TotalSense Series

10-in-1 IAQ Sensor

Select from ten IAQ options per enclosure

Senva Sync App compatible

RS-485 Protocol or Analog output options

DESCRIPTION

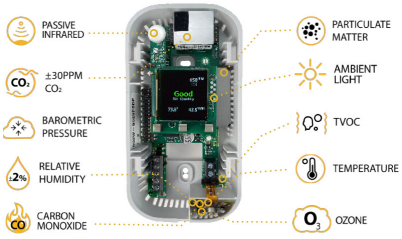
The TotalSense Series provides more data for more advanced ventilation control while drastically reducing installation cost and time on a project. It includes a comprehensive selection of IAQ sensing with carbon dioxide (CO2), relative humidity (RH), and temperature plus options for occupancy detection (PIR), total volatile organic compounds (TVOC), particulate matter (PM), Carbon Monoxide (CO), and ambient light. More than an IAQ sensor, it's the first fully configurable Indoor Environmental Quality (IEQ) sensor matrix. Motion detection (PIR) can initiate ventilation upon occupancy, providing air exchanges the instant people are present, allowing for cleaner and safer indoor spaces while still saving energy.

APPLICATIONS

- Verify effectiveness of IAQ strategies in post covid environment
- Energy management/building control
- Facilitates compliance with ASHRAE 62.1 standard for air quality
- Contributes toward satisfying Feature A08 and T06 under the WELL Building Standard®

Display, AQ ring, and standard designs

PIR Motion Detection (optional) - Detect occupancy for quicker and safer ventilation

