

# The FlameGard® Series of Flame Detectors

Fast, Reliable Flame Detection



# FlameGard



Continuous optical flame detection for hydrocarbon-based fires.

MSA FlameGard Flame Detectors are designed to constantly monitor for fire or flame by detecting the characteristic ultraviolet (UV) and/or infrared (IR) radiation from a hydrogen or hydrocarbon-fueled fire. They can operate as a stand alone unit without a control panel, or can be connected to a fire or security panel via an internal alarm or accessory relay.

FlameGard Detectors reduce the possibility of false alarms because the units must receive the proper wavelength, duration and intensity of the fire's radiation before an alarm is activated. The self-test model further enhances the fire detection system because it performs a complete functional test periodically.

Enclosed in heavy-duty, copper-free, explosion-proof aluminum or stainless steel housings, FlameGard Detectors are easily mounted via a simple bracket or the optional Swivel Mount Kit.

## Applications

Optical flame detection is essential where the threat of accidental hydrocarbon fires can have serious consequences, such as:

- Flammable liquid or gas storage or pumping facilities
- Aircraft hangars
- Automotive manufacturing plants
- Refineries and petrochemical plants
- Printing plants
- Electrical power plants
- Resin and paint manufacturers

### 3 Versions

#### **FlameGard UV Flame Detector**

- monitors ultraviolet radiation

#### **FlameGard UV/IR Flame Detector**

- dual-optical sensing monitors ultraviolet radiation and infrared radiation

#### **FlameGard IR<sup>3</sup> Flame Detector**

- patented triple-infrared detection technique monitors infrared radiation while providing enhanced immunity to false alarms

### FlameGard Flame Detectors

- 4 to 20mA and RS-485 outputs
- alarm, accessory and fault relays
- manual or automatic built-in test feature performs a complete functional test of the unit as desired, or routinely during operation
- Stand alone operation or connection to standard four wire fire control panels
- 100,000 hours minimum calculated Mean Time Between Failure (MTBF)
- Easy to install, operate and maintain
- User programmable to various configurations
- High-speed response with false alarm suppression
- Optional MSA Fire Simulator provides flame-free testing



### FlameGard UV and UV/IR Flame Detectors Specification:

#### **Performance**

- Detection Range: 1 sq. ft., gasoline fire, 50 ft. (15 m.); 1 sq. ft., n-heptane fire, 53 ft. (16 m.)  
Response Time: 0.5 sec. typical  
UV Spectral Response: 0.18 to 0.26 microns  
Field of View: 90° horizontal, 90° vertical  
Approvals: FM, CSA

#### **Electrical**

- Operating Voltage: 20-32 volts DC at 50 mA (standby condition), 90 mA (alarm condition)  
Electrical Interface: standard 4-wire connection with cascading capability for Class A or Class B style of circuits  
Relays, Alarm & Accessory: 2 Amps at 30 Volts DC or 250 Volts AC

#### **Enclosure**

- Explosionproof: Class 1 Division 1 and 2, Groups B, C and D; Class II Division 1 and 2, Groups E, F and G  
Water-tight and Dust-tight: Per NEMA 250, Type 6P  
Electrical Entry: Standard 3/4" 14 NPT conduit

#### **Physical**

- Dimensions: 5.19"W x 5.19"H x 4.72"D (132 mm. W x 132 mm. H x 120 mm. D)  
Weight: 7.7 lb. (3.5 Kg.) aluminum version; 13.3 lb. (6.0 Kg.) stainless steel version

#### **Environmental**

- Temperature  
Operating: -40 to +160°F (-40 to +70°C)  
Storage: -65 to +185°F (-55 to +85°C)  
Humidity: 0 to 100% non-condensing  
Salt Fog: 48-hr. exposure to 5% salt solution fog  
Dust: 12-hr. exposure to 0.3 gram/ cubic ft. dust concentration at 1,750 ft.-per-minute velocity  
Vibration: vibration at 1.5g acceleration between 5-30 Hz, and at 4.2g acceleration between 30-500 Hz  
Mechanical Shock: 40g half-sine wave mechanical shock for 11 msec.

## FlameGard IR<sup>3</sup> Detector

The FlameGard IR<sup>3</sup> Flame Detector uses a patented triple-infrared (IR) detection technique that offers two to three times the detection distance (up to 200 ft) of conventional IR or UV/IR detectors. This technique uses the signal from three different sensors, each looking at a different

infrared frequency. All the signals are checked for the proper ratio and relationship to each other before an alarm is given. This enhances immunity to false alarms, though not at the expense of sensitivity to a real fire or flame condition.

### FlameGard IR<sup>3</sup> Detector Specification:

<b>Spectral Response:</b>	three IR channels
<b>Detection Range</b> 1 sq. ft. gasoline fire at:	200 ft. (60 m.)*
	1 sq. ft. diesel oil fire at 200 ft. (60 m.)*
	1 sq. ft. n-heptane fire at 200 ft. (60 m.)*
	1 sq. ft. alcohol fire at 200 ft. (60 m.)*
	1 sq. ft. JP4 fire at 200 ft. (60 m.)*
<b>Response Time:</b>	2 seconds typical, adjustable time delay up to 30 seconds.
<b>Field of View:</b>	90° horizontal, 90° vertical
<b>Approvals:</b>	FM, CSA, Cenelec
<b>Electrical</b>	
Operating Voltage:	18-32 VDC
Power Consumption:	150 mA in standby, 200 mA in alarm
Electrical Interface:	standard 4-wire connection with cascading capability; complete electrical interface protection
Available Outputs:	4-20 mA, RS-485
<b>Electrical Connection:</b>	standard 3/4 in. 14NPT conduit
<b>Dry Contacts Relays</b>	
Alarm:	2 Amps at 30 VDC, 2 Amps at 250 VAC
Fault & Accessory:	5 Amps at 30 VDC, 5 Amps at 250 VAC
<b>Environmental Tests</b>	

MIL-STD-810C  
 High Temp..Method 501.1 Proc.II  
 Low Temp..Method 502.1 Proc. I  
 Humidity.Method 507.1 Proc. IV  
 Salt Fog.Method 509.1 Proc. I  
 Dust.Method 510.1 Proc. I  
 Vibration.Method 514.2 Proc. VIII  
 Mechanical Shock.Method 516 Proc. I

#### Temperature range

Operating:	-40 to 160°F (-40 to 70°C)
Storage:	-65 to 185°F (-55 to 85°C)

#### Explosion-proof enclosure

NFPA:	Class I