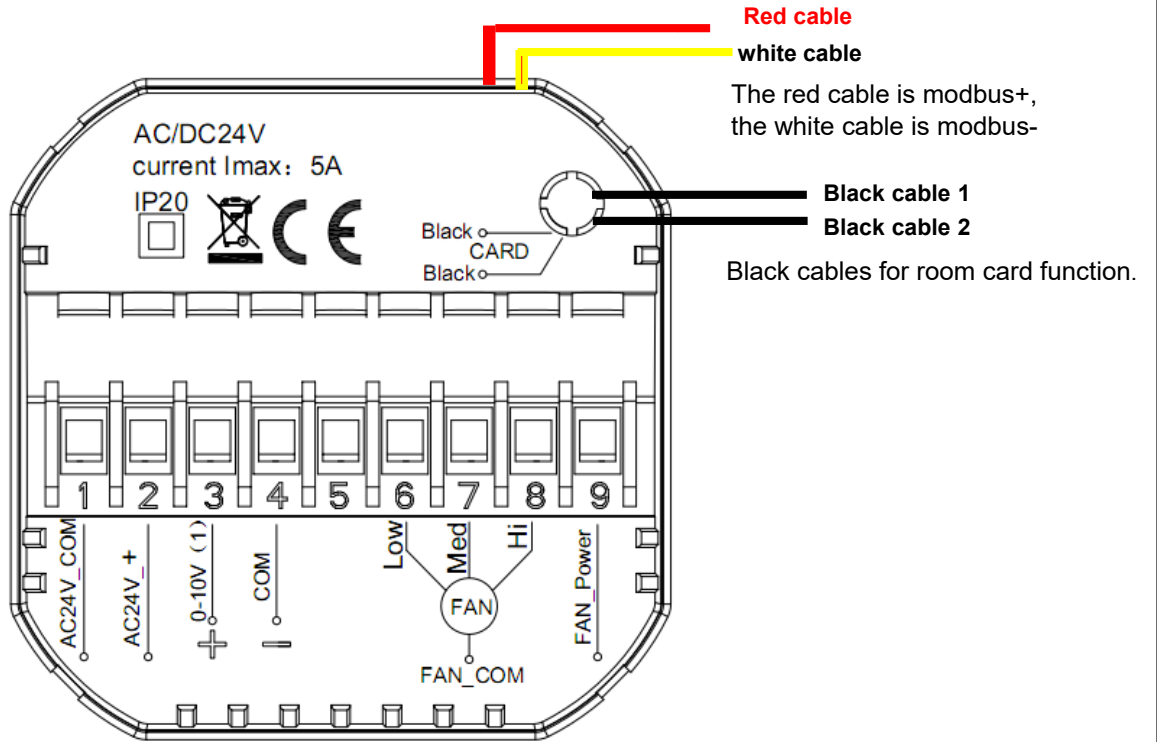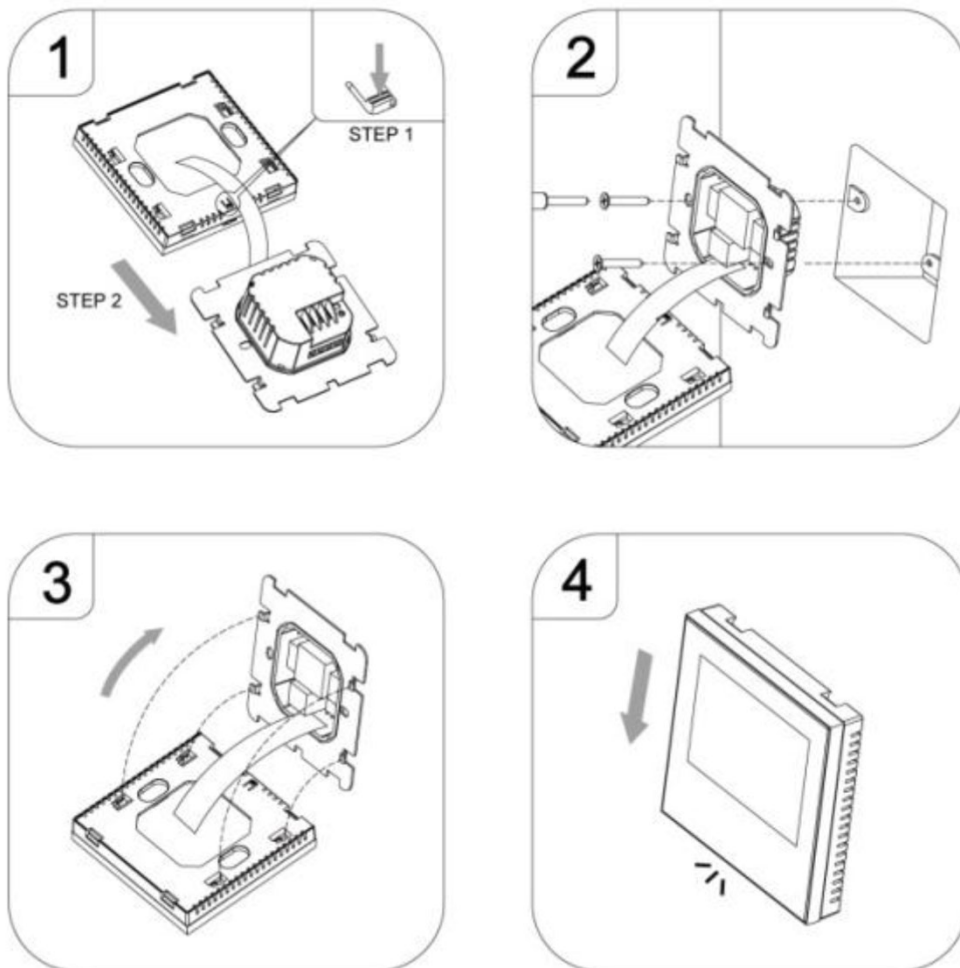
PL	MODBUS communication address	01-FF	01
B1	Sensor type	0: inner sensor 1: inner sensor with key card 2:Double sensor when choose 2, In the heating state, normally only valve is opened , and the fan is turned on when the external temperature is detected to be ≥X°C. When the temperature is detected to be lower than (X-2) °C, the fan is turned off.	0
B2	Key Card Type	00: S1 Connect S2 Means Put-out Card Status; Disconnection Means Pull-in Card Status 01: S1 Connect S2 Means Pull-in Card Status; Disconnect Means Put-out Card Status	00
B3	After Door Card Pull Out To Cool Temperature	Setting Range 22～32℃	26℃
B4	After Door Card Pull Out To Heat Temperature	Setting Range 10～21℃	18℃
B5	Baud Rate	0：2400 1：4800 2：9600	2
B6	P value (0-10V adjustment interval voltage)	10：1V 8：1.26V 6：1.67V 4：2.5V	10
B7	I value (0-10V adjustment interval time)	5-60S	5

