Carbon Dioxide (CO_2) Gas Transmitters

I-M308

DESCRIPTION

Wall and duct mounted transmitters provide a voltage (0-(5)10 V) or current (4-20 mA) signal, representing 0-2,000 or 0-5,000 ppm Carbon Dioxide (CO_2) concentration.

Infrared sensing technology provides high accuracy and outstanding long-term stability.

APPLICATION

To economically sense the concentration of Carbon Dioxide (CO_2) in air for a wide variety of commercial applications, such as demand-controlled ventilation in buildings, schools, theaters, etc., and transmit to any compatible electronic analog controller, DDC/PLC control or automation system in accordance with ASHRAE standards.

FEATURES

- *Non-dispersive infrared (NDIR) sensing technology*
- *0-2,000 or 0-5,000 ppm CO_2 (other ranges on request)*
- *0-(5)10 VDC or 4-20 mA output*
- *Tri-color LED (normal/warning/alarm)*
- *Highly efficient 24 VAC/VDC powered*
- *Executive-style room housing; mounts to wall or standard 2x4 electrical box*
- *Convenient screw terminal connections*
- *Simple one-button, single-point calibration*
- *5-year calibration interval*

SPECIFICATIONS

Electrical	
Power supply	18-28 VAC, 18-30 VDC
Power consumption	
- voltage out	0.75 VA avg, 2 VA peak
- current out	1.4 VA avg, 4 VA peak
Sensor Performance	
Gas detected	Carbon Dioxide (CO_2)
Sensor element	Non-dispersive infrared (NDIR)
Gas sampling method	Diffusion
Range	0-2000 ppm CO_2 0-5000 ppm CO_2
Accuracy	± 30 ppm, plus 2% of reading
Repeatability	± 20 ppm
Response time	3 min. (typical)
Altitude dependence	Calibrated for sea level, adjustable to altering altitude levels by performing one gas auto calibration
Calibration	
- adjustment	Span only, zero adjustment automatically self-tuned
- time	2-3 minutes, typical
- re-cal interval	(5) Five years
Sensor life expectancy	10 years, normal service
Type of Control	
General	Continuous proportional analog sensor signal output
Analog output	
- voltage	0-(5)10 VDC
- current	4-20 mA, R_{LOOP} < 600 Ω
Warm-up time	Less than 1 minute
LED Display	
- green	< 1000 ppm
- yellow	> 1000 ppm
- red	> 2000 ppm
Environmental	
- temperature	50°F to 122°F (10°C to 50°C)
- humidity	0 to 95% RH, non-condensing
Physical	
Enclosure	
- material	High impact plastic, ABS, UL 94 V0
- color	White
- cover	Snap-on, w/ locking screw for 3/32" Allen wrench
Dimensions	
- wall	4.5 x 2.8 x 0.9 in. (114 x 72 x 24 mm)
- duct	4.7 x 2.8 x 0.9 in. (120 x 72 x 24 mm) Probe 6.3 in. (161 mm)
Wire connection	(4) Four screw terminals
Wire size	22-16 AWG
Weight	
- wall	0.25 lb (0.11 kg)

SPECIFICATIONS

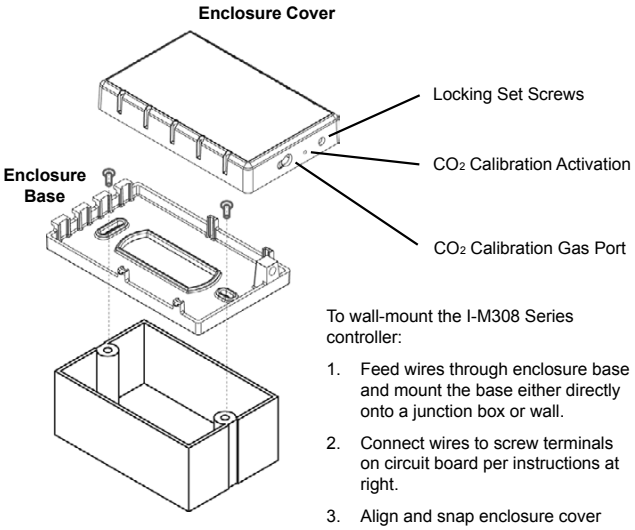
- duct	0.44 lb (0.19 kg)
Installation	
- wall	Surface mount or junction box, 4 to 6 feet above floor (1.2 to 1.8 m)
Warranty	Limited eighteen months

