CO-8ZBS Carbon Monoxide Detector

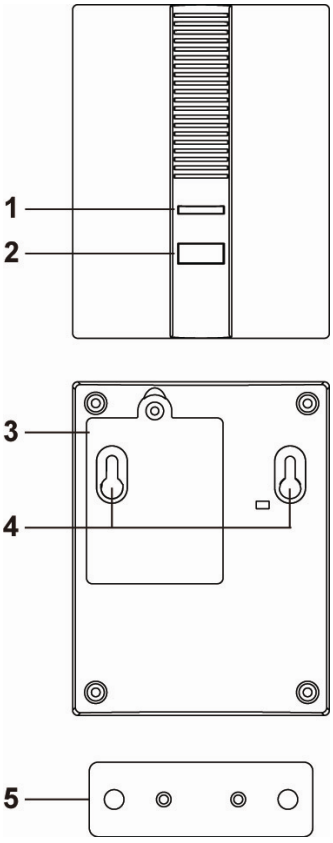
Introduction

CO-8ZBS is a ZigBee Carbon Monoxide Detector. It is capable of sending wireless signals to the coordinator in the ZigBee network upon detection of Carbon Monoxide concentration.

The Carbon Monoxide Detector utilizes ZigBee technology for wireless signal transmission. ZigBee is a wireless communication protocol that is reliable and has low power consumption and high transmission efficiency. Based on IEEE802.15.4 standard, ZigBee allows a large amount of devices to be included in a network and coordinated for data exchange and signal transmission.

The Carbon Monoxide Detector Serves as an end device in the ZigBee network. It can be included in the ZigBee network to transmit signal upon activation, but cannot permit any other ZigBee device to join the network through the Carbon Monoxide Detector.

Parts Identification



1. Dual Color LED indicator (Amber/Red)

The LED indicator lights up in the following conditions:

- Red LED flashes twice

  The Carbon Monoxide Detector has successfully joined a ZigBee network.
- Red LED Flashes once every 20 minutes:

  The Carbon Monoxide Detector has lost connection to its current ZigBee network.
- Amber LED flashes every second:

  The Carbon Monoxide Detector is in Alarm Silence mode.

2. Function Button

- Press the button once to send a supervision signal.
- Press the button once during alarm to silence the alarm.
- Press and hold the button for 10 seconds then release to reset the Carbon Monoxide Detector.

3. Battery Compartment

The Carbon Monoxide Detector is powered by three AA Alkaline 1.5V batteries.

4. Mounting Hole

5. Mounting Bracket

Features

- ***Carbon Monoxide Detection***
  - The Carbon Monoxide Detector will be activated according to the following table when CO concentration is detected.

CO concentration level	Time taken before alarming
30 ppm	None
50 ppm	60-90 minutes
100 ppm	10-40 minutes
300 ppm	Under 3 minutes

  - Once the CO concentration level exceeds the threshold and persists for the time length as listed in the above table, the Carbon Monoxide Detector will transmit the signal to ZigBee network coordinator and raise alarm with its built-in siren.
  - After the alarm has been activated, the Carbon Monoxide Detector will continue to send the alarm signal every 2 minutes as long as CO concentration remains above 30 ppm.
  - If the CO concentration drops below 30 ppm, the Carbon Monoxide Detector will stop alarming and transmit a restore signal

- ***Alarm Silence***
  - When the Carbon Monoxide Detector is alarming, you can press the Function button once on Carbon Monoxide Detector to enter Alarm Silence mode for 10 minutes
  - Under Alarm Silence mode, the Carbon Monoxide Detector will not sound alarm; the Amber LED Indicator will flash every second to indicate it is under Alarm Silence mode.
  - After 10 minutes, if CO concentration still exceeds 30ppm, the Carbon Monoxide Detector will raise alarm and send alarm signal again.
- ***Battery and Low Battery Detection***
  - The Carbon Monoxide Detector uses three 1.5V Alkaline batteries as its power source. The batteries are included in the package.
  - The Carbon Monoxide Detector feature Low Battery Detection function. When low battery voltage is detected, the Carbon Monoxide Detector will transmit Low Battery signal to notify the user.
  - When changing batteries, after removing the old batteries, press the Function Button twice to fully discharge before inserting new batteries.
- ***Supervision***

  The Carbon Monoxide Detector will transmit a supervision signal to report its condition regularly according to user setting. The factory default interval is 30 minutes. The user can also press the Function Button once to transmit a supervision signal manually.

ZigBee Network Setup

- ***ZigBee Device Guideline***

  ZigBee is a wireless communication protocol that is reliable and has low power consumption and high transmission efficiency. Based on IEEE802.15.4 standard, ZigBee allows a large amount of devices to be included in a network and coordinated for data exchange and signal transmission.

  Due to the fundamental structure of ZigBee network, ZigBee device will actively seek and join network after powering on. Since performing a task in connecting network may consume some power, it is required to follow the instructions to avoid draining battery of a ZigBee device

  - Ensure your ZigBee network router or coordinator is powered on before inserting battery into the ZigBee device.
  - Ensure the ZigBee network router or coordinator is powered on and within range while a ZigBee device is in use.
  - Do not remove a ZigBee device from the ZigBee network router or coordinator without removing the battery from a ZigBee device.
- ***Joining the ZigBee Network***

  As a ZigBee device, the Carbon Monoxide Detector needs to join a ZigBee network to transmit signal when smoke concentration is detected. Please follow the steps bellow to join the Carbon Monoxide Detector into the ZigBee network.

