Flammable & Toxic Gas Detection for Natural Gas Processing Plants

LEL, H₂S, SO₂, CO₂, Oxygen
Many Additional Gases Available
Universal Point Gas Monitor Accepting Combustible (Infrared or Catalytic), Toxic, and Oxygen Gas Sensors

**Highest Reliability and Function**
- Predictive Sensor End-of-Life Indication
- Missing or Non-functional Sensor Indication
- Sensor Test-On-Demand, with On-board Gas Generator

**Explosion-Proof Transmitter with Intrinsically Safe Sensor Head**
- Shop Calibrate and Hot-swap Gas Sensors in Classified Areas
- Mount Sensor up to 100 ft./30 m. Away Without Rigid Conduit

**Intelligent SensAlert Plus Sensors**
- Auto-recognition and Set-up from Sensor Memory Provides Operating Parameters and Diagnostics for All Plus Transmitters

**International Performance Approvals**
- Performance Tested and Certified to FM and ATEX Standards
- Unrestricted Hazardous Classified Area Installation and Operation

**Flexible Installation or Retrofit**
- 2-Wire and 3-Wire Transmitters with Enclosure Options
- Non-intrusive Configuration and Maintenance Interface
- Remote Sensor / Gassing, Duct Mount and Sample Draw
- Configurable Alarms: Fault Conditions and Test-on-Demand

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**Increased Reliability**
- Sensor Data Review
  - Gas Name: H2S
  - 100
  - Sensor Life Remaining: 95%

**Simple to Install & Maintain**
- System Configuration
  - Self Test
  - Alarm Settings
  - 4/20mA Adjustment
  - Adjust Date/Time
  - Communication Setup
  - TOD Mode Adjustment
  --more--

**Reduced Cost of Ownership**
- Calibration Info
  - Last Cal @ 50PPM
  - 03/27/07 13:07:49
  - PreCal Value 55PPM
Gas Processing Hazards and Mitigation

Natural gas is a mixture of Methane and up to 30% of other Hydrocarbons and lesser amounts of impurities such as Carbon Dioxide, Hydrogen Sulfide, Helium and Nitrogen. Gas is commercially extracted from underground oil and gas fields.

Highly valued as the cleanest fuel with the lowest CO2 emissions, Natural gas flammability and toxic constituents require exacting monitoring and mitigation programs for compliance with OSHA, EPA, API and State Corporation Commission laws and guidelines for compliance and prevention of personal injury and property loss.

Wellhead gas is separated from the liquids (water and oil or condensate), gathered and processed under pressure in multiple dedicated units, before being compressed and delivered to the pipeline. Gas leaks are very hazardous because of the flammability of the gas and highly toxic Hydrogen Sulfide. Revised ACGIH guidelines for H2S limit exposure to 1.0 PPM, 8 hour TWA, with a 15 PPM STEL (15 minutes). The OSHA PEL is 10 PPM.

Natural gas pretreatment usually consists of mercury removal, gas sweetening and drying. A Claus unit with tail gas treating may be used when sulfur content is high. Should Carbon Dioxide be an exposure hazard, Oxygen deficiency monitoring is not sufficient as safe levels of CO2 are grossly exceeded way before an Oxygen sensor alarms. Gas detectors for H2S, CO2 and SO2 are strategically placed in the units near the fluid handling equipment to protect personnel.

Nitrogen and Helium extraction and purification is usually done by cryogenic or PSA methods. Natural gas liquids, liquefied petroleum gas and the pure components C2 through C5 are separated by fractionation. LEL monitoring is required near all active process equipment where leaks might occur. Optical flame detectors are often positioned for flame and fire detection within seconds.

A complete safety program including point gas detectors, open path gas detection and optical flame detection is the most reliable solution for process leak detection. FM performance certified sensors and FM explosion-proof approval delivers gas detection that operates flawlessly in any environment and delivers the earliest warning of dangerous conditions.

