

# CO<sub>2</sub>-1

## Wall mounted CO<sub>2</sub> sensor with 1 analog output & 1 on/off output

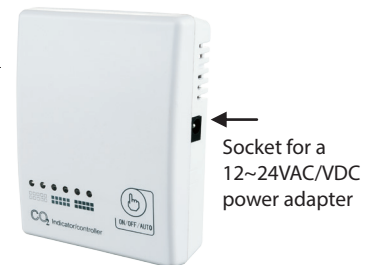
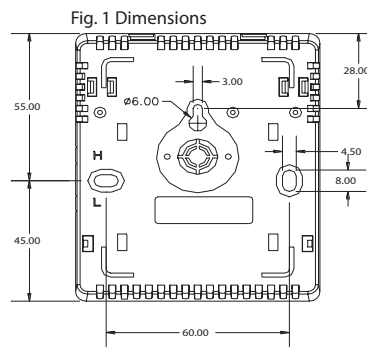
### User's Manual

#### ■ SPECIFICATIONS

Parameters	Value
Power supply/Consumption	24VAC (50/60Hz ± 10 %), 24VDC / max. 1.6 W
Gas sensing element	Non-dispersive infrared detector (NDIR) with self-calibration system
CO <sub>2</sub> measuring range	0–2,000 ppm (parts per million)
Accuracy at 25 °C, 2,000 ppm	±30 ppm + 3 % of reading
Response time	<2 minutes
Warm up time for each turning-on	2 hours (first time) 2 minutes (operation)
Analogue output	0–10VDC (default), 4–20mA selectable by jumpers
On/Off output	1X2A switch load Four set points selectable by jumpers
6 LED lights	1st green indicator lights when CO <sub>2</sub> concentration is below 600 ppm 1st and 2nd green indicators light when CO <sub>2</sub> concentration is 600–800 ppm 1st yellow indicator lights when CO <sub>2</sub> concentration is 800–1200 ppm 1st and 2nd yellow indicators light when CO <sub>2</sub> concentration is 1200–1400 ppm 1st red indicator lights when CO <sub>2</sub> concentration is 1400–1600 ppm 1st and 2nd red indicators light when CO <sub>2</sub> concentration is above 1600 ppm
Operation conditions/ Storage regulations	0–50 °C; 0–95 % RH non condensing/ 0–50 °C
Net weight/Dimensions	120g/100 mm × 80 mm × 30 mm
Mounting standard	65 mm × 65 mm wire box, or hang on a nail
Standard Approval	CE

#### ■ MOUNTING AND WIRE CONNECTION

- Notice the supply power voltage of the sensor: 24VAC/VDC. Do not install the sensor on voltages higher than marked on the sensor.
- Follows the steps in fig. 2 to remove the cover.
- Mount the sensor on the place where you want to detect CO<sub>2</sub> level. Do not mount it near diffuser or any steam source, in direct sunlight.
- Mount the wall plate first, there are two dimensions available (see fig. 1). Place the sensor against the wall at selected location; make sure wires pass through the notch on the wall plate.
- Connect wires to terminal strips (see fig. 4). Make sure wiring connection is correct and secure.
- Follows the steps in fig. 3 to close the cover.



Touch button for switching on/  
off/auto operation modes of  
the fan.

Fig. 2

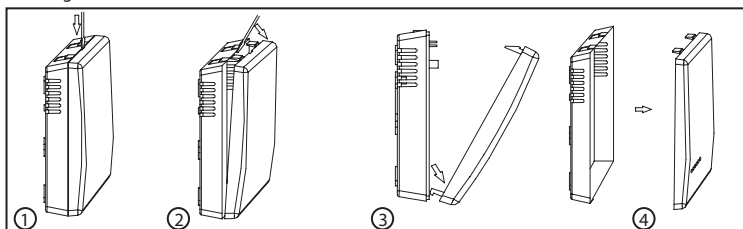


Fig. 3

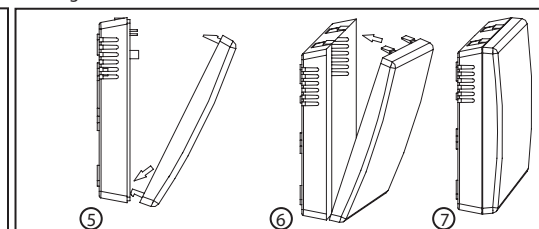
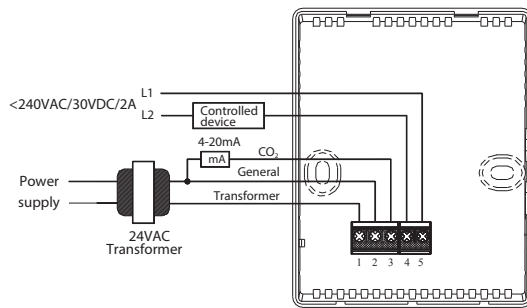


