

# INDOOR AND OUTDOOR AIR QUALITY



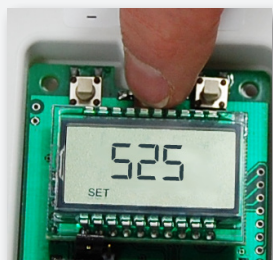
## AIR QUALITY

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## CO2, Humidity, and Temperature all-in-one duct mounted unit!

Our duct mounted **CHTDL** monitors CO2, RH and temperature in one combination unit. Mount all three sensing points in one enclosure accompanied with a standard LCD and field replaceable CO2 element.



LCD with menu for easy set-up and parameter sections



Field replaceable CO2 NDIR element

## High reliability CO2

Our non-dispersive infrared sensing element (NDIR) offers high performance—accurate to  $\pm 40\text{ppm}$ ,  $\pm 3\%$  of reading to be exact. And while you'll probably never have to change it out, it is field replaceable in case you are in a caustic environment or if the IR source should falter. And thanks to our auto calibration mode, the sensor will adapt to the environment, ensuring effects of long term drift are negligible. Our sensing element has a life expectancy of 15+ years.

# Wall Combo Sensors

## CO2/Humidity/Temp

Available with analog outputs or protocol for BACnet RS-485  
Integrated set-point relay  
Optional field replaceable NDIR CO2 and RH elements



### DESCRIPTION

The AQW series design allows customization for a sensor that meets project requirements for monitoring temperature, CO2 and relative humidity. The sensor can be ordered as stand alone temperature, CO2/Temp, RH/Temp or all-in-one CO2/RH/Temp with a 0-5/10V analog or BACnet RS485 output. Lower material costs and installation time by combining multiple sensors into a single sensor housing with standard LCD and optional add-on features.

### APPLICATIONS

- Controlling ventilation in response to occupancy
- Facilitating compliance with ASHRAE 62.1-2004 standard for air quality
- Offices, conference rooms, and public assembly areas

### FEATURES

#### Customize to meet project requirements

- Standard LCD and temperature on each device
- Options to add CO2 and/or RH sensing elements
- Field replaceable elements for CO2 and RH
- Available with 0-5/10V Analog or BACnet protocol communication

#### Protocol Version

- BACnet RS-485 ready
- Auto-configuration wizard detects baud rate and MAC address
- Adjustable set-point using button menu or optional 10k slider

#### Analog Version

- LCD for easy setup of all parameters (concealment cover included)
- Programmable set-points for complete control
- Provision to offset CO2 reading
- Optional thermistors, sliders and override button

#### High performance field replaceable NDIR CO2 element

- Selectable auto-calibration mode returns sensor to baseline values

#### 2% RH field replaceable sensor

- On-board temperature compensation for RH eliminates temp coefficient errors achieving excellent measurement accuracy, high repeatability and offset stability.
- State of the art testing facilities. 8-point NIST traceable certification available—consult factory

#### Quality

- Industry leading 7-year limited warranty/ 2-year RH element, 3-year CO2 element limited warranties

### ORDERING INFORMATION

Output	CO2	RH	SLD	BTN	RTD/TH	Color
<b>AQW -</b>						
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<b>Output Type</b>						
A = Analog (0-5/10V)						
B = BACnet RS-485						
<b>CO2 Sensor</b>						
A = None						
B = CO2 Sensor						
<b>RH Sensor</b>						
A = None						
B = 2% RH Sensor						
<b>Set-Point Slider</b>						
A = None						
B = 1k (Not valid w/ BACnet)						
C = 10k						
<b>Push Button</b>						
A = None						
B = Override Button (Requires thermistor)						
C = User Push Button						
<b>RTD/Thermistor*</b>						
A = None						
C = 100Pt (385) RTD						
D = 1000Pt (385) RTD						
E = 10k type 2						
F = 10k type 3						
G = 10k w/11k						
H = 3k						
I = 2k2						
J = 1k8						
K = 20k						
<b>Color</b>						
1 = White						
2 = Ivory						
4 = Light Almond						

\*Add-on RTD/Thermistor not readable via BACnet; Temperature output is standard on AQW devices, Add-on RTD/Thermistor is option for Analog.

