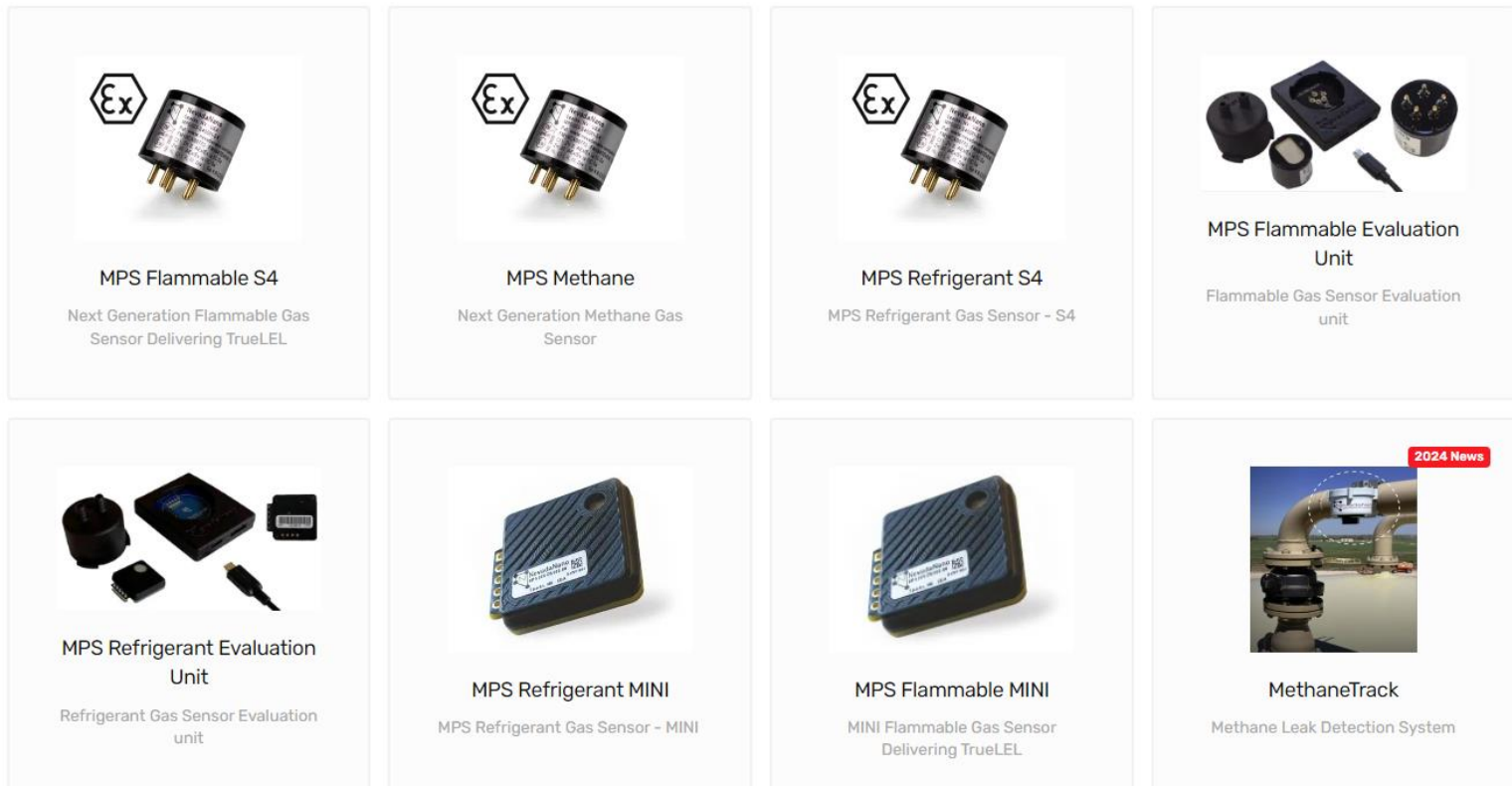


NevadaNano (NevadaNanotech Systems, Inc.) develops and manufactures **Micro Electro-Mechanical Systems (MEMS)**-based sensor modules and subsystems for a diverse array of commercial and government applications. The products are used by system integrator partners and by system manufacturers because they benefit from the unique characteristics of our sensors — namely small size, low cost, unattended operation, and the ability to detect a broad range of threats with a single, standard sensor configuration.

