



CE  
TTH 8D1



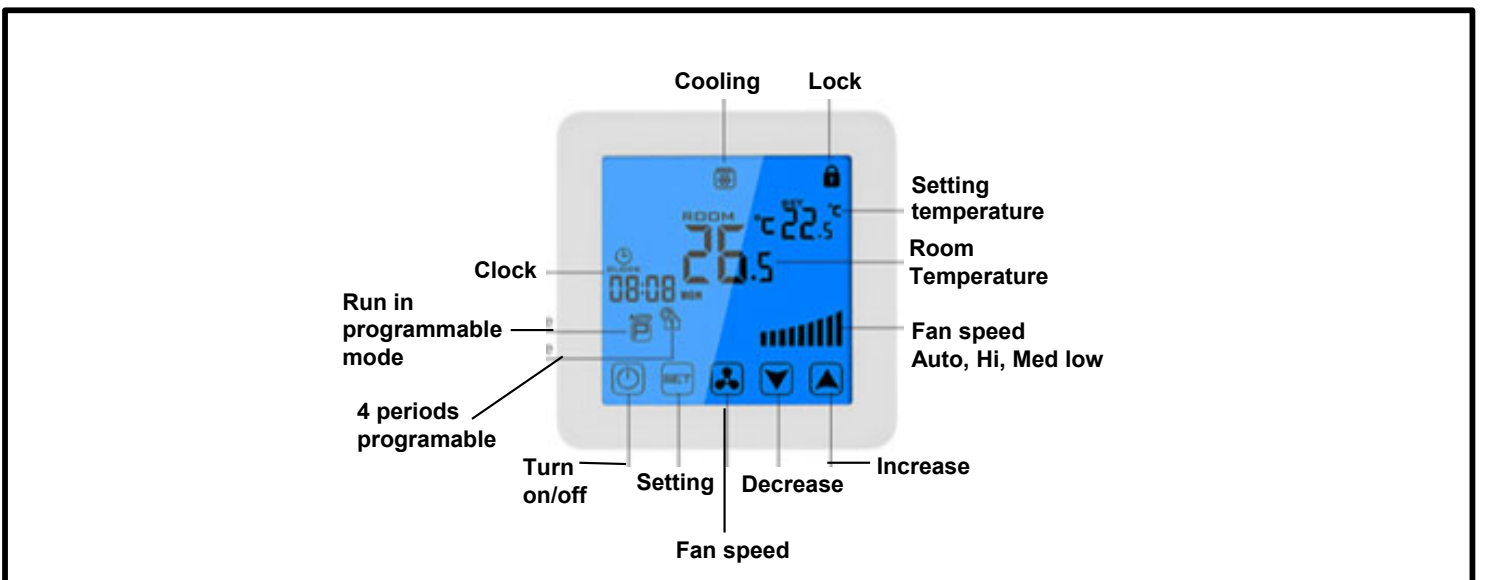
CE  
TTH 8D2



CE  
TTH 8D3



CE  
TTH 8D4



## Features

- All thermostats in TTH 8D-series (TTH 8D1, TTH 8D2, TTH 8D3 and TTH 8D4) have the same functions, the difference is the front appearance.
- Touch Screen
- Large LCD display
- 3-speed (high, med, low, auto)
- Output on/off
- Key lock function
- Power supply 230 Vac
- cooling 2-pipe or cooling/heating 4-pipe system for 2-wire motorised 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 8D-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 8D-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

