



Fixed Gas & Flame Detection

North America Product Range Overview



Over 100 years of experience and capability in comprehensive safety solutions have made MSA Safety a modern and forward-looking company for the protection of people, facilities, and the environment. MSA Safety is one of the few suppliers of fixed gas and flame detection (FGFD) measurement technology that develops and manufactures a complete range of products and integrates them into safety solutions.

Our expertise in gas and flame detection is second to none and proves that the right mix of durable products and innovative technology increases safety while driving operational efficiency.

We have the widest range of sensing technologies for gas and flame detection. We create solutions that not only provide worker safety and protect facilities, but also decrease overall cost of ownership.

SAFEGUARDING
PEOPLE, PLACES & THE PLANET

Selection Guide: The Right Gas Detector

	Product Type									
	ULTIMA X5000	S5000	ULTIMA XE & ULTIMA X3	PRIMAX IR	CHEMGARD	T55000	TRIGAS	SENSICIENT ELDS	OPR-5 / IRS500	OBSERVER-I
Detection Principle										
Catalytic combustion sensor	■	■				■	■			
Electrochemical sensor	■	■	■			■	■			
Semiconductor sensor		■								
Infrared Point detection	■	■		■		■	■			
Open Path detection								■	■	
Photoacoustic Infrared					■					
Ultrasonic										■
Units of Measure										
0-100% LEL	■	■		■	■	■	■			
% Volume		■	■		■		■			
0-5% LEL-m								■	■	
ppm	■	■	■		■	■	■			
ppm.m								■	■	
40-120 dB (u)										■
Detectable Gases										
Ammonia (NH ₃)	■	■	■		■	■		■		■
Carbon Monoxide (CO)	■	■	■		■	■	■			
Carbon Dioxide (CO ₂)	■		■		■	■		■		■
Chlorine (Cl ₂)	■	■	■			■				
Chlorine Dioxide (ClO ₂)	■	■				■				
Ethylene (C ₂ H ₄)	■	■	■	■	■	■		■	■	■
Ethylene Oxide (EtO)	■	■	■		■	■				
Hydrocarbon Combustible Gases	■	■		■	■	■	■		■	■
Hydrogen (H ₂)	■	■	■			■				■
Hydrogen Cyanide (HCN)	■	■	■			■				
Hydrogen Sulfide (H ₂ S)	■	■	■			■	■	■		
Hydrogen Chloride (HCl)	■	■	■			■		■		
Hydrogen Fluoride (HF)	■	■	■			■				
Methane (CH ₄)	■	■		■	■	■	■	■	■	■
Nitrogen Oxide (NO)	■	■	■			■				
Nitrogen Dioxide (NO ₂)	■	■	■			■				
Oxygen (O ₂)	■	■	■			■	■			
Propane (C ₃ H ₈)	■	■		■	■	■			■	■
Sulfur Dioxide (SO ₂)	■	■	■			■				

See page 3 for Flame Detectors, page 7 for Controllers, and page 8 for Refrigerant Monitors.

Explosion-Proof Detectors

ULTIMA® X5000 Gas Monitor

The ULTIMA X5000 Gas Monitor offers advanced technologies detecting oxygen, toxic, and combustible gases.

Key features:

- TruCal® simulated calibration technology extends manual calibration intervals up to 24 months for XCell® H₂S and CO sensors
- High visibility and intuitive display with full-word text available in 9 languages
- Tool-free operation with touch-enabled display
- Dual sensing and universal board design lowers project installation costs
- Bluetooth® application provides easy configuration for faster start-ups



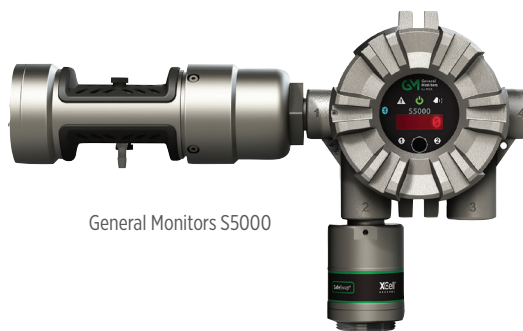
ULTIMA X5000

General Monitors® S5000 Gas Monitor

The S5000 Gas Monitor is the ultimate gas detector for extreme environments requiring detection of oxygen, toxic, and combustible gases.