The patented sensor technology was developed at the University of Nevada, Reno. Early R&D was supported by DARPA, the DOD, and the Department of Homeland Security. As a result, NevadaNano was founded in 2004. The company has now turned its focus to commercial applications, specifically, Internet of Things (IOT) enabled distributed gas sensing.



Product line NevadaNano:

NevadaNano's Molecular Property Spectrometer™ (MPS) Flammable Gas sensor is powering the next generation of combustible gas detection.

The MPS delivers unprecedented reliability, accuracy, and worker safety by simultaneously detecting over a dozen of the most common combustible gases, including Hydrogen. We call this TrueLEL™. No other sensor can accurately report 0-100% LEL across over a dozen different gases with just one factory calibration, the MPS never requires field calibration.

With its robust industrial design, the MPS doesn't drift, decay, or poison and requires no maintenance over its lifetime. And with its data-rich reporting capabilities, the MPS will instantly let you know if a fault exists and why. The MPS Flammable Gas sensors accuracy is enhanced by integrated, real-time measurements and built-in compensation for temperature, pressure, and humidity. Gas concentration readings are accurate across the full environmental range including rapid environmental transients, delivering best-in-class false positive accuracy.

The MPS Flammable Gas sensor is certified intrinsically safe certified, stable, inherently immune to poisons, and never requires servicing or calibration. Sensor readings are output on a UART digital bus providing industry first gas classification or industry-standard analog output for easy integration and improved performance into existing designs.

Legacy flammable gas detection products cannot promise the same combination of accurate and reliable detection of multiple gases across the full environmental range.

Codes	Description	PKG	Pins	UART	Analog Out	Auto Start
MPS003-S40501-EX	Flammables Gas Sensor	S4	5	✓	✗	✗
MPS003-S40505-EX	Flammables Gas Sensor	S4	5	✓	0.4-2V	✗
MPS003-S40309-EX	Flammables Gas Sensor (LEL ISO)	S4	3	✗	0.4-2V	✓
MPS003-S40509-EX	Flammables Gas Sensor	S4	5	✓	0.4-2V	✓
MPS003-S403E9-EX	Flammable Gas Sensor (LEL IEC)	S4	3	✗	0.4-2V	✓
MPSF00-MN0505-00	Flammable Gas Sensor	Mini	5	✓	0.4-2V	✗
MPSF00-MN0509-00	Flammable Gas Sensor (ISO)	Mini	5	✓	0.4-2V	✓
MPSF00-MN05E9-00	Flammable Gas Sensor (IEC)	Mini	5	✓	0.4-2V	✓

Benefits

- Accurate LEL measurements for single gas exposures as well as multi-gas mixtures, including Hydrogen
- Built-in real-time environmental compensation
- Reduced costly and nuisance – false alarms
- Real-time auto gas classification – delivering complete answer – powering analytics Trustworthy Performance and No Maintenance Required
- No calibration required · Immune to poisoning
- Built in Self-Test
- 2 year warranty with 15+ year expected lifetime
- Certified intrinsically safe
- Low-power: 29 mW average
- Temp Operating Range -40 to 75°C
- Humidity Operating Range 0 to 100% RH

NevadaNano's MPS™ Methane Gas Sensor quickly and accurately conducts methane gas leak detection in the most challenging environments – from Arctic wellheads to shale fields in South Texas.

