TotalSense Series

IAQ/Occupancy Sensor

Industry's first IAQ sensor with PIR motion detection
Nine environmental sensors: PIR, PMx, VOC, CO2, CO, RH, T, ambient light, barometric pressure
BACnet/Modbus or analog outputs with set-point relay



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

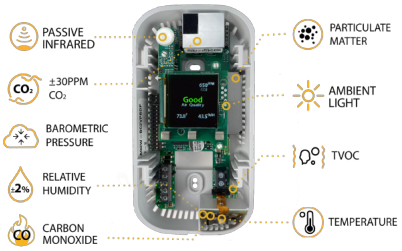
- Verify effectiveness of IAQ strategies in post covid environment
- Energy management/building control
- Facilitates compliance with ASHRAE 62.1 standard for air quality
- Contributes toward satisfying Feature A08 and T06 under the WELL Building Standard®



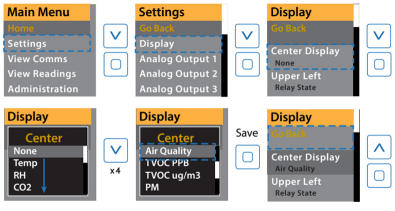
Display, AQ ring, and standard designs



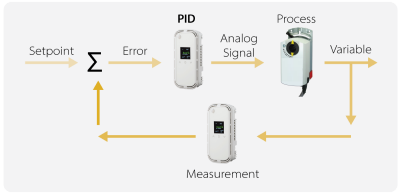
PIR Motion Detection (optional) - Detect occupancy for quicker and safer ventilation



Configure up to nine sensors



Change any setting, press ENTER to see the setup menu and navigate to parameter



NEW! PID control - program any analog output for local control of dampers or valves

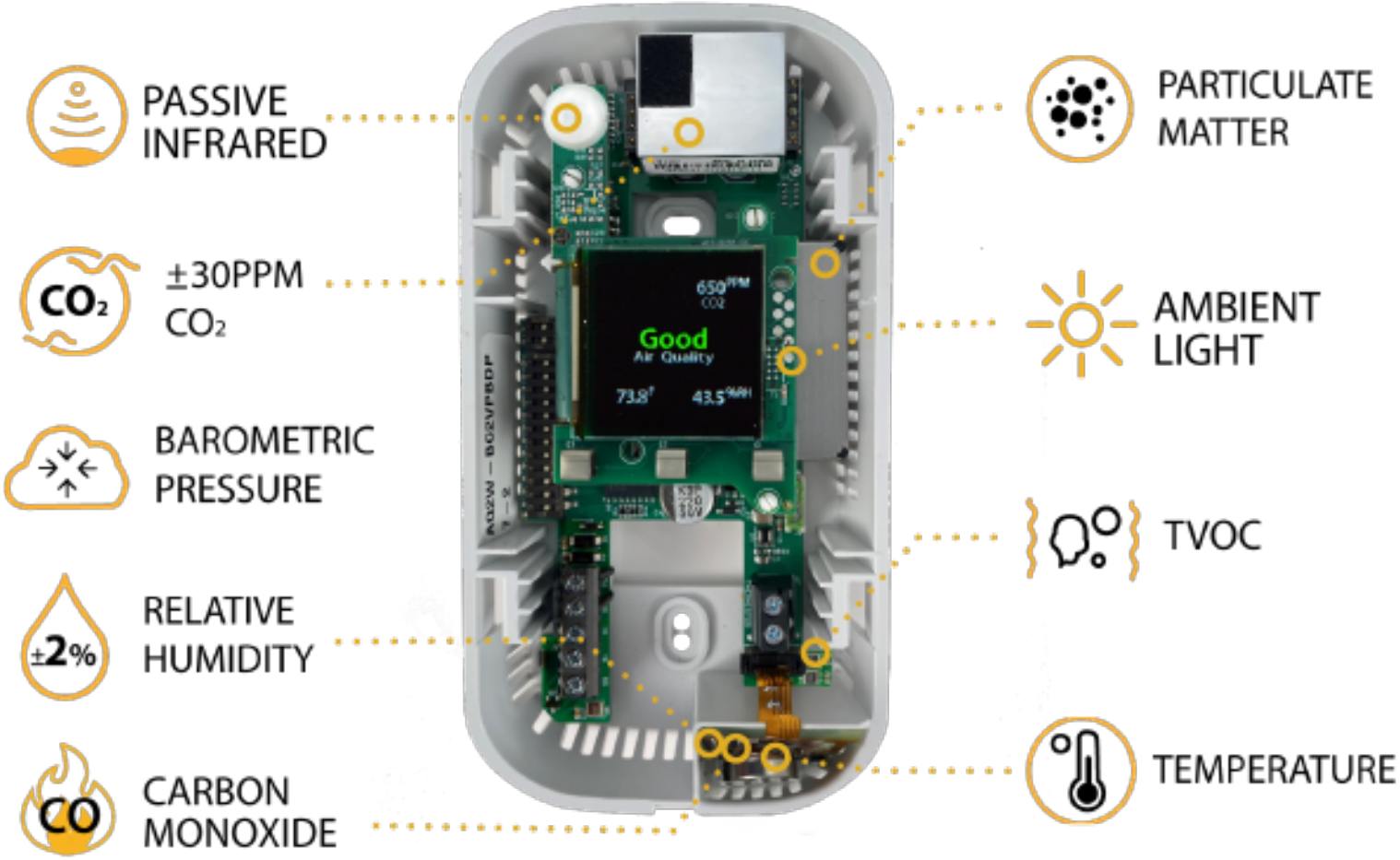


RESET monitors are tested and certified for your RESET Air Projects.