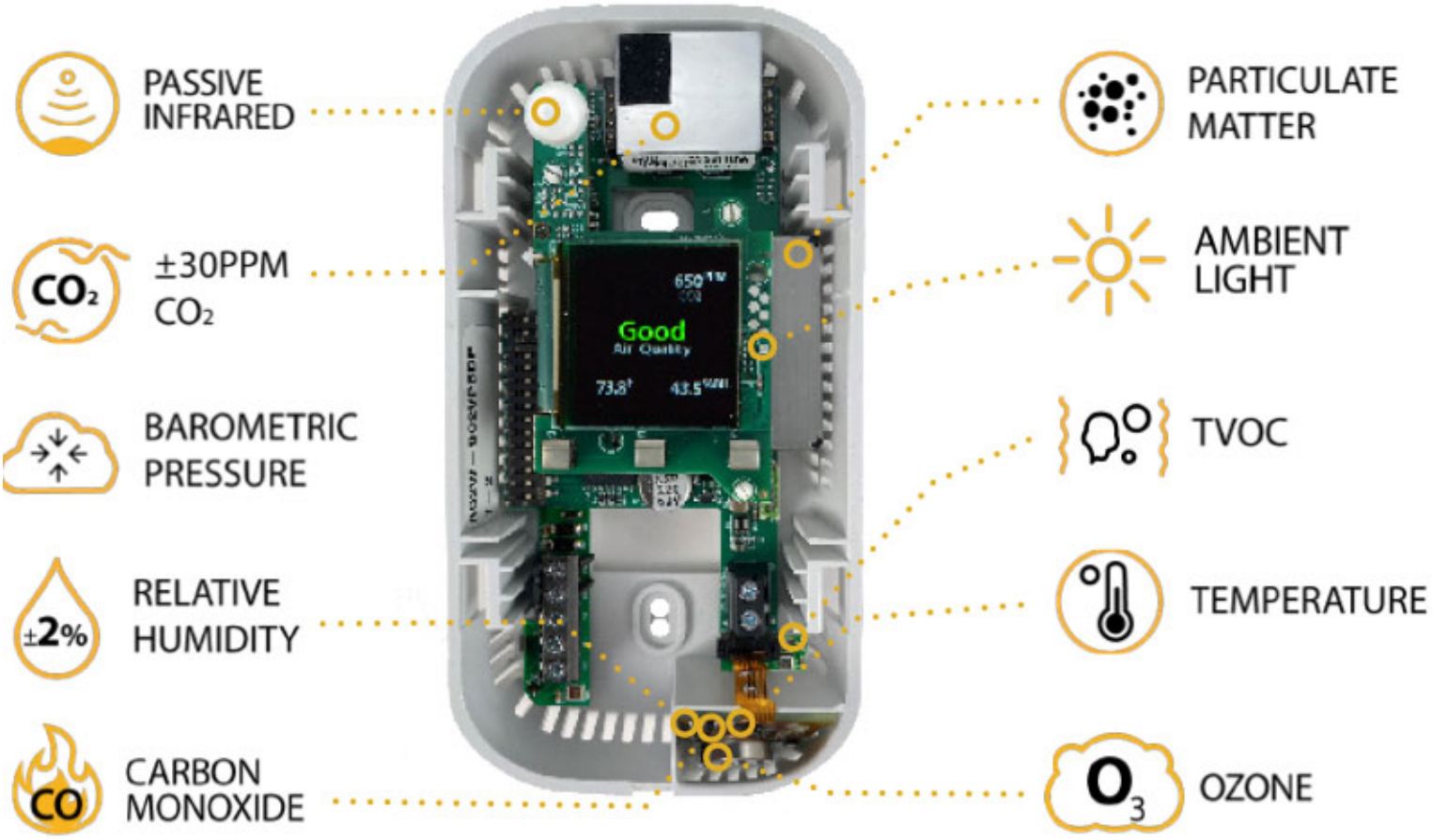


Configure up to ten sensors

FEATURES

- Reduce installation costs with multiple sensors in a standard size enclosure
- **NEW!** Save even more using an analog output for local PID control
- **NEW!** Dual BACnet/Modbus PLUS analog output version for BAS connection plus local analog control
- **NEW!** Configure quickly with the SenvaSync app
- Specify the exact product for your application with made in USA quality
- Color display and Air Quality Ring for tenant assurance (programmable)
- **NEW!** Use PIR occupancy sensor to enable auto-wakeup of display
- Initiate ventilation immediately upon occupancy detection for healthier buildings and energy savings
- Sense unhealthy or offensive air with TVOC
- Detect a variety of PM sizes to indicate airborne respiratory droplets, allergens, and other dangers
- Industry-leading temperature and barometric pressure compensated CO2 sensing with non-dispersive infrared sensing element (NDIR), 15+ year life expectancy on CO2 sensing element; ±30ppm, ±3% of reading
- Capacitive touch buttons make setup and use simple
- Slim and sleek surface-mount enclosure is tamper-proof and easy to install
- Field-replaceable PM, RH, Temp, and CO2 sensors ease maintenance
- Set-point sliders and pushbuttons are also available to meet the requirements for any job
- 7-year limited warranty / 3 years on CO2 sensor - 2 years on all others

TEN SENSING TECHNOLOGIES



ORDERING

AQ2 [W] - [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Mounting Type
W = Wall Mount

Output Type *(1)(3)(4)(5)(7)*
A = Analog
B = BACnet/Modbus
D = Dual Analog + BACnet/Modbus

CO2 *(2)*
A = None
C = CO_2
D = Dual Channel CO_2

Humidity Sensor (RH) *(3)*
A = None
2 = 2% RH Sensor

Total Volatile Organic Compounds (TVOC)
A = None
V = TVOC

Advanced Sensors *(4)(6)(7)(10)*
A = None
C = CO
O = O_3
P = (PM) Particulate Matter 1.0, 2.5, 4.0,10.0
Q = PM + O_3
R = PM + CO

Temperature *(3)(5)*
A = None
B = Transmitter
C = 100PtRTD
D = 1000PtRTD
E = 10K Type 2
F = 10K Type 3
G = 10K W/ 11K
H = 3K
I = 2K2
J = 1K8
K = 20K

Display *(1)(5)(6)(7)*
X = None
D = OLED Display
S = OLED w Solid Cover
R = Air Quality Ring

Optional Accessories
Blank = None
(See below for options)

[ ] **Setpoint Slider** *(7)*
Blank = None
C = 1K Ω
F = 10K Ω
G = 20K Ω
T = 200-900 Ω

[ ] **Slider Offset Resistor**
Blank = None
E = 910 Ω
K= 6K Ω

[ ] **Pushbutton** *(7)*
Blank= None
S = Slider Override Pushbutton *(8)*
O = Thermistor Override Pushbutton *(9)*
U = Stand Alone PB Terminals
B = Comms Only PB (No Terminals)