ORDERING INFORMATION

I-M308WV	Wall mount, 0-10 VDC, 0-2000 ppm CO_2
I-M308WC	Wall mount, 4-20 mA, 0-2000 ppm CO_2
I-M308DV	Duct mount, 0-10 VDC, 0-2000 ppm CO_2
I-M308DC	Duct mount, 4-20 mA, 0-2000 ppm CO_2
Optional	
I-M308..-5K	0-5000 ppm range
I-M308.V-5V	0-5 VDC output

INSTALLATION & CALIBRATION

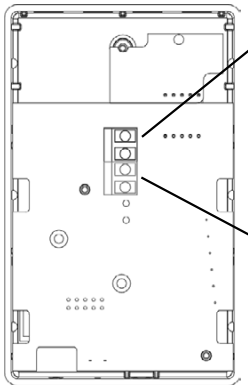
Wall Mount



Junction box is for illustrative purposes: not included.

To wall-mount the I-M308 Series controller:

1. Feed wires through enclosure base and mount the base either directly onto a junction box or wall.
2. Connect wires to screw terminals on circuit board per instructions at right.
3. Align and snap enclosure cover closed.
4. Install two set screws to secure enclosure cover.



Power input
18-30 VDC
18-28 VAC
(polarity matters for VDC only)

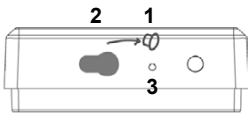
Outputs available in either
Voltage (0–5 or 0–10 V) or
Current (4–20 mA)

All terminals are electrically connected.

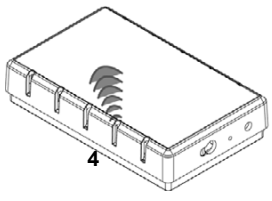
Output	Sensors
Output 1	CO_2

Recommended
- **Twisted, shielded wire**
- **Mount 4-6 ft (1.2-1.8 m) above floor**

Calibration Procedure



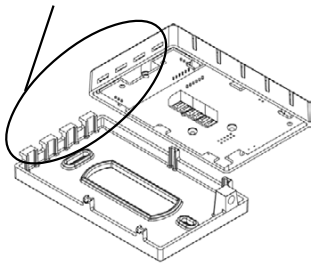
Bottom Side

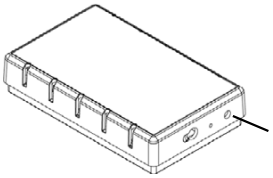


Isometric View

1. Temporarily remove dust cover from left side of enclosure cover.
2. Place 2,000 ppm CO_2 calibration gas tube with 50 mL/min gas regulator in side port and slide onto the fitting inside. Turn on gas.
3. Allow calibration gas to flow for one minute, then use a 1/16" Allen wrench (or equivalent) to depress switch (inside hole 3 at left) for 5 seconds. LED will blink yellow.
4. After 5 minutes the LED will blink green. The calibration process is completed.
5. Press and hold switch (labeled 3 at left) to accept calibration. The LED will turn solid green after only a few seconds, indicating that calibration is complete.
6. At this point it is safe to turn off gas and remove gas tubing from calibration port.
7. When calibration is complete, replace dust cover on gas calibration port.

Align top and bottom latch and snap closed.