Key features:

- Performs over a wide temperature range (-67°F / -55°C) to (+167°F / +75°C)
- TruCal simulated calibration technology extends manual calibration intervals up to 24 months for XCell H₂S and CO sensors
- Multiple communication options including HART, Modbus, Dual 4-20 mA (source or sink)
- Backwards compatible with select S4000TH and S4000CH sensors
- Bluetooth provides easy configuration with X/S Connect app



General Monitors S5000

Flame Detectors

General Monitors FL500 UV/IR Flame Detector

- Ultraviolet/infrared flame detector detects hydrocarbon fires fast
- Six fuel sources FM performance approved
- Wide field of view for greater fire detection coverage
- HART and Modbus communication options
- Hydrogen-specific flame detector also available



FL500

General Monitors FL4000H MSIR Flame Detector

- Advanced multi-spectral infrared optical flame detector for hydrocarbon fires
- Neural Network Technology (NNT) for reliable discrimination between actual flames and false alarm sources
- Detection range up to 230 ft (70 m)
- HART and Modbus communication options



FL4000H

Fixed Gas & Flame Detection

Gas Detectors

TG5000 Gas Monitor

The TG5000 Gas Monitor is an effective and economical solution to detecting combustible and toxic gases, as well as oxygen deficiency/enrichment, in wastewater, commercial, and light industrial applications.

Key features:

- Organic LED (OLED) and bright status LEDs for extreme visibility
- Touch button interface for intuitive, tool-free user experience
- Breakthrough XCell TruCal gas sensors for H₂S and CO monitoring extends calibration periods for up to 24 months
- Bluetooth wireless technology to check status, modify settings, and more with the X/S Connect app
- Available as single or dual gas monitoring unit



PrimaX® IR Gas Transmitter

The PrimaX IR Gas Transmitter is used for methane and propane gas applications.

Key features:

- Hydrocarbon detection in LEL
- Infrared dual source technology
- Redundant IR source provides enhanced reliability



Chemgard® Photoacoustic Infrared Gas Monitor

The stable, durable Chemgard Photoacoustic Infrared Gas Monitor is purpose-built and detects minute amounts of a wide variety of gases.

Key features:

- Precise, efficient, high-performance monitoring for many gases such as hydrocarbons, solvents, alcohols, CO₂, CO, and toxics
- Three different styles for flexible mounting options
- Unit can expand to monitor up to 8 locations with 3 levels of alarms
- Easy-to-read display



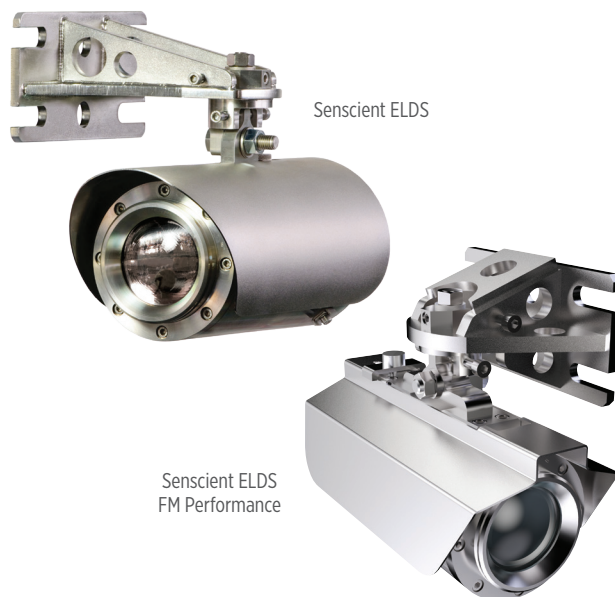
Open Path and Ultrasonic

Senscient ELDS™ Open Path Gas Detector

A laser-based open path gas detector for the detection of toxic or flammable gases. Using a separate transmitter and receiver arrangement, it is certified for use in hazardous areas. Available for open area detection or ventilation air intakes.