### Example

Output	CO2	RH	SLD	BTN	RTD/TH	Color
<b>AQW -</b>	<b>B</b>	<b>B</b>	<b>B</b>	<b>A</b>	<b>A</b>	<b>A</b>
	<b>1</b>					

(AQW sensor with BACnet RS-485, Temp, CO2, 2% RH, no set-point slide, no user push button, no RTD/thermistor, white color)

## SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Temperature	0–5/10V standard, Scaling 50°F to 95°F (10°C to 35°C); thermistor/RTD values optional
	CO2 and RH	0-5/10V
	Update Rate	Continuous
	Programmable Relay	Solid-state output, 1A @ 30VAC/DC, N.O.
Analog LCD Menu Parameters <sup>(2)</sup>	SPt, Set point, Hi (On)	Sets relay turn-on threshold (800ppm default)
	SPh, Set point, hysteresis (Off)	Sets the relay turn-off hysteresis (100ppm default)
	SCl, Scaling	0-2000ppm or 0-5000ppm (2000ppm default)
	RdJ, Adjustment	CO2 Offset adjustment +/-250ppm (0 default)
	CL, Auto Calibration Period	Off, 7 days, 14 days, 30 days, 60 days (14 days default)
	°F, Displayed Temp Unit	°F degrees fahrenheit (default), °C degrees celsius
	LoL Analog Output Scale	5V 5.0V full scale, 10V 10.0V full scale (default)
Protocol Output	Run Mode	Displays temp and optional CO2 and RH
	Protocol	BACnet (Isolated)
	Connection	3-wire RS-485, with isolated ground
	Data Rate	Locally set baud rate up to 115200 (9600, 19200, 28800, 38400, 57600, 76800, 115200)
Protocol Relay Set-point	Address Range	0-127
	Programmable	Solid-state output, 1A @ 30VAC/DC, N.O. Source selectable: CO2, RH, Temperature
CO2	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±40ppm, ±3% of reading (400-2000ppm)
	Range	0-2000/5000ppm; Programmable up to 10,000ppm
	Response time	60 seconds to 90% reading
	Sample rate	3 seconds
Relative Humidity	Type	Digital CMOS
	Accuracy	2% models, +/-2% over 10 to 90%RH range
	Resolution	0.05%RH
	Hysteresis	+/-1%RH
	Temperature coefficient	Compensated on-board
	Response time <sup>(3)</sup>	30s
	Sample rate	3s
	Operating range/Output Scale	0 to 100%RH (non-condensing)
	Long term drift	<0.5%RH per year
	Operating conditions <sup>(4)</sup>	-20° C to 60° C @ RH>90%; -20° C to 80° C @ RH=50%
Temperature (with RH option)	Type	Silicon Bandgap
	Nominal Accuracy	+/-0.3° C (operating range)
	Maximal Accuracy	+/-0.5° C (at 25° C), +/-1.0° C (operating range)
	Resolution	0.01° C
	Repeatability	+/-0.1° C
	Response time <sup>(3)</sup>	30s
	Sample rate	3s
Temperature (without RH option)	Type	NTC Thermistor
	Nominal Accuracy	+/-0.5° C (operating range)
	Maximal Accuracy	+/-1.0° C (at 25° C), +/-2.0° C (operating range)
	Resolution	0.05° C
	Repeatability	+/-0.2° C
	Sample Rate	100 milliseconds
Operating Environment	Temperature	32 to 122F (0 to 50C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	4.85"h x 3.25"w x 1.19"d

<sup>(1)</sup> One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.

<sup>(2)</sup> Quick Start Menu parameters shown, for additional capabilities see installation manual.

<sup>(3)</sup> Time for reaching 63% of reading at 25° C and 1 m/s airflow

<sup>(4)</sup> Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)

BACnet® is a registered trademark of ASHRAE.

## Duct CO<sub>2</sub>/Humidity/Temp

LCD display with field calibration menu  
2000/5000 ppm CO<sub>2</sub>; 2% RH  
Integrated set-point relay  
Field replaceable NDIR CO<sub>2</sub> element



### DESCRIPTION

Senva CO<sub>2</sub> sensors maximize energy savings by ensuring optimal ventilation. Measuring exhaled CO<sub>2</sub> levels ensures air is conditioned only when needed. This unit combines CO<sub>2</sub>, humidity, and temperature sensing all in one compact device, reducing sensors required, installation labor and provides a cleaner IAQ solution.

