

Choosing an IAQ Sensor to Maximize your WELL Rating

AIMING FOR A WELL CERTIFICATION?

Earn more points with Senva's TotalSense. The TotalSense is the only complete indoor air quality (IAQ) sensor that was built for building automation and control.

Earn up to 9 points by not only monitoring IAQ *but controlling with it!* While many IAQ sensors can help achieve A08's Air Quality Monitoring and Awareness, the **TotalSense can be easily tied into your building automation system** (BAS) using BACnet or Modbus communications to help you meet more advanced air quality standards such as A05's Enhanced Air Quality, A06's Advanced Ventilation Design, or T07's Manage Relative Humidity.

Also, integrate TotalSense **duct** and **outdoor** sensors for a full air quality validation system using a single interface!

Finally, **save on ongoing maintenance costs.** Our sensors were designed to operate accurately much longer than the required one year calibration interval. We suggest meeting the annual calibration requirement by planning on a 'proxy calibration' which simply means comparing the sensor to a reference to verify its ongoing calibration accuracy. Each can also be replaced, as needed.



See Senva's Air Quality Products



help you earn points in the Air and Thermal Comfort categories. Here's how:

1. Choose an **AQ2W-BC2APBDQP**, a TotalSense with PM, CO, CO₂, RH, and Temp with a display and Modbus and BACnet capability. Optionally, add TVOC (change yellow "A" to "V" in part number to include TVOC) to account for precondition A01, Part 2. PIR motion sensing (blue) is included to ensure the display is visible only when occupants are sensed.
2. Install one for every 3500 square feet of occupiable space at 3.6-5.6 feet above finished floor.
3. Set display to show all air quality readings. Use the Senva Sync NFC App to streamline setup. Just set *one* the way you want it and replicate settings to all of your devices!

Scan to download the Senva Sync App



POINTS AVAILABLE FOR IAQ SENSING

You can earn between 5 and 9 additional points towards your certification, depending on whether your system is able to maintain the levels set forth in A05, A06, and T07. Here are the potential points you'll earn:

A05 Enhanced Air Quality (2-3 points)

Part 1: Particulate Matter thresholds (**1-2 points**): Verified by annual performance test or *sensor data*

- Maintain PM_{2.5} < 12 µg/m³ or PM₁₀ < 30 µg/m³ (1 point)
- Maintain PM_{2.5} < 10 µg/m³ or PM₁₀ < 20 µg/m³ (2 points)

Part 3: Inorganic Thresholds (**1 point**): Verified by annual performance test or *sensor data*

- Maintain CO < 6 ppm
- Maintain NO₂ < 21 ppb

CHOOSING AN IAQ SENSOR FOR WELL PROJECTS

The International Well Building Institute Well Standard V2, Q4 2022 (WELL) has a 11 categories to improve the comfort and health of occupants in modern day buildings. While many can be achieved through intelligent building and HVAC design, Senva can

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A06 Enhanced Ventilation Design (2 points)

Part 1 Option 2: Demand controlled ventilation using CO2 levels: **(1-2 points)**: Verified by Engineer's letter of assurance. Option 4: Ventilation monitoring: verified by *sensor data*.

- Maintain CO₂ < 900 ppm or 500 above outdoor reading (1 point)
- Maintain CO₂ < 750 ppm or 350 above outdoor reading (2 points)

A08 Air Quality Monitoring and Awareness (2 points)

Part 1: Install indoor air monitors **(1 point)**: Verified by on-site photographs and on-going data report.

- Must have at least 3 of the following: PM2.5 or PM10, CO₂, CO, O₃, NO₂, TVOC, Formaldehyde
- Submit data annually

Part 2: Promote Air Quality Awareness **(1 point)**: Verified by on-site photographs, letter of assurance.

- Display screens positioned at a height of 3.6-5.6 ft every 5400 ft² of regularly occupied space
- Data presented includes concentrations of the parameters measured or color-coded air quality results.

T06 Thermal Comfort Monitoring (1 point)

Part 1: Thermal Comfort Monitoring **(1 point)**: Verified by on-site photographs, letter of assurance.

- Monitor dry-bulb temperature (T) and relative humidity (RH).
- Real-time T and RH available to occupants (display screens) every 5400 ft²

T07 Manage Relative Humidity (1 point)

Part 1: Thermal Comfort Monitoring **(1 point)**: Letter of assurance, performance test.

- Maintain RH between 30-60% at all times using mechanical system.

ANNUAL CALIBRATION

Many competitive sensors require replacement of each element to meet WELL's annual calibration requirement. This is both extremely expensive and horribly wasteful. *Our sensors are built to last longer than 1 year!*

For the annual calibration requirement, we suggest opting for a 'proxy calibration' which can be submitted as the annual calibration plan through WELL. This means deploying a calibrated reference device to compare the readings to the sensor.


For the PM sensor, our factory accuracy is better than 10% and our annual drift is estimated at about 1.25% each year (worst case). So, as long as the sensors don't experience any abnormal disturbances, you could be within WELL's 25% specification for over 10 years without needing calibration or replacement.

For the CO₂ sensor, do nothing! The TotalSense employs auto-baseline-calibration (ABC) technology. This has been a proven industry-standard for decades and WELL accepts this auto-calibration method in place of annual calibration.

For the CO sensor, we recommend calibrating the zero and span annually using a calibrated test gas. Alternatively, the CO sensor can very easily be replaced using a new factory-calibrated element.

For the TVOC sensor, we do not recommend using TVOC as one of the 3 required WELL IAQ technologies for A08. TVOC has artificial intelligence built-in to self-calibrate continuously as well as at startup. It works similarly to the CO₂ sensor's ABC. WELL does not (yet) accept this technology in place of annual calibration as it is relatively new. However, if you choose to do a proxy calibration of TVOC, please make sure your reference sensor is calibrated to Ethanol, as there is a lot of variability between different TVOC sensors.

For RH and T sensor, WELL requires a 3 year calibration interval. These parameters can be adjusted using offsets for ongoing calibration (if necessary). Alternatively, both sensors can very easily be replaced using a new factory-calibrated element.

 **Warning:** Application notes contain installation ideas and tips. Although developed by engineers and installers, Senva disclaims any liability for injury or losses due to information provided. This information does not supersede codes and/or ordinances or regulatory standards. Application notes do not comprehensively cover safety procedures for working with live electrical equipment. Refer to installation instructions that accompany products and heed all safety instructions. Copyright © 2022 by Senva Inc. All rights reserved.