Key features:

- Target gas specific—no false alarms
- Gases detected: ammonia, carbon dioxide, hydrogen chloride, hydrogen sulfide, ethylene, methane, sour gas (H₂S/Methane)
- Fast speed of response (<5 seconds)—fast initiation of safety actions
- SimuGas daily automatic self test—no routine manual testing
- Factory lifetime calibration—no routine recalibration required
- No consumable sensing elements—reduced operational cost
- FM performance-approved methane variant



General Monitors IR5500 / OPIR-5 Open Path Infrared Gas Detector

The IR5500 / OPIR-5 Open Path Infrared Gas Detector provides continuous monitoring of flammable gases.

Key features:

- Sensitive to small (ppm.m) and large (LEL.m) gas leaks
- Ideal for harsh environments (-67°F / -55°C)
- Continuous self-check for fail-to-safe operation
- Multiple communication outputs (HART, Modbus, AMS support)



General Monitors Observer® i Ultrasonic Gas Leak Detector

The Observer-i responds rapidly (<1 second (speed of sound)) to the airborne ultrasound generated from pressurized gas releases in open ventilated areas.

Key features:

- Artificial Neural Network (ANN) distinguishes real gas leak noise and suppresses false alarm sources
- Patented Senssonic™ self-test ensures full fail-safe operation
- Trouble-free maintenance and one-person check and calibration
- AISI 316L stainless steel housing enclosure
- Explosion proof design, Ex-d



Fixed Gas & Flame Detection

Gas Detectors

ULTIMA X Series

The ULTIMA XE and ULTIMA X3 Gas Monitors provide continuous monitoring of toxic gases and oxygen deficiency using electrochemical sensor technologies.

Key features:

- Monitors a large range of toxic gases
- Easy-to-read LEDs
- Optional on board status LED and/or output relays
- Optional HART
- Available only as two-wire (Ultima XE) or with Modbus output (Ultima X3)



ULTIMA XE

TriGas X5000/TriGas Flow Panel Gas Monitoring Systems

The TriGas X5000 and TriGas Flow Panel (TriGas Lite) monitoring systems with the Ultima X5000 are engineered product solutions to meet compliance to NFPA 820 in the Municipal Market. Primarily designed for wet-well monitoring associated with pumping and lift stations, these products are suitable for any plant monitoring application that requires a pumped system.

Key features:

- Three-sensor gas monitoring of combustible gas LEL, hydrogen sulfide (H_2S), and oxygen (O_2)
- Alarming relays
- SM5000 sample pump module with associated flow components
- NEMA 4X Stainless Steel enclosure with red strobe, 95dB buzzer, and power supply (TriGas X5000 System)



TriGas Flow Panel

TriGas X5000

Odor Scrubber Monitoring System

The Odor Scrubber Monitoring System is a pre-engineered solution for monitoring hydrogen sulfide (H_2S) at strategic points before and after both wet or dry scrubbers or bio-filter systems in wastewater facilities. The system provides the user valuable real-time H_2S removal efficiency data that provides plant operations critical information for optimum control.

Key features:

- Ensures that scrubber system is working and meeting EPA requirements
- Indicates break-through for carbon bed scrubbers
- Controls chemical feeds for wet scrubbers
- Conserves expensive chemicals
- Helps eliminate odor complaints from the community



Odor Scrubber Monitor

Controllers

SUPREMATouch Controller

SUPREMATouch is a gas and fire warning system for large area measuring.

Key features:

- Processes up to 256 inputs and 512 outputs
- Multi-lingual touchscreen enabling intuitive operation
- New software enabling remote, one-man, and group calibration
- SIL 3 compatible due to the option of redundant input cards



SUPREMATouch

SENTRY io® Controller

The SENTRY io is an easily-configurable, wall-mount multi-channel controller suitable for a variety of industrial applications.