### APPLICATIONS

- Controlling ventilation in response to occupancy
- Facilitating compliance with ASHRAE 62.1-2004 standard for air quality
- Offices, conference rooms, and public assembly areas

### FEATURES

#### CO<sub>2</sub>, humidity, and temperature all in one device...fewer units to buy and install

- LCD display for easy set up of all parameters
- Options for complete control including set-point
- 0-10V outputs standard. Thermistors optional

#### High performance NDIR CO<sub>2</sub> with set-point relay

- Non-dispersive infrared sensing element (NDIR)
- Selectable auto-calibration mode returns sensor to baseline values
- Field replaceable CO<sub>2</sub> sensor
- 2000 or 5000 ppm scale

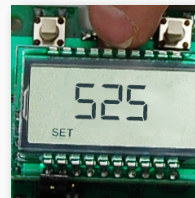
#### 2% RH sensor

- On-board temperature compensation for RH eliminates temp coefficient errors achieving excellent measurement accuracy, high repeatability and offset stability.

#### Quality

- Industry leading 7-year limited warranty/ 2-year RH element, 3-year CO<sub>2</sub> element limited warranties

#### Display and menu



- Easy set point and calibration adjustments. Set offsets for CO<sub>2</sub>

#### Field replaceable element



- Display and menu
- Easy set point and calibration



## ORDERING

**CHTDL -**

CO<sub>2</sub>/Temp/RH (2%)

### Thermistor Addition\*

A = None  
C = 100Pt (385)  
D = 1000Pt (385)  
E = 10k type 2  
F = 10k type 3  
G = 10k w/11k shunt  
H = 3k  
I = 2k2  
J = 1k8  
K = 20k'  
L = 100K

\*Addition of Thermistor requires the removal of the setpoint relay on the circuit board of the CHTDL.

To order replacement sensor elements, please consult factory

## SPECIFICATIONS

Power Supply	12-30VDC/24VAC <sup>(1)</sup> , 100mA max.	
Outputs	CO2, RH, and Temperature Transmitters	3 wire 0-5/0-10V <sup>(2)</sup> (jumper selectable)
CO2	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±40ppm ±3% of reading
	Response time	60 seconds to 90% reading
	Output update rate	3 seconds
	Output scaling	0-2000 ppm (default), 0-5000 ppm (option)
	Programmable set point	Solid-state output, 1A @ 30VAC/DC, N.O.
	Relative Humidity	Type
Accuracy		+/-2% over 10 to 90%RH range
Resolution		0.05%RH
Hysteresis		+/-1%RH
Non-Linearity		factory linearized <1%RH
Temperature coefficient		fully compensated on-board
Response time <sup>(3)</sup>		30s
Output update rate		2s
Operating range		0 to 100%RH (non-condensing)
Long term drift		<0.5%RH per year
Operating conditions <sup>(4)</sup>		-20° C to 60° C @ RH>90% -20° C to 80° C @ RH=50%
Temperature (transmitter specifications; thermistors optional)		Scaling
	Accuracy (-20 to 70° C range)	<+/-1° C; 0.5° C typ @ 25° C 3% models, <+/-2° C; 0.5° C typ @ 25° C
	Resolution	0.01° C
	Repeatability	+/-0.1° C
	Response time (3)	30s
	Output update rate	2s
	Operating range	-40° C to 120° C (sensor only)
	LCD Menu Setup Parameters	SPH, Setpoint, Hi (On) point
SPL_ Setpoint, Lo (Off) point		400ppm to full-scale-50 (600ppm default)
SEL, Scaling		0-2000ppm or 0-5000ppm (2000ppm default)
Adj, Adjustment		Offset adjustment +/-250ppm (0 default)
CAL, Calibration mode		Automatic mode ON or OFF (default=ON)
Run mode		Displays CO2 in ppm
Operating Environment	Temperature	32 to 122F (0 to 50C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS/Polycarbonate
	Dimensions	4.0' h x 4.4"w x 2.1"d (+6.8" probe)

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

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

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

(4) Long term exposures to conditions outside normal range at high humidity may temporarily offset the RH reading (+3%RH after 60 hours.)



## Recessed Wall CO2 Sensor

LCD display with field calibration menu  
2000/5000 ppm CO2  
Integrated set-point relay  
Field replaceable NDIR element



### DESCRIPTION

Senva CO2 sensors maximize energy savings by ensuring optimal ventilation. Measuring exhaled CO2 levels ensures air is conditioned only when needed. The CO2RL is a flush mount design sensor with NDIR sensing element and features that include a standard LCD, setpoint relay, menu selectable auto-calibration and provision to offset the reading +/-250ppm.

