

Fan Coil Thermostat MH5-4D



MH5 Fan Coil Thermostat is a Z-Wave (800 series) enabled device for indoor temperature control. It is mainly applied to a 4-pipe Fan coil system. It can read room temperature, and automatically control fan speed based on the temperature difference. The device is of high reliability and practicability. This product can be included and operated in any Z-Wave network with other Z-Wave certified devices from any other manufacturers.

Features

- Capacitive touch buttons
- Tempered glass panel, PC alloy enclosure
- Precise temperature calibration function
- Non-volatile Memory, working state saved even power failure
- Intelligent on/off control of electric (ball) valve or air-valve and 0-10V fan
- Easily steel frame back plate installation

Specification

- **Power Supply:** AC85~260V, 50/60Hz
- **Resistive Load:** ≤3A
- **Self Consumption:** ≤1W
- **Temperature Sensor:** NTC 10K
- **Working Environment:** 0 ~ 55°C ; <95% RH (Non-condensation)
- **Temperature Setting:** 5-37°C (Adjustable)
- **Dimension:** 86* 86*14mm
- **Hole Pitch:** 60-65mm (60 or 86 Standard junction box)
- **Z-Wave Frequency:** Operating frequency range, defined by the regulatory bodies (for Z-wave in Europe: 868.0 - 868.6 MHz, 869.7 - 870.0 MHz) or other frequency customized



Declaration of Conformity

CE Hereby, We declare that the device is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

WEEE Directive Compliance

The device marked with this symbol should not be disposed of with household waste. It is the user's responsibility to deliver the used appliance to a designated recycling point.

Z-Wave Compliance

The thermostat is a fully compatible Z-Wave Plus device.

Important Safety Instruction

- ⚠ Read the instructions before starting up the unit!
- ⚠ This product is not a toy. Keep out of reach of children and animals!
- ⚠ Do not expose the device to moisture, water or other liquids. Do not place liquids near or on the device!
- ⚠ Do not attempt to disassemble, repair or modify the device yourself! This product is for indoor use only. Do not use outdoors!

CAUTIONS!

Flush-mount only into a UL/ETL/CE certified plastic junction box. The minimum size should be 65*65*45mm, minimum Volume is 190cm³. Use Copper Conductors Only.

CAUTIONS!

Risk of Electric Shock - More than one disconnect switch may be required to de-energize the equipment before servicing.

Installation

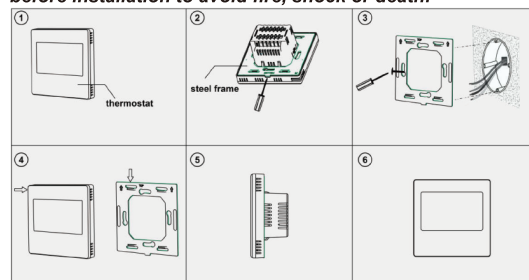
Location:

The device 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.

Important!

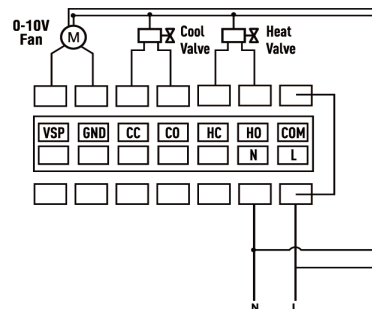
- A qualified electrician with the understanding of wiring diagrams and knowledge of electrical safety should complete installation following the instructions.
- Before installation, please confirm the real voltage complying with the device's specification. Cut off any power supply to secure the safety 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.

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

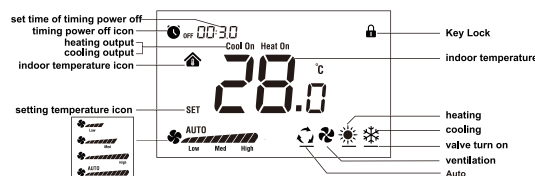


- **Step 1:** Remove the steel frame from the device, and secure it onto the junction box with two screws.
- **Step 2:** Insert all wires into the right terminals and tighten screws. The wiring diagram is shown below.
- **Step 3:** Attach the wired device on the points of the steel frame as shown in fig.4, and then push the whole device into junction box.
- **Step 4:** 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, device will display "OFF", press \odot to enter into working interface.