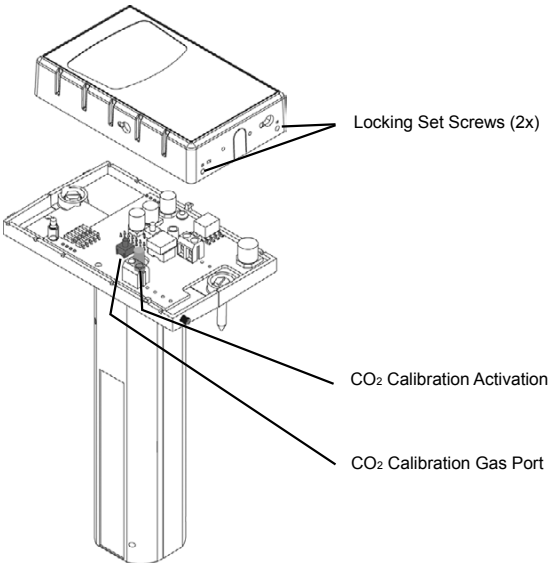


Once lid is closed, back out set-screw to secure enclosure cover.

Requires 3/32" Allen wrench

INSTALLATION & CALIBRATION

Duct Mount



Power input
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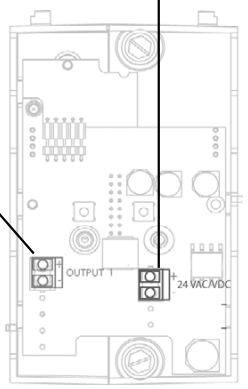
All terminals are electrically connected.

Output	Sensors
Output 1	CO_2



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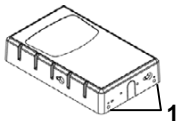
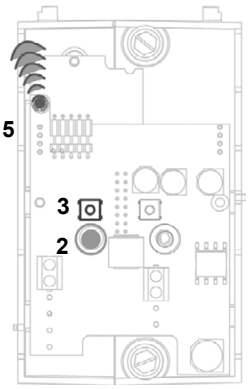
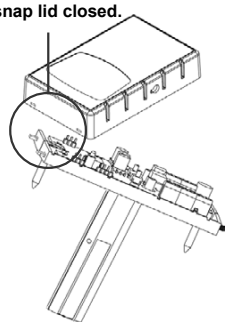
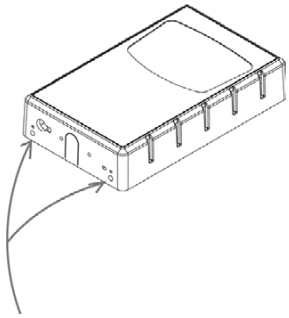




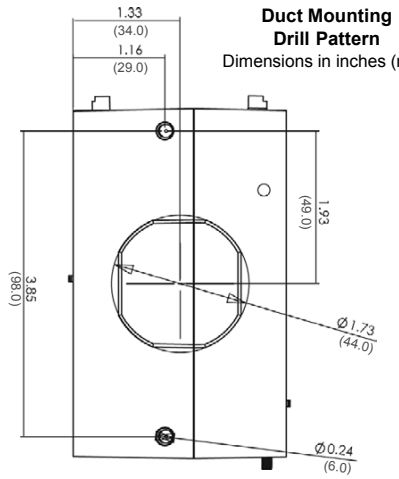
1. Back out set screws along bottom edge of enclosure cover and remove cover
2. Remove dust cover from left-most post. Connect 2,000 ppm CO_2 calibration gas with 50 mL/min gas regulator. Turn on gas and allow to flow one minute before proceeding to step 3.
3. Press 'CO2 CAL' switch for 5 seconds. LED will blink yellow.
4. After 5 minutes the LED will blink green, indicating that the calibration process is completed.
5. Press and hold 'CO2 CAL' switch (labeled 3 at left) to accept calibration. The LED will turn solid green after only a few seconds.
6. At this point it is safe to turn off gas and remove gas tubing from the calibration port.
7. When calibration is complete, replace dust cover on gas calibration port.

Align top and bottom latch and snap lid closed.





Once lid is closed, insert set-screws to lock enclosure.

Requires 1/16" Allen wrench

Duct Mounting Drill Pattern
Dimensions in inches (mm)