Key features:

- Monitors up to 16 inputs and 56 outputs with an option for analog outputs
- Modern multi-lingual touchscreen HMI supports intuitive operation
- SmartStart walks users through setup process saving valuable time
- EZ-ID synchronizes and pre-populates details of HART-enabled MSA detectors
- Digital communications supported: Modbus TCP/IP, Modbus RTU (optional), EtherNet/IP/DLR



SENTRY io

9010/9020 Controller

The 9010/9020 Gas Controller provides maximum flexibility, simple operation, and high reliability.

Key features:

- Monitors up to 20 channels independently
- Options in 19-in. rack or wall-mount box (one or two channels)
- Works in combination with a wide range of MSA gas sensors
- Large LCD and LED inform about gas concentration, alarm status, and more
- RS 485 Modbus RTU, Ethernet for Modbus TCP

9010/9020



ModCon™ 75 Touch Controller

Designed for use with the Ultima X Gas Monitor with X3 technology, the pre-programmed ModCon 75 Touch Controller features a 7" touchscreen monitor for ease of use. The controller is self-configuring for monitoring up to 25 monitors for a total of 75 sensors.

- All pertinent data displays on main data screen
- Modbus RTU input and Modbus-over-Ethernet interface capability
- Battery backup holds system information in case of power loss

ModCon 75 Touch



Fixed Gas & Flame Detection

HVAC Monitors

Chillgard® 5000 Refrigerant Leak Monitor

The Chillgard 5000 leak monitor provides the earliest level of detection of costly refrigerant gas leaks in mechanical equipment rooms.

Key features:

- Patented photoacoustic infrared (PAIR) technology detects leaks as low as 1 ppm for refrigerant gases
- Intuitive, multi-lingual touchscreen user interface makes it easy to operate
- Predictive maintenance and diagnostics keep you operational
- Modular design makes it easy to maintain and expand sample points
- Digital communications—BACnet (BTL listed) and Modbus
- Pictured with optional strobe



Chillgard 5000

Chillgard 5000 Ammonia Monitor

The Chillgard 5000 ammonia monitor provides the earliest level of detection of ammonia leaks in industrial settings.

Key features:

- Patented photoacoustic infrared (PAIR) technology detects leaks as low as 10 ppm for ammonia gas
- Intuitive, multi-lingual touchscreen user interface makes it easy to operate
- Predictive maintenance and diagnostics keep you operational
- Modular design makes it easy to maintain and expand sample points
- Digital communications—BACnet (BTL listed) and Modbus
- Optional strobe available



Chillgard 5000 Ammonia Monitor

Chillgard 5000 Remote Display

The Chillgard 5000 Remote Display provides a convenient remote display that mimics the Chillgard 5000 Gas Monitor's readings for gas concentration, alarm status, calibration, and fault diagnostics.

Key features:

- Verifies the gas levels inside the hazardous area from the safe entry way
- ASHRAE 15 compliant for entry way signaling
- Can connect up to 4 remote displays in series
- 7" touch display
- 70dB buzzer
- Optional strobe available



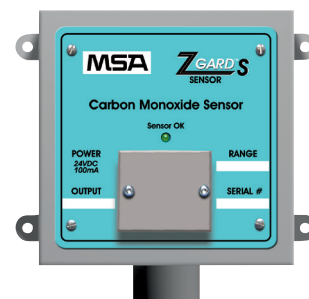
Chillgard 5000 Remote Display

Monitors for Commercial Applications

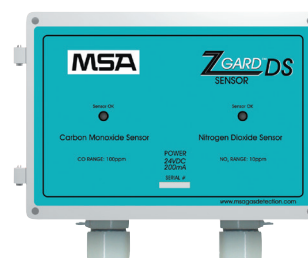
In enclosed areas such as parking garages, potentially lethal concentrations of carbon monoxide (CO) and nitrogen dioxide (NO₂) can build up quickly—before exposed individuals have any indication of danger. The issue is not whether these gases reach hazardous concentrations, but rather how to control and ventilate gas buildup when it occurs.