Immediate alerts and prioritization are made possible because real-time sensor arrays powered by the MPS™ Methane Gas Sensor continuously feed cloud-based monitors. 24/7 point detection is the ideal solution to achieve fast mitigation of fugitive methane emissions across the entire oil and gas supply chain.

The MPS™ Methane Gas Sensor is built on a robust Microelectromechanical-system (MEMS) platform that is inherently low-power, poison and drift-resistant. Because of this, it enables service and calibration intervals that can be measured in years. Built-in environmental compensation enables reliable, accurate performance across a range of harsh conditions, from -40°C to 75°C and 0% to 99% relative humidity.

The MPS™ Methane Gas Sensor is a natural choice in order to gain accurate methane gas leak detection in harsh, remote, and complex environments.

Benefits

- Real-time auto-gas classification and identification
- Built-in environmental compensation
- No cross-sensitivity to T, RH, P
- Inherently poison resistant
- 0.01% typical measurement accuracy
- Altitude pressure compensation
- Analogue or digital CH4 measurements
- Built-in zero tracking and auto-calibration
- I²C or UART digital interface
- Real-time temperature correction
- Solid state NDIR LED optical technology
- Ultra-low power, typically <5mW average
- 15+ year calibration interval
- 15+ year lifetime
- Low power — 29 mW typical
- 24/7 monitoring
- Temp Operating Range -40 to 75°C
- Humidity Operating Range 0 to 100% RH
- ATEX certified

Codes & Features

Codes	Description	PKG	Pins	UART	Analog Out	Auto Start
MPSM01-S40501-E0	Methane XR (50-1M PPM)	S4	5	✓	✗	✗

New MPS Refrigerant Gas Sensor provide accurate and reliable detection of mildly flammable (A2L) R-32, R-454b blends, R-1234yf and other low global warming refrigerant gases such as (A1) R744 as well as (A3) R290 and R600 common in HVAC applications. With a 15+ year calibration interval and lifetime, the MPS A2L Refrigerant Sensors deliver industry-leading performance and the lowest total cost of ownership.

The Molecular Property Spectrometer (MPS) A2L Refrigerant Sensors transducer is a micro-machined membrane with an embedded Joule heater and resistance thermometer. The MEMS transducer is mounted onto a PCB and open to ambient air. The 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 an accurate concentration.

Benefits

- Meets UL 60335-2-40 & ASHRAE 15 requirements
- Wide environmental operating range with no cross-sensitivity to rapid T & RH changes
- No false positives
- Extremely fast response time
- Immune to poisoning
- 15+ year calibration interval
- 15+ year lifetime
- Built-in self-test for fail-safe operation
- Industrial and residential packaging options
- Third-party tested
- Available now for integration
- Temp Operating Range -40 to 75°C
- Humidity Operating Range 0 to 100% RH

Codes & Features

Codes	Description	PKG	Pins	UART	Analog Out	Auto Start
MPS004-S40505-EX	Refrigerant R-32 (A2L)	S4	5	✓	0.4-2V	✗
MPS210-S40309-E0	Refrigerant R-32 (A2L)	S4	3	✗	0.4-2V	✓
MPS210-MN05CC-00	Refrigerant R32 (A2L)	Mini	5	✓	0.4-2V	✗
MPS004-MN0505-00	Refrigerant R-32 (A2L)	Mini	5	✓	0.4-2V	✗
MPS009-MN0505-00	Refrigerant R-404A (A1)	Mini	5	✓	0.4-2V	✗
MPS010-MN0505-00	Refrigerant R-407A (A1)	Mini	5	✓	0.4-2V	✗
MPS011-MN0505-00	Refrigerant R-454B (A2L)	Mini	5	✓	0.4-2V	✗
MPS230-MN0505-00	Refrigerant R-454C (A2L)	Mini	5	✓	0.4-2V	✗
MPS310-S40505-E0	MPS A3 Refrigerant Gas Sensor (R-290)	S4	5	✓	0.4-2V	✗