Fig. 4 Wiring



Connection Terminal	Function	Electrical Data
1	G+	Power (+)
2	G0	Power ground (-)
3	OUT	Analog output (+)
4	Fan	Relay output
5	Common	
		24VAC/24VDC+
		24VAC/24VDC
		0–10VDC (default), 2–10VDC, 0–20mA, 4–20mA=0–2,000 ppm (CO <sub>2</sub> )
		<240VAC/30VDC 2A switching current (resistance load)

## SELECT OUTPUT

- Power off first and remove the face cover, you'll see a set of short-circuit block jumpers in the middle of the right side of PCB board. From left to right, it's J1–J5 and S1–S2. Choose the type of analogue output or CO<sub>2</sub> level to control the relay following instructions shown in table shown in table below (J2 & J3 are just for manufacture test. Please don't change it!).

Jumper S1-S2	Jumper J1	Analog outputs
Lower two pins blocked	disconnected	0–10VDC (default)
Upper two pins blocked	disconnected	0–20mA
Lower two pins blocked	connected	2–10VDC
Upper two pins blocked	connected	4–20mA

Jumper J4-J5	CO <sub>2</sub> level	The relay turns on /turns off
J4-disconnected; J5-disconnected	800 ppm	CO <sub>2</sub> >800 ppm, the relay on; CO <sub>2</sub> <700 ppm, the relay off
J4-connected; J5-disconnected	1,000 ppm	CO <sub>2</sub> >1,000 ppm, the relay on; CO <sub>2</sub> <900 ppm, the relay off
J4-disconnected; J5-connected	1,200 ppm (default)	CO <sub>2</sub> >1,200 ppm, the relay on; CO <sub>2</sub> <1,100 ppm, the relay off
J4-connected; J5-connected	1,400 ppm	CO <sub>2</sub> >1,400 ppm, the relay on; CO <sub>2</sub> <1,300 ppm, the relay off

## IMPORTANT INSTRUCTIONS

- Don't shake or hit the sensor too much during shipment or mounting to protect the internal infrared CO<sub>2</sub> sensor from any damage and excursion of infrared receiver.
- When:
  - First use CO<sub>2</sub> sensor, or
  - Reuse CO<sub>2</sub> sensor after a long time unused or
  - CO<sub>2</sub> measurement is proved to be incorrect (by comparing with the measurement of other CO<sub>2</sub> sensors, or put the sensor outdoors and its measurement is away from the range of 350 ppm–450 ppm, which is the normal ambient CO<sub>2</sub> concentration, then let the self-calibration system work as follows:  
Keep the CO<sub>2</sub> sensor energized continuously for at least 2 days to let CO<sub>2</sub> sensor's self-calibration system operate properly. After more than 2 days' calibration, if the measurement (indicated by the analog output) of the CO<sub>2</sub> sensor still exceeds over the accuracy, you need to let it self-calibrated for a longer time. Here's a typical 14-day calibration solution: During a 14-day period, place the CO<sub>2</sub> sensor twice outdoors or in unoccupied places where CO<sub>2</sub> level is around 400 ppm. Each time let it be there for more than 4 hours and then check the CO<sub>2</sub> measurement via analogue output. If the CO<sub>2</sub> measurement is in its accuracy limit, it indicates the measurement is correct.

### Notice:

- Using of cellular telephones or radio transceivers about 60 cm away from the sensor during calibration process could cause sensor interference, calibration errors and affect sensor accuracy. Please refrain from using these devices during calibration of the sensor.
- When checking the analog output, please avoid breathing out directly to the CO<sub>2</sub> sensor. It's recommended to connect the output terminals with the extending wires with length of more than 1 meter. When the CO<sub>2</sub> sensor indications become stable after more than 10 minutes turning-on, check the analog output through the extending wires to avoid influence of breathing process on CO<sub>2</sub> concentration.