

FL4000 Multi-Spectral Infrared Flame Detector



Breakthrough Neural Network Intelligence
for Improved False Alarm Immunity



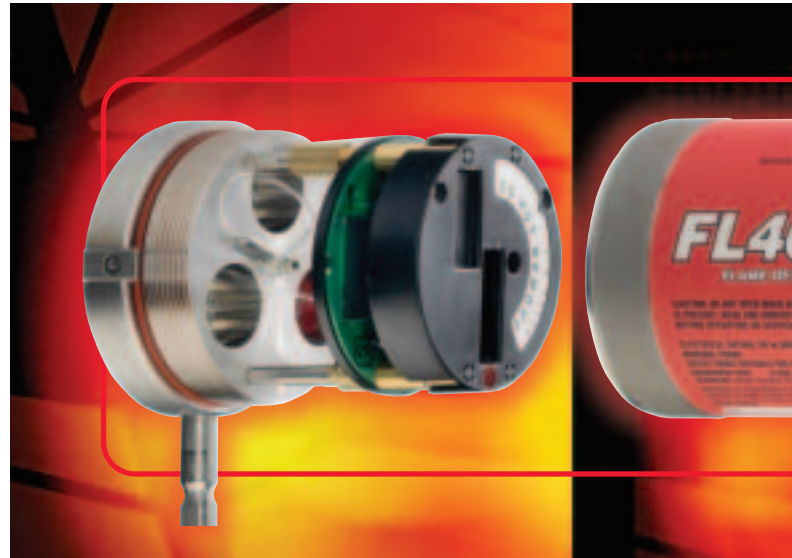
GENERAL MONITORS
Protection for life.

Innovative Technology for

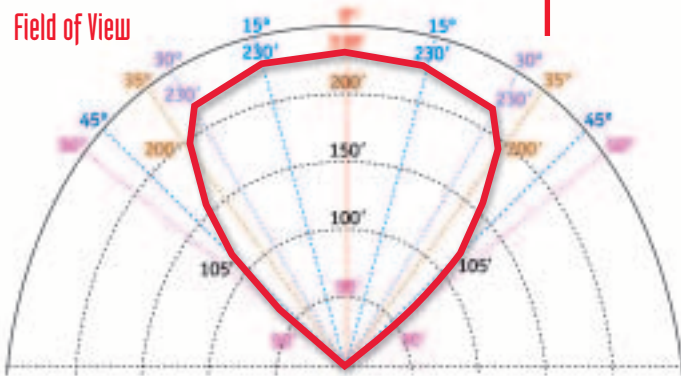
Advanced Multi-Spectral Sensor Array with Neural Network Technology

The FL4000 Multi-Spectral Infrared (MSIR)/Neural Network Technology (NNT) Flame Detector from General Monitors sets a new industry standard for performance, reliability, and value. General Monitors has developed 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 FL4000 reliably discriminates between actual flames and nuisance false alarm sources (such as arc welding or hot objects).



Field of View



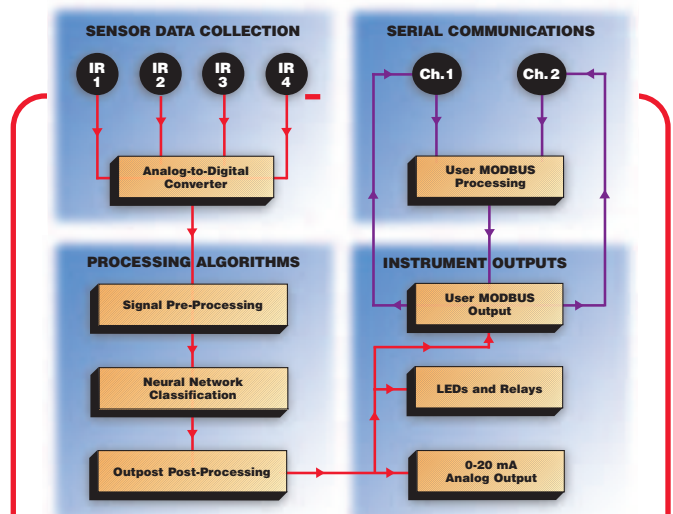
Standard features of the FL4000 Flame Detector include:

- > 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
- > 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

- > Event logging records time, date and type of event
- > Minimum immunity distance to arc welding: 5-15 ft. (1.5-4.6 m)

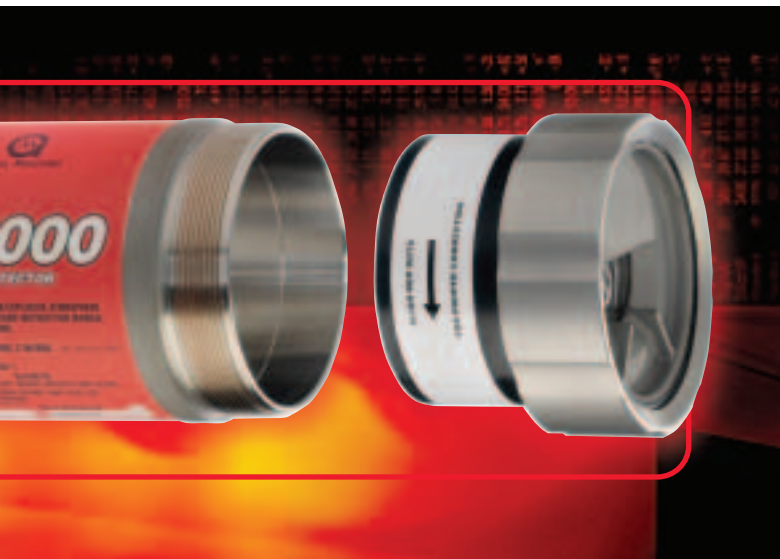
How MSIR/NNT Flame Detection Works

The FL4000 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.



MSIR / NNT Signal Processing

Superior False Alarm Immunity



The time and frequency information are used by the FL4000'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 FL4000 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 FL4000'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 FL4000 Flame Detector is a powerful next generation solution with distinct advantages over many existing flame detection devices in the marketplace. The FL4000'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.

FL4000 Approvals

To support global applications, the FL4000 is approved by CSA, FM, ATEX, ULC and has CE Marking. Additionally, the detector is rated as SIL 3 Suitable. 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 FL4000 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



Global Service. Anytime, Anywhere.

Responsive, Expert Service

No matter where you are, 24-hour technical service and support is available from General Monitors. Our two manufacturing and six sales and service facilities are located for efficient support worldwide.

Quality Commitment

General Monitors brings a respected reputation for quality and reliability to the gas and flame detector market. We are ISO 9001:2000 certified, utilizing continuous process improvement quality programs.



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