

# CO2 Monitor

## MH9-CO2-WA/WD



V1.1

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### 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 sensor 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!

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### 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.

### Notice!

1. Device must be wall-mounted vertically. Do not lay it flat or upside down while working.
2. Do not mounted it in a wind gap, or cover its bottom, which may affect the detected data.

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## Specification

- **Power Supply:** DC12V (WD); AC220V±10% 50/60Hz (WA)
- **Self Dissipation:** <3W
- **CO2 Display Range:** 0-5000ppm
- **Default Threshold:** 1000ppm (adjustable)
- **Temperature Range:** -9~50 C (15-122 F)
- **Humidity Range:** 0%~99%RH
- **Work Environment:** -10~50 C 0-90%RH (Non-condensation)
- **Housing:** Tempered glass+ PC Alloy
- **Dimension:** 90\*130\*28mm
- **Hole Pitch:** 60mm or 82mm
- **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
- **Installation:** Wall-mounted (Vertical)



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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 90\*60\*50mm, minimum Volume is 270cm<sup>3</sup>. Use Copper Conductors Only.



### CAUTIONS!

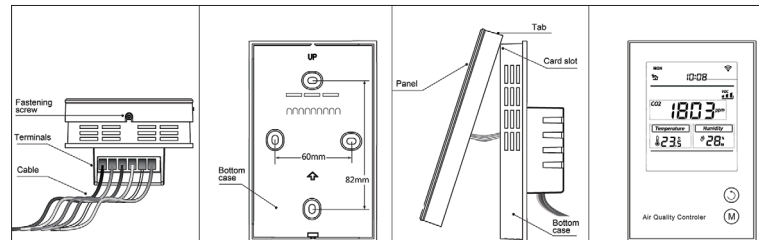
Risk of Electric Shock - More than one disconnect switch may be required to de-energize the equipment before servicing.

## Installation & Wiring

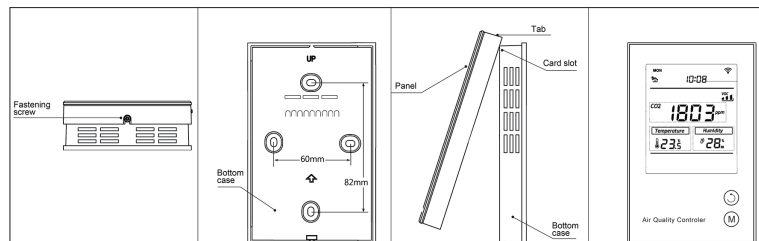
### Location:

Device is suggested to be installed indoor, a place with around 1.5m height above the floor where represents the average CO2 concentration. It should be away from direct sunlight, any cover, or any heat source, to avoid false signal for temperature control.

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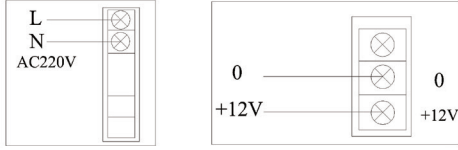
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**Step 1:** Separate Panel and Bottom case by removing the screw at the bottom of device. Insert all wires into the right terminals and tighten screws. The wiring diagram is shown as below.

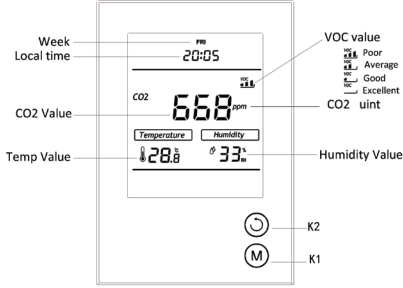
**Step 2:** Mount the Bottom case onto wall with two screws (M4\*25mm). The hole pitch 60mm is for 86/60mm box, and 82mm is for American 120mm box.

**Step 3:** Mount the Panel back by aligning its tabs and card slot onto the Bottom case.

**Step 4:** Tighten the fastening screw and the device is ready for normal work.



**Pay attention to the current direction of positive and negative, otherwise device will easily burned!**



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## Calibration

Long press K1+ K2 button, enter into Secret Menu interface, press K2 button to input the value, press K1 to switch the value, and enter password 1234. Then press K1 button enter into Secret Menu. "01" parameter number will be displayed, the current value flashes.

1. Press K2 to modify the parameters.
2. Press K1 as enter confirmation and switch to the next item to modify the value.
3. After setting, press K1 to confirm then quit.

Following is the information of each parameter:

Item	Parameter	Range	Default Value
01	Temperature Calibration	-5 C ~+5 C	00 C
02	Humidity Calibration	-9%RH~+9%RH	00
03	CO2 Calibration	-99~+99	00
04	Backlight Brightness Settings	00-09 (00:backlight normally open)	00

## Error Display

When the main display shows Error, E means error, 0 means CO2 sensor may be defected, 1 means temperature sensor may be defected, e.g. E0 means CO2 sensor may be defected. In this case, please contact manufacturer.

