

# Carbon Dioxide (CO<sub>2</sub>) Gas Transmitters / Control Systems



I-M350

## DESCRIPTION

Wall and duct mounted transmitters provide continuous 0-10 VDC or 4-20 mA signals representing 0-2,000 ppm Carbon Dioxide (CO<sub>2</sub>), with options for relay/control output, audible alarm, LCD display, and relative humidity measurement.

## APPLICATION

To economically sense the concentration of Carbon Dioxide (CO<sub>2</sub>) 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*
- *Self-calibrating*
- *0-2,000 or 0-5,000 ppm CO<sub>2</sub> (other ranges on request)*
- *0-100% RH output, optional*
- *0-(5)10 VDC or 4-20 mA output*
- *Tri-color LED (normal/warning/alarm)*
- *Warning relay output, optional*
- *Audible alarm, optional*
- *LCD display, optional*
- *Executive-style room housing, or integrated duct probe*
- *Convenient screw terminal connections*
- *5-year calibration interval*

## SPECIFICATIONS

### Electrical

Power supply	18-28 VAC, 18-30 VDC
Power consumption	
- volts out	0.5 W, average
- (1) 4-20 mA out	1.0 W, average
- (2) 4-20 mA out	1.5 W, average

### Sensor Performance

Carbon Dioxide (CO <sub>2</sub> )	
Sensor element	Non-dispersive infrared (NDIR)
Gas sampling method	Diffusion
Range	0-2000 ppm CO <sub>2</sub> (std.) 0-5000 ppm CO <sub>2</sub> (opt.)
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
- re-cal interval	(5) Five years
Sensor life expectancy	10 years, normal service
Relative humidity	
- sensor element	Capacitive
- range	0-100% RH
- accuracy	± 5% @ 10-90% RH @ 25°C
- calibration	Factory-calibrated; none required in normal operating conditions
- life expectancy	15 years

### Outputs

General	Continuous proportional analog sensor output(s)
Output signal	
- voltage	0-10 VDC
- current	4-20 mA, R <sub>LOOP</sub> < 600 Ω
Warm-up time	Less than 1 minute
Relay (Opt.)	SPST, NO/NC, 24 VAC, 2 Amps max., 1000 ppm trip
Audible alarm (Opt.)	Sounds at 2000 ppm
<b>LED Display</b>	
- green	< 1000 ppm
- yellow	> 1000 ppm
- red	> 2000 ppm
<b>Environmental</b>	
- temperature	50°F to 122°F (10°C to 50°C)
- humidity	0 to 95% RH, non-condensing
<b>Physical</b>	
Enclosure	
- material	High impact plastic, ABS, UL 94 V0
- color	White
- cover	Snap-on, w/ locking screw for 1/16" Allen wrench

**SPECIFICATIONS**

**Physical (cont...)**

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

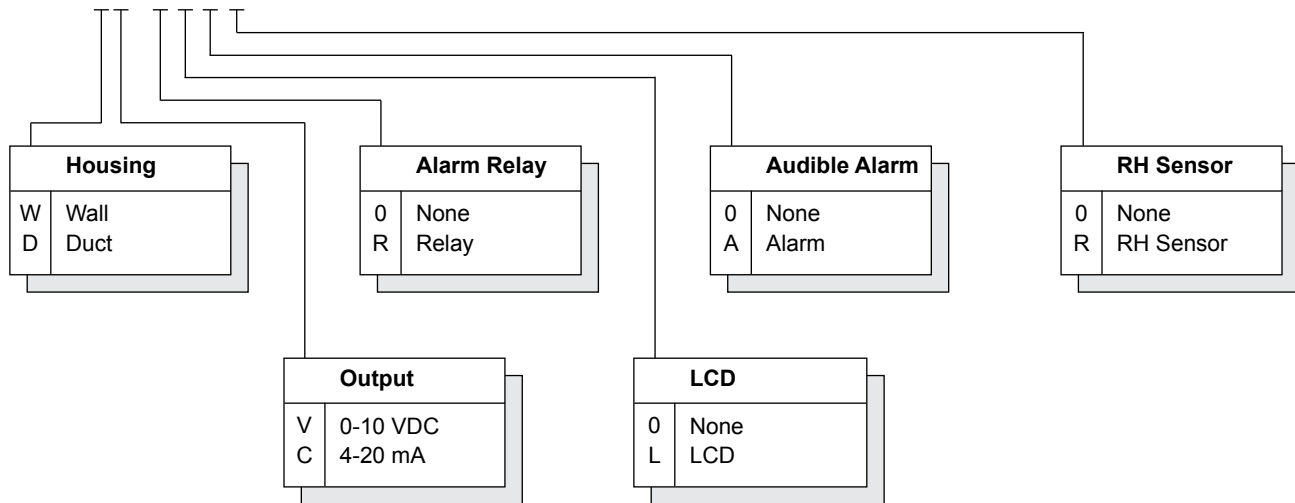
- wall 0.25 lb (0.11 kg)
- duct 0.44 lb (0.19 kg)