[ ] **PIR Sensor**
Blank = None
P = PIR Sensing

(1) Ambient light detection standard on all models selected with BACnet/Modbus and D= OLED Display Option.
(2) Barometric pressure sensing included standard on all models with CO2!
(3) Models with RH have a separate temp sensor that reads to the display and BACnet/Modbus, if chosen with any temperature selection.
(4) All PM options only available with BACnet/Modbus models.
(5) Only Transmitter and RH option is shown on display and readable via BACnet/Modbus. Thermistor versions not available to display on OLED or to read over BACnet/Modbus. See note (3).
(6) CO sensor only available with display and Temp/RH for calibration purposes.
(7) Slider and pushbutton options not available with PM sensor. Call for additional slider and override options. Slider value will show on the OLED Display and via BACnet/Modbus, if the appropriate options are selected.
(8) Slider required, shorts slider terminals to read pushbutton.
(9) Thermistor Required, shorts thermistor terminals to read pushbutton.
(10) Ozone (O3) only available with Temp/RH for calibration purposes

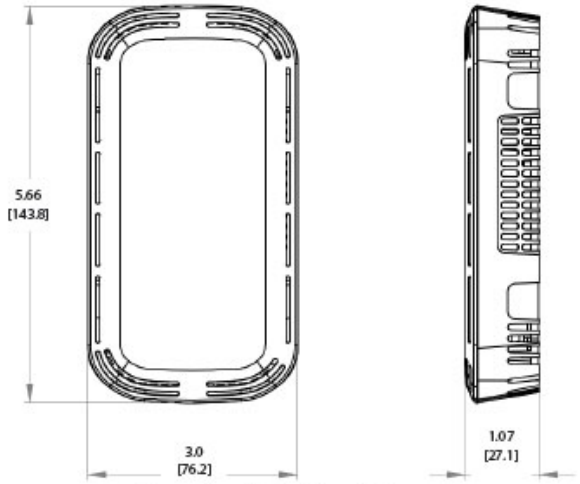
Example:

	Mount	Output	CO_2	RH	TVOC	PM	Temp	Display	PIR	
AQ2	W -	B	C	2	V	P	F	D	P	(TotalSense Wall mount with BACnet/Modbus RS-485, Temp, CO2, 2% RH, VOC, PM, 10K T3 Temp, OLED, PIR Sensor)

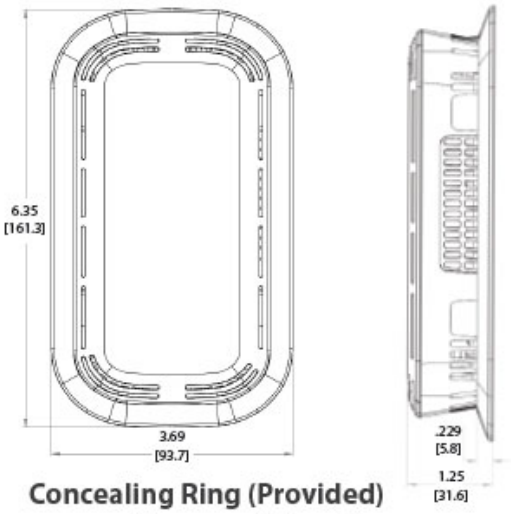
AQS - [CO2] **Replacement CO2 Sensor**

AQS - [D] [CO2] **Replacement Dual CO2 Sensor**

DIMENSIONS



Standard Surface Mount



Concealing Ring (Provided)

- Conceal oversized drywall cutouts or European junction boxes

Warning: The datasheet is designed for reference only. Refer to installation instructions that accompany the product and heed all safety instructions. Product improvement is a continuing process at Senva. Changes may occur to products without prior notice.

