

# IR4000 Point Infrared Combustible Gas Detection System

The Reliable and Flexible Safety Solution That's Low Maintenance



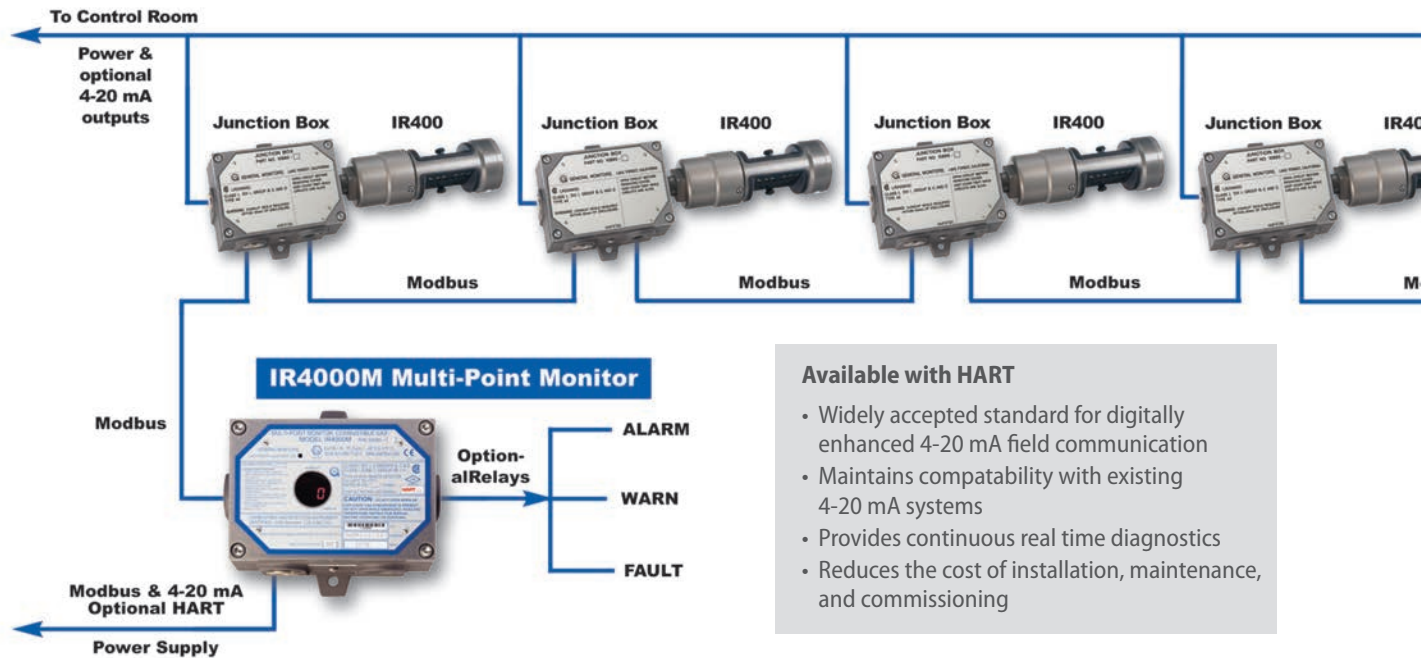
General Monitors



The Safety Company

*Because every life has a **purpose...***

## Multi-Point Gas Detection that's Reliable, Scalable, and Simple



### Fast Set-Up, Low Maintenance, Cost-Effective

The innovative Model IR400 Point Infrared Combustible Gas Detector and the Models IR4000M and IR4000S Display Monitors provide superior safety monitoring in hazardous environments with a highly scalable product suite that is ideal for complex multi-point systems or simple single-point applications.

### IR400 Point IR Detector

The Model IR400 Detector comes factory pre-calibrated, takes only minutes to set-up, operates with less than 4.8 W of power, requires little maintenance, and is inexpensive to operate and maintain. Other Model IR400 advanced features include:

- Fail-to-safe operation for high reliability
- Event logging for easy record-keeping
- 4-20 mA signal for remote alarm and fault indication
- Built-in RS485 interface for ease of communication
- Modbus interface
- HART® communication
- Heated optics that eliminate condensation
- Dirty optics indicator for preventive maintenance
- IP66, Type 4X ratings for rugged processes

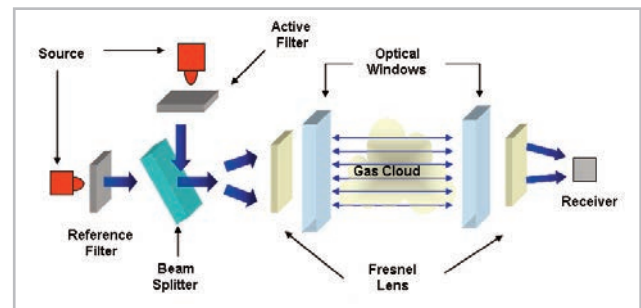
The microprocessor-based Model IR400 continuously monitors combustible gases in the lower explosive limit (LEL) range and provides a 4-20 mA analog output signal proportional to the 0 to 100% LEL concentration. The IR400 operates with a 20-36 VDC power supply, which may be supplied by the customer or General Monitors.

