MH-3928 Thermostat
User Manual

Introduction

MH-3928 thermostat is used to control up to 3 stages heating and 2 stages cooling system with 8 types control system, EM heat activation, adjustable compressor delay time and O/B changeover. It is with tempered touch capacitive button, quick connecting terminals to save installer's time. Support S2 function.

Technical Parameters

- **Power Supply**: AC24V
- **Resistive Load**: ＜1A
- **Self-Consumption**: <2W
- **Thermistor**: NTC thermistor
- **Temp. Setting Range**：10-37℃
- **Precision**：0.1℃(1℉)
- **Outcase**：Tempered glass + PC
- **Dimension**：104*104*20mm
- **Installation**：60.3mm hole pitch
- **Active Element**: Relay switch μ
- **Maximum transmitting power**: +3dBm
- **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)

Features

- Application range: gas/fuel boiler, electric heating, water heating, heat pump etc. 8 types control systems.
- Touch button operation interaction.
- Simpler way to connect wires without screw driver.

▪ Declaration of Conformity

Hereby, MCOHome 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

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

Important Safety Information

⚠ 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!

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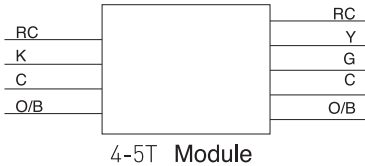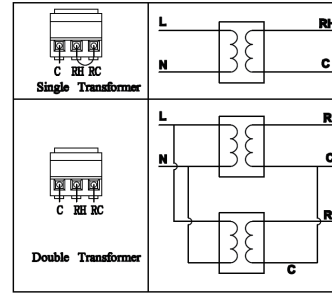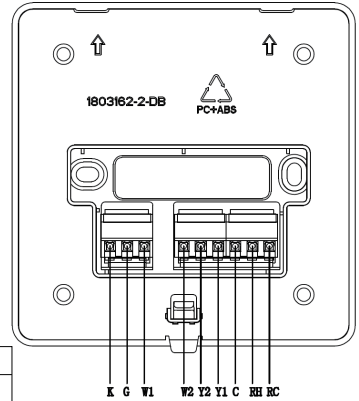
⚠ CAUTIONS!

Compressor protection is bypassed during testing. To prevent equipment damage, avoid cycling the compressor quickly.

⚠ MERCURY NOTICE

If this product is replacing a control that contains mercury in a sealed tube, do not place the old control in the trash. Contact your local waste management authority for instructions regarding recycling and proper disposal.

REQUIRED: 24 VAC POWER ("C" WIRE)

Transformer Illustrate

Terminal	Conventional	Heat pump	
1	C	C	24V AC power supply
2	Rh	Rh	
3	Rc	Rc	
4	W1	O/B	Heating or changeover
5	W2	AUX	2nd stage heating or auxiliary heating
6	G	G	Fan
7	Y1	Y1	Compressor stage 1
8	Y2	Y2	Compressor stage 2

Note: A wire saver acts as a splitter forapplications that do not include a24-volt C wire. If your heating/cooling system does not include a C wire,install the wire saver in or near themain unit (furnace, air handler) ofyour heating/cooling system.

Controlling Type

No	Type	Working mode	Output Stage	Termimals(cool)	Termimals(heat)
0	2C(conventional)	OFF	2th cooling	G Y1 Y2	/
		COOL	1th cooling	G Y1	/
1	2H(conventional)	OFF	2th heating	/	G W1 W2
		HEAT	1th heating	/	G W1
2	2H/2C(conventional)	COOL	2th cooling	G Y1 Y2	/
		OFF	1th cooling	G Y1	/
		HEAT	2th heating	/	G W1 W2
		AUTO	1th heating	/	G W1
3	2C(heat pump)	OFF	2th cooling	G Y1 Y2(O/B)	/
		COOL	1th cooling	G Y1(O/B)	/
4	1H(heat pump) AUX optional	OFF	2th heating	/	G Y1 AUX (O/B)
		HEAT	1th heating	/	G Y1 (O/B)
		AUX	AUX	/	G AUX
5	2H(heat pump) AUX optional	OFF	3th heating	/	G Y1 Y2 AUX (O/B)
		HEAT	2th heating	/	G Y1 Y2 (O/B)
		AUX	1th heating	/	G Y1 (O/B)
			AUX	/	G AUX

No	Type	Working mode	Output Stage	Termimals(cool)	Termimals(heat)
6	1H/1C(heat pump) AUX optional	OFF	1th cooling	G Y1 (O/B)	/
		COOL	2th heating	/	G Y1 AUX (O/B)
		HEAT	1th heating	/	G Y1(O/B)
		AUX	AUX	/	G AUX
		AUTO			
7	1H/2C(heat pump) AUX optional	OFF	2th cooling	G Y1 Y2(O/B)	/
		COOL	1th cooling	G Y1 (O/B)	/
		HEAT	3th heating	/	G Y1 Y2 AUX (O/B)
		AUX	2th heating	/	G Y1 Y2 (O/B)
		AUTO	1th heating	/	G Y1 (O/B)
			AUX	/	G AUX

