FL4000H Multi-Spectral
Infrared Flame Detector

General Monitors

Breakthrough Neural Network Intelligence for Improved False Alarm Immunity

MSA
The Safety Company

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

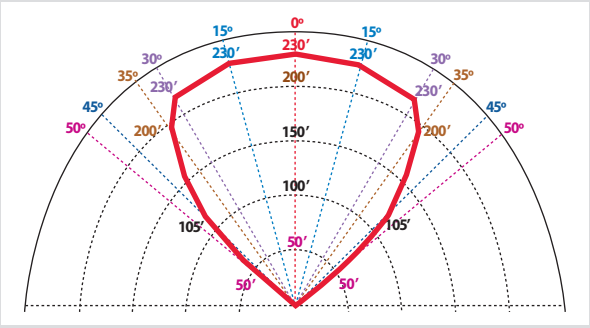
Innovative Technology for Superior False Alarm Immunity

Advanced Multi-Spectral Sensor Array with Neural Network Technology

The General Monitors FL4000H Multi-Spectral Infrared (MSIR)/Neural Network Technology (NNT) Flame Detector sets a new industry standard for performance, reliability, and value. The FL4000H is the industry's first MSIR/NNT Flame Detector designed to operate at longer range with a wider field of view and at higher accuracy for superior false alarm immunity.

Combining a precision multi-spectral IR sensing array with highly intelligent neural network processors, the FL4000H reliably discriminates between actual flames and nuisance false alarm sources (such as arc welding or hot objects).

Field of View



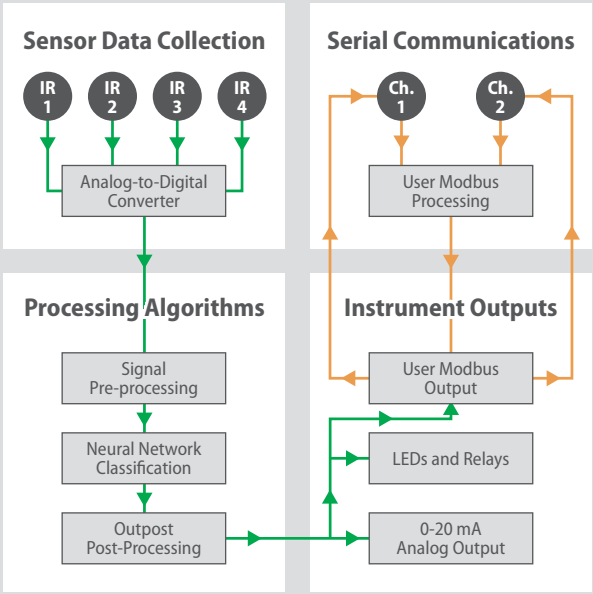
Standard features of the FL4000H Flame Detector include:

- MSIR sensor array for maximum range of up to 230 ft.
- Neural network technology for superior false alarm immunity
- Continuous optical path monitoring (COPM) checks optical path integrity for high reliability
- Event logging records time, date and type of event
- Minimum immunity distance to arc welding: 5-15 ft. (1.5-4.6 m)
- Response time of <10 seconds for rapid flame detection and alarming
- Industry standard 4-20 mA output signal for communications with remote alarms, PLCs, or DCS
- HART digital communication signal superimposed on the 4-20 mA analog signal
- Dual-redundant Modbus communications via RS-485 interface for remote operation
- Test lamp that checks all outputs
- Explosion-proof stainless steel housing for corrosive and marine environments

How MSIR/NNT Flame Detection Works

The FL4000H is a highly discriminating MSIR/NNT detector, which makes use of multiple infrared sensors sampling different IR spectrum wavelengths. Each detector's analog sensor signals are sampled and converted into digital format for signal pre-processing to extract time and frequency data.