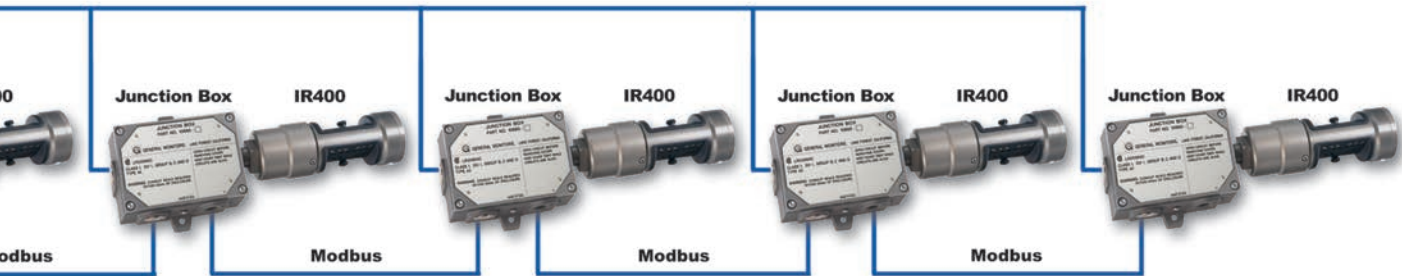
### Versatility with Configuration Flexibility

The IR400, IR4000S, and IR4000M are modular by design and can be installed in a wide range of configurations to meet individual process or plant requirements from the simplest of single-point local monitoring stations to large integrated fire and gas systems:

- IR400→Direct Connect to PLC or DCS
- IR400→IR4000M→8-Point Gas Detection System
- IR400→IR4000S→Single-Point Gas Detection
- IR400→DC110→Readout /Relay Module
- IR400→TA102A Trip Amplifier→Zero-Two Series System
- IR400→MC600 Multichannel Controller
- IR400→HazardWatch Fire and Gas System

### IR Sensor Theory of Operation





### IR4000M Multi-Point Monitor



Installing a new multi-point combustible gas detection system to protect complex processes or large plants is now easier than ever with the IR400 Detector and IR4000M Multi-Point Monitor. The Model IR4000M is a three-digit LED display and relay module that features a data concentrator designed for use with the IR400 Detector. It provides monitoring and control functions for up to eight IR400 point detectors via a single command. Model IR4000M key features include:

- Complete integrated gas detection system with voting
- Connect as many as eight IR400 point IR gas detectors
- Data concentrator reads status for eight IR400's at once via a single command
- Calibrate, gas check and zero multiple IR400's based on a single command
- Scalable operation that requires no programming
- Explosion-proof enclosure certified for hazardous locations
- Bright LED local display shows gas concentrations in % LEL
- Optional 8 Amp relays reduce wiring, enclosures and need for a PLC

### IR4000S Single-Point Monitor



The IR4000S Single-Point Monitor is a three-digit LED display and user interface for the IR400 Detector. It is an easy-to-use solution for single-point combustible gas detection where a local display unit is required.

### Infrared Combustible Gas Detection

Infrared gas detection sensing is based on the ability of hydrocarbon gases to absorb IR radiation. Almost all hydrocarbon gases absorb IR at approximately 3.4  $\mu\text{m}$ . The IR400 detects hydrocarbon gas by measuring the absorption of IR radiation passing through a volume of gas using a dual-beam, single-detector method. The IR detector measures the intensity of two wavelengths, one at the absorption wavelength of target gases and another outside of the absorption wavelength. The gas concentration is determined by measuring the absorbance of infrared radiation at the target wavelength and comparing its value to a reference.

### Ideal for Hazardous Industries

The versatile IR400, IR4000M, and IR4000S are suitable for a wide range of hazardous industry processes and plant applications:

- Aerospace
- Electric Power Generation
- LNG/LPG Processing & Storage
- Oil & Gas Production
- Petrochemical Refining
- Pipelines
- Wastewater Treatment

### Certifications

The Models IR400, IR4000M, and IR4000S include the following industry approvals:

- CSA
- ATEX
- IECEx
- DNV GL (IR400/IR4000S)
- FM
- CE Marking
- MED (IR400/IR4000S)

The IR400 detector is SIL 3 rated and the IR4000S/M monitors are rated SIL 2 capable. All are FM certified to IEC 61508.

# General Monitors—by MSA

---

*Over 100 years of experience and capability in comprehensive safety solutions have made MSA a modern and forward-looking company for the protection of people, facilities, and the environment. MSA 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.*

*With the acquisition of General Monitors in September 2010, the MSA FGFD product portfolio expanded even further. As two unmatched experts in gas and flame detection joined forces, we are proving that the right mix of durable products and innovative technology can increase safety while driving operational efficiency.*

*Together MSA and General Monitors have the widest range of sensing technologies for gas and flame detection. We can create solutions that will not only provide worker safety and protect facilities, but will also decrease overall cost of ownership. While our customers still have access to the great products and service that they have come to rely on in the past, they now have access to so much more: superior service, improved support, a wider range of technology, and unique solutions enhanced by the combined strength of MSA and General Monitors.*

---

## 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: Because every life has a purpose.**

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products. Specifications subject to change without notice.



**ID 1465-02-MC / Dec 2015**  
© MSA 2015 Printed in U.S.A.

*Corporate Headquarters:*

**MSA**  
1000 Cranberry Woods Drive  
Cranberry Township, PA 16066  
United States  
+1-724-776-8600  
[info.us@MSAsafety.com](mailto:info.us@MSAsafety.com)

*Design Center:*

**General Monitors**  
26776 Simpatica Circle  
Lake Forest, CA 92630  
United States  
+1-949-581-4464  
[info.gm@MSAsafety.com](mailto:info.gm@MSAsafety.com)

Additional locations can be found on our web site:  
[www.MSAsafety.com](http://www.MSAsafety.com)