### APPLICATIONS

- Controlling ventilation in response to occupancy
- Facilitating compliance with ASHRAE 62.1-2004 standard for air quality
- Offices, conference rooms, and public assembly areas

### FEATURES

#### The industry's best looking CO2 sensor meets demanding architectural standards.

- Fits in most standard j-box or low voltage brackets.
- No exposed screws; unobtrusive tamper resistant design
- Popular colors to match any decor

#### Easy to install and maintain

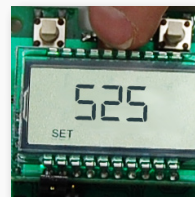
- Integrated display and push-button menus for field selectable scale, calibration, and operational modes
- Dual 4-20mA and 0-5V/0-10V output (jumper selectable)
- Integrated high-reliability solid-state set-point relay is ideal for direct control applications; easy to set up thanks to LCD

#### High reliability reduces call backs

- Non-dispersive infrared sensing element (NDIR)
- Field replaceable CO2 sensor
- 15+ year life expectancy on CO2 sensing element
- Industry leading 7-year limited warranty on electronics; NDIR module 3 years

#### High accuracy for improved system performance

- Selectable auto-calibration mode returns sensor to baseline values
- $\pm 40$ ppm,  $\pm 3\%$  of reading



#### Display and menu

- Easy set point and calibration adjustments



#### Field replaceable element

- Replaceable CO2 element for easy service



7 year limited warranty

## ORDERING



Blank = White  
2 = Ivory  
3 = Brown  
4 = Light Almond  
5 = Almond  
6 = Black  
7 = Gray



To order replacement sensor elements, please consult factory

## SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Dual Analog	3-wire 4-20mA and 0-5V/0-10V <sup>(2)</sup> (jumper)
	Output scaling	0 - 2000 or 0 - 5000 ppm (selectable)
Digital Setpoint Output	Programmable	Solid-state, 1A @ 30VAC/DC, N.O.
Sensor Performance	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±40ppm, ±3% of reading
	Response time	60 seconds to 90% reading
	Output update rate	3 seconds
	5PH, Setpoint, Hi (On point)	500ppm to full-scale (700ppm default)
LCD Menu Setup Parameters	5PL, Setpoint, Lo (Off point)	400ppm to full-scale-50 (600ppm default)
	5CL, Scaling	0-2000ppm or 0-5000ppm (2000ppm default)
	Adj. Adjustment	Offset adjustment +/-250ppm (0 default)
	CL, Calibration mode	Automatic mode ON or OFF (default=ON)
	Run mode	Displays CO2 in ppm
Operating Environment	Temperature	32 to 122F (0 to 50C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions (fits low-voltage bracket)	4.7" h x 2.9" w x 1.24" d (0.48" wall profile)

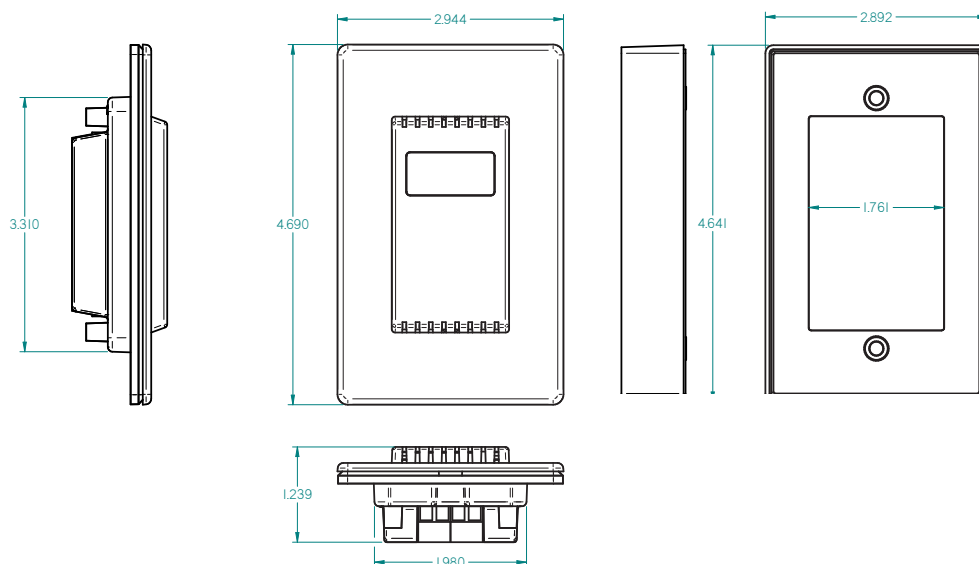
(1) One side of transformer secondary is connected to signal common. Dedicated transformer is recommended.

