

# INSTALLATION INSTRUCTIONS

## CT1D Duct Mount CT1O Outdoor Mount CO<sub>2</sub> & Temp Transmitters



### IMPORTANT WARNINGS

- Only qualified trade installers should install this product
- This product is not intended for life-safety applications
- Do not install in hazardous or classified locations
- The installer is responsible for all applicable codes
- De-energize power supply prior to installation or service

### PRODUCT APPLICATION LIMITATION:

Senva products are not designed for life or safety applications. Senva products are not intended for use in critical applications such as nuclear facilities, human implantable device or life support. Senva is not liable, in whole or in part, for any claims or damages arising from such uses.

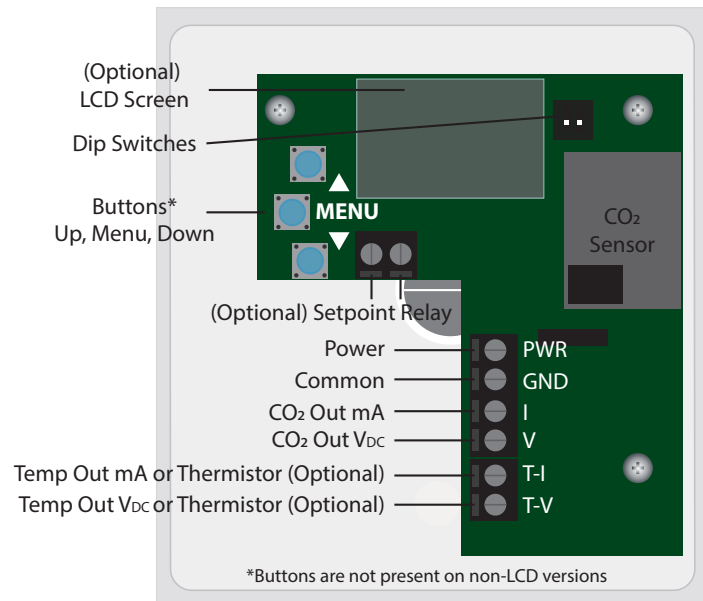
## INSTALLATION

**Duct:** 1. Drill a 3/4" hole in duct. Install sensor using gasket and screws provided. The pickup tube will ensure adequate air flow regardless of air flow direction.

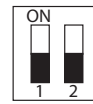
**Outdoor:** 1. Select an outdoor location under an eave on the north side of the building away from direct sunlight and rain exposure.

2. If installing with a conduit adapter, remove and replace the factory-installed cable gland.

3. Wire sensor as shown.



4. Set DIP switch positions to accommodate your application. DIP switch 2 only applies to units with transmitter temperature output selected.



DIP	1	2
UP	0-10V	-40-60C
DN	0-5V	0-50C

5. Apply power to sensor.

6. Tighten cable gland firmly around wires. If installing with a conduit adapter, seal wire entry to prevent conduit air from affecting sensor readings or operation.

7. Close lid and tighten screw. Cover must be securely installed. to prevent moisture from entering enclosure.

## OPERATION

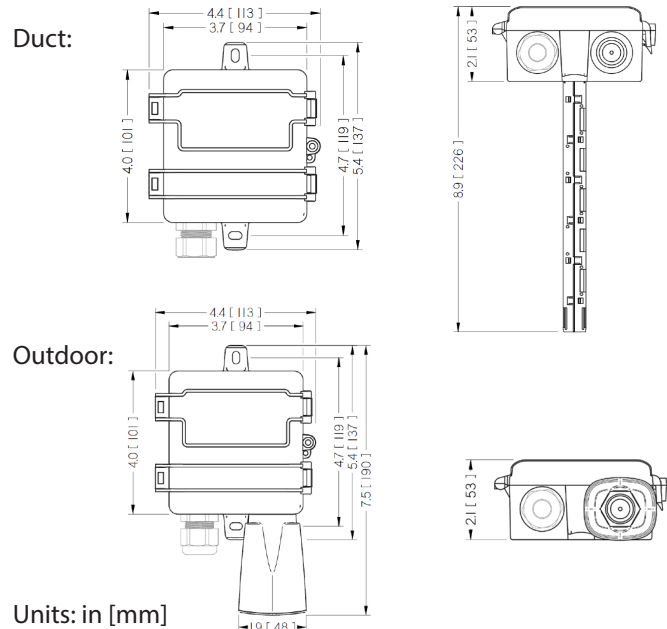
Press center MENU button to cycle between:

- SCL* Scaling "2" = 2,000ppm, "5" = 5,000ppm, "10" = 10,000ppm
- SPH* Setpoint, Hi (Closed above this level)
- SPL* Setpoint, Lo (Open below this level)
- Adj* Manual calibration adjustment +/-250ppm
- CAL* Automatic calibration - ON/OFF
- EO5* Temperature Offset value -5 to 5° in 0.1° increments
- °FC* Temperature display selection °F or °C

The upper ▲ arrow and lower ▼ arrow will show the current setting and then adjusted values on consecutive presses.

