

# Gas & Flame Detection Solutions for the Natural Gas Shale Industry



**GENERAL MONITORS**  
*An MSA Company*





## Shale Reserve Operational Phases

### Construction Operations

Construction support for a natural gas well involves road construction to access the well site, well pad assembly to support the drilling rig, and pit excavation for wastewater containment.

### Drilling Operations

Shale drilling workers are potentially exposed to several gas hazards including pockets of hydrogen sulfide (H<sub>2</sub>S) created by decomposing organic material and carbon monoxide (CO) from the rig's diesel engines. Fixed gas monitoring devices offer continuous monitoring and detection of combustible and toxic gases and provide essential early-warning alerts.

### Production Operations

Once the gas well is drilled and production of the raw natural gas begins, fixed gas detectors can be used to perform the combustible gas monitoring that is necessary during normal operation or maintenance. Ultrasonic gas leak detector can be used to monitor pressurized gas leaks.

### Workovers

Every few years, a rig may undergo partial re-drilling, re-fracturing, and maintenance activities to keep it fully operational and safe. Such workover operations present many of the same potential safety hazards as drilling and production operations and thus require the same safety equipment. Monitoring of combustible gas levels is especially vital during repair operations involving welding or other spark-producing work.

PRODUCT	PURPOSE
<b>DRILLING</b>	
<b>S4000CH / S4100C / IR400 Combustible Gas Detectors</b>	Monitor near drilling site for combustible levels of methane escaping during drilling process. Leaks can occur in drilling process, possibly forming explosive levels of combustible gas.
<b>S4000TH / S4100T MOS H<sub>2</sub>S Sensors</b>	Monitor near drilling site for worker exposure to toxic levels of H <sub>2</sub> S gas escaping from underground gas pockets.
<b>MC600 Controller</b>	Control device which can interface with any of the gas sensors and provide a visual indication of gas readings. Relays can be used to activate other safety/signaling devices.
<b>PRODUCTION</b>	
<b>S4000CH / S4100C / IR400 Combustible Gas Detectors</b>	During normal operation or maintenance, combustible gas monitoring is necessary for safe operation.
<b>Gassonic Observer-H Ultrasonic Gas Leak Detector</b>	Detection of ultrasonic sound released by a pressurized gas leak. Provides early detection and signaling of leaks to shut down the production process and initiate safety measures.
<b>DELIVERY</b>	
<b>S4000CH / S4100C / IR400 Combustible Gas Detectors</b>	Monitor for combustible gas build-up from leaks in compressor stations.
<b>Gassonic Observer-H Ultrasonic Gas Leak Detector</b>	Detects leaks from failed seals or flanges in compressors or piping in compressor rooms. Can be located inside or outside of room to provide sensitive detection of pressurized leaks.
<b>FL4000H Flame Detectors</b>	Quick detection of flames in the compressor room to prevent property damage and loss of life.
<b>MC600 Controller</b>	Control device which can interface with any of the gas sensors and provide a visual indication of gas readings. Relays can be used to activate other safety/signaling devices.
<b>HazardWatch System</b>	Integrates gas and flame detection products into an NFPA 72-compliant controller system.

# Fixed Gas and Flame Detection Product Descriptions

## **S4000CH / S4100C / IR400 Combustible Gas Detectors**

General Monitors Combustible Gas Monitors offer continuous hazardous gas monitoring using catalytic (S4000CH / S4100C) or infrared (IR400) technologies, with HART Protocol available on most models. Suitable for indoor and outdoor applications in virtually any industry including offshore rigs, refineries, chemical and petrochemical facilities, steel mills, water and wastewater plants, mining, and general industry.

## **Gassonic Observer-H Ultrasonic Gas Leak Detector**

Gassonic Ultrasonic Gas Leak Detectors offer fast detection of high pressure gas leaks without requiring the gas to come into contact with the detector. They are ideally suited for outdoor installations.

## **S4000TH / S4100T H<sub>2</sub>S Gas Detectors**

General Monitors H<sub>2</sub>S gas detectors feature a highly intelligent microprocessor-based design for use with thin film metal oxide semiconductor (TFMOS) sensors. Options include relays, ModBus and/or HART.

## **FL4000H Flame Detector**

The FL4000H Multi-Spectral Infrared (MSIR) Flame Detector provides superior false alarm immunity with the widest field of view utilizing neural network technology (NNT). Options include relays, ModBus and HART.

## **MC600 Multi-Channel Controller**

One to six channels of continuous monitoring make the MC600 highly configurable with dual redundant Modbus communications providing complete status and control capability.

## **HazardWatch Fire and Gas Detection System**

The next generation in highly intelligent monitoring solutions is designed to help customers reduce hazard vulnerability while meeting the world's most demanding safety standards. HazardWatch is an innovative, highly scalable system offering intelligence, flexibility and reliability. The system's controller hardware configuration and software have been tested by Factory Mutual to verify NFPA 72 compliance.



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