

Canary IAQ Monitor Specifications and Explanation of Readings

Relative Humidity

Sensor Description – CMOS capacitive polymer – range 5-95% - accuracy $\pm 2\%$

Standards/Guidelines – 62-55 is the comfort standard that gives T/RH specs for seasons – typically 30-60% is an acceptable zone – too dry leads to dust mites and too wet leads to mold growth – keeping in mind the Temp plays a major role in the equation for dew point.

Temperature

Sensor Description – CMOS bandgap temperature sensor – range 40-90 degrees F – accuracy ± 1 degree F.

Standards/Guidelines – same standard as above

CO²

Sensor Description – Non dispersive infra red – dual channel to reduce drift over time – there is a CO₂ measurement channel and a zero gas channel – both work off the same lamp that flashes at 4 Hz – as the lamp gets dirty and the bulb wears down, both channels decay at the same rate so the drift is reduced compared to similar single channel CO₂ sensors which is used by most systems. Sensor life is estimated at 10 years. Range is 0-20000 ppm – accuracy is ± 75 ppm – outside air is typically 325-425 ppm depending on what part of the country you are in.

Standards/Guidelines – ASHRAE standards says 650 ppm above ambient is the limit before you have to look at changing your ventilation system – this is a commercial standard of care – there is no standard for residences but this is a good guideline.

CO

Sensor Description – electrochemical – working/counter/reference electrodes – CO reacts with the electrolyte in the sensor and produces a signal proportional to the CO in the air. Range is 0-250 ppm – accuracy is ± 3 ppm – ambient levels are between 0-2ppm depending on area.

Standards/Guidelines – EPA outdoor air standard is 9 ppm. Theoretically shouldn't be more than ambient levels of CO in your home. The OSHA standard is 50 parts per million (ppm). OSHA standards prohibit worker exposure to more than 50 parts of the gas per million parts of air averaged during an 8 hour time period. Sensor life is estimated at 3 – 5 years.

Particulates

Sensor Description – near nephelometer – range 0-200 ug/m³ accuracy ± 10 ug/m³ or 20% of reading (whichever is larger). Accuracy measurement is difficult because of different sizes of particles.

Standards/Guidelines – Outside air standard is 50 ug/m³. EPA Indoor guideline is 150 $\mu\text{g}/\text{m}^3$ for a 24-hour average.

VOC

Sensor– Metal Oxide – heater inside the sensor basically burns the VOC's that come into contact with the sensor which produces a signal – range is 0-10 ppm. Accuracy is highly dependent on what gas is reacting on the sensor. TBD

Standards/Guidelines – Typical background levels are very low in homes– close to zero. Typical contaminants in the home would be cleaning compounds and cooking by-products – along with air fresheners and perfumes. There are no EPA or other standards but the sensor will show events in the home that are complimented by one or more of the other sensors - for example, cooking shows up in the VOC sensor graph and the Dust graph.