

Digital Transmitter with Electrochemical Formaldehyde (CH₂O) Sensor

Dimensions: Size	4.9 x 4.9 x 2 in / 124.9 x 124.9 x 50 mm
Weight	286 g / 10 oz
Construction:	Polycarbonate, white, low profile
Sensor: Type	Electrochemical
Life Span	Approximately 3 years (application dependent)
Gases Detected:	Formaldehyde (CH ₂ O)
Sensor Range:	0 – 5 ppm
System Power:	4-wire: 16-30 VDC, 3W, Class 2 4-wire: 12-27 VAC, 50-60 Hz, 3 VA, Class 2
Temperature:	0°C to +40°C (32°F to 104°F)
Humidity:	15 to 90% non-condensing
Indicators:	LCD digital display, 2 line x 16 character, backlit
Communication	BACnet® MS/TP (version 1 rev 14) RS-485, or Modbus® RTU (version 1.1b3) RS-485
Relay (Option -RLY):	1 SPDT relay rated 30 volts, 2 amp max
Relay and Audible (Option -RBZ):	1 SPDT dry contact relay rated 30 volts, 2 amp max Internal buzzer, rated 90 dB @ 10 cm / 4 in, enable/disable
Audible:	none
Minimum Detection:	0.01 ppm (with regular calibration maintenance of sensor)
Accuracy:	2% of signal (at conditions and date of calibration)
Repeatability:	<2% of signal
Sensitivity Drift:	<2% signal loss per month
Response Time (T₆₀):	<30 seconds
Resolution:	Display resolution 1.0 ppm Sensor resolution: <0.01 ppm
Warm Up Time:	4 minutes after power up (to full operation)
Cross Sensitivity:	CO @100 ppm = <20ppm, Ethanol @30 = 1ppm, H ₂ @100 = 5ppm, H ₂ S @20 = ~20ppm, Methanol @80 = 10ppm, Methyl Mercaptan @10 = ~6ppm, Tert-butyl Mercaptan @10 = ~6ppm
Safety:	Automatic resetting thermal overload fuse (reset capabilities to 500 times)
Wiring:	VDC or VAC (ground referenced) 4-conductor shielded, 16 AWG stranded within conduit, network wiring (daisy-chain)
Sensor Mounting:	Breathing Zone - slightly heavier than air 4 to 6 ft / 1.2 to 1.8 m from finished floor
Monitoring Area:	3,000 ft ² / 279 m ² , application dependent
Suggested Alarm Points	Low Alarm: 0.3 ppm / Mid Alarm: 0.5 ppm / High Alarm: 1.0 ppm
Certifications: (tested to)	CSA: C22.2 NO.205-12 UL: UL508 (Edition 18): 2018 CE: EMC Directive 2014/30/EU, EN50270:2015, Type 1, EN61010 Listed by BTL RoHS compliant circuit boards This device complies with part 15 of the FCC Rules
Notes:	Never install gas detectors in the direct path of moving air.

Conditions Affecting Electrochemical Sensors:

- Typically designed to operate between -10°C and +50°C, do not exposed to extreme temperatures for prolonged periods of time. Repeated or prolonged exposure to temperatures like 60-65°C / 140-149 can lead to evaporation of the electrolyte and shifts in baselines readings.
- Continuous operation in low relative humidity environments can dry out the electrolyte and extended periods of exposure to high moisture environments can cause the electrolyte to absorb the moisture, causing dilution and inaccurate measurements.
- Abrupt changes in RH causes a short-term transient signal.
- Prolonged exposure to extremely high gas concentrations can compromise sensor performance.
- Paint fumes, cleaning products, dust, sand, water, insects can reduce lifespan and compromise performance. Avoid exposure to high concentrations of solvent vapours both during storage and operation. Organic solvents may block the sensing electrodes, create false baselines and in some cases damage the electrodes and physically damage the body of the sensor.
- Negative cross-sensitivities may cause the sensor to produce lower readings than the true concentration of gas in ambient air. CH2O has moderate to high cross-sensitivity to other gases like hydrogen sulphide, isobutylene, phosphine, sulphur dioxide and hydrogen cyanide.
- Before initial use after production may be stored at room temperature ideally at 20°C / 68°F and 60%RH or preferably in the fridge for up to 6 months. Beyond this period, the sensor performance is likely to deteriorate, such as with longer response time and lower sensitivity regardless of whether sensor has been used or not.
- The more exotic gases (chlorine, ozone etc.) tend to have shorter life spans than the more common gases (CO, nitrogen dioxide)
- Install gas detector vertically so the display is over top of the sensor vent and device is flat against a wall or column. Never install gas detectors in the direct path of moving air.
- CH2O has moderate to high cross-sensitivity to other gases like hydrogen sulphide, isobutylene, phosphine, sulphur dioxide and hydrogen cyanide.

In addition to the factors listed above, most sensors will suffer general wear and tear and it may not always be easy to detect the damage caused, making regular maintenance important to help keep the sensors in good working order. Regular maintenance includes inspecting, cleaning if necessary, bump testing and calibration.