Z-Gard® S MPO Single Gas Monitor

- Detects the presence of either carbon monoxide, nitrogen dioxide, or combustible gases in air
- Connects directly to a building automation system for single gas monitoring solutions
- Communicates with one of several industry standard protocols, providing seamless integration with commercial automation systems



Z-Gard S MPO Single Gas Monitor (CO)



Z-Gard DS IMPO Dual Gas Monitor

Z-Gard DS MPO Dual Gas Monitor

- Offers the benefit of two points of detection in one enclosure
- Detects the presence of carbon monoxide and nitrogen dioxide
- Connects directly to a building automation system for dual gas monitoring solutions
- Communicates with one of several industry standard protocols, providing seamless integration with commercial automation systems

Z-Gard COmbo Gas Monitor

- Cost-efficient monitor for underground garages and ventilation control
- Uses a solid-state sensor to detect carbon monoxide
- Local audio/visual alarm status indicators
- Interfaces with air-handling equipment to control air quality within a building
- Remote sensors can be attached to the unit via the RS-485 network port
- 4-20mA output is proportional to the calibrated operating range



Z-Gard COmbo Gas Monitor

Z-Gard CXII Controller

- Highly configurable controller with up to 99 sensor inputs and 12 relay outputs
- Large backlit LCD screen displays operating, alarm, and fault diagnostic system status
- Modbus RTU or BACnet MS/TP digital protocols are available for integration with building automation systems



Z-Gard CXII Controller

Z-Gard C 485 Controller

- Microprocessor-based system links up to 24 remote gas sensors
- Set points and readout display are automatically adjusted to match sensor
- Relay outputs indicate warning, alarm, or sensor fail for each zone and units are available with one or two zones
- Large LED readout displays the active channel and the corresponding sensor gas level
- Audible alarm



Z-Gard C 485 Controller

System Capabilities

General Monitors HazardWatch® NFPA 72 Fire and Gas System

The innovative, modular HazardWatch System combines highly reliable programmable logic controller (PLC) technology with our advanced gas and flame field devices. It is highly scalable, making it suitable for small systems (HazardWatch FX-12) to large plant-wide applications. Offering intelligence, flexibility and reliability, the HazardWatch System's controller hardware configuration and software has been tested by Factory Mutual to verify NFPA 72 compliance.

HazardWatch key features:

- Both fire and gas functions are certified to NFPA 72 by FM
- FM certified fiber optic network allows for multiple HazardWatch systems to be networked together
- Touchscreen interface (10.4 in.) provides user-friendly graphical interface and supports plot plans
- Field wiring topology is simple, reliable, and cost effective
- FM certified ControlNet, Ethernet, or Modbus output from the system

HazardWatch



HazardWatch FX-12 Fire and Gas System

- Factory Mutual (FM) approved for NFPA 72 (2013) compliance
- Up to 12 field devices can be supported per alarm panel, with capability to network up to 12 panels
- Remote monitoring and notifications available
- Data and event logging
- Enclosure available in gray or red housing

HazardWatch FX-12



MultiGard™ 5000 Gas Sampling System

The MultiGard 5000 Gas Sampling System uses auto-standardization and flexible sample point order to analyze gas from up to 32 locations.

- Modular construction allows simple installation and maintenance
- Easy setup via front touch-screen panel display
- Common alarm and fault relays
- Gas flow failure indication
- Options include discrete relays and Modbus TCP/BACnet IP output

MultiGard 5000



Custom Products

Individually designed gas detection solutions to fit your application

Special solutions sometimes require greater versatility and unique equipment configurations. MSA's Custom Products group offers individually designed solutions for customer monitoring, control, and data acquisition applications.