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



Optional Trim Ring for surface mount applications or mis-sized j-boxes

## DIMENSIONS



## Recessed Wall Bid Spec CO2 Sensor

2000 ppm CO2  
Field replaceable NDIR element  
Dual 3-wire 4-20mA and 0-5V/0-10V (selectable)



### DESCRIPTION

Senvia CO2 sensors maximize energy savings by ensuring optimal ventilation. Measuring exhaled CO2 levels ensures air is conditioned only when needed. The CO2-VAL is a flush mount design sensor with NDIR sensing element and auto-calibration mode.

### APPLICATIONS

- Controlling ventilation in response to occupancy
- Facilitating compliance with ASHRAE 62.1-2004 standard for air quality
- Offices, conference rooms, and public assembly areas

### FEATURES

#### The industry's best looking CO2 sensor meets demanding architectural standards.

- Fits in any standard j-box or low voltage bracket.
- No exposed screws; unobtrusive tamper resistant design
- Popular colors to match any decor

#### High reliability reduces call backs

- Non-dispersive infrared sensing element (NDIR)
- Field replaceable CO2 sensor
- 15+ year life expectancy on CO2 sensing element
- Industry leading 7-year limited warranty on electronics; NDIR module 3 years

#### High accuracy for improved system performance

- Auto-calibration mode returns sensor to baseline values
- $\pm 40$ ppm,  $\pm 3\%$  of reading



*Optional Trim Ring for surface mount applications or mis-sized j-boxes*



#### Field replaceable element

- Replaceable CO2 element for easy service



7 year limited warranty





## ORDERING

### CO2-VAL Economy CO2

To order replacement sensor elements,  
please consult factory

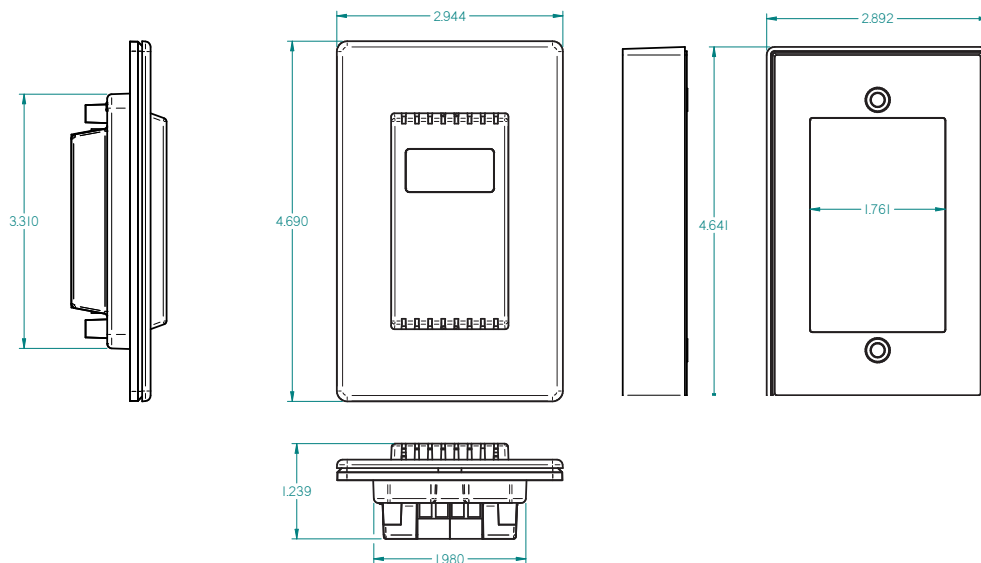
## SPECIFICATIONS

Power Supply	12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Dual Analog 3-wire 4-20mA and 0-5V/0-10V <sup>(2)</sup> (jumper)
	Output scaling 0 - 2000 ppm
Sensor Performance	Type Non-dispersive Infrared (NDIR)
	Accuracy $\pm 40$ ppm, $\pm 3\%$ of reading
	Response time 60 seconds to 90% reading
	Output update rate 3 seconds
Operating Environment	Temperature 32 to 122F (0 to 50C)
	Humidity 0-95% non-condensing
Enclosure	Material ABS Plastic
	Dimensions (fits low-voltage bracket) 4.7" h x 2.9" w x 1.24" d (0.48" wall profile)

(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.

## DIMENSIONS



## Duct CO2 Sensor

LCD display with field calibration menu  
2000/5000 ppm CO2  
Integrated set-point relay  
Field replaceable NDIR element



### DESCRIPTION

Senva CO2 sensors maximize energy savings by ensuring optimal ventilation. Measuring exhaled CO2 levels ensures air is conditioned only when needed. The CO2D series is duct mount sensor with NDIR sensing element and features that include a standard LCD, optional thermistor for temperature, setpoint relay, menu selectable auto-calibration and provision to offset the reading +/-250ppm.

