Water /Electrical Heating Thermostat

MH7H-WH / MH7H-EH(V1.1)

Water / Electrical Heating Thermostat is a Z-Wave Plus enabled device for indoor temperature control. MH7H-WH is mainly applied to control wall mounted boiler, water valve/pump etc., while MH7H-EH is for electrical heating system. The device is of high reliability and practicability, which 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
- Attractive appearance
- Clear display, easy to operate

Specification

- **Power Supply:** AC85~260V, 50/60Hz
- **Output:** MH7H-WH ≤5A ; MH7H-EH≤ 16A
- **Self Consumption:** ≤1W
- **External Temp. Sensor(optional):** NTC R25℃=15KΩ B25℃/50℃=3550K
- **Working Environment**：0-50℃; 0-90% RH（Non-condensation)
- **Temperature Setting**：5-37 ℃ （41-99 ℉ ）(Adjustable)
- **Dimension**：86* 86*15mm
- **Hole Pitch**：60-61mm
- **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 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.

⚠ 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 Safety Instruction

⚠ Read the instructions before starting up the unit!

⚠ This product is not a toy. Keep out of reach of children and animals!

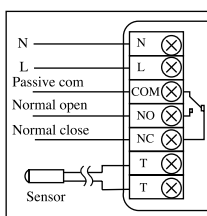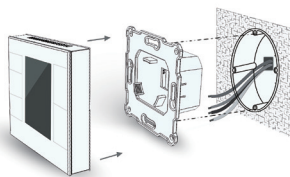⚠ **CAUTION:** Cut off power supply at circuit breaker or fuse before installation to avoid fire, shock or death!

Step 1: Separate the device into two parts: the display panel and the bottom.
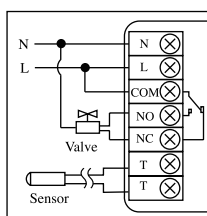
Step 2: Insert all wires into the right terminals and tighten screws. Wiring diagrams are shown below.

Step 3: Push the bottom into the junction box and secure it with two screws, and then mount the touch panel back.
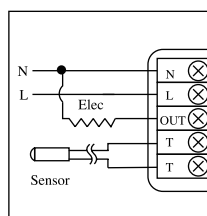
Step 4: Confirm the device is well mounted, power on and it is ready to operate.

Model	Terminal	Control Device	Wiring Instruction	Contact Capacity
MH7H-WH	N、L、COM、NO、NC	Thermostatic valve/ electric ball valve/pump	1. For passive control,follow wiring diagram 2. For active control,follow wiring diagram	5A
MH7H-EH	N、L、OUT、T、T	Heating film、electric radiator，heating cable etc	TT terminal is to be connected with an external sensor with high temperature protection function	16A

Button & Display

（1）Passive Wall-boiler　（2）Active normal close valve　（3）Electrical Heating
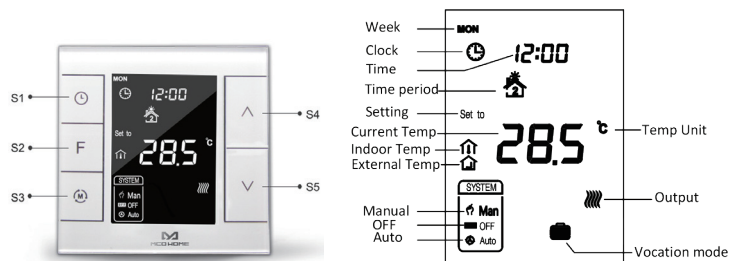
Operation

On/Off Operation

When power on, device displays "OFF", all outputs are forced off. Touch S3 button to switch (manual/off/auto) mode, then press S2 to confirm and proceed with power on/off setting. After power on, device displays current week, local time, working mode, current temperature, output status etc.

Note: After the backlit goes out, please press the button to light up the backlit first, and then press the button again for corresponding operation.

Temperature Setting

In normal working status, press S4 or S5 button will enter into temperature setting interface. The setting range is 5-37 ℃ (41-99 ℉). Then press S4 or S5 can adjust the value. Press S3 or wait 25 seconds without any key operation will save the setting and return back to the normal operation interface.

Auto Mode: The changed value only valid in the current time period for this time, and the device will not affect the preset time period value.
Manual Mode: The changed value will be valid until next setting.
Vacation Mode: The changed value will be valid until next setting.

Key Lock Function

In normal operating interface, long press S1+S4 button, 🔒 icon appear that indicates the button is locked, at this time all buttons are disabled; When long press S1+S4 button again, 🔓 icon disappear that indicates the button is unlocked, all buttons back to normal work.

