Fan Coil Thermostat

MH8-FC/MH8-FC4 （V1.1）

MH8 Fan Coil Thermostat is a Z-Wave enabled device for indoor temperature control. It is mainly applied to a 2-pipe or 4-pipe Fan coil system. It can read room temperature and local time, 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 3-speed fan, electric (ball) valve or air-valve
- Easily steel frame back plate installation

Specification

- **Power Supply:** AC85~260V, 50/60Hz

- **Resistive Load:** ≤3A
- **Self Consumption**：≤1W
- **Temperature Sensor:** NTC 10K
- **Display Accuracy:** 0.1 ℃
- **Working Environment**：0～55℃; <95% RH（Non-condensation)
- **Temperature Setting**：5-35 ℃（41-95 ℉）(Adjustable)
- **Dimension**：86* 86*42mm
- **Hole Pitch**：60-65mm（86 Standard junction box）
- **Connection Pattern:** Tx/Rx
- **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)
- **Maximum Transmitting Power:** +3dBm
- **Active Element:** Relay switch μ
- **Over Current Protection:** Required external 10A circuit breaker

- **Declaration of Conformity**

Hereby, We declares 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 86*86*60mm, minimum Volume is 443cm³. 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

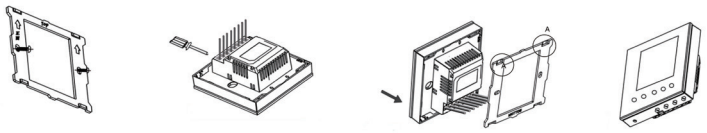
Location:

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!

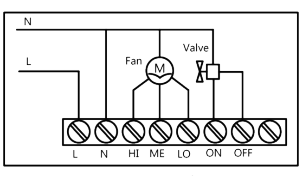


Step 1: Remove the steel frame from the device, and secure it onto the junction box with two screws.

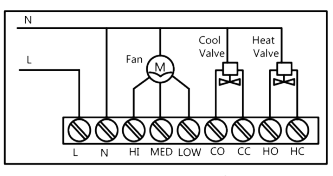
Step 2: Insert all wires into the right terminals and tighten screws. The wiring diagram is shown below.

Step 3: Attach the wired device on "A" points of the steel frame as shown first, 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.

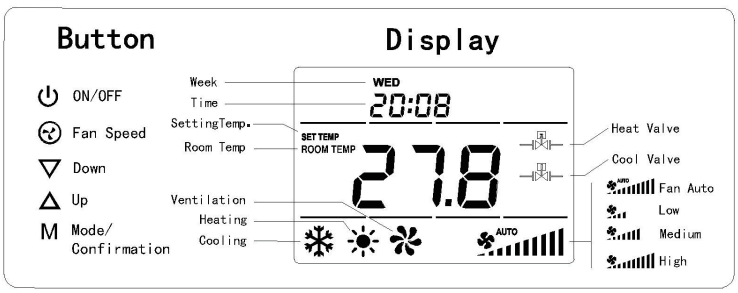


MH8-FC(2-pipe)



MH8-FC4(4-pipe)

Button & Display



MH8-FC (2-pipe): Only —①— will display no matter heating or cooling

MH8-FC4 (4-pipe): —①— displays when cooling, —②— displays when heating.

Operation

On/Off Setting

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

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

Local Time Setting

Press & hold "**M**" to enter local time setting.Touch "**M**"to switch among Week, Hour & Minute, and then press ▽

or △ to set the parameters of flashing item. Press "**M**", or wait for 15s to save the value and return to display.

Working Mode Setting

Touch "**M**" to enter working mode setting, the current mode flashing. Press ▽ or △ to switch among Cooling , Heating & Ventilation mode, then press "**M**", or wait for 15s to confirm the choice.

Temperature Setting

Touch or to set local temperature value. Hold the buttons can set continuously. Press "**M**", or wait for 15s 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"; Then press "**M**", or wait for 15s to confirm the choice.

Note: In Ventilation mode, no Auto speed choice.

Fan Manually Control

If fan speed is manually set, the

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.

Fan Automation

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

Note: Fan will operate only if the valve opens.

Temperature Unit Setting

In normal display, press and then will flash, then hold ▽ can switch between celsius ℃ and fahrenheit ℉.

Note: In fahrenheit unit mode, ℉ will not be shown on the display.

Temp. Sensor Error

If temperature sensor does not work, "E1" displays, fan stops and valve closes automatically.

Secret Menu

Under the shutdown state, press & hold M to enter secret menu. The password is 5138 and press M to enter.