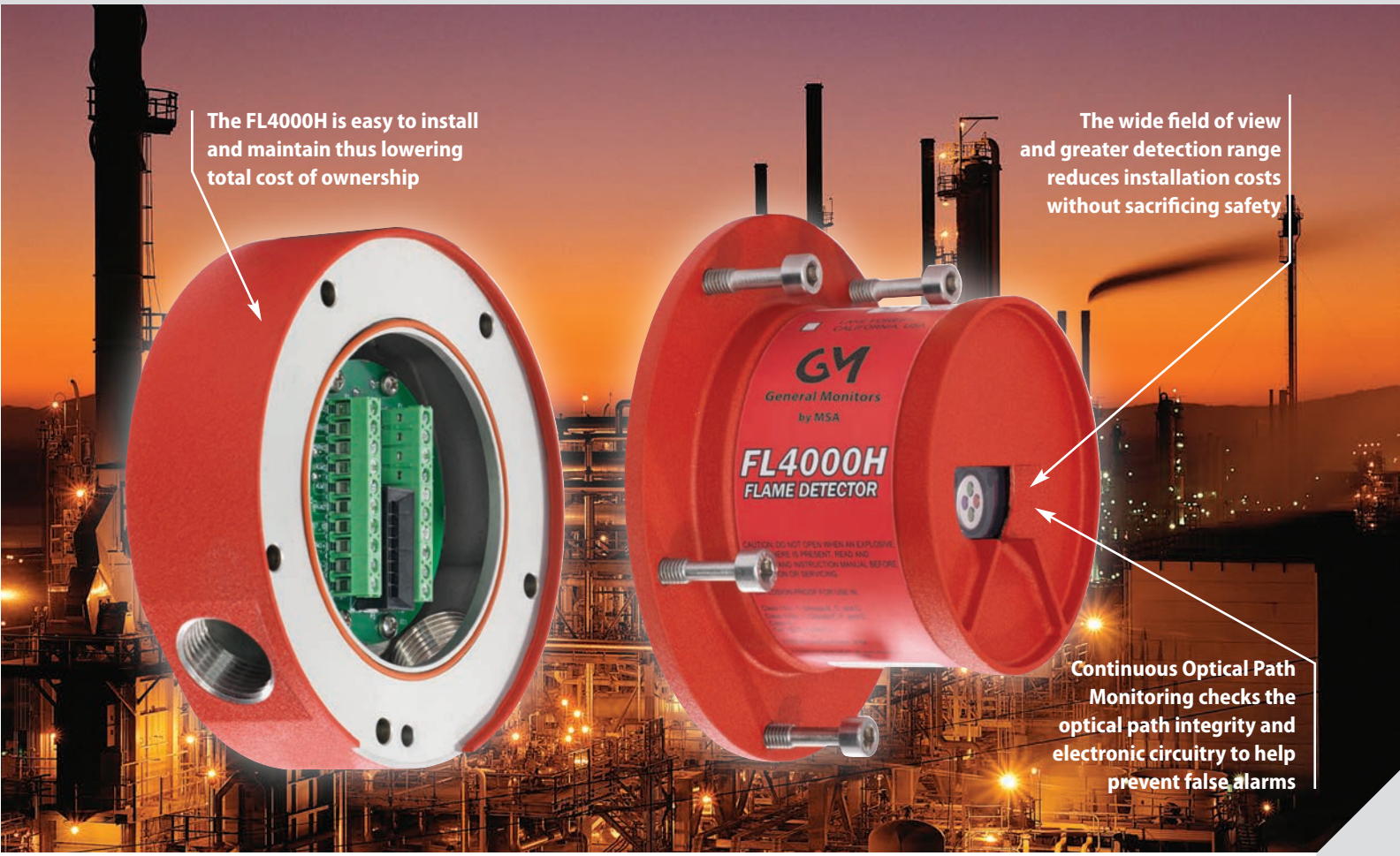
Field of View



The time and frequency information are used by the FL4000H's proprietary neural network classification algorithm to identify if input IR signals are emitted from a flame or non-flame source. The flame or non-flame decision is then reported as an output via LEDs, relays, HART and /or Modbus.

With its NNT flame discrimination algorithm, the FL4000H is highly immune to false alarms. COPM (Continuous Optical Path Monitoring) self-diagnostic circuitry checks the optical path (window cleanliness) and the detector's circuitry every two minutes. Serial ports allow up to 128 units (247 using repeaters) to be linked to a host computer using the Modbus RTU protocol.

The FL4000H's breakthrough NNT signal processing model offers a distinct advantage. Its ability to adapt to customer application conditions is almost limitless, resulting in highly reliable flame protection with superior false-alarm immunity.



Lower Your Total Installed Cost

The FL4000H Flame Detector is a powerful next generation solution with distinct advantages over many existing flame detection devices in the marketplace. The FL4000H's greater range and wider field of view reduces the number of detectors necessary in many applications—thus cutting total installed cost while achieving greater false alarm immunity.

FL4000H Approvals

To support global applications, the FL4000H is approved for CSA, FM, ATEX, IECEx, ULC, BV, MED, CPR EN 54-10, Inmetro, and has CE Marking. Additionally, it is rated as SIL 3 Suitable, FM Certified to IEC 61508. Patent 7202794.

Applications Versatility

Until now, plant engineers facing chronic false alarm problems have had to choose between accepting the costs of false alarms, changing the process or installing complex redundant flame detection systems at a high cost and with high maintenance requirements. The FL4000H with its highly intelligent MSIR/NNT sensor addresses the shortcomings of today's typical flame detectors and is ideal for a wide range of applications and industries:

- Automotive
- Aerospace
- Chemical Plants
- Electric Power
- Food /Beverage
- Offshore Platforms
- Oil /Gas Distribution
- Oil /Gas Refineries
- Pharmaceuticals
- Textile Manufacturing
- Warehouses
- Wood and Paper Plants

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.

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Corporate Headquarters:
MSA – The Safety Company
1000 Cranberry Woods Drive
Cranberry Township, PA 16066
United States
+1-724-776-8600
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

Additional locations can be found on our web site:
www.MSAsafety.com