Control Specification

MH7H-WH

▸ Detection temperature < setting temperature - 0.5 ℃, output turns on, and output icon displays.
▸ Detection temperature ≥ setting temperature + 0.5 ℃, output turns off, and output icon disappears.

MH7H-EH

▸ Detection temperature < setting temperature - 1.5 ℃, output turns on, and output icon displays.
▸ Detection temperature ≥ setting temperature, output turns off, and output icon

Manual / Auto Mode Setting

In normal display interface, touch S3 button can switch between Manual and Auto mode. Choose the mode you may need and press S2 button to save the setting.

Auto Mode: Device will follow the preset time periods and temperature to control heating system automatically.
Manual Mode: Device will follow the manual setting temperature to control the heating system.

Vacation Mode Setting

In normal working interface, if vocation mode is not activated, long press S2 button to enter vacation mode temperature setting. The default temperature is 10 ℃, and setting range is 5-37 ℃ (41-98 ℉). Press S4 or S5 to adjust the value, then press S3 or wait 25 seconds to save the setting and return to the normal working interface. In this time vacation mode icon displays and device will follow the setting. Long press S2 again will end vacation mode and resume to normal work, vacation mode icon will be disappeared.

Local Time Setting

In normal working interface, long press S1 to enter into local time setting interface.

In local time setting interface, press S4 or S5 button to set the "week, hour & minute" parameter, and press S1 button can switch among the "week, hour & minute".
After finish the local time setting, press S1 or wait 25 seconds without any key operation will save the setting and return to normal display.

Auto Mode Time Periods Parameter Setting

In normal working interface, short press S1 to enter into time periods setting. Four time periods can be set for each day of the whole week.
Press S2 can switch among "Hours, Minutes, Temperature value". Press S4 or S5 can change the value.
After finished the setting of 4 time periods on Monday, press S1 and follow the same way to set periods of next days.
After all periods set, press S1 /S2 or wait 25 seconds without any key operation will save the setting and return to normal display. Device will operate in accordance with the new setting.

The default setting is as follow:

Week\Periods	Period 1		Period 2		Period 3		Period 4	
Mon~Fri	5:00	28 ℃	7:00	24 ℃	17:00	28 ℃	22:00	24 ℃
Sat~Sun	5:00	28 ℃	9:00	24 ℃	17:00	28 ℃	22:00	24 ℃

High Temperature Protection (For MH7H-EH Electrical Heating ONLY)

When external temperature sensor detect the temperature value≥55 ℃, device will open high temperature protection,

electric heating will be forced off, and high temperature protection icon displays.

When external temperature sensor detect the temperature value＜50 ℃, device will return to normal work, high temperature protection icon disappears.

Anti-Freeze Protection Function: (Optional)

In shutdown interface:
When the built-in temperature sensor detect the temperature value≤5 ℃, device will open anti-freeze protection, electric heating will be forced open, and anti-freeze protection icon displays.

When the built-in temperature sensor detect the temperature value＞8 ℃, device will turn off anti-freeze protection and return to normal work, anti-freeze icon disappears.

Note: If the device does not connect with an external temperature sensor, it will only display the indoor temperature icon; If the device connects with an external temperature sensor, it will display the indoor temperature and high temperature protection icon; When it is under high temperature protection, high temperature protection icon flickers.

Humidity Display Operation

In normal working interface, long press S1+S5 buttons and enter into humidity display interface,when press S1+S5 buttons again, it will back to the normal interface.

Z-Wave Operation

• **Including & Excluding of Z-Wave network**

In normal working interface, press & hold S4 to enter interface for inclusion or exclusion of Z-Wave network. Before the device included into network, "- - -" will display on the screen. Then press S4 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. When removed, the device will restore its Z-Wave factory setting.

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.

- - -	007
Before Inclusion (No Node ID)	After Inclusion (Node ID is 007)

• **Association Group**

AG Identifier	Max Node ID	Command Class	Trigger Situation
1	1	COMMAND_CLASS_DEVICE_RESET_LOCALLY,DEVICE_RESET_LOCALLY_NOTIFICATION	255 parameter setting value 85
		COMMAND_CLASS_SENSOR_MULTILEVEL_V5, SENSOR_MULTILEVEL_REPORT_V5	1. When parameter set to 1, the amount of temperature change is greater than the parameter setting value of No. 2, or the humidity change is greater than the parameter setting value of No. 5 2. When parameter set to 2, the time interval is greater than the setting value of parameter No. 4. 3. When parameter set to 3, the temperature change amount is greater than the parameter setting value of No. 2, or the humidity change is greater than the parameter setting value of No. 5, or the time interval is greater than the setting value of parameter No. 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	Device mode set point change
2	5	COMMAND_CLASS_BASIC,BASIC_SET	Device status change
3	5	COMMAND_CLASS_BASIC,BASIC_SET	Device status change