### APPLICATIONS

- Controlling ventilation in response to occupancy
- Facilitating compliance with ASHRAE 62.1-2004 standard for air quality
- Offices, conference rooms, and public assembly areas

### FEATURES

#### Easy to install and maintain

- Integrated display and push-button menus for field selectable scale, calibration, and operational modes
- Dual 4-20mA and 0-5V/0-10V output (jumper selectable)
- Integrated high-reliability solid-state set-point relay is ideal for direct control applications; easy to set up thanks to LCD

#### High reliability reduces call backs

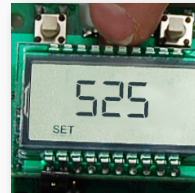
- Non-dispersive infrared sensing element (NDIR)
- Field replaceable CO2 sensor
- 15+ year life expectancy on CO2 sensing element
- Industry leading 7-year limited warranty on electronics; NDIR module 3 years

#### High accuracy for improved system performance

- Selectable auto-calibration mode returns sensor to baseline values
- $\pm 40$ ppm,  $\pm 3\%$  of reading

#### Display and menu

- Easy set point and calibration adjustments. Set offsets for CO2



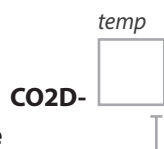
#### Field replaceable element

- Replaceable NDIR CO2 element for easy service



7 year limited warranty

## ORDERING



### Temperature

A = None  
 C = 100Pt (385)  
 D = 1000Pt (385)  
 E = 10k type 2  
 F = 10k type 3  
 G = 10k type 3 w/11k shunt  
 H = 3k  
 I = 2k2  
 J = 1k8  
 K = 20k  
 L = 100k

To order replacement sensor elements,  
please consult factory

## SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Dual Analog	3-wire 4-20mA and 0-5V/0-10V <sup>(2)</sup> (jumper)
	Output scaling	0 - 2000 or 0 - 5000 ppm (selectable)
Digital Setpoint Output	Programmable	Solid-state, 1A @ 30VAC/DC, N.O.
Sensor Performance	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±40ppm, ±3% of reading
	Response time	60 seconds to 90% reading
	Output update rate	3 seconds
	SPH, Setpoint, Hi (On point)	500ppm to full-scale (700ppm default)
LCD Menu Setup Parameters	SPL, Setpoint, Lo (Off point)	400ppm to full-scale-50 (600ppm default)
	SCL, Scaling	0-2000ppm or 0-5000ppm (2000ppm default)
	RdJ, Adjustment	Offset adjustment +/-250ppm (0 default)
	CLL, Calibration mode	Automatic mode ON or OFF (default=ON)
	Run mode	Displays CO2 in ppm
Operating Environment	Temperature	32 to 122F (0 to 50C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS/Polycarbonate
	Dimensions	4.0' h x 4.4" w x 2.1" d (+6.8" probe)

(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.

# Duct Bid Spec CO2 Sensor

2000 ppm CO2  
Field replaceable NDIR element  
Dual 3-wire 4-20mA and 0-5/0-10V (selectable)



## DESCRIPTION

Senvia CO2 sensors maximize energy savings by ensuring optimal ventilation. Measuring exhaled CO2 levels ensures air is conditioned only when needed. The CO2D-VAL series is a duct mount sensor with a field replaceable NDIR sensing element and features that include auto-calibration and optional thermistor for temperature readings.

## APPLICATIONS

- Controlling ventilation in response to occupancy
- Facilitating compliance with ASHRAE 62.1-2001 standard for air quality
- Offices, conference rooms, and public assembly areas

## FEATURES

### Easy to install and maintain

- Dual 4-20mA and 0-5/0-10V output (jumper selectable)
- Field replaceable CO2 sensor

### High reliability reduces call backs

- Non-dispersive infrared sensing element (NDIR)
- 15+ year life expectancy on CO2 sensing element
- Industry leading 7-year limited warranty on electronics; NDIR module 3 years

### High accuracy for improved system performance

- Auto-calibration mode returns sensor to baseline values
- $\pm 40$ ppm,  $\pm 3\%$  of reading



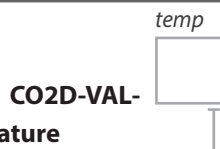
### Field replaceable element

- Replaceable NDIR CO2 element for easy service



7 year limited warranty

## ORDERING



### Temperature

A = None  
C = 100Pt (385)  
D = 1000Pt (385)  
E = 10k type 2  
F = 10k type 3  
G = 10k type 3 w/11k shunt  
H = 3k  
I = 2k2  
J = 1k8  
K = 20k  
L = 100k

## SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Dual Analog	3-wire 4-20mA and 0-5V/0-10V <sup>(2)</sup> (jumper)
	Output scaling	0 - 2000 ppm
Sensor Performance	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±40ppm, ±3% of reading
	Response time	60 seconds to 90% reading
	Output update rate	3 seconds
Operating Environment	Temperature	32 to 122F (0 to 50C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	4.0'h x 4.4"w x 2.1"d (+6.8" probe)

(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.

