

# Molecular Property Spectrometer™

## MPS™ LGW Refrigerant Gas Sensor

NevadaNano's MPS Low Global Warming (LGW) Refrigerant Gas Sensor provides accurate and reliable capability to detect mildly flammable (A2L) refrigerants common in HVAC applications. Sensor readings are output on a digital bus or configurable voltage output; no additional electronics are required. With a 5+ year calibration interval and lifetime, the MPS LGW Refrigerant Sensor delivers industry-leading performance and a low cost of ownership.

### GAS DETECTION

Gas	Detection Range	Accuracy (at 25 %LEL)
R32 (CH <sub>2</sub> F <sub>2</sub> )	0-100 %LEL	±5 %LEL

Accuracy guaranteed across full environmental range. The MPS is capable of detecting mixtures of R32 and other refrigerants. Please contact the factory for additional information.

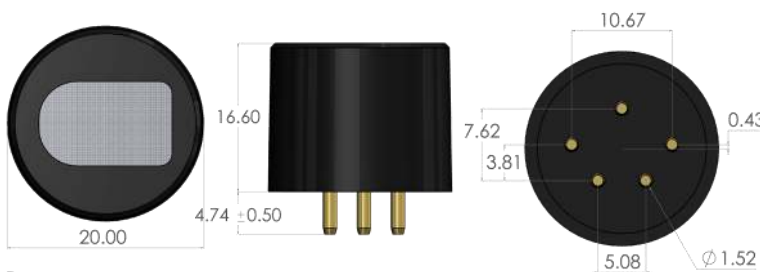
Resolution	0.1 %LEL
Response time (T90)	< 20 seconds
Calibration interval	>5 years
Sensor lifetime	>5 years

### ENVIRONMENTAL OPERATING RANGE

Temperature	-40° to 75° C
Humidity	0% to 99% RH
Pressure	80 to 120 kPa

Accuracy guaranteed in non-condensing environments. Alternative mechanical configurations can improve condensation robustness.

### MECHANICAL



Dimensions	16.6 mm (H) x 20.0 mm (ø)
Mass	8.0 ± 0.5 grams
Body material	Ultem PEI

### CERTIFICATION

The MPS LGW Refrigerant Gas Sensor is currently in review for certification to the following standards:

IEC/EN60079-0, IEC/EN60079-11  
 Ex ia IIC T4 Ga, Ex ia T85°C Da, -40°C < T<sub>amb</sub> < 75°C

### FEATURES

- Built-in environmental compensation; no cross-sensitivity to T, RH, P
- Inherently poison-resistant
- 5+ year calibration interval
- 5+ year lifetime
- Low power — 29 mW average
- Intrinsically safe
- Built-in self-test for fail-safe operation

### OPERATING PRINCIPLE

The Molecular Property Spectrometer (MPS) Refrigerant Gas Sensor's transducer is a micro-machined membrane with an embedded Joule heater and resistance thermometer. The MEMS transducer is mounted on a PCB and packaged inside a rugged enclosure open to ambient air. Presence of a flammable refrigerant gas causes changes in the thermodynamic properties of the air/gas mixture that are measured by the transducer. Sensor data are processed by patent-pending algorithms to report accurate concentration.

### ELECTRICAL

Operating voltage	3.3 - 5.0 ±5% VDC	
Current consumption [mA]	Average	Operating Range
	8.9	5.0-21.0
Digital Input/Output	Communication: 4 or 5 pin UART / I2C Logic level: 3.3 V Programmable Analog out (optional)	