The Molecular Property Spectrometer™ (MPSTM) Flammable Gas Sensor Evaluation Unit is a user-friendly sensor system developed for assessing flammable gas detection performance. The

evaluation system is shown in Figure 1. The sensor is 20.0 \varnothing x 16.6 mm with 1.52 mm diameter connector pins and connects to a provided evaluation PCB for communication with a PC (USB) or breakout to individual sensor signals (optional 5-wire harness). The sensor contains the MPS sensing element, environmental sensor, microprocessor, and supporting electronics. A quarter-turn plastic gas mask and housing is included to provide a sealed headspace above the sensor for test gas delivery.

Evaluation Kit Contents

- MPSTM Sensor Interface Software and Drivers
- Evaluation PCB + housing
- Gas delivery mask with integrated barbs
- USB A-to-micro-B cable
- 1/4" Tygon tubing (McMaster: 6516T17)
- Micro USB plug (not shown--optional)
- MPSTM S4 Flammable Gas Sensor (sold separately)

The Molecular Property Spectrometer™ (MPSTM) Flammable Gas Sensor Evaluation Unit is a user-friendly sensor system developed for assessing flammable gas detection performance. The evaluation system is shown in Figure 1. The sensor is 20.0 \varnothing x 16.6 mm with 1.52 mm diameter connector pins and connects to a provided evaluation PCB for communication with a PC (USB) or breakout to individual sensor signals (optional 5-wire harness). The sensor contains the MPS sensing element, environmental sensor, microprocessor, and supporting electronics. A quarter-turn plastic gas mask and housing is included to provide a sealed headspace above the sensor for test gas delivery.

Evaluation Kit Contents

- MPSTM Sensor Interface Software and Drivers
- Evaluation PCB + housing
- Gas delivery mask with integrated barbs
- USB A-to-micro-B cable
- 1/4" Tygon tubing (McMaster: 6516T17)
- Micro USB plug (not shown--optional)
- MPSTM S4 Flammable Gas Sensor (sold separately)

New MPS Refrigerant Gas Sensor provide accurate and reliable detection of mildly flammable (A2L) R-32, R-454b blends, R-1234yf and other low global warming refrigerant gases such as (A1) R744 as well as (A3) R290 and R600 common in HVAC applications. With a 15+ year calibration interval and lifetime, the MPS A2L Refrigerant Sensors deliver industry-leading performance and the lowest total cost of ownership.

Operating Principle

The Molecular Property Spectrometer (MPS) A2L Refrigerant Sensors transducer is a micro-machined membrane with an embedded Joule heater and resistance thermometer. The MEMS transducer is mounted onto a PCB and open to ambient air. The 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 an accurate concentration.

Benefits

- Meets UL 60335-2-40 & ASHRAE 15 requirements
- Wide environmental operating range with no cross-sensitivity to rapid T & RH changes
- No false positives
- Extremely fast response time
- Immune to poisoning
- 15+ year calibration interval
- 15+ year lifetime
- Built-in self-test for fail-safe operation
- Industrial and residential packaging options
- Third-party tested
- Available now for integration
- Temp Operating Range -40 to 75°C
- Humidity Operating Range 0 to 100% RH
- Codes & Features

• Codes	• Description	• PKG	• Pins	• UART	• Analog Out	• Auto Start
• MPS004-S40505-EX	• Refrigerant R-32 (A2L)	• S4	• 5	•	• 0.4-2V	•
• MPS210-S40309-E0	• Refrigerant R-32 (A2L)	• S4	• 3	•	• 0.4-2V	•
• MPS210-MN05CC-00	• Refrigerant R32 (A2L)	• Mini	• 5	•	• 0.4-2V	•
• MPS004-MN0505-00	• Refrigerant R-32 (A2L)	• Mini	• 5	•	• 0.4-2V	•
• MPS009-MN0505-00	• Refrigerant R-404A (A1)	• Mini	• 5	•	• 0.4-2V	•
• MPS010-MN0505-00	• Refrigerant R-407A (A1)	• Mini	• 5	•	• 0.4-2V	•
• MPS011-MN0505-00	• Refrigerant R-454B (A2L)	• Mini	• 5	•	• 0.4-2V	•
• MPS230-MN0505-00	• Refrigerant R-454C (A2L)	• Mini	• 5	•	• 0.4-2V	•
• MPS310-S40505-E0	• MPS A3 Refrigerant Gas Sensor (R-290)	• S4	• 5	•	• 0.4-2V	•