Each custom system is individually designed to provide the very best solution to unique application requirements. MSA Custom Products provide customers with a distinctive combination of solutions, expertise, and timeliness. Examples include:

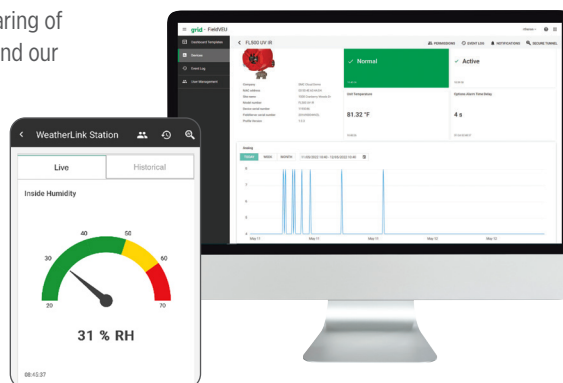
- Flow panels
- Intrinsically safe multi-point gas sampling systems
- Facility management monitoring systems
- Customer-defined packaging solutions
- Shipboard rugged systems
- OEM packaging and labeling



Remote Monitoring and Notifications

On-site or in the cloud, MSA's Infrastructure Connectivity Solutions enable the sharing of critical operational data 24/7 through our safe and secure FieldServer gateways and our cloud-based services—MSA Grid FieldVEU and MSA FieldServer Manager.

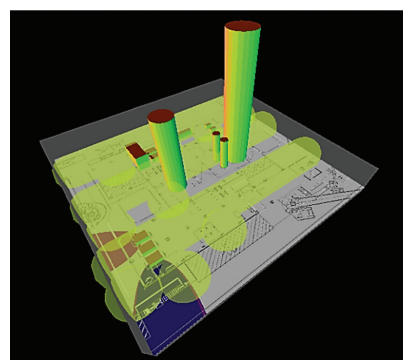
MSA's FieldServer IIoT solutions help support a variety of field devices, including MSA's fixed gas and flame detectors, by notifying of events in the field via BACnet, EtherNet/IP, Modbus, SNMP, and a host of other protocols.



Improving Gas Detection Coverage with Fire and Gas Mapping

Fire and gas mapping is a solution that assists in the evaluation of flame and gas risks within a process facility and in the reduction of these risks towards an acceptable risk profile.

Fire and gas mapping includes placing of detectors in appropriate locations to achieve the best possible detection coverage, with a systematic and numeric method, which also considers external factors, such as wind direction and obstructions. The output of a mapping study includes graphical maps of residual risks, recommended detector placements, and numerical estimates of detection coverage.



MSA Field Service — Professional, Reliable, and Responsive

Alongside the extensive range of top-quality products, MSA Safety also provides a high level of customized service. MSA Safety's comprehensive and versatile range of services ensures that your equipment and systems will always be reliable, economical, and ready for use. MSA Safety is always at your service to provide you with the support you need, when you need it.

- Installation and Commissioning. Premium commissioning service program—designed to make it easy for you to have successful start-ups and commissioning of newly installed fixed gas and flame instruments.
- Maintenance—MSA's routine maintenance service program is designed to make it easy for you to budget for the maintenance and calibration needs for your fixed gas and flame instruments. This program offers a flat-fee approach to make it easy for you to determine your costs.
- Project Management
- System Modification
- Repair & Service
- Training



Our Mission

MSA's mission is to see to it that men and women may work in safety and that they, their families, and their communities may live in health throughout the world.

MSA: SAFEGUARDING PEOPLE, PLACES & THE PLANET.

Note: This Bulletin contains only a general description of the products shown. While product uses and performance capabilities are generally described, the products shall not, under any circumstances, be used by untrained or unqualified individuals. The products shall not be used until the product instructions/user manual, which contains detailed information concerning the proper use and care of the products, including any warnings or cautions, have been thoroughly read and understood. Specifications are subject to change without prior notice. MSA is a registered trademark of MSA Technology, LLC in the US, Europe, and other Countries. For all other trademarks visit <https://us.msasafety.com/Trademarks>.

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