

CI 21 Transmitter

Low Maintenance Ammonia Detection



- Stable long-life charge-carrier-injection sensor
- Sensor is unaffected by exposure to high gas concentrations
- Low temperature operation to -40°F
- Low cross-sensitivity
- Eliminates costly false alarms
- Low cost of ownership

The charge carrier injection (CI 21) sensor is a progressive development to improve upon current ammonia refrigeration detection methods. With CI 21 technology sensor life is no longer limited to ammonia exposure levels. This reduces replacement costs associated with electrochemical sensors.

Charge carrier injection technology also eliminates false alarms frequently associated with metal oxide sensing (MOS). These, along with other features, provide reliable, cost effective, long-term safety.

The CI 21 transmitter is an advanced development to which all other ammonia transmitters will be compared.

The New Ammonia Standard

Temperature influence

Utilizing a controlled sensor voltage, the CI 21 maintains a constant internal temperature, allowing accurate readings without additional heating components.

Graph 1 compares the temperature behaviors of metal oxide (MOS) and electrochemical sensors with the CI 21. The alarm threshold is set at 200 ppm, and each of the sensors is calibrated to 200 ppm NH₃ at 25°C (77°F). At lower temperatures, the response of the CI 21 is extremely accurate, whereas the MOS and electrochemical sensors drift considerably.

If calibration is performed at lower temperatures, the identification lines shift to a higher ppm indication. As temperatures increase, the CI 21 operates with the same reliability, whereas the MOS and electrochemical sensors indicate alarm conditions due to the higher slope of their indication lines.

Humidity influence

Fluctuating humidity levels are no longer an issue with the CI 21. MOS sensors require a minimum humidity level in order to respond to leaks of ammonia, while the CI 21 does not!

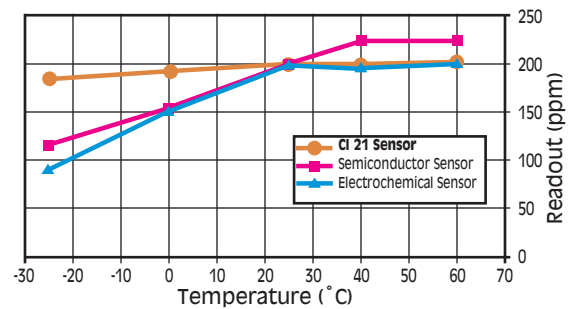
Low humidity is a typical condition of refrigerated areas due to lower temperatures. With the CI 21, a direct calibration with ammonia test gas can be accomplished with low humidity. As shown in graph 2, the influence of humidity on the CI 21 is considerably less than MOS sensors.

Sensor selectivity

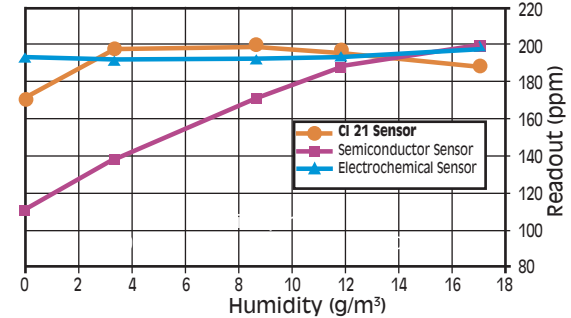
MOS sensors typically interfere with other gases and are rarely specific. Cross interferences occur with alcohol, cleaning detergents, water, carbon monoxide, and many other substances. Interfering alarms become a nuisance that can lead to work stoppage and expensive shut downs.

In graph 3, the cross-sensitivities of conventional sensors and the CI 21 are plotted on a logarithmic axis.

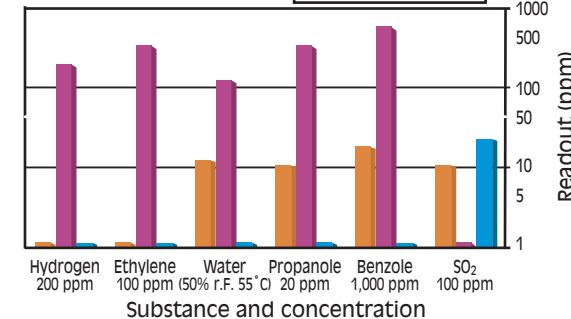
GRAPH 1: Behavior of temperature after calibration with 200 ppm at 50 % r.h. (All sensors without temperature compensation)



GRAPH 2: Influence of humidity



GRAPH 3: Cross sensitivity



Technical Data

CI 21 remote transmitter

Gas

Ammonia (NH₃)

Ranges

20 - 200 ppm
30 - 1,000 ppm
30 - 10,000 ppm

Gas supply

Diffusion

Humidity

0 to 99% r.h. non-condensing

Pressure

920 to 1,100 hPa

Temperature range

-40°F to +131°F

Shielded cable

3 wire x 18 AWG for up to 500 yards

Output signal

0.2 to 1 mA or 4 to 20 mA

Power supply

10 to 30 VDC (300 mA maximum)

Expected sensor life

Greater than 3 years

Sensor warranty

2 years

Casing protection

NEMA 4X (IP 54)

Weight

13.05 ounces (370 grams)

Dimensions

3.9x3.9x2.2 inches (100x100x57 mm) (HxWxD)

Specifications subject to change without notification

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