If no LCD is present, default values will not be adjustable.

## DIMENSIONS



## SPECIFICATIONS

Power supply <sup>(1)</sup>	AC Supply/DC Supply	24VAC <sup>(1)</sup> 100mA max / 12-30VDC, 50mA max
Outputs	CO <sub>2</sub> and Temperature (option) Set-point Relay	3-wire 4-20mA, 0-5V or 0-10V <sup>(2)</sup> (selectable) Solid-state, 1A @ 30VAC/DC, N.O.
Output scaling	CO <sub>2</sub>	0-2000ppm (Default), 0-5000/10000 (Selectable)
	Temp. transmitter	32 to 122°F (0-50°C) or -40 to 140 °F (-40-60°C) (Selectable)
Thermistor/RTD options		Yes, see ordering table in catalog
Media filter		PBT with water vapor-permeable membrane
CO <sub>2</sub> Sensor Performance	Type	Non-Dispersive Infrared (NDIR)
	Accuracy (Standard)	±(30ppm +3% of reading) (400-2000ppm), @ -10-50°C, 0-85%RH ±(50ppm +5% of reading) (2000-5000ppm), @ -10-50°C, 0-85%RH ±(100ppm+10% of reading) (5000-10000ppm), @ 0-50C, 0-85%RH
	Accuracy (Dual Channel)	±(30ppm+3% of reading) (400-2000ppm), @ 0-50C, 0-85%RH ±(50ppm+3% of reading) (2000-5000ppm), @ -10-50C, 0-85%RH ±(100ppm+10% of reading) (5000-10000ppm), @ 0-50C, 0-85%RH
	Drift with ABC disabled (Standard)	35 ppm/month (5)
CO <sub>2</sub> Sensor Performance	Drift with ABC disabled (Dual Channel)	5 ppm/month (5)
	Pressure Dependency	+1% reading per kPa (0.143PSI) deviation from nominal (101kPa, 14.7PSI)
	Response time <sup>(2)</sup>	60s to 90% reading
	Sample rate	1 second
	Update Rate	1 second
	Element Operating Environment <sup>(3)</sup>	4 to 122°F (-20 to 50°C), 0 to 95% RH
	Accuracy	±0.5°C max from -10 to 50°C; ±0.2°C typ 0 to 65°C
Temperature (Transmitter)	Resolution	0.01°C
	Repeatability	0.04°C
	Response time <sup>(4)</sup>	>2s
Environmental	Enclosure Rating	IP20/NEMA 1 *Vent bottom of outdoor enclosure to achieve NEMA 3R rating
	Max Operating Temp	Outdoor: -4 to 122°F (-20 to 50°C) Duct: 14 to 122°F (-10 to 50°C)
Enclosure	Materials	ABS/Polycarbonate
	Dimensions	4.0”h x 4.4”w x 2.1”d (Duct: +6.8” probe) (Outdoor: +2.5” Solar Shield)

## TROUBLESHOOTING

Symptom	Solution
No output	Check wiring. Ensure power supply meets requirements.
Temp or CO <sub>2</sub> reading error	Verify control panel software is configured for correct output scaling.
	Verify accuracy of test instrument. Observe installation and calibration guidelines.
	Verify unit is securely installed on duct without excessive air leakage.
	Offset calibration only if necessary.
Sensor damage, contamination, or long-term drift	Replace sensor element. Consult factory for ordering information.

(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.

(2) 15-30VDC/24VAC power supply voltage required for 10 volt output.

(3) Operating outside of element operating environment may result in reduced accuracy.

(4) Time for reaching 63% of reading at 25°C and 1 m/s airflow.

(5) It is not recommended to de-activate ABC (auto-calibration) except for continuously occupied spaces or greenhouses. Drift ratings may vary based on environment.

## CALIBRATION

### Automatic Calibration feature:

The sensor will automatically track low ambient CO<sub>2</sub> levels and gradually make adjustments to compensate for sensor drift due to long-term aging of the IR light source. In applications where CO<sub>2</sub> levels are continuously elevated, or spaces are occupied day and night, it is recommended to use our dual channel CO<sub>2</sub> sensor.

Senva CO<sub>2</sub> sensors are factory calibrated to controlled test gases. No field calibration is necessary or recommended. However, to facilitate compliance with job requirements and commissioning procedures, provisions for field calibration are provided:

1. Locate calibration instrument and sensor in close proximity to each other in a controlled environment free of drafts, people, and equipment to reduce influence on CO<sub>2</sub> and temperature.
2. Compare output of sensor to calibration instrument, and note difference. (In 0-10V mode/2000ppm range, 1V = 200ppm)
3. Using the buttons on front of unit, adjust offset value for CO<sub>2</sub> as needed. Factory calibration may be restored by setting offset back to 0.

In extreme cases where the sensor module has been damaged, a new sensor module may be installed in the field.

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