TotalSense Series
IAQ/Occupancy Sensor

Industry's first IAQ sensor with PIR motion detection
Ten environmental sensors: PIR, PMx, VOC, CO2, CO, O3, RH, T, ambient light, barometric pressure
BACnet/Modbus or analog outputs with set-point relay

DESCRIPTION

The TotalSense Humidity version is designed for quick-installation and complete flexibility. With options for analog or BACnet/Modbus connectivity, four display options, various thermistors, sliders, and pushbuttons, it can be configured for any job. Motion detection (PIR) can initiate ventilation upon occupancy, providing air exchanges the instant people are present (in addition to monitored elevated CO2 levels.) This technology provides a much faster trigger for ventilation allowing for cleaner and safer indoor spaces while still saving energy. PIR and ambient light sensors can also be utilized for light harvesting for additional energy savings and code compliance. The TotalSense Series also includes a comprehensive selection of IAQ sensors. For options including CO2, TVOC, or PM, see the "indoor air quality" section.
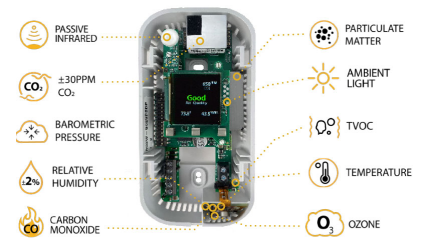
APPLICATIONS

Energy management/building control
Facilitates compliance with ASHRAE 62.1 standard for air quality

GOOD
FAIR
POOR

Display, AQ ring, and standard designs

PIR Motion Detection (optional) - Detect for safer ventilation

PASSIVE INFRARED
CO₂ ±30PPM CO₂
BAROMETRIC PRESSURE
±2% RELATIVE HUMIDITY
CO CARBON MONOXIDE
PARTICULATE MATTER
AMBIENT LIGHT
TVOC
TEMPERATURE
O₃ OZONE

Configure up to ten sensors

TAMPER PROOF

Tamper proof push-in lock tabs - great for schools!

Setpoint Σ Error | PID | Analog Signal | Process | Variable
Measurement
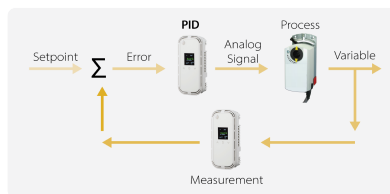
NEW! PID control output for local control of dampers or valves.