## Z-Wave Operation

### Including & Excluding of Z-Wave network

Activate Inclusion/Exclusion mode in the gateway. When device is powered on, long press K2 can enter interface for inclusion or exclusion of Z-Wave network.

- ▶ If device has not been included into any Z-Wave network before, "--" will display on the screen.

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### Parameter Setting

Number	Function	Size	Description	Default	Possible Values
1	CO2 Notification threshold	2	N*1 PPM Notification threshold	1000	1-5000
2	CO2 Report Interval	1	=0 Report disabled 1~127: Report when change $\geq n * 5 \text{ ppm}$ -1~-127: Report when change $\geq (n+256) * 5 \text{ ppm}$	10	-127~127
3	Temperature Report Interval	1	=0 Report disabled 1~127: Report when change $\geq n * 0.5 \text{ C}$ -1~-127: Report when change $\geq (n+256) * 0.5 \text{ C}$	1	-127~127
4	Humidity Report Interval	1	=0 Report disabled $\geq 1$ Report when change $\geq n\%$	2	0~100
255	Factory Setting	1	85: Restore the factory setting (write only)	0	85

### Command Class supported by the device:

COMMAND\_CLASS\_ZWAVEPLUS\_INFO,  
COMMAND\_CLASS\_MANUFACTURER\_SPECIFIC,  
COMMAND\_CLASS\_DEVICE\_RESET\_LOCALLY,  
COMMAND\_CLASS\_ASSOCIATION\_GRP\_INFO,  
COMMAND\_CLASS\_BASIC,  
COMMAND\_CLASS\_SENSOR\_MULTILEVEL,  
COMMAND\_CLASS\_SENSOR\_CONFIGURATION,  
COMMAND\_CLASS\_FIRMWARE\_UPDATE\_MD,  
COMMAND\_CLASS\_VERSION,  
COMMAND\_CLASS\_ASSOCIATION,  
COMMAND\_CLASS\_POWERLEVEL,  
COMMAND\_CLASS\_CONFIGURATION,  
COMMAND\_CLASS\_NOTIFICATION,

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## Operation

### Local Time Setting

In normal display interface, long press K1 will enter the local time modification interface.

- "Week" starts flashing, press K2 can switch among "MON-TUE-WED-THU-FRI-SAT-SUN". Choose one then press K1 will save the setting.
- "Hour" starts flashing. Press K2, the value will cycle switchover from 00-23. Press K1 to save the change.
- "Minute" starts flashing. Press K2, the value will cycle switchover from 00-59. Then press K1 can save settings and return to normal display.

In the process of modification, long press K1 can save and return to the normal interface, long press K2 can continuously increase the value.

### VOC Detection

Device has built-in a VOC sensor which can only be check locally (not able to check via Z-Wave), and four levels can be detected and shown on the display: **Excellent, Good, Average & Poor**. (VOC toxic gases include carbon monoxide, alcohol, hydrogen, methane, isobutene, ammonia and benzene, etc.)

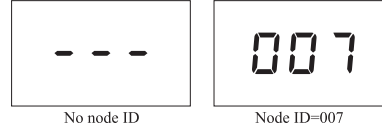
### Fahrenheit/Celsius switch

Long press K1+K2 button, enter into Secret Menu interface, press K2 button to input the value, press K1 to switch the value, and enter password 5166. Then press K1 to enter into Secret Menu. Temperature display area will flash "C".

1. Press K2 button can switch between "C" and "F"
2. After setting, press K1 button to confirm and quit.

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- ▶ Then press K2 once, "--" flashing and device enters into learning mode to get a node ID. If inclusion is success, a node ID will display on the screen. If not, "--" will stop flashing in 20s.
- ▶ If a node ID displays, it means the device is already in a Z-Wave network. To press K2 once can remove it from the network. "--" displays and press K1 once can return to normal work.



### Association Group

Device supports 1 association group:

G Identifier	Max Node ID	Command Class	Trigger Situation
0x01	1	COMMAND_CLASS_SENSOR_MULTILEVEL_V5, SENSOR_MULTILEVEL_REPORT_V5	1. CO2 The value difference between current value and previous reported value > the setting value of parameter number 2, set value $\neq 0$ ; 2. Temperature The value difference between current value and previous reported value > the setting value of parameter number 3, set value $\neq 0$ ; 3. Humidity The value difference between current value and previous reported value > the setting value of parameter number 4, set value $\neq 0$ ;
		COMMAND_CLASS_NOTIFICATION_V4, NOTIFICATION_REPORT_V4	CO2 The detect value > 0x01, and set Notification Type=CO2, Notification Status=ON via NOTIFICATION_SET.
		COMMAND_CLASS_DEVICE_RESET_LOCALLY, DEVICE_RESET_LOCALLY_NOTIFICATION	Restore the factory setting

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## 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.

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