Rehydration of TSI® Carbon Monoxide (CO) Sensors

Application Note TSI-158 (US)

TSI® utilizes an electro-chemical sensor in its IAQ probes to measure the concentration of Carbon Monoxide (CO) in air. When exposed to low relative humidity conditions for extended periods of time, the electrolyte (liquid) in the sensor can experience a loss of moisture dehydration), resulting in reduced sensor response.

Low relative humidity conditions (<30% R.H.) often occur indoors during winter months. They can also occur year-round in semi-arid and arid environments, such as at high elevations and other naturally dry environments such as deserts.

However, this “drying out” of the sensor is a reversible process. The sensor can be re-hydrated in order to recover its response, and the process of sensor re-hydration is quite simple.

It is recommended to rehydrate the CO sensor in your TSI® IAQ probe if you are in any of the dry conditions mentioned above for any extended period of time (more than 3 weeks).

Required Materials

- An air-tight sealable large container
- A small beaker, such as a measuring cup
- A small, dry bowl
- Salt (regular table salt)
- Water
- Time (leave overnight for full sensor hydration)

Instructions

1. In a small beaker, such as a measuring cup, pour 2 oz (55 g) quantity of salt (Figure 1).

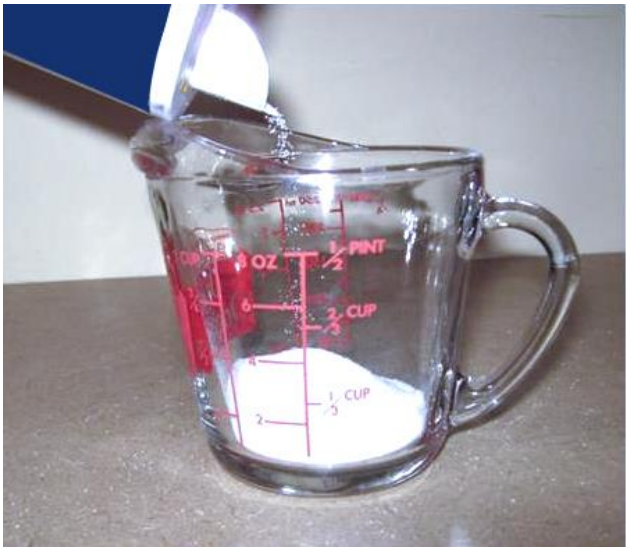

Figure 1

2. In the same beaker, pour in 4 oz (115 g) to 5 oz (140 g) of warm water. Stir until fully mixed. There should be some salt that remains undissolved in the solution. You have just created a “super saturated” solution of salt water.
3. Unscrew the end of the TSI® IAQ probe to access the CO sensor. Remove the CO sensor by pulling it straight out of its socket to unplug it from the probe (Figure 2).

Figure 2

4. Place the sensor in a small, dry bowl (Figure 3). This bowl is to be kept separate from the beaker containing the salt/water solution.

NOTICE
DO NOT allow the CO sensor to come in direct contact with water or the salt/water solution.

Figure 3

5. Place both the small beaker with the saturated salt/water solution and the small, dry bowl containing the CO sensor into the large, sealable container (Figure 4).

Figure 4

6. Carefully place the cover on the container to seal the contents. Be careful not to spill the salt/water solution.

7. Leave container undisturbed overnight indoors at room temperature 64.5 to 77°F (18 to 25°C).

8. Next day open the sealed container, again taking care not to spill the salt/water solution from the beaker inside the container.

9. Remove the CO sensor from the dry bowl and install it onto the TSI® IAQ probe (Figure 5).

NOTICE
The sensor plugs into the probe receptacle in only one correct orientation.

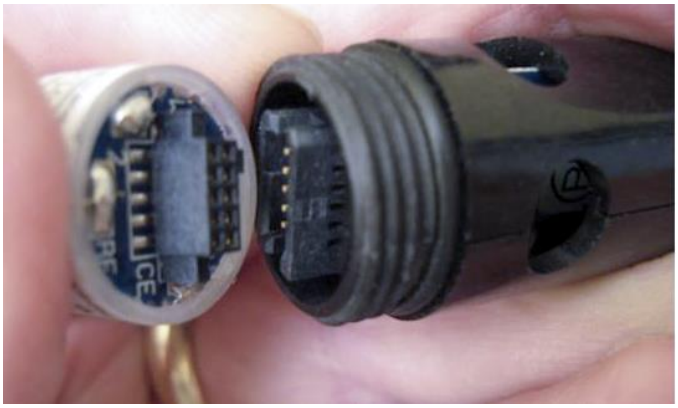

Figure 5

10. Carefully screw on the protective probe cover back onto the probe end.

For best results, perform a field calibration of the CO sensor using zero and span gases available from TSI®:

- CO and CO_2 Calibration kit p/n 8938: Includes 35 ppm CO gas with 1000 ppm CO_2 gas cylinder, 0 ppm gas (air) cylinder, carrying case, regulator, and tubing.

NOTICE
Calibration and zero gas not are available outside the USA. Zero gas, span gases, and regulators that meet TSI® Incoporated's requirements are available internationally from PortaGas at www.portagas.com in 103 liter bottle configurations.

Knowledge Beyond Measure.

TSI Incorporated – Visit our website **www.tsi.com** for more information.

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