Wiring Diagram

Red cable

white cable

The red cable is modbus+, the white cable is modbus-

Black cable 1
Black cable 2

Black cables for room card function.

AC/DC24V
current Imax: 5A

IP20

Black o—
CARD
Black o—

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

AC24V_COM
AC24V_+
0-10V (1)
COM
Low
Med
Hi
FAN
FAN_Power
FAN_COM

Installation

STEP 1

STEP 2

Protocol based on MODBUS and derived;it is exclusively used in connection between air conditioner thermostat and room controller.

1、MODBUS Instructions

Number	Parameter Name	Regulations
1	Working Mode	RS485 half-duplex;master-slave inspection way;thermostat is slave
2	Physical Interface	A(+),B(-),2-wire system
3	Baud Rate	(Standard Rate is 2400/4800/9600bps)
4	Byte Format	9 format:8 bits + 1 stop bit
5	Modbus	RTU mode
6	Transmission Mode	RTU(Remote Terminal Unit) mode (Please refer to the MOBUSinstructions)
7	Thermostat Address	1－247;(0 is the broadcast address,can not be use)
8	Command Code	3, 6(3: read thermostat;6:setting thermostat)
9	CRC Checksum	CRC－16 (Please refer to the MOBUS instructions)
10	Calibration Mode	CRC－16 (Please refer to the MOBUS instructions)

2、read the thermostat operation frame format

﹡command frame(given out by PC controller)read the thermostat state;

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Thermostat Address	03	Read the register high starting address byte	Read the register low starting address byte	Read the high byte register number	Read the low byte register number	CRC HIGH	CRC LOW

﹡ Response frame (Given out by thermostat)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	……				
Thermostat Address	03	Returns data and byte numbers	Returns the first high byte register data	Returns the first low byte register data	……	Returns the N high byte register data	Returns the N low byte register data	CRC HIGH	CRC LOW

3、Set the thermostat frame format

﹡ Command frame 1 (given out by PC controller)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Thermostat Address	06	Set the register high starting address byte	Set the register low starting address byte	Set high value	Set low value	CRC HIGH	CRC LOW

﹡ Response frame (Given out by   thermostat)

Byte 1	Byte 2	Byte 3	Byte 4	Byte 5	Byte 6	Byte 7	Byte 8
Thermostat Address	06	Set the register high starting address byte	Set the register low starting address byte	Set high value(Writable)/Return state(read only)	Set low value(Writable)/Return state(read only)	CRC HIGH	CRC LOW