Under normal working interface, press \odot to turn off the device, "OFF" displays and all outputs are forced off.

Timing Power Off

Under normal working interface, long press \odot and M synchronously for 3 seconds to enter into timing setting interface, press \wedge or \vee to adjust the setting value, press M to save the setting and then return to normal working interface, and then \odot timing icon will display on the screen. Setting range 00~12 (in sequence), setting gap is half-hour, minimum unit is hour.

Cancel Timing Power Off

Turn on/off the device by manual, timing power off will be invalid automatically and the setting value changes to 0, or set the value of timing to 00:00 to cancel timing power off.

Key Lock

Under normal working interface or shutdown interface, long press \vee + \wedge for 3 seconds to enter into lock/unlock setting. If \mathcal{L} appears on the screen, it indicates the keys are locked and all keys are invalid. If \mathcal{L} disappears on the screen, it indicates the keys are unlocked and all keys are available to operate.

Fan Speed Setting

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

Note: In Ventilation mode, Auto is invalid for fan.

Temperature Setting

Under normal working interface, press \vee or \wedge to adjust the value of setting temperature, setting range 5-37°C, setting gap of adjustment is 0.5°C, press \vee to decrease the value of setting temperature, press \wedge to increase the value of setting temperature, and then press M to confirm, or wait for 8

seconds without any operation to save the setting value automatically and then return to normal working interface.

Working Mode Setting

Under normal working interface, press M to switch the working mode among $\omin�$ cooling --> $\omin�$ heating --> $\omin�$ ventilation--> \odot auto in sequence.

Fan Manually Control

If fan speed is manually set, the device controls the fan in such situation:

Cooling Mode:

Room temperature \leq setting temperature, valve closes and fan stops;
Room temperature \geq setting temperature +1°C, valve and fan opens.

Heating Mode:

Room temperature \geq setting temperature, valve closes and fan stops;
Room temperature \leq setting temperature -1°C, valve and fan opens.

Ventilation Mode:

Fan turns on normally in accordance with the setting fan speed, valve is forced to close.

(Note: The fan output is nothing to do with the setting temperature in ventilation mode)

Fan Automation

Cooling Mode	a. Room temperature \leq setting temperature, valve closes automatically, fan stops; b. Room temperature \geq setting temperature +1°C, fan turned on in low speed; c. Room temperature \geq setting temperature +2°C, fan turned on in medium speed; d. Room temperature \geq setting temperature +3°C, fan turned on in high speed;
Heating Mode	a. Room temperature \geq setting temperature, valve closes automatically, fan stops; b. Room temperature \leq setting temperature -1°C, fan turned on in low speed; c. Room temperature \leq setting temperature -2°C, fan turned on in medium speed; d. Room temperature \leq setting temperature -3°C, fan turned on in high speed;

Note: Fan will operate only if the valve opens.

Temp. Sensor Error

If temperature sensor does not work, "0.0" displays, fan stops and valve closes automatically.

Fan Voltage Setting

Under shutdown state, long press M + \clubsuit to enter into interface of adjusting the level of fan voltage, press M to switch the parameter number from 1 to 3, press \vee and \wedge to adjust the setting value, and then press \odot to save and exit.

Parameter No.	Definition	Setting range	Default	Remark
1	Fan in low level	0-10V	4	gap: 0.1V
2	Fan in medium level	0-10V	6	gap: 0.1V
3	Fan in high level	0-10V	8	gap: 0.1V



Secret Menu

Under shutdown interface, long press M + \clubsuit to enter Secret Menu, input password 5138, press M to confirm and enter into setting interface. Press \clubsuit to switch among the parameters and press \vee or \wedge to modify the setting value, and then press M to save the modification and exit.