- **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_OPERATING_STATE;

COMMAND_CLASS_SENSOR_MULTILEVEL;

COMMAND_CLASS_TIME,

COMMAND_CLASS_TIME_PARAMETERS,

COMMAND_CLASS_ASSOCIATION;

COMMAND_CLASS_ASSOCIATION_GRP_INFO,

COMMAND_CLASS_MANUFACTURER_SPECIFIC

COMMAND_CLASS_CONFIGURATION,

COMMAND_CLASS_FIRMWARE_UPDATE_MD_V2,

- **Parameter Setting:**

Number (Hex)	Function	Size(Byte)	Description	Default (Hex)	Possible Values(Hex)
1	Automatic Temp Scale Reporting	1	0: Celsius 1:Fahrenheit 2:Follow the main display	0	0-2
2	Automatic Temperature & Humidity Reporting	1	0: OFF 1:Report the difference value only 2: Regular reporting only 3: Difference reporting +Interval reporting	3	0-3
3	Automatic Temperature Difference Reporting	2	Base on 0.1 C unit :=N*0.1 C	5	3-1000
4	Time Interval Regularly Reporting	2	Base on 1s unit, it suggest to be set above 30s	30	10-32768
5	Automatic Humidity Difference Reporting	1	When the detection humidity value differ with the last percentage value, reporting activated	3	2-99
255	Factory setting	1	85: Restore the factory setting(write only)Z-Wave parameters setting back to default value,association groups deleted	0	85

Secret Menu

In shutdown state, long press S3+S5 synchronically can enter into secret menu, press S4 to choose the number and press S3 to switch among the number (code is 1234) . After the screen displays 1234, then press S2 to enter parameter setting interface. Press S4 or S5 can adjust the current parameter setting, then press S2 to switch among the Item P value. Following are the parameters which can be set:

Item	Function	Default	Range	Remark
P01	Temp. Setting Upper Limit	37.0℃ （99°F）	00-99.5℃ （32-211°F）	Always confirm the upper limit ＞ bottom limit
P02	Temp. Setting Bottom Limit	5℃ （41°F）	00-99.5℃ （32-211°F）	
P03	Slave Address	1 96	1~64 12~576	Reserved
P04	Time Format	24	12/24	hours
P05	EH Negative Hysteresis	1.5℃ （3°F）	0.0-10.0℃ （0-18°F）	
	WH Negative Hysteresis	0.5℃ （1°F）	0.0-10.0℃ （0-18°F）	
P06	EH Positive Hysteresis	0.0℃ (00°F)	0.0-10.0℃ （0-18°F）	
	WH Positive Hysteresis	0.5℃ （1°F）	0.0-10.0℃ （0-18°F）	
P07	Anti-Freeze Temperature Setting	5℃ （41°F）	0-30℃ （32-86°F）	
P08	Protection Temperature	55℃ （131°F）	25-95℃ （77-203°F） OFF	MH7H-EH
		OFF		MH7H-EH-WT15
P09	Power On State After Power Failure	OFF	OFF/ OPN/ PRU	= OFF device turn to OFF state，= OPN device turn to ON state，= PRU device return to last state
P10	The Time Of Temperature Change	2	0-99	2*30s=1min
P11	Indoor Temperature Calibration	0.0℃(00°F)	-9.5-9.5℃ （-16-16°F）	
P12	Beep Volume	3	OF/0-9	
P13	Backlit Level	2	1-8/ON/OFF	
P14	Outdoor Temperature Calibration	0.0℃(00°F)	-9.5-9.5℃ （-16-16°F）	
P15	Control Based On External Temperature	OFF	ON/OFF	MH7H-WH, MH7H-EH
		ON	ON/OFF	MH7H-WH-WT15, MH7H-EH-WT15
P16	Display Based On External Temperature	OFF	ON/OFF	MH7H-WH, MH7H-EH
		ON	ON/OFF	MH7H-WH-WT15, MH7H-EH-WT15
P17	Temp. Format	OC	OC/OF	=OC，Celsius； =OF，Fahrenheit
P18	Restore Factory Setting	Display:53 Password: 55	00-99	Change 53 to 55, and press S3 to confirm.
P19	High Temp.Protection Hysteresis Setting	5℃(9°F)	1-10℃ （2-18°F）	

After power failure:

0 indicates device will be in shutdown state ("OFF") when power on again;

1 indicates device will be in working interface when power on again;

2 (default) indicates device will stay the status before power failure when power on again.

1-Year Limited Warranty