  1. Insert the batteries into the battery compartment to power on the Carbon Monoxide Detector.
  2. The Carbon Monoxide Detector will emit two short beeps when it is powered on.
  3. Press and hold the function button for 10 seconds then release to join ZigBee network. Please make sure to enable the permit-join feature on the router or coordinator of your ZigBee network
  4. After joining the ZigBee network, the Carbon Monoxide Detector will be registered in the network automatically. Please check the ZigBee network coordinator, system control panel or CIE (Control and Indicating Equipment) to confirm if joining and registration is successful. If the Carbon Monoxide Detector successfully joins the ZigBee network, the Red LED will flash twice to confirm.
  5. After joining the ZigBee network, if the Carbon Monoxide Detector loses connection with its current ZigBee network, the Red LED will flash every 20 minutes to indicate. Please check your ZigBee network condition and Carbon Monoxide Detector signal range to correct the situation.
- ***Removing Device from ZigBee Network (Factory Reset)***

  To remove the Carbon Monoxide Detector from current ZigBee network, the device must be put to Factory Reset to complete device removal. Factory Reset function will clear the Carbon Monoxide Detector of its stored setting information and prompt the device to search for new ZigBee network.

  Before removing device, make sure the Carbon Monoxide Detector is within current ZigBee network signal range

  1. Press and hold the function button for 10 seconds, then release the button to reset Carbon Monoxide Detector.

2. Upon reset, the device will clear current ZigBee network setting and transmit signal to ZigBee coordinator to remove itself from current ZigBee network. It will then actively search for available ZigBee network again and join the network automatically.

Installation

● *Installation Guideline*

It is recommended to install the Carbon Monoxide Detector in following locations.

- Install the Carbon Monoxide Detector in your bedrooms to protect your safety.
- For houses with garage, also mount near the internal door to garage and the room above the garage for protection in case when car engin is not turned off.

Avoid mounting in following locations.

- Inside kitchen and garage – to avoid false alarm when
- Corner or location with stagnant air – to avoid false alarm
- Fireplace – Keep at least 4.5 meters of distance to avoid false alarm.

● *Installation*

A mounting bracket is provide in the package for mounting the Carbon Monoxide Detector on the wall.

1. Refer to Control Panel manual and put the Control Panel into **Walk Test** mode.
2. Put the Carbon Monoxide Detector at desired installation location, press the Learn/Test button to transmit signal to panel.
3. If the panel receives signal, it will display the device signal strength. Check and make sure the panel can receive signal normally from device at current location. If signal reception is unsatisfactory, relocate the Carbon Monoxide Detector and repeat Step 1~3 until an ideal installation location is found.
4. Use the mounting bracket as template to mark the two holes on the wall at chosen location for installing screws.
5. Screw the mounting bracket onto the wall according to marked location. Install wall plugs if necessary.
6. Hook the Carbon Monoxide Detector onto the mounting bracket. Installation is now complete.

● *Using Carbon Monoxide Detector with ZigBee Router*

IMPORTANT NOTE

If the Carbon Monoxide Detector installation location is away from your system control panel and requires ZigBee routers to improve signal strength. **DO NOT** use a ZigBee Router without backup battery. A ZigBee router without battery will be powered down during AC power failure and the Carbon Monoxide Detector connected to the router will lose connection with ZigBee network. You should plan your Carbon Monoxide Detector installation location using only ZigBee router with backup battery.

Appendix (For developers only.)

● *Carbon Monoxide Detector Cluster ID*

Device ID: IAS Zone 0x402 **Endpoint: 0x01**	
Server Side	**Client Side**
Mandatory	
Basic (0x0000)	*None*
Identify(0x0003)	
IAS Zone(0x0500)	
Optional	
None	*None*

● *Attribute of Basic Cluster Information*

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	*ZCLVersion*	Unsigned 8-bit integer	0x00 –0xff	Read only	0x01	M
0x0003	*HWVersion*	Unsigned 8-bit integer	0x00 –0xff	Read only	0	O

0x0004	*ManufacturerName*	Character String	0 – 32 bytes	Read only	Climax Technology	O
0x0005	*ModelIdentifier*	Character String	0 – 32 bytes	Read only	(Model Version)	O
0x0006	*DateCode*	Character String	0 – 16 bytes	Read only		O
0x0007	*PowerSource*	8-bit	0x00 –0xff	Read only		M
0x0010	*LocationDescription*	Character String	0 – 32 bytes	Read / Write		O
0x0011	*PhysicalEnvironment*	8-bit	0x00 –0xff	Read / Write	0x00	O
0x0012	*DeviceEnabled*	Boolean	0x00 –0x01	Read / Write	0x01	M

- ***Attribute of Identify Cluster Information***

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0000	*IdentifyTime*	Unsigned 16-bit integer	0x00 –0xffff	Read / Write	0x0000	M

- ***Attribute of IAS Zone Cluster Information***

Identifier	Name	Type	Range	Access	Default	Mandatory / Optional
0x0001	*ZoneState*	8-bit Enumeration	All	Read only	0x00	M
0x0002	*ZoneType*	8-bit Enumeration	All	Read only		M
0x0003	*ZoneStatus*	16-bit bitmap	All	Read only	0x00	M
0x0010	*IAS_CIE_ADDRESS*	IEEE ADDRESS	Valid 64bit IEEE address	Read / Write		M
0x0011	*ZONE_ID*	Unsigned 8-bit integer	All	Read only	0xFF	M

Federal Communication Commission Interference Statement

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:
. Reorient or relocate the receiving antenna.
. Increase the separation between the equipment and receiver.
. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
. Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).

FCC Radiation Exposure Statement

This equipment complies with FCC RF radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 centimeters between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:
(1) This device may not cause harmful interference, and
(2) This device must accept any interference received, including interference that may cause undesired operation.