

Sensor Suite Sensors

Carbon Monoxide



Sensor Suite Sensors

Sensor Suite Sensors enable the Aircuity system to cost effectively monitor a breadth of environmental parameters throughout a facility. Located within a Sensor Suite, the sensors evaluate an array of environmental conditions using a shared sensing architecture. In lieu of locating individual discrete sensors in each space, the Aircuity system gathers air samples from the spaces and multiplexes them across the Aircuity network back to the Sensor Suite for analysis.

Sensor Suite Sensors have unique performance specifications and product features to meet specific applications, such as demand controlled ventilation, Differential Energy™ economizer control; or for monitoring only purposes. The ability to sense a variety of conditions, combined with a specific level of sensor performance, optimizes an application's potential energy savings, control or monitoring capacity.

Features



Sensor Suite Sensors are tailored to match specific monitoring and control needs.



Calibration and maintenance of sensors is automatically and routinely scheduled through Aircuity's Calibration Laboratory and Assurance Services program.



Flexible architecture for future sensor enhancements and technology updates.

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Carbon Monoxide (CO) is a colorless, odorless, and tasteless gas produced by incomplete combustion of carbon fuels. It is a common component of exhaust from motor vehicles and heating units, such as boilers and space heaters, and also is present in tobacco smoke. Although the airborne concentrations of this gas in most indoor environments are usually low, elevated levels can occur under certain situations. These situations include entrainment of exhaust from trucks idling at a loading dock into a building air intake, migration of air from traffic or parking garages, or leakage of boiler flue gases into a building.

The extent of symptoms produced by CO inhalation depends on both personal activity level and airborne concentrations. Exposures to high concentrations may produce headaches, dizziness, fatigue, and nausea. Although average indoor concentrations of CO are usually less than 2 ppm, levels can reach 5 ppm to 10 ppm inside motor vehicles. Symptoms become clinically apparent when the amount of CO bound to red blood cells, termed carboxyhemoglobin, reaches approximately 10%.



Carbon Monoxide Sensing Technology (SEN-COM-1)

The Aircuity carbon monoxide sensor relies on an electrochemical element with a diffusion cell and an additional reference electrode to measure Carbon Monoxide (CO). The basic principle of the sensor operation is when the CO is in the presence of O₂, it reacts with water at the sensing electrode (anode). The flow of electrons between the anode and cathode is proportional to the amount of CO present. To minimize drift that would occur via polarization of the working electrode, a third (reference) electrode is included to provide a constant potential for which the current across the working electrode can be referenced against.

The electrochemical sensor used is very different from sensors used in typical residential CO alarms. Most residential alarms use a metal oxide sensor, a much more insensitive detector for CO that is also susceptible to interference from any volatile organic compounds (VOCs) that may be present. These sensors are typically filled with activated carbon to prevent VOCs from reaching the sensor and causing erroneous readings. Because the air has to diffuse through this bed of activated carbon, the response is much slower than that of the electrochemical sensor.

The sensor features excellent long term drift stability due to the use of a reference electrode configuration, and minimal reactivity to other compounds by use of an adsorptive filter that desorbs when in contact with clean air.

Ordering Guide

Sensed Parameter	Model Number	Element
Carbon Monoxide	SEN-COM-1	Electromechanical Sensor

Sensor Specifications

Model Number	SEN-COM-1
Typical Application	Carbon Monoxide Monitoring or Control
Sensor: COM	
Element	Electrochemical Sensor
Range	0–150 ppm
Accuracy	± 3 ppm or 5% of reading (whichever is greater)
Resolution	1 ppm
Response	30 seconds

Regulatory Compliance



UL 916 Accessory Energy Management Equipment



Part 15 Class A

