FlameGard® 5
MSIR Flame Detector

Superior false alarm immunity through multi-spectrum infrared flame detection

Description

MSA's FlameGard 5 MSIR Detector is an advanced multi-spectrum flame detector designed to provide superior false alarm immunity with the widest field of view. The FlameGard 5 MSIR Detector employs a state-of-the-art multi-spectrum infrared (MSIR) sensor array with a sophisticated Neural Network Technology (NNT) system. Designed to detect typical fires such as those produced by alcohol, n-heptane, gasoline, jet fuels and hydrocarbons, the FlameGard 5 Detector can see through dense smoke produced by diesel, rubber, plastics, lube oil, and crude oil fires.

The NNT flame discrimination algorithm classifies the output signals from the MSIR sensor array as either fire or non-fire. This MSIR/NNT combination is highly immune to false alarms caused by lightning, arc-welding, hot objects, and other sources of radiation.

The electronics of the FlameGard 5 MSIR Detector are housed in a stainless steel explosion-proof enclosure. The detector is available with the following output configurations:

- 4-20 mA stepped output
- Dual serial communications
- HART communication
- Warning, alarm and fault relays

The serial communication port(s) allows 128 units (247 using repeaters) to be linked up to a host computer using the Modbus RTU protocol. The communication registers provide alarm status, fault and other information for operating, troubleshooting or programming the unit.

The continuous optical path monitoring (COPM) self test checks both the optical path integrity (window cleanliness) and the detector's electronic circuitry every two minutes.

Features and Benefits

Multi-Spectrum IR (MSIR) sensor array provides increased range and a wide field of view
Neural Network Technology (NNT) provides superior false alarm immunity
Continuous Optical Path Monitoring (COPM) checks the optical path integrity and the detector's electronic circuitry
Multiple communication outputs provide versatility for use in a variety of applications
Event Logging is a standalone diagnostic tool
Test Mode can be used with a test lamp to check all outputs

Applications

- Drilling and Production Platforms
- Gas Turbines
- LNG/LPG Processing and Storage Facilities
- Fuel Loading Facilities
- Compressor Stations
- Electrostatic Paint Spray Booths
- Aircraft Hangars
- Refineries
- Chemical Plants

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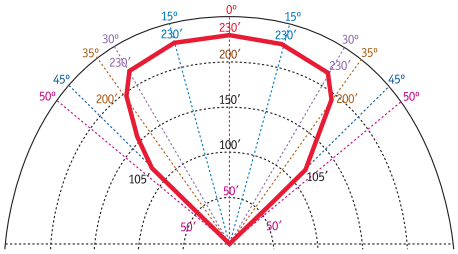
System Specifications	
Spectral Range	2 - 5 microns (IR)
Maximum Range	230 ft. (70 m)*
Typical Response Time	< 10 s
Minimum Arc Welding Immunity Distance	5-15 ft. (1.5-4.6 m) depending on rod
Maximum Field of View	100° @ 100 ft; 90° @ 210 ft.†



* *1 sq. ft. n-heptane fire using high sensitivity. This is a nominal value and different results may arise depending on the source of each fire.*

† *Maximum field of view is the angle at which the FlameGard 5 MSIR Detector can detect flame at 50% of maximum specified range.*

Accessories	Test Lamp, Mounting Brackets
Classification	Class I, Div. 1, Groups B, C, D; Class II, Div. 1, Groups E, F, G; Class III II 2GD Ex d IIC T5 Gb Ex tb IIIC T100°C Db
Warranty	Two years
Approvals	CSA, FM, ULC, ATEX, IECEx & CE Marking HART registered SIL 3 suitable FM certified to IEC 61508

Environmental Specifications	
Operating/Storage Temperature Range	-40°F to +176°F (-40°C to +80°C)
Operating Humidity Range	0% to 95% RH, non-condensing

Mechanical Specifications	
Housing	316 stainless steel
Height	4.3 inches (109 mm)
Diameter	5.4 inches (137 mm) base 3.5 inches (89 mm) optical housing
Weight	7.9 lbs. (3.6 kg)
Mounting	Stainless steel mounting bracket
Cable Entry	2 x 3/4 inch NPT

Electrical Specifications	
Input Power	20-36 VDC 24 VDC @ 150 mA (3.6 W)
Analog Signal	0-20 mA (600 Ohms maximum)
Fault Mode	0 mA to 0.2 mA
Test Mode	1.5 mA, ± 0.2 mA
COPM Fault	2 mA, ± 0.2 mA
Ready Mode	4.3 mA, ± 0.2 mA
WARN Mode	16 mA, ± 0.2 mA
ALARM Mode	20 mA, ± 0.2 mA
Relay Contact Rating	8A @ 250 VAC, 8A @ 30 VDC resistive maximum
RFI/EMI Protection	Complies with EN6100-6-4: 2001 and EN50130-4: 1995+A2: 2003
Selectable Options	Sensitivity: High, Medium or Low Alarm Time Delay: up to 14 seconds with dip switches and up to 30 seconds with Modbus Warn & Alarm Relays: Latching/Non-latching Energized/De-energized
RS-485 Output	Modbus RTU, suitable for linking up to 128 units and 247 units with repeaters
Baud Rate	2400, 4800, 9600, 19200, or 38400 bit/s
HART	HART 6, HART Device Description
Status Indicators	Two LEDs with status and fault cues
Fault Monitoring	RAM, EPROM and EEPROM checksum errors, optics failure/ blockage and low supply voltage
Cable Requirements	3-wire shielded cable minimum configuration. Maximum distance between the FlameGard 5 MSIR Detector and power source or remote sensor @ 24 VDC nominal (20 Ohm loop): 14 AWG - 4,500 ft (1,370 m) Max. distance for analog output (250 Ohms max): 14 AWG - 9,000 ft. (2,750 m)
Standard Part Numbers	5MSIR-1013110 Dual Modbus, no relays, 0 - 20 mA, high sensitivity, 10-second delay 71370-1 mounting bracket

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.

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