## Outside Air CO2 Sensor

LCD display with field calibration menu  
2000/5000 ppm CO2  
Integrated set-point relay  
Field replaceable element  
Internal heater for increased operating range



### DESCRIPTION

Senva CO2 sensors maximize energy savings by ensuring optimal ventilation. Measuring exterior CO2 levels ensures optimized economizer control. The CO2OA series is an outside air sensor with NDIR sensing element and features that include a built-in heater, standard LCD, setpoint relay, menu selectable auto-calibration and provision to offset the reading +/-250ppm.

### APPLICATIONS

- Controlling ventilation in response to occupancy
- Economizer control
- Facilitating compliance with ASHRAE 62.1-2004 standard for air quality

### FEATURES

#### Easy to install and maintain

- Integrated display and push-button menus for field selectable scale, calibration, and operational modes
- Dual 4-20mA and 0-5V/0-10V output (jumper selectable)
- Integrated high-reliability solid-state set-point relay is ideal for direct control applications; easy to set up thanks to LCD

#### High reliability reduces call backs

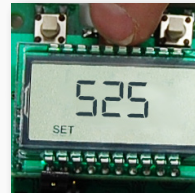
- Non-dispersive infrared sensing element (NDIR)
- Field replaceable CO2 sensor
- 15+ year life expectancy on CO2 sensing element
- Industry leading 7-year limited warranty on electronics; NDIR module 3 years

#### High accuracy for improved system performance

- Internal heater for reliable outdoor operation
- Selectable auto-calibration mode returns sensor to baseline values
- $\pm 40$ ppm,  $\pm 3\%$  of reading

#### Display and menu

- Easy set point and calibration adjustments. Set offsets for CO2



#### Field replaceable element

- Replaceable NDIR CO2 element for easy service



7 year limited warranty



## ORDERING

### CO20-A CO2 Outside Air

To order replacement sensor elements,  
please consult factory

## SPECIFICATIONS

Power Supply		12-30VDC/24VAC <sup>(1)</sup> , 100mA max.
Analog Outputs	Dual Analog	3-wire 4-20mA and 0-5V/0-10V <sup>(2)</sup> (jumper)
	Output scaling	0 - 2000 or 0 - 5000 ppm (selectable)
Digital Setpoint Output	Programmable	Solid-state, 1A @ 30VAC/DC, N.O.
Sensor Performance	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±40ppm, ±3% of reading
	Response time	60 seconds to 90% reading
	Output update rate	3 seconds
LCD Menu Setup Parameters	SPH, Setpoint, Hi (On point)	500ppm to full-scale (700ppm default)
	SPL, Setpoint, Lo (Off point)	400ppm to full-scale-50 (600ppm default)
	SEL, Scaling	0-2000ppm or 0-5000ppm (2000ppm default)
	Adj, Adjustment	Offset adjustment +/-250ppm (0 default)
	CAL, Calibration mode	Automatic mode ON or OFF (default=ON)
	Run, Run mode	Displays CO2 in ppm
Operating Environment	Temperature	0 to 122F (-18 to 50C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	4.0" h x 4.4" w x 2.1" d

(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.

## Wall & Duct CO & NO2 Sensor/Controller

Analog and BACnet/Modbus protocol options  
Field replaceable sensing elements  
Standard LCD with intuitive set up menu  
Integrated LED indicators and audible alarm



### DESCRIPTION

Senva TG Series sensors can be ordered as individual CO or NO2 sensors or as a combination CO/NO2 sensor in a shared enclosure.

The analog output model features 2 outputs that support daisy chain wiring - multiple sensors may be used in a parallel sequence (0-10V) for cost effective coverage of large areas. The unit can also act as a stand alone controller, utilizing the relay for exhaust fan operation or the output for direct control of a VFD.

The BACnet/Modbus model supports BACnet MS/TP & Modbus network communication in one unit. Standard features include network auto-configuration, a programmable fan relay, LED indicators, integrated display and audible alarm.