FM Certified Gas Detection Sensors for Natural Gas Processing Plants

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Gas</th>
<th>TLV TWA</th>
<th>NIOSH IDLH</th>
<th>Sensor Span Units</th>
<th>Response Time, T-50</th>
<th>Operating Temperature, Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>823-0201-22</td>
<td>NH3</td>
<td>25 PPM</td>
<td>300 PPM</td>
<td>0-50 PPM</td>
<td>11 sec</td>
<td>-4° to 122° F, 15-90% RH</td>
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<tr>
<td>823-0201-21</td>
<td>NH3</td>
<td>25 PPM</td>
<td>300 PPM</td>
<td>0-100 PPM</td>
<td>11 sec</td>
<td>-4° to 122° F, 15-90% RH</td>
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<tr>
<td>823-0201-41</td>
<td>NH3</td>
<td>25 PPM</td>
<td>300 PPM</td>
<td>0-300 PPM</td>
<td>10 sec</td>
<td>-4° to 122° F, 15-90% RH</td>
</tr>
<tr>
<td>823-0206-23</td>
<td>H2S</td>
<td>1 PPM</td>
<td>100 PPM</td>
<td>0-10.0 PPM</td>
<td>10 sec</td>
<td>-40° to 122° F, 15-90% RH</td>
</tr>
<tr>
<td>823-0206-22</td>
<td>H2S</td>
<td>1 PPM</td>
<td>100 PPM</td>
<td>0-50 PPM</td>
<td>10 sec</td>
<td>-40° to 122° F, 15-90% RH</td>
</tr>
<tr>
<td>823-0206-21</td>
<td>H2S</td>
<td>1 PPM</td>
<td>100 PPM</td>
<td>0-100 PPM</td>
<td>10 sec</td>
<td>-40° to 122° F, 15-90% RH</td>
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<tr>
<td>823-0205-52</td>
<td>CO2</td>
<td>0.50%</td>
<td>4.00%</td>
<td>0-5.00%</td>
<td>60 sec</td>
<td>-4° to 122° F, 15-95% RH</td>
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<tr>
<td>823-0219-23</td>
<td>CO</td>
<td>25 PPM</td>
<td>1,200 PPM</td>
<td>0-100 PPM</td>
<td>10 sec</td>
<td>-4° to 122° F, 15-90% RH</td>
</tr>
<tr>
<td>823-0219-22</td>
<td>CO</td>
<td>25 PPM</td>
<td>1,200 PPM</td>
<td>0-500 PPM</td>
<td>10 sec</td>
<td>-4° to 122° F, 15-90% RH</td>
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<tr>
<td>823-0240-31</td>
<td>O2</td>
<td>19.50%</td>
<td>18.00%</td>
<td>0-25%</td>
<td>4 sec</td>
<td>-4° to 122° F, 5-90% RH</td>
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<tr>
<td>823-0221-21</td>
<td>NO2</td>
<td>1 PPM</td>
<td>20 PPM</td>
<td>0-10.0 PPM</td>
<td>10 sec</td>
<td>-4° to 122° F, 15-90% RH</td>
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<tr>
<td>823-0218-22</td>
<td>SO2</td>
<td>2 PPM</td>
<td>100 PPM</td>
<td>0-10.0 PPM</td>
<td>10 sec</td>
<td>-4° to 122° F, 15-90% RH</td>
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<tr>
<td>823-0218-21</td>
<td>SO2</td>
<td>2 PPM</td>
<td>100 PPM</td>
<td>0-20.0 PPM</td>
<td>10 sec</td>
<td>-4° to 122° F, 15-90% RH</td>
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<tr>
<td>823-0211-51</td>
<td>NGLs, CH4</td>
<td>10% LEL</td>
<td>-</td>
<td>0-100% LEL</td>
<td>10 sec</td>
<td>-13° to 167° F, 15-90% RH</td>
</tr>
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</table>
Universal Point Gas Detector Accepting Combustible (Infrared or Catalytic), Toxic, and Oxygen Gas Sensors

- Enclosure Options Certified for most Environments
- Large Backlit Alphanumeric Display (Backlit on 3-wire only)
- HART or Modbus (RS-485) Communication Cards (Optional)
- Alarm Relay Card (Optional)
- Intrinsically Safe Sensor Head
- Test-On-Demand™ (ToD) Gas Generator (Optional)
- Plus Intelligent Sensor
- O-ring Seal
- Sensor Retainer
- Moisture Barrier (Optional)
- Remote Gassing Fixture (Optional)
- Sensor Shield
- Flow Block for Remote Sampling and Cal Plug (Optional)
- Baffled Rainshield (Optional)

The new 40/40I Triple IR (IR3) Flame Detector detects fuel and gas fires at long distances with the highest immunity to false alarms. The 40/40I IR3 can detect a 1ft² (0.1m²) gasoline pan fire at 215 ft (65m) in less than 5 seconds. The 40/40I is the most durable and weather-resistant flame detector currently on the market. Due to increased reliability, the 40/40 Series warranty period has been extended to 5 years and is SIL2 approved to IEC 61508.

SaEye 700 Open Path Gas Detector has superior Xenon Flash with 10 year warranty and 3-years on the electronics. Made of all 316L ss, it has heated optics to withstand severe environmental conditions and a data port for maintenance or configuration changes. Path lengths up to 460 feet are available.