**Warranty**

1 year material and workmanship

**ORDERING INFORMATION**

**I-M350XX - X X X X**



Example:

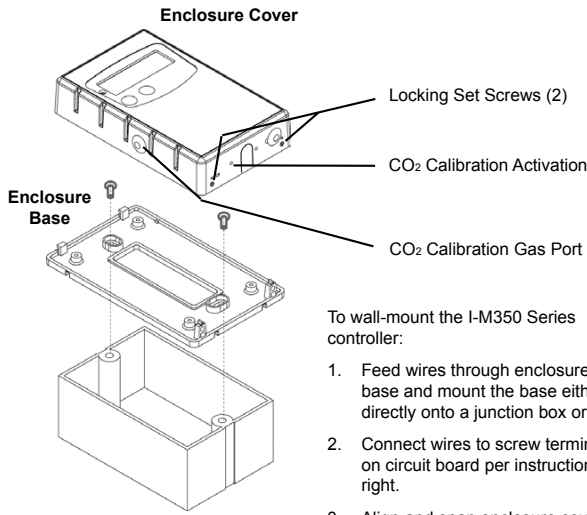
**I-M350DV - R000,**

configuration includes:

Duct mount CO<sub>2</sub> sensor, 0-10 VDC output,  
and alarm relay

**INSTALLATION & CALIBRATION**

**Wall Mount**



- To wall-mount the I-M350 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.

Junction box is for illustrative purposes: not included.

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

All '-' terminals are electrically connected.

Output	Sensors
Output 1	CO <sub>2</sub>
Output 2	RH

Relay is optional and may not be present (dry contact rated 24 VAC, 2A max).

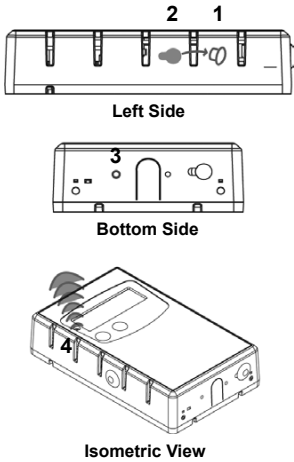
Power input 18-30 VDC  
18-28 VAC (polarity matters for VDC only)

Relay Sense Jumper	Relay contact state	
	No alarm	In alarm
OPEN (shorting block on only one pin)	OPEN	CLOSED
CLOSED (shorting block on both pins)	CLOSED	OPEN

**Recommended**

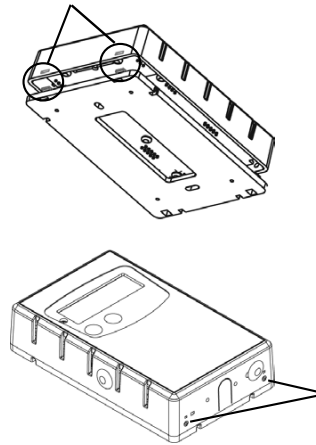
- Twisted, shielded wire
- Mount 4-6 ft (1.2-1.8 m) above floor

**Calibration Procedure**



1. Temporarily remove dust cover from left side of enclosure cover.
2. Place 2,000 ppm CO<sub>2</sub> 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.