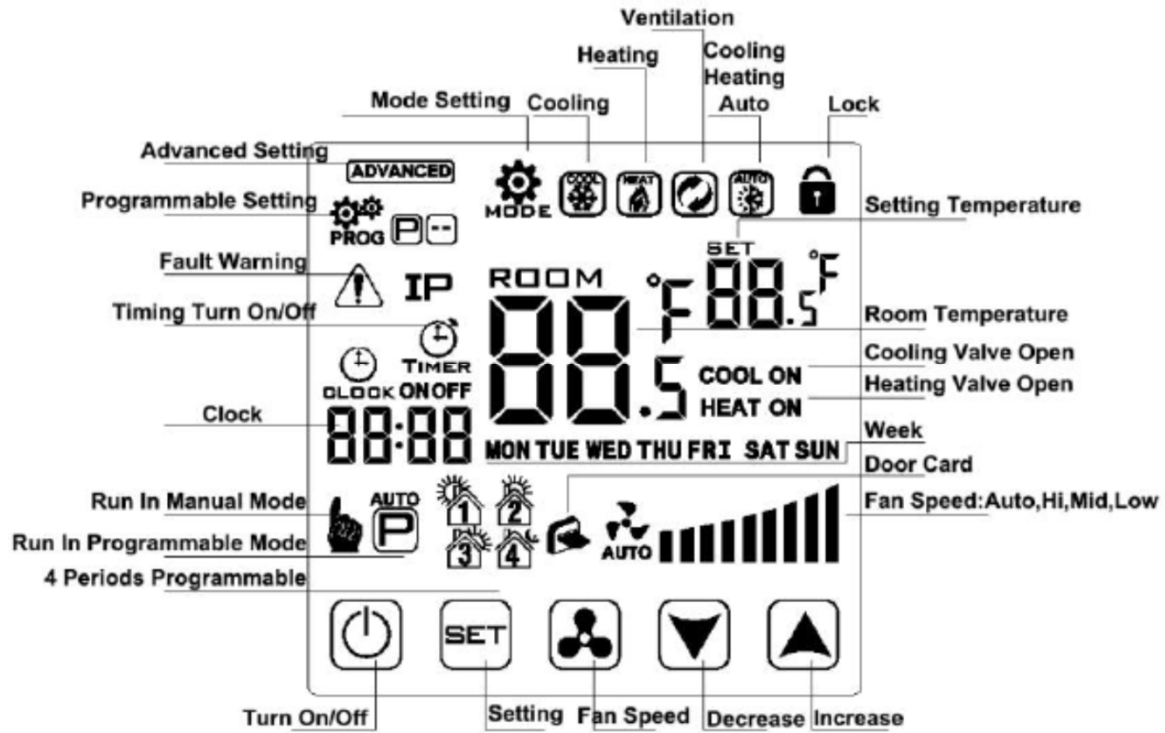
### Standard types without Modbus

TTH 8D1  
TTH 8D2  
TTH 8D3  
TTH 8D4

### Modbus types ends type number with MOD:

TTH 8D1 MOD  
TTH 8D2 MOD  
TTH 8D3 MOD  
TTH 8D4 MOD

### Display and buttons



### Operation Keys (Buttons)

Icon	Description
	Increase key: short press to adjust data, long press to check external sensor temperature (When the sensor type is N3 in the advanced option)
	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



Program mode; run preset program



Temporary manual mode




Manual mode



Clock

## Operation instruction

Operation	Description
Fan Speed	Power on state ,press “  Ventilation Control Products Sweden AB • +46-31-811666 • info@vcp.se • www.vcp.se

### Operation instruction

<p>Door card energy saving mode</p>	<p>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.</p> <p>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;</p> <p>2. Heating mode, the temperature is automatically set to 18°C (the heating temperature can be set after the advanced option door card is pulled out), and the fan runs at low speed;</p>
<p>MODBUS communication address view</p>	<p>Power on state, long press  enter setting interface, short  to choose  then press  to confirm, display the MODBUS communication address of the current device</p>





### Program setting


TTH 8D fan coil units thermostat can set different time different temperature; there is 5+2,6+1,7days programs can be chosen.

Long press 3-5S, next short press to choose , 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		06:00	20° C
	2		8:00	15° C
	3		17:30	22° C
	4		22:00	15° C