Display

- Z-Wave Signal
- Setting Temperature
- Indoor Temperature
- Arrow For Changing Setpoint
- Circle Button For Entering Menu
- Heating/Cooling Status
- Compressor Delay
- Current Mode
- Humidity Value
- Arrow For Changing Setpoint
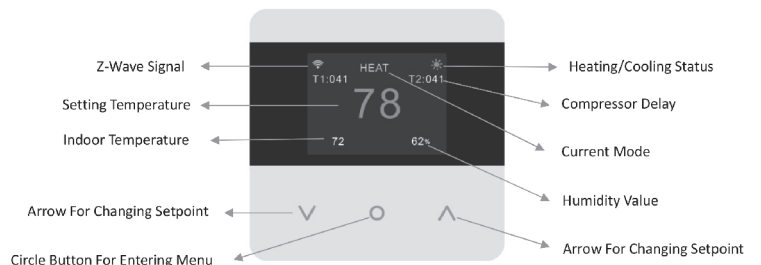
Functions & Settings

Working State Indicator

1. Red heating icon shows the output is heating

2. Blue cooling icon shows the output is cooling

3. Icon turns off shows the output is closed

Heat/Cool mode Setpoint Setting

Press "∧"or "∨" to set the setpoint temperature. Setting range: 5~37℃ (41~98 ℉) by default.

Auto Mode Setpoint Setting

Under Auto mode and in the home page, short press "∨" or "∧" button can set the Auto Mode Setpoint Setting. From the left side it is for Auto Heat setpoint setting, press "∨" or "∧" button can change the temperature value, then short press ◯ will swift to Auto Cool setpoint. Short press ◯ again will back to the home page and will only display the setpoint value which currently used.

Secondary Menu Setting

In home page, short press ◯ will enter into the following user menu interface:

1. Mode setting

2. Fan mode setting

3. Screen brightness

Mode Setting

Press "∧"or "∨"to select current working mode, press to confirm current setting and enter the next user menu. After 10sec without any operation, it will back to the home page.

Fan Mode Setting

Press "∨" or "∧" button to change the options in the fan state area from Fan On to Fan Auto.

Fan on: In this state, the fan is normally on. If thermostat is under OFF state, then the fan is OFF.

Fan Auto: In this state, fan turns on automatically once the device is heating or cooling. Fan is OFF when the output closed.

Screen Brightness

Auto OFF or Always On can be set.

Z-Wave Configuration

Under home page interface, press"∧"and"∨"button synchronously for 3 sec then the device will enter into Z-WAVE MENU interface. Under Z-WAVE MENU interface, short press ◯ then the device will send out a Z-WAVE Node Info. "—"shows the device does not have NODE ID ,"002"is the device NODE ID . Under Z-WAVE MENU, press "∧"and"∨"button synchronously for 3 sec, then the device will back to the home page. Under Z-WAVE MENU, without any operation for 10 sec, the device will back to the home page.

Secret Menu(Can be configured via Z-Wave parameters, please refer to the Z-Wave Parameters Setting table)

Under home page interface, long press for 5 sec, the device will enter into SECRET MENU. Press "∧"or"∨"button to select the menu, press ◯ to confirm the selected menu, then press "∧"or"∨"button to modify the value, after setting is done, press ◯ as confirm. Exit from the menu will be automatically after 30 sec no use or holding for 5 sec again.

Menu Number	Item	Range	Default	Description
0	RESET FACTORY	ON/OFF	OFF	Restore factory setting
1	EM HEAT MODE	ON/OFF	OFF	OFF-—Turn off EM HEAT MODE ON-—Turn on EM HEAT MODE
2	LOCK KEY	ON/OFF	OFF	OFF-—Unlock button ON-—"∧" and "∨" button will be locked. It is invalid in Secret Menu interface.
3	BEEP	ON/OFF	ON	OFF-—Turn off the Beep sound. ON-— Turn on the Beep sound.
4	CHANGE OVER	ON/OFF	ON	OFF-—Turn off CHANGE OVER ON-—Turn on CHANGE OVER
5	OB LOGIC	0-1	0	0: OFF—-OB normal logic 1: ON—OB opposite logic
6	TEMP SCALE	C/F	F	C: Celsius F: Fahrenheit
7	CONTROL TYPE	0-7	2	0-7 control type wrote as above
8	TEMP DIFF	0-3℃	1℃	Temperature difference value(Temperature unit will follow the device's unit setting)
		0-5℉	2℉	
9	TEMP CALIBRA	-10℃~10℃	0℃	Temperature calibration value(Temperature unit will follow the device's unit setting)
		-18℉~18℉	0℉	
10	SET UPPER	1~99℃	37℃	Set temperature upper value,upper>lower(Temperature unit will follow the device's unit setting)
		1~99℉	98℉	
11	SET LOWER	0~99℃	5℃	Set temperature lower value,upper>lower(Temperature unit will follow the device's unit setting)
		0~99℉	41℉	
12	PROTECT DELAY	0~10min	1min	Compressor output delay time 0: OFF 1-10: Delay time in minute
13	SCREEN OFF	0~60min	1min	Automatically turn off screen time 0: OFF 1-60: Automatically turn off the screen after certain time by minute.