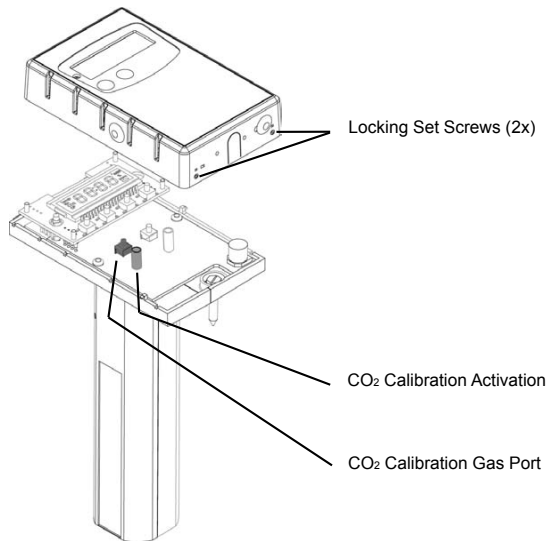
Align top and bottom latch and snap closed.



Once lid is closed, insert set-screws to secure enclosure cover.  
Requires 1/16" Allen wrench

**INSTALLATION & CALIBRATION**

**Duct Mount**



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

Not all outputs are used on every unit.

All '-' terminals are electrically connected but isolated from the power supply.

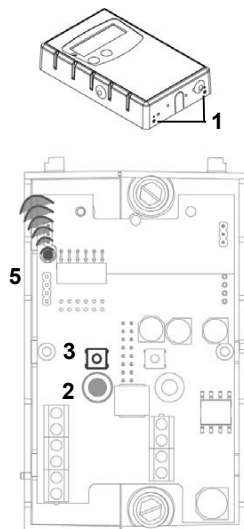
Output	Sensors
Output 1	CO <sub>2</sub>
Output 2	RH

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

Relay Sense Jumper	Relay contact state	
	No alarm	In alarm
OPEN (shorting block on only one pin)	OPEN	CLOSED
CLOSED (shorting block on both pins)	CLOSED	OPEN

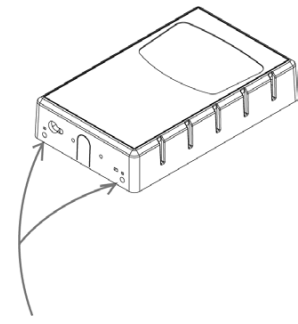
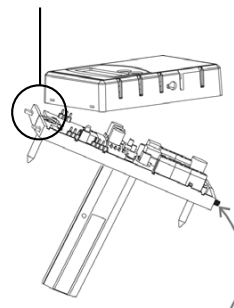
A dry contact relay is optional and may not be present (rated 24 VAC, 2 A max).

**Calibration Procedure**



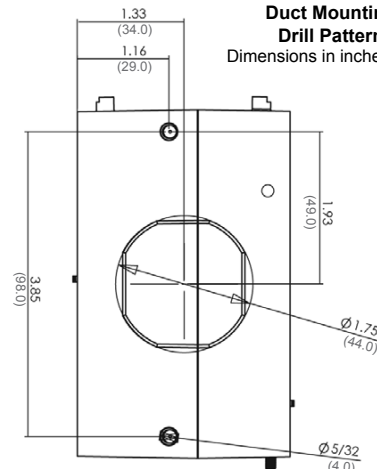
1. Back out set screws along bottom edge of enclosure cover and remove cover.
2. Remove dust cover from left-most post. Connect 2,000 ppm CO<sub>2</sub> calibration gas with 50 mL/min gas regulator. Turn on gas and allow to flow one minute before proceeding to step 3.
3. Press 'CO<sub>2</sub> CAL' switch 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 'CO<sub>2</sub> 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)



**Authorized Distributor:**  
**GasDetectorsUSA.com**  
**Houston, TX USA**  
**832-615-3588**  
**sales@GasDetectorsUSA.com**