## Advanced Setting A

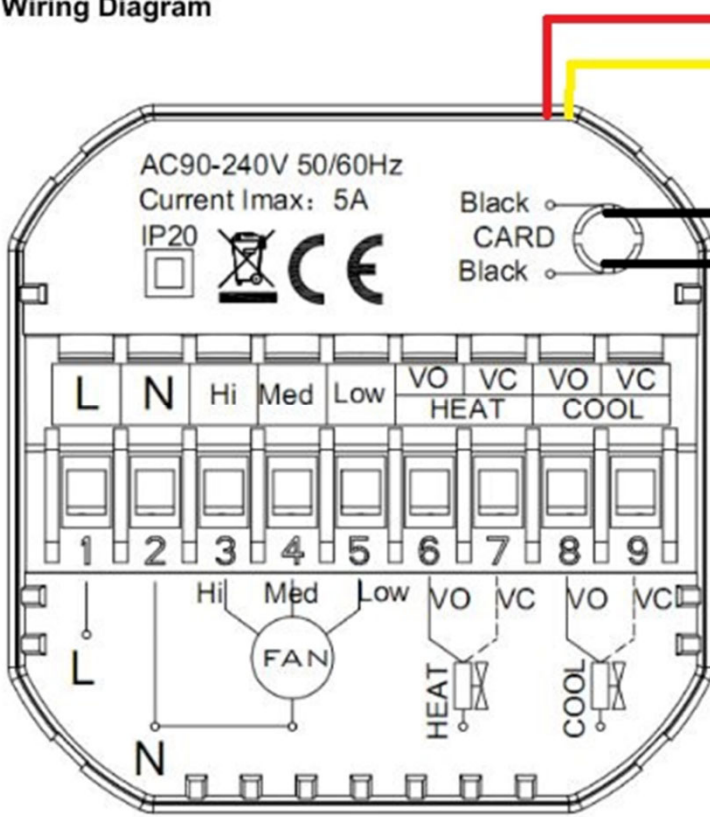
Turn off thermostat ,long press 5S to enter advanced setting option A, Short press  to set next item, press“”or“”to set item data

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	2
A3	Setting the low limit temperature	5-15°C	5°C
A4	Setting the high 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 4:4pipe	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	10S
AB	Reset	Display Ao, press  key until whole show	Ao

### Advanced Setting B

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 $\geq X^{\circ}\text{C}$ . When the temperature is detected to be lower than $(X-2)^{\circ}\text{C}$ , 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°C	26°C
B4	After Door Card Pull Out To Heat Temperature	Setting Range 10~21°C	18°C
B5	Baud Rate	0: 2400      1: 4800      2: 9600	2

**Wiring Diagram**



AC90-240V 50/60Hz  
Current I<sub>max</sub>: 5A



Black ○  
CARD ○  
Black ○

**red cable:**

**white cable:**

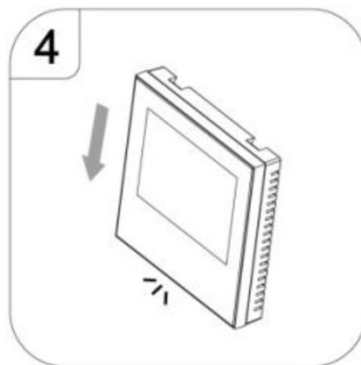
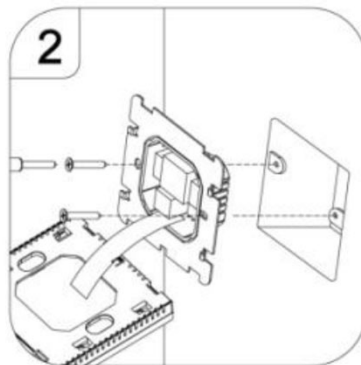
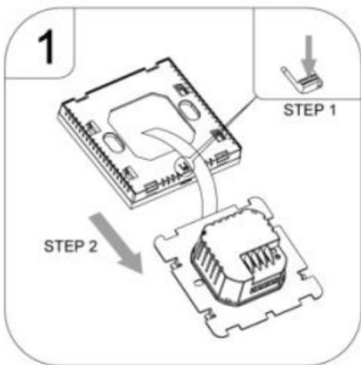
The red cable is modbus+,  
the white cable is modbus-

**black cable 1:**

**black cable 2:**

Black cables for room card function.

**Installation**





**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 MODBUSinstructions)
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 MODBUS instructions)
10	Calibration Mode	CRC—16 (Please refer to the MODBUS 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 °C	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°C, 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 8D-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 8D-series thermostat installed on 1.5m above the ground.
3. For the TTH 8D-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 8D-series thermostat for installation.  
When install the power supply, make sure that the power cable is well insulated.
5. The TTH 8D-series thermostat is unrepairable product.  
The user shall not open the internal circuit board.
6. TTH 8D-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 8D-series thermostat, make sure that the system is disconnected.  
The maximum voltage of the system shall meet the requirements specified in the Instruction Manual (Max. AC Voltage: 250V).