TotalSense Series

Outdoor Air Quality Sensor

Build a complete air quality system for indoor, duct, and outdoor
Seven environmental sensors: PMx, VOC, CO2, RH, T, ambient light, barometric pressure
BACnet/Modbus or analog outputs with set-point relay
Pair with an IOTBuddy for BACnet IP or IOT Connection

Modbus BACnet RoHS CE

SENV SYNC COMPATIBLE

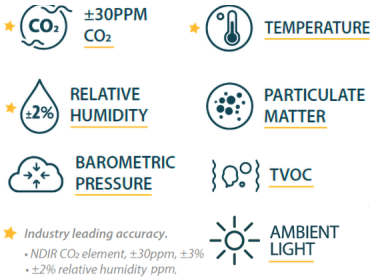
DESCRIPTION

The TotalSense Series Outdoor AQ sensor provides more data for more advanced ventilation control while drastically reducing installation cost and time on a project. It includes a comprehensive selection of AQ sensing with carbon dioxide (CO2), relative humidity (RH), and temperature plus options for total volatile organic compounds (TVOC), barometric pressure and particulate matter (PM). This sensor is enclosed in an outdoor rated enclosure to protect electronics from rain, overhead watering systems and harmful UV rays.

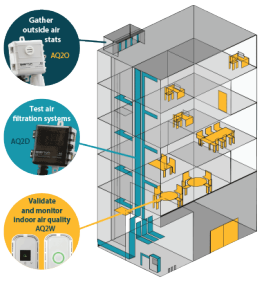
APPLICATIONS

- Measure outdoor air quality for indoor/outdoor comparison to meet ASHRAE 62.1 standard for air quality
- Energy management/building control
- Contributes toward satisfying Feature A08 and T06 under the WELL Building Standard®
- Dual Channel CO2 version is perfect for greenhouses

Fully configurable display



Choose from to 7 environmental sensors



Build a full validation system

Built for building automation.

BACnet/Modbus protocols or up to 3 analog outputs

Replaceable CO2, RH, and temp sensors

Made in USA; 7 year warranty on electronics

FEATURES

- NEW! Configure and update firmware with the SenvaSync app
- Reduce installation costs with multiple sensors in a rugged, easy-mount outdoor enclosure
- Specify the exact product for your application with made in USA
- Sense unhealthy particulates or TVOC's
- 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
- Tamper-proof
- Field-replaceable RH, Temp, and CO2 sensors ease maintenance
- 7-year limited warranty / 3 years on CO2 sensor - 2 years on all others

ORDERING

AQ2 [O] - [ ] [ ] [ ] [ ] [ ] [ ] [ ]

Mounting Type
O = Outdoor

Output Type
A = Analog
B = BACnet/ Modbus

CO2 Sensor
A = None
D= Dual Channel CO_2

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

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

Particulate Matter (PM)
A = None
C = CO*
P = PM 1.0, 2.5, 4.0, 10.0
O = O3**
Q = PM + O3**
R = PM + CO*
L = Ambient Light+

Temperature***
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
X = None
D = OLED Display

* CO sensor only available with RH, Temp, and Display for calibration purposes.
** Ozone (O3) only available with Temp/RH for calibration purposes
*** Choose Transmitter option for OLED temperature display and temperature readings over BACnet/Modbus. Thermistor versions not available to display on OLED or to read over BACnet/Modbus.
+ Ambient light is only available on select models with temp and RH, consult factory.

Example

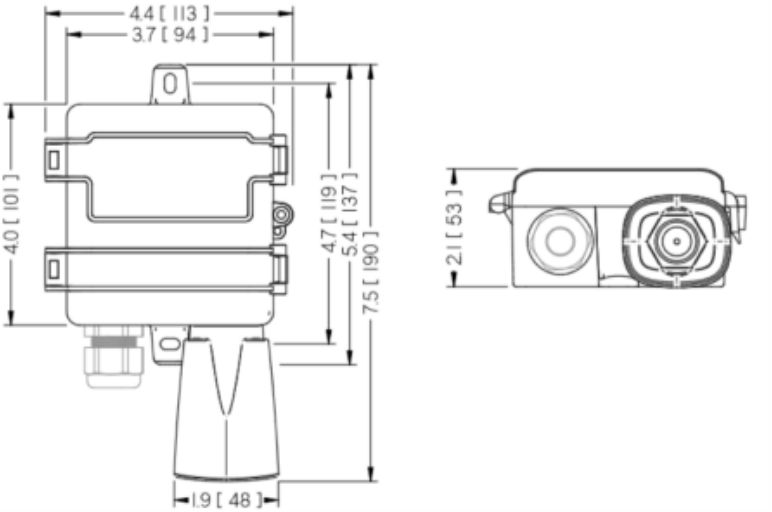
	Mount	Output	CO_2	RH	TVOC	PM	Temp	Display
AQ2	O	B	D	2	V	P	F	D