Designed and manufactured in America
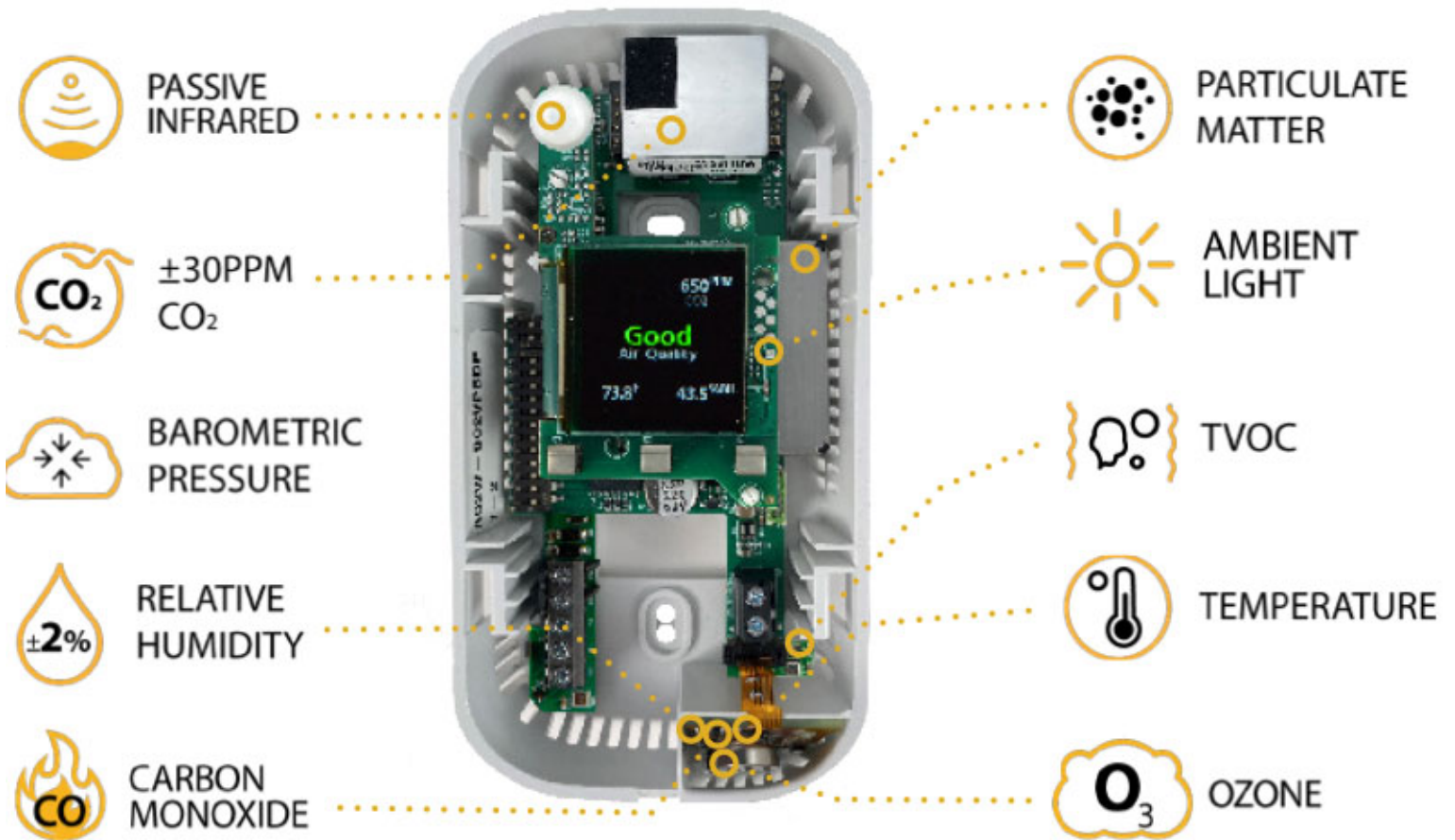World-class quality backed by seven year limited warranty
RESET Certified

RESET monitors are tested and certified.

FEATURES

- NEW! Configure and update firmware with the SenvaSync app
- Color display and Air Quality Ring for tenant assurance (programmable)
- Initiate ventilation immediately upon occupancy detection for healthier buildings and energy savings
- Capacitive touch buttons make setup and use simple

- Slim and sleek surface-mount enclosure is tamper-proof and easy to install
- Field-replaceable 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

RESET monitors are tested and certified.

PASSIVE INFRARED

±30PPM CO₂

BAROMETRIC PRESSURE

RELATIVE HUMIDITY ±2%

CARBON MONOXIDE

PARTICULATE MATTER

AMBIENT LIGHT

TVOC

TEMPERATURE

OZONE

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

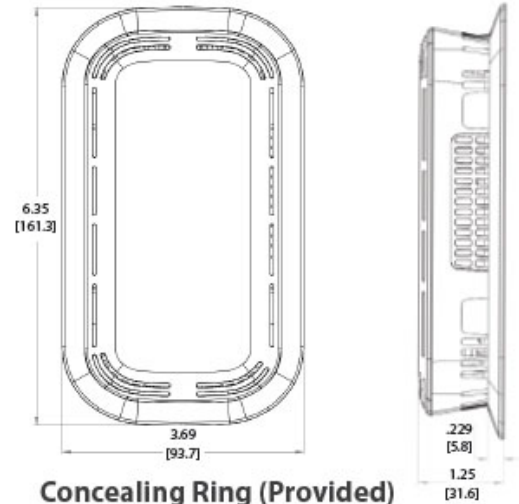**CO2** (2)
A = None
C = CO$_2$
D = Dual Channel CO$_2$

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

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

Advanced Sensors (4)(6)(7)
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

Display (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.

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, 10K T3 Temp, OLED, 10K Slider, Slider Override PB, No Offset Ω, PIR Sensor)

DIMENSIONS

Standard Surface Mount

5.66 [143.8]
3.0 [76.2]
1.07 [27.1]

Concealing Ring (Provided)

6.35 [161.3]
3.69 [93.7]
.229 [5.8]
1.25 [31.6]

▪ 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

		With RH option	Without RH option
	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	
Ozone	Type	PMOS	
	Gas	Ozone, cross sensitivity to NO2	
	Ozone Detection Range	20-500 ppb	
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	

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