### APPLICATIONS

- Ensure adequate air flow in occupied spaces
- Monitor multiple toxic gases with one mounted unit
- Alert occupants of elevated gas levels
- Directly control exhaust fans



7 year limited warranty

### FEATURES

#### Cost-effective dual gas sensing and control

- Integrated display, LED indicators, audible alarm
- Order as individual CO or NO2 sensor, or specify both sensing elements in one enclosure

#### Flexibility of analog output model

- Menu selectable 0-5/10V, 1-5V and 4-20mA outputs (0-10V default)
- Dual outputs support daisy chain wiring to cost-effectively sense and control large areas

#### Versatility with BACnet/Modbus model

- Supports BACnet MS/TP and Modbus RTU networks
- Auto-configuration detects network baud rate, serial format, protocol type and self-addresses

#### High reliability reduces call backs

- Temperature compensated elements for maximum accuracy
- UL2034 recognized electrochemical CO sensing element
- 5 year life expectancy on CO and NO2 elements
- Warning indicators alert occupants when element's lifecycle is near end for replacement
- 7-year limited warranty on electronics; 2-year on elements

#### Easy to install

- Test mode speeds up field commissioning for verifying warning indicators and relay functions
- Push buttons and LCD to navigate setting parameters

Standard LCD and LED indicators

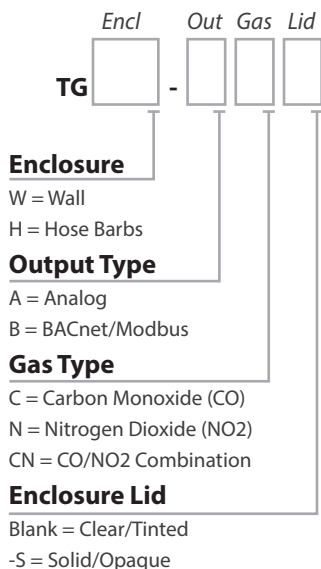
Removable terminal block

Field Replaceable Sensing Elements

Audible alarm

Push button menu for easy setup and programming

## ORDERING



## Replacement Elements

TGS-CO = Carbon Monoxide  
TGS-NO2 = Nitrogen Dioxide



## SPECIFICATIONS

Power Supply		15-30VDC/24VAC <sup>(1)</sup> , 4W max, 120mA max.
Analog Outputs	2 programmable outputs	0-10V (default), 0-5V, 1-5V and 4-20mA (menu selectable)
	CO output scaling	0-200ppm (default), ranges below 200ppm (menu selectable)
	NO2 output scaling	0-10ppm (default), ranges below 10ppm (menu selectable)
	Temperature output scaling	-20 to 85°C
BACnet/Modbus	Baud Rates	9600, 19200, 38400, 57600, 76800, 115200
Fan Relay	Fan relay characteristics	N.C. 10A@125VAC, 5A@30VDC
	CO fan relay setpoint	25ppm (default), 0-200 ppm (menu selectable)
	NO2 fan relay setpoint	1ppm (default), 0-10ppm (menu selectable)
Alarm Relay (Analog model only)	Alarm relay characteristics	N.C. 0.5A@125VAC, 1A@30VDC
	CO alarm relay setpoint	100ppm (default), 0-200ppm (menu selectable)
	NO2 alarm relay setpoint	3ppm (default), 0-10ppm (menu selectable)
Display	3-1/2 digit LCD	Indicates CO ppm, NO2 ppm (menu selectable)
LEDs	Green, Yellow, Red	Green = Normal, Yellow = Relay, Red = Alarm
Audible Alarm Exposure	85dB Piezo transducer	30 minutes above alarm setpoint per UL2034 (menu selectable)
CO Sensor Performance	Type	Electrochemical
	Accuracy	+/-10% of full scale @ 20°C
	Reproducibility	<+/-2% of reading
	Response time	<15 seconds
	Certifications	UL2034 Recognized Component
	Long term stability	<+/-5% per year
	Life expectancy	>5 years
NO2 Sensor Performance	Type	Electrochemical
	Accuracy	+/-10% of full scale @ 20°C
	Reproducibility	<+/-3% of reading
	Response time	<15 seconds
	Long term stability	<+/-5% per year
	Life expectancy	>5 years
Operating Environment	Temperature, continuous	-20 to 40°C
	Temperature, intermittent	-30 to 55°C
	Humidity	15-95% continuous, 0-95% intermittent
Enclosure	Material	ABS/Polycarbonate
	Dimensions	4.0"h x 4.4"w x 2.1"d
	Conduit Opening	Tapped 1/2" NPT

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