FEATURES

- 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! Configuration App with Senva Sync
- Specify the exact product for your application with made in USA quality
- 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

NINE SENSING TECHNOLOGIES



ORDERING

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

Mounting Type
W= Wall Mount

Output Type *(1) (3) (4)*
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)
A= None
2= 2% RH Sensor

Volatile Organic Compounds (VOC)
A= None
V= VOC

Advanced Sensors *(3) (5) (6)*
A= None
C= CO
P= (PM) Particulate Matter 1.0, 2.5, 4.0,10.0
R= CO+PM

Temperature *(4)*
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 *(5)*
X= None
D= OLED Display
S= OLED w Solid Cover
R= Air Quality Ring

Optional Accessories
Blank= None
(See below for options)

[ ] **Setpoint Slider** *(6)*
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** *(6)*
Blank= None
S= Slider Override Pushbutton *(7)*
O= Thermistor Override Pushbutton *(8)*
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 with BACnet/Modbus and D display option

(2) Barometric pressure sensing included standard on all models with CO2!

(3) All PM options only available with BACnet/Modbus models.

(4) Only Transmitter option is shown on display and readable via BACnet/Modbus. Thermistor versions not available to display on OLED or to read over BACnet/Modbus.

(5) CO sensor only available with display and Temp/RH for calibration purposes.

(6) Slider and pushbutton options not available with PM sensor. Call for additional slider and override options.

(7) Slider required, shorts slider terminals to read pushbutton.

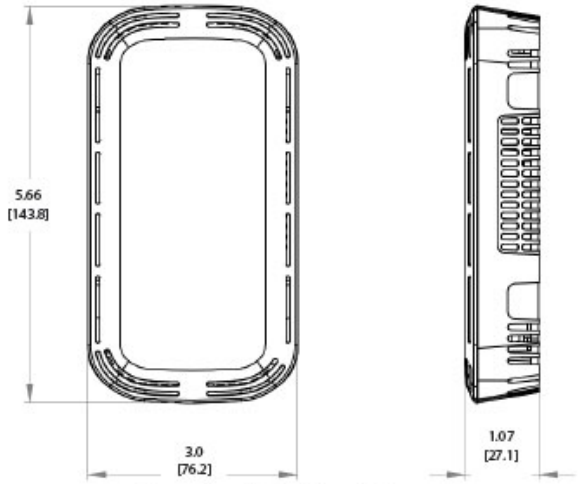
(8) Thermistor Required, shorts thermistor terminals to read pushbutton.

Example:

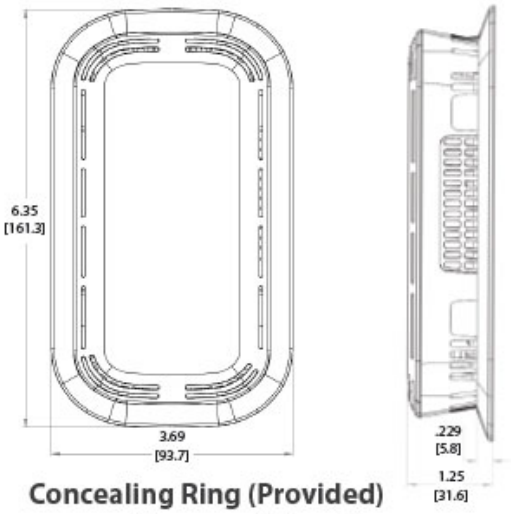
	Mount	Output	CO_2	RH	VOC	PM	Temp	Display	Slider	Push-Button	PIR
AQ2	W	- B	C	2	V	P	F	D	F	S	P

(TotalSense Wall mount with BACnet/Modbus RS-485, Temp, CO2, 2% RH, VOC, PM, 10KT3 Temp, OLED, 10K Slider, Slider Override PB, No Offset Ω, PIR 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	24-30VDC/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		With RH option	Without RH option
(Optional)	Type	Silicon Band-gap	NTC Thermistor
	Nominal Accuracy	±0.3° C (operating range)	±0.5° C (operating range)
	Maximum Accuracy (2)	±0.5° C (at 25° C), ±1.0° C	±1.0° C (at 25° C), ±2.0° C
	Resolution	0.1° C	0.05° C
	Response time	30s	30s
	Sample rate	3s	100 milliseconds
TVOC (Optional)	Type	MOS	
	Gas	Total VOC	
	Formaldehyde CH2O Sensitivity	Responsive to Formaldehyde concentrations 50-1000 ppb	
	Range	0-32,000 µg/m3 (Display may be programmed to show PPB)	
	Response Time	<10s	
	Output	0-2,000 µg/m3 (default) programmable up to 32,000 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% of reading	
	Resolution	1 ppm	
	Response Time	60 seconds	
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 122oF (0 to 50oC)	
	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	

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 to +0.5ºC
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.)

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