NevadaNano's MPS Mini Flammable Gas Sensor is the next generation of gas detection and quantification for worker safety and leak detection in drilling, transportation, and production of oil & gas and chemical products. The smart sensor quickly detects and accurately quantifies over a dozen gases and gas mixtures using a standard factory calibration. It has built-in environmental compensation and automatic self-testing for fail-safe operation. It is robust and extremely poison resistant. Sensor readings are output on a digital bus or configurable analog output – no added electronics are required. With a 15-year lifetime and no calibration required, the MPS Mini Flammable Gas Sensor delivers industry-leading performance and a low cost of ownership.

Operating Principle

The MPS Mini Flammable 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 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 an accurate concentration and classify the flammable gas.

Benefits

- Automatic multi-gas accuracy in real-time
- Built-in environmental compensation
- Extremely poison resistant
- No calibration required
- 15+ year lifetime
- Low power — 29 mW average
- Built-in self-test for fail-safe operation

TrueLEL GAS DETECTION

Gas	Formula	Detection Range	Accuracy (0-50 %LEL)
butane	C4H10	0-100 %LEL	±5 %LEL
ethane	C2H6	0-100 %LEL	±5 %LEL
hydrogen	H2	0-100 %LEL	±5 %LEL
isobutane	HC(CH3)3	0-100 %LEL	±5 %LEL
isobutylene	C4H8	0-100 %LEL	±5 %LEL
isopropanol	C3H8O	0-100 %LEL	±10 %LEL
methane	CH4	0-100 %LEL	±3 %LEL
methyl ethyl ketone	C4H8O	0-100 %LEL	±5 %LEL
octane	C8H18	0-100 %LEL	±5 %LEL
pentane	C5H12	0-100 %LEL	±5 %LEL
propane	C3H8	0-100 %LEL	±6 %LEL
propylene	C3H6	0-100 %LEL	±5 %LEL
toluene	C7H8	0-100 %LEL	±12 %LEL
xilene	C8H10	0-100 %LEL	±12 %LEL

Accuracy guaranteed for methane and hydrogen across full environmental range. Other gases typically meet the published tolerances across the full environmental range, but are guaranteed only near standard conditions. The MPS Mini Flammable Gas Sensor is capable of detecting most common flammable gases/vapors

Codes	Description	PKG	Pins	UART	Analog Out	Auto Start

MPS003-S40501-EX	Flammables Gas Sensor	S4	5	✓	✗	✗
MPS003-S40505-EX	Flammables Gas Sensor	S4	5	✓	0.4-2V	✗
MPS003-S40309-EX	Flammables Gas Sensor (LEL ISO)	S4	3	✗	0.4-2V	✓
MPS003-S40509-EX	Flammables Gas Sensor	S4	5	✓	0.4-2V	✓
MPS003-S403E9-EX	Flammable Gas Sensor (LEL IEC)	S4	3	✗	0.4-2V	✓
MPSF00-MN0505-00	Flammable Gas Sensor	Mini	5	✓	0.4-2V	✗
MPSF00-MN0509-00	Flammable Gas Sensor (ISO)	Mini	5	✓	0.4-2V	✓
MPSF00-MN05E9-00	Flammable Gas Sensor (IEC)	Mini	5	✓	0.4-2V	✓

[Дистрибьютор в России компания Газсенсор www.gassensor.ru](http://www.gassensor.ru)