Parameter No.	Definition	Setting range	Default	Remark
E01	Restore factory setting	0-99	53	Default 53, change 53 to 55 to restore factory setting
E02	Power on state after power failure	0~ 2	01	When power on again after power failure: 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.
E03	Backlit brightness	1 ~5	2	1: Dim totally 2: Low brightness 3: Medium brightness 4: High brightness 5: Always on
E04	Beep volume	1-5	5	1: Off 2: Low beep 3: Medium beep 4: High beep 5: Standard beep
E06	Temp. upper limit	0-99	37.0°C	0-99
E07	Temp. lower limit	0-99	05.0°C	0-99
E08	Indoor temp. calibration	-9.9-9.9	0.0	-9.9-9.9
E10	External temp. calibration	-9.9-9.9	0.0	-9.9-9.9
E11	Function option of external temp. sensor	0-1	0	0:External temperature sensor is protection sensor 1:External temperature sensor is controlled sensor
E12	Anti-freeze protection switch	ON / OF	OF	ON: Turn on OF: Turn off Default protection temperature range: (5.0°C – 8.0°C) Anti-freeze feature is available only when heating mode, turn on when temperature decrease to 5.0°C, turn off when temperature increase to 8.0°C
E13	Fan mode option when indoor temp. reaches to setting temp.	ON/OF	OF	ON: Fan keep low speed OF: Fan turned off
E14	Fan function	0-3	0	0: Fan works both for cooling and heating 1: Fan works only in cooling 2: Fan works only in heating 3: Fan not work neither in cooling nor heating
E15	Key lock function	ON/OF	ON	ON: turn on OF: turn off
E17	Option for interval ventilation feature	ON/OF	OF	ON: turn on OF: turn off
E18	Duration for interval ventilation	1-30 (min)	05 (min)	Duration for interval ventilation every 1 hour (unit: minute)
E19	Temp. deadband	1.0 – 9.9°C	1.0°C /2.0 F	
E20	Temp. unit	0 ~ 1	0	0: Celsius 1: Fahrenheit

► Z-Wave Operation

• Including & Excluding of Z-Wave network

Under normal display, long press  +  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 successful, 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.

Note: Follow the same steps to exclude the device from the network.

• 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 temp. 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

• 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

• Z-Wave Parameter Setting:

Number	Function	Size	Description	Default	Possible values
1	Secret menu No. E20: Temp. unit	1	0: Celsius 1: Fahrenheit	0	0-1
2	Automatic temp. value reporting (Celsius)	2	Unit 0.1°C 0: OFF: 3-255: n *0.1°C ,automatically report to gateway when temperature variation greater than this value Unit 0.1°F: 0: OFF: 3-255: n *0.1°F,automatically report to gateway when temperature variation greater than this value	5 10	0, 3-255 0,3-255
12	Secret menu No. E02: Power on state after power failure	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 totally 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

Number	Function	Size	Description	Default	Possible values
18	Secret menu No. E08: Indoor temp. calibration	1	Temperature calibration value (C or F) , accuracy 0.1 (n *0.1)	0	(-99~+99) (Celsius) (-99~+99) (Fahrenheit)
20	Secret menu No. E10: External temp. calibration	1	Temperature calibration Value (C 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:External temperature sensor is protection sensor 1:External 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 C – 8.0 C) Anti-freeze feature is available only when heating mode, turn on when temperature decrease to 5.0 C , turn off when temperature increase to 8.0 C	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 function	1	0: Fan works both for cooling and heating 1: Fan works only in cooling 2: Fan works only in heating 3: Fan not work neither in cooling nor heating	0	0-3
25	Secret menu No. E15: Key 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 every 1 hour, unit: minute	5	1-30
29	Secret menu No. E19: Temp. deadband	1	Temperature deadband (C or F) , accuracy: n* 0.1	10 (Celsius) 20 (Fahrenheit)	0-99 (Celsius) 0-99 (Fahrenheit)
255	Secret menu No. E01: Factory restore	1	55:write 55 to restore factory setting and turn to shut down interface	53	0-99

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.