SPECIFICATIONS

Power Supply	Non-Display	16-30VDC/24VAC(1), 3.5W nominal, 4W max.
	Display or LED Ring	16-30VDC/24VAC(1), 4.3W nominal, 5W max.
Interface	OLED (optional)	1.5" Organic LED Display, 128x128, color
	Air Quality Ring	Color changing (red/yellow/green) LED Air Quality Ring
Analog Outputs (Analog or Dual version only)	Quantity	Up to 3 outputs
	Source	CO2, RH%, Temp, Temp slider, TVOC (selectable)
	Scale	0-5V, 0-10V, 4-20mA (switch selectable, programmable per output)
Protocol Output (Comms or Dual version only)	Protocol	BACnet MS/TP or Modbus RTU
	Connection	3-wire RS-485, with isolated ground
	Data Rate	9600, 19200, 38400, 57600, 76800, 115200 (switch selectable)
	Address Range	0-127
Relay (Standard except for PM models)	Type	Solid-state output, 1A @ 30VAC/DC, N.O.
	Polarity	NO/NC (selectable)
	Source	CO2 setpoint, RH setpoint, Temp setpoint, TVOC setpoint, PIR motion detection, Air Quality, off (selectable)
CO2 (Optional)	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±(30ppm + 3% of reading) (400-2,000ppm), -10-50ºC, 0-85%RH
		±(50ppm+ 5% of reading) (2,000-5,000ppm), -10-50ºC, 0-85%RH
		>5,000ppm consult factory
	Resolution	1 ppm
	Range	0-2,000 PPM (Default) (Programmable up to 10,000ppm)
	Response time	90 seconds to 90% reading
	Sample rate	1s
	Temp and Pressure Compensation	Yes, barometric pressure readable over comms
Relative Humidity (Optional)	Type	Digital CMOS
	Accuracy(2)	2% models, +/-2% over 0 to 80%RH range

	Resolution	0.05%RH
	Response time (3)	30s
	Sample rate	3s
	Operating range	0 to 100%RH (non-condensing)
	Operating conditions (4)	-4 to 140oF (-20 to 60° C) @ RH>90%; -4 to 176oF @ RH=50%
Temperature Transmitter	Type	Silicon Band-gap
(Optional)	Nominal Accuracy	±0.3° C (operating range)
	Maximum Accuracy (2)	±0.5° C (at 25° C), ±1.0° C
	Resolution	0.1° C
	Response time	30s
	Sample rate	3s
TVOC (Optional)	Type	MOS
	Gas	Total VOC
	Formaldehyde CH2O Sensitivity	Responsive to Formaldehyde concentrations 50-1000 ppb
	Range	0-10,000 µg/m3 (Display may be programmed to show PPB)
	Response Time	<10s
	Accuracy (5)	±20 µg/m3 + 15% at 1 to 500 µg/m3 (typical)
	Output	0-2,000 µg/m3 (default) programmable up to 10,000 µg/m3
PMx (Optional)	Type	Optical
CLASS 1 LASER PRODUCT	Size Range	PM1.0, PM2.5, PM4.0, PM10.0
	Scale	0-1,000 µg/m3
	Lower detection limit	0.3 µm
	Precision	±10 µg/m3 (0-100µg/m3); ±10% (100-1,000 µg/m3)
	Long-Term Drift	±1.25 µg/m3 / year
Carbon Monoxide	Type	Electrochemical
	Detection Range	0-200 ppm
	Accuracy	±5% FullScale @20°C
	Resolution	1 ppm
	Response Time	60 seconds
	Sensor Life	5 years
	Certifications	UL2034 Recognized Component
Ozone	Type	MOS
	Ozone Detection Range	20-500 ppb
	Accuracy	±15% of FS @ 20° C
PIR (Optional)	Type	Passive Infrared
	Axis X field of view	140o, 15 ft (4.5m)
	Axis Y field of view	76o, 15 ft (4.5m)
Ambient Light	Type	Phototransistor
	Scale	0-100 fc (lm/ft2), readable over comms
Operating Environment	Temperature	32 to 122^{o}F (0 to 50^{o}C)
	Humidity	0-95% non-condensing
Enclosure	Material	ABS Plastic
	Dimensions	5.67”h x 3.00”w x 1.07”d (With concealing ring: 6.35”h x 3.69”w x 1.25”d)
Compliance	Agency	CE, RoHS
	Accreditations	RESET Air Accredited Monitor
	Standards	Facilitates compliance with ASHRAE 62.1 standard for air quality

Contributes toward satisfying Feature A08 and T06 under WELL Building Standard®

(1) One side of transformer, secondary is connected to signal common. Dedicated transformer is recommended.
(2) Models with PM sensor included achieve ±5% accuracy over 0 to 80%RH range and an additional temperature shift of up +0.5° C.
(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).
(5) Wiring with silicone or other high VOC insulation will affect TVOC readings.

** Product improvement is a continual process at Senva and product features and specification may change without prior notice. Refer to instructions that accompany the product for installation and wiring.*