

# INSTALLATION INSTRUCTIONS

## CT1R Select Series Room CO2 & CO2/T 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

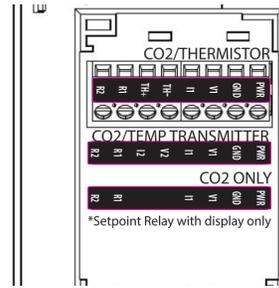
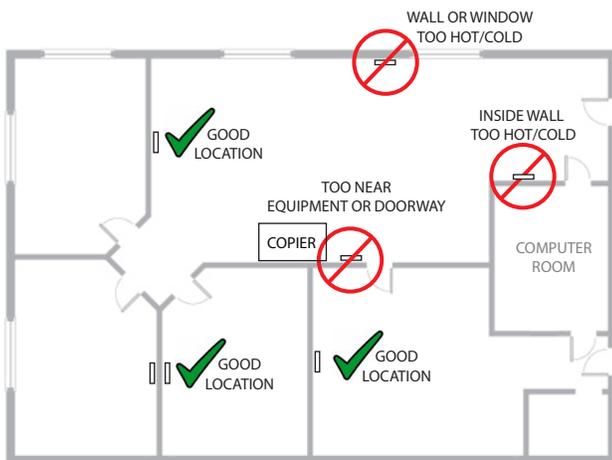
### PRODUCT APPLICATION LIMITATION:

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

1. IMPORTANT! Locate sensor in an area away from ventilation sources and heat generating equipment and appliances. Sensor should be mounted at light switch height in a vertical orientation. Use insulating material behind sensor to ensure reading accuracy.

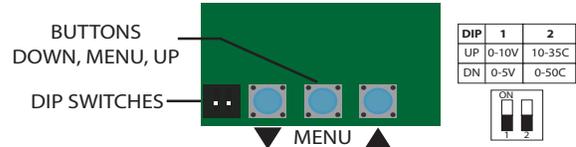
NOTE: Do not install sensor in multi-gang electrical boxes with line voltage or other electrical devices.



- PWR POWER
- GND COMMON
- V1 CO2 OUT V
- I1 CO2 OUT mA
- V2 TEMP OUT V
- I2 TEMP OUT mA
- R1 SETPOINT RELAY\*
- R2 SETPOINT RELAY\*
- TH THERMISTOR OUT
- TH+ THERMISTOR OUT

2. Wire sensor as shown above.

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



4. See mounting section.

5. Apply power to sensor.

## OPERATION

Press center MENU button to cycle between:

- SC** Scaling "2" = 2000ppm, "5" = 5000ppm, "10" = 10000ppm
- SPH** \*Setpoint, Hi (Closed above this level)
- SPL** \*Setpoint, Lo (Open below this level)
- Adj** Manual calibration adjustment +/-250ppm
- CAL** \*\*Automatic calibration - ON/OFF

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

For No Display:

0-2000ppm output and ABC is ON

\* Relay only available with Display.

\*\*For continuously occupied areas or greenhouses, it is recommended to turn automatic calibration to 'off'.

CT1R-XXX-D (Dual Channel CO2) products will have with calibration 'off' by default.

## TROUBLESHOOTING

Symptom	Solution
No output	Check wiring. Ensure power supply meets requirements.
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
	Install insulation foam gasket provided to prevent thermal conduction from inside wall.
	Perform calibration only if necessary.

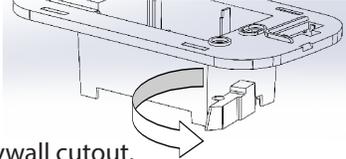
## MOUNTING

### IF MOUNTING INTO A JUNCTION BOX:

1. Remove drywall clamps by turning screws counter clockwise.

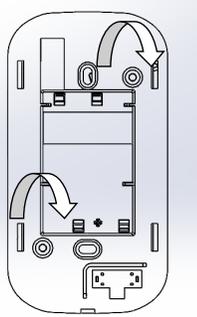
### IF MOUNTING INTO DRYWALL:

1. Turn both mounting clamps all the way counter clockwise.



2. Insert into drywall cutout.

3. Turn screws clockwise to tighten drywall mounts until tight to wall.



## 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 with ABC disabled.

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.

## SPECIFICATIONS

Power supply	AC Supply/DC Supply	24VAC <sup>(1)</sup> 100mA max / 12-30VDC, 50mA max
Outputs	CO <sub>2</sub> and Temperature (option)	3-wire 4-20mA, 0-5V or 0-10V <sup>(2)</sup> (selectable)
	Relay	Solid state, 1A@30VAC/DC, N.O. <sup>(3)</sup>
Output scaling	CO <sub>2</sub>	0-2000ppm (default), 0-5000ppm or 10,000ppm (selectable)
	Type	Non-dispersive Infrared (NDIR)
CO <sub>2</sub> Sensor Performance	Accuracy (Standard)	±(30ppm +3% of reading) (400-2000ppm), @ -10-50°C ±(50ppm +5% of reading) (2000-5000ppm), @ -10-50°C ±(100ppm+10% of reading) (5000-10000ppm), @ 0-50C
	Accuracy (Dual Channel)	±(30ppm+3% of reading) (0-2000ppm), @ 0-50C ±(50ppm+3% of reading) (2000-5000ppm), @ -10-50C ±(100ppm+10% of reading) (5000-10000ppm), @ 0-50C
	Drift with ABC disabled (Standard)	35ppm/month <sup>(4)</sup>
	Drift with ABC disabled (Dual Channel)	5ppm/month <sup>(5)</sup>
	Range	0-2000/5000ppm; Programmable up to 10,000ppm
	Response time	60s to 90% reading
	Output update rate	1s
Element Operating Environment <sup>(4)</sup>	14 to 122°F (-10 to 50°C), 0 to 95% RH	
Temperature Transmitter	Accuracy	<±0.2°C
	Resolution	0.01°C
	Repeatability	0.04°C
	Response time	2s
	Output update rate	0.5s
Element Operating range	-40 to 140°F (-40 to 60°C)	
Environmental	Enclosure Rating	IP20/NEMA 1
	Dimensions	5.66"h x 3.00"w x 0.36"d (1.69"d including recessed portion)
	Max Operating Temp	14 to 122°F (-10 to 50°C)

(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) Relay only available with display.

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

(5) Operation outside of element operating environment may result in reduced accuracy.