(TotalSense outdoor sensor with BACnet/Modbus RS-485, Temp, Dual Channel CO2, 2% RH, VOC, PM, 10K Type 3 Temp, OLED Display)

Replacement Sensors:

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

DIMENSIONS



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		16-30VDC/24VAC(1), 3.5W nominal, 4W max.
Analog Outputs	Quantity	3 outputs
	Source	CO2,%RH,Temp,PM,TVOC,Ambient Light,CO,Ozone
	Scale	0-5V, 0-10V, 4-20mA (switch selectable, programmable per output)
Protocol Outputs (Communications 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 (switch selectable)
Relay Set-point	Type	Solid-state output, 1A @ 30VAC/DC, N.O.
	Source	CO2 setpoint, RH setpoint, Temp setpoint, TVOC setpoint, air quality, off (selectable)
	Polarity	NO/NC (selectable)
CO2 (optional)	Type	Non-dispersive Infrared (NDIR)
	Accuracy	±(30ppm +3% of reading) (400-2000ppm), @-10-50°C ±(50ppm +5% of reading) Standard (2000-5000ppm), ±(50ppm+3% of reading) Dual Channel (2000-5000ppm), ±(100ppm+10% of reading) (5000-10000ppm)
	Drift with ABC disabled (Standard)	35ppm/month
	Drift with ABC disabled (Dual Channel)	5ppm/month
	Resolution	1 PPM
	Range	0-2000 PPM (Default) (Programmable up to 10,000 PPM)
	Response Time	90 seconds to 90% reading
	Sample Rate	1s
	Temp and Pressure	Compensated. Barometric pressure also readable over communications
Relative Humidity (optional)	Type	Digital CMOS
	Accuracy(2)	±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)	41 to 140oF (5 to 60° C) @ 20% to 80%RH
Temperature Transmitter (optional)	Type	Silicon Band-gap
	Nominal Accuracy	±0.3° C (operating range)
	Maximum Accuracy (2)	±0.5° C (at 25° C), ±1.0° C
	Resolution	0.01° C
	Response time	30s
	Sample rate	3s
TVOC (optional)	Type	MOS
	Gas	Total VOC
	Range	0-10,000 µg/m3
	Response Time	<10s
	Accuracy (5)	±20 µg/m3 + 15% at 1 to 500 µg/m3 (typical)
	Output	0-2000 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	0-1000 µg/m3
	Lower detection limit	0.3 µm
	Precision	±10 µg/m3 (0-100µg/m3); ±10% (100-1000 µg/m3)
Carbon Monoxide	Type	Electrochemical
	Detection Range	0-200 ppm
	Accuracy	5% of reading
	Resolution	1 ppm
	Response Time	60 seconds
	Sensor Life	5 years
	Certifications	UL2034 Recognized Component
Ozone	Type	PMOS
	Ozone Detection Range	20-500 ppb
	Accuracy	±15% of FS @ 20° C
Ambient Light	Type	Phototransistor
	Scale	0-300 fc (lm/ft2)
	Precision	±15%, across Full Range
Operating Environment	Temperature	-4 to 122° F (-20 to 50° C). Devices including PM or CO sensors rated (-10 to 50° C) CO sensors can intermittently operate down to –20°C.
	Humidity	0-95% non-condensing
Agency	Compliance	CE, RoHS
Enclosure	Material	ABS/Polycarbonate
	Dimensions	7.5”h x 4.4”w x 2.1”d
	Conduit Opening	Tapped 1/2” NPT
	Rating	IP43 or NEMA 3R

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

(2) Models with PM sensor included achieve ±3% 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.)

** 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.*