No.	Function	Range	Default	Remark
P-01	Screen Brightness	0-1	0	**0:** Dim without key touch **1:** Always on
P-02	Fan Work Mode	0-1	0	**0:** fan and valve will be shutdown if room temp. reaches setting temp. **1:** only valve will be shutdown if room temp. reaches setting temp. The fan will continuously work in low speed.
P-03	Reserve			
P-04	Temp. Unit			**0:** Celsius **1:** Fahrenheit

No.	Function	Range	Default	Remark
P-05	Beep	0-2	1	**0 :** Mute **1:** Low **2:** High
P-06	Power Failure Memory	0-2	0	When power on again: **0:**device will be in shutdown state ("OFF"); **1:** device will be in working interface; **2:** device will stay the status before power failure.
P-07	Temp. Calibration	-5.0 ~ +5.0 ℃	0 ℃	
P-08	Temp. Upper limit	5-99.5 ℃	35 ℃	Upper limit always > lower limit
P-09	Temp. Lower limit	5-99.5 ℃	35 ℃	
P-10	Factory Restore		53	

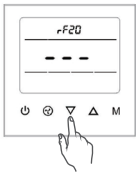
Z-Wave Operation

• Including & Excluding of Z-Wave network

Under the shutdown state, 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 ▽ 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.

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



After inclusion, turn off the device and then turn it on. Now the device is ready to be operated by controller/ gateway in Z-Wave network.

• Association Group

AG Identifier	Max Node ID	Command Class	Trigger Situation
0x01	1	COMMAND_CLASS_SENSOR_MULTILEVEL_V5, SENSOR_MULTILEVEL_REPORT_V5	When the parameter 2 set to 1,detected temperature change is greater than the value set by parameter 3. When the parameter 2 set to 2,when the report is the interval time is greater than the value set by parameter 4. When 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 4.
		COMMAND_CLASS_THERMOSTAT_MODE_V2, THERMOSTAT_MODE_REPORT	Device mode change
		COMMAND_CLASS_THERMOSTAT_OPERATING_STATE,THERMOSTAT_OPERATING_STATE_REPORT	Device status change
		COMMAND_CLASS_THERMOSTAT_SETPOINT_V2,THERMOSTAT_SETPOINT_REPORT_V2	Set point value change
		COMMAND_CLASS_THERMOSTAT_FAN_MODE, THERMOSTAT_FAN_MODE_REPORT	Fan mode change
		COMMAND_CLASS_THERMOSTAT_FAN_STATE, THERMOSTAT_FAN_STATE_REPORT	Fan status change
		COMMAND_CLASS_DEVICE_RESET_LOCALLY,DEVICE_RESET_LOCALLY_NOTIFICATION	Restore the factory setting

• Command Class supported by the device:

COMMAND_CLASS_ZWAVEPLUS_INFO, COMMAND_CLASS_POWERLEVEL, COMMAND_CLASS_VERSION; COMMAND_CLASS_DEVICE_RESET_LOCALLY,
COMMAND_CLASS_MANUFACTURER_SPECIFIC, COMMAND_CLASS_BASIC; COMMAND_CLASS_THERMOSTAT_SETPOINT; COMMAND_CLASS_THERMOSTAT_MODE;
COMMAND_CLASS_THERMOSTAT_FAN_MODE; COMMAND_CLASS_THERMOSTAT_FAN_STATE, COMMAND_CLASS_THERMOSTAT_OPERATING_STATE;
COMMAND_CLASS_SENSOR_MULTILEVEL; COMMAND_CLASS_ASSOCIATION; COMMAND_CLASS_ASSOCIATION_GRP_INFO,
COMMAND_CLASS_MANUFACTURER_SPECIFIC COMMAND_CLASS_CONFIGURATION, COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2,

• Z-Wave Parameter Setting:

Number	Function	Size	Description	Default	Possible Values
1	Automatic Temp Scale Reporting	1	**0**: Celsius **1**: Fahrenheit **2**: Follow the main display	2	0-1
2	Automatic Temperature Value Reporting	1	**0**: OFF **1**:Report the difference value only **2**:Regular reporting only **3**:Difference reporting + Interval reporting	3	0-3
3	Temperature Difference Setting	2	Base on 0.1 ℃ unit :=N*0.1 ℃	5	3-1000
4	Timed Report Intervals	2	Base on 1s unit, it suggest to be set above 30s	30	10-32768
255	Factory Setting	1	85: Restore the factory setting(write only)	0	85

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.