Air conditioner thermostat status value format specification table

Byte	Value	Specification	Corresponding Register Address
Byte 5	00	Set temperature high byte:usually be 0	10030
Byte 6	5-35	Set temperature low byte: 5-35 (Corresponding mode,cooling setting temperature,heating setting temperature,ventilation is no)	
Byte 5	00	Mode set high byte:usually be 0	10031
Byte 6	00-10	Mode set low byte: 00 cooling 01 heating 10 ventilation 11 auto heating and cooling	
Byte 5	00	Thermostat read temperature high byte from sensor(read only)	10032
Byte 6	00	Thermostat read temperature low byte from sensor(read only)	
Byte 5	00-59	High byte: Second value, the data is HEX code	10033
Byte 6	00-59	Low byte: Minute value, the data is HEX code	
Byte 5	00-23	High byte: Hour value, the data is HEX code	10034
Byte 6	00-07	Low byte: Week value, the data is HEX code	
Byte 5	00	Compensation temperature high byte: 0	10035
Byte 6	0-36	Compensation temperature low byte: 0~36(-9~9) such as：0 =-9 ，1=-8.5 ，2=-8，3=-7.5…..	
Byte 5	00	Fan speed set high byte:usually be 0	10036
Byte 6	00-11	Fan speed set low byte: 00Auto 01 low 10 medium 11 high	
Byte 5	00	On-Off switch mark high byte: 0	10037
Byte 6	00-01	On-Off switch mark low byte: 0 turn off thermostat; 1 turn on thermostat	
Byte 5	00	Lock mark high byte: 0	10038
Byte 6	00-01	Lock mark low byte: 0 unlock thermostat 1 lock thermostat	
Byte 5	00	Full lock and half lock mark high byte: 0	10039
Byte 6	00-01	Full lock and half lock mark low byte: 0: cancel the lock 1: unlock thermostat	
Byte 5	00	Upper limiting value high byte: 0	10040
Byte 6	16-50	Upper limiting value low byte: 16-50	
Byte 5	00	Lower limiting value high byte: 0	10041
Byte 6	5-15	Lower limiting value low byte: 5-15	
Byte 5	00-01	High byte: sensor state mark(read only): 0 sensor is normal 1 sensor is fault	10042
Byte 6	00-01	Low byte: load state mark(read only): 0 load off 1 load on	

Byte 5	00	High byte: 0	10043
Byte 6	0-2	Working Mode: 0 manual 1 program 2 temporary manual mode	
Byte 5	xx	Room temperature (add compensation) Read only: the ones digit is the decimal place, for example: 255 is 25.5 ℃	10044
Byte 6	xx		
Byte 5	xx	Set temperature (lower limit to upper limit) : the ones digit is the decimal place, for example: 255 is 25.5℃, step is 5 (0.5)	10045
Byte 6	xx		
Byte 5	0	High byte: 0	10046
Byte 6	01-07	Low byte: week value, the data is 1-7	
Byte 5	0	High byte: 0	10047
Byte 6	00-23	Low byte: hour value, the data is 0-23	
Byte 5	0	High byte: 0	10048
Byte 6	00-59	Low byte: minute value, the data is 0-59	
Byte 5	0	High byte: 0	10049
Byte 6	00-59	Low byte: second value, the data is 0-59	

Remarks：thermostat native unlock operation:long press "up" and "down" for 5 seconds to lock and unlock thermostat.

Cautions on Installation and Use

1. To prevent the TTH 8M-series thermostat display from a high fluctuation, special treatment has been made to the program.
   Therefore, it is normal that the thermostat cannot immediately display the sudden change of temperature.

2. The TTH 8M-series thermostat installed on 1.5m above the ground.

3. For the TTH 8M-series thermostat installed, please take care not to install it to the wall corner, door / window side
   or behind the door or in such unheated area as exterior wall. Avoid hot / cold air duct, radiator, flue or thermal pipe.

4. Only the professional technicians are permitted to open the transmitting and receiving box of the
   TTH 8M-series thermostat for installation.
   When install the power supply, make sure that the power cable is well insulated.

5. The TTH 8M-series thermostat is unrepairable product.
   The user shall not open the internal circuit board.

6. TTH 8M-series thermostat design for the standard 75x75x35mm wall mount box installed.
   Follow the instructions to open the rear cover base, mount it on the wall and wire it.

7. Before installing the TTH 8M-series thermostat, make sure that the system is disconnected.
   The maximum voltage of the system shall meet the requirements specified in the Instruction Manual