Z-Wave Function

1. The device supports S2 function

2. Z-WAVE supported Command Class:

COMMAND_CLASS_ZWAVEPLUS_INFO,

COMMAND_CLASS_VERSION,

COMMAND_CLASS_MANUFACTURER_SPECIFIC,

COMMAND_CLASS_POWERLEVEL,

COMMAND_CLASS_ASSOCIATION,

COMMAND_CLASS_ASSOCIATION_GRP_INFO,

COMMAND_CLASS_SENSOR_MULTILEVEL,

COMMAND_CLASS_THERMOSTAT_SETPOINT,

COMMAND_CLASS_THERMOSTAT_MODE,

COMMAND_CLASS_THERMOSTAT_OPERATING_STATE,

COMMAND_CLASS_THERMOSTAT_FAN_MODE,

COMMAND_CLASS_THERMOSTAT_FAN_STATE,

COMMAND_CLASS_TRANSPORT_SERVICE_V2,

COMMAND_CLASS_SECURITY_2,

COMMAND_CLASS_SUPERVISION,

COMMAND_CLASS_FIRMWARE_UPDATE_MD

COMMAND_CLASS_BASIC,

COMMAND_CLASS_CONFIGURATION,

3. Association Group

AG Identifier	Max Node ID	Command Class	Trigger Situation
0x01	1	COMMAND_CLASS_SENSOR_MULTILEVEL_V5, SENSOR_MULTILEVEL_REPORT_V5	**1.** Parameter 2 set to 1,detected temperature change is greater than the value set by parameter 3(Celsius). **2.** Parameter 2 set to 1,detected temperature change is greater than the value set by parameter 4(Fahrenheit). **3.** Parameter 2 set to 2, when the interval time report is greater than the value set by parameter 5. **4.** 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(Celsius). **5.** 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(Fahrenheit).
		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 factory setting

4. Z-Wave Parameter Setting

Number	Function	Size	Description	Default	Possible Values
1	Automatic Temp Scale Reporting	1	0: Celsius 1: Fahrenheit	1	0-1
3	Temperature Difference Reporting(Celsius)	2	Unit: 0.1℃ 0:Disabled 3-1000:n*0.1℃ A temperature value greater than this will be automatically reported to the gateway.	5	0, 3-1000
4	Temperature Difference Reporting(Fahrenheit)	2	Unit:0.1F 0: Disabled 3-1000:n*0.1F A temperature value greater than this will be automatically reported to the gateway.	10	0, 3-1000

Number	Function	Size	Description	Default	Possible Values
5	Timed Report Intervals (Temp.)	2	0: Disabled 30-30000: Temperature value will be automatically reported to the gateway in defined time interval by second.	60	0, 30-30000
6	Humidity Difference Reporting	1	0: Disabled 1-99: A humidity difference value greater than this will be actively uploaded to the gateway.	3	0-99
7	Timed Report Intervals (Humidity)	2	0: Disabled 30-30000: Humidity value will be automatically reported to the gateway in defined time interval by second.	90	0, 30-30000
11	EM HEAT MODE	1	0: OFF 1: ON	0	0-1
12	LOCK KEY	1	0: OFF 1:ON("∧"and"∨"button will be locked. It is invalid in Secret Menu interface)	0	0-1
13	BEEP	1	0: OFF 1: ON	1	0-1
14	CHANGEOVER	1	0: OFF 1: ON	0	0-1
15	OB LOGIC	1	0: OFF(OB logic is normal) 1: ON(OB logic is opposite)	0	0-1
17	CONTROL TYPE	1	0-7 control type wrote as above.	2	0-7
18	TEMP DIFF	1	Temperature difference value(Temperature unit will follow the device's unit setting)	1(Celsius)	0-3(Celsius)
				2(Fahrenheit)	0-5(Fahrenheit)
19	TEMP CALIBRA	1	Temperature calibration value(Temperature unit will follow the device's unit setting)	0	(-10~+10)Celsius
					(-18~+18)Fahrenheit
20	SET UPPER	1	Set temperature upper value,upper>lower(Temperature unit will follow the device's unit setting)	37(Celsius)	1-99
				98(Fahrenheit)	
21	SET LOWER	1	Set temperature lower value,upper>lower(Temperature unit will follow the device's unit setting)	5(Celsius)	0-98
				41(Fahrenheit)	
22	PROTECT DELAY	1	Compressor output delay time 0: OFF 1-10: Delay time in minute	1	0-10
23	SCREEN OFF	1	Automatically turn off screen time 0: OFF 1-60: Automatically turn off the screen after certain time by minute	1	0-60
255	RESET FACTORY	1	Write 85: Restore the factory setting (write only)		85

1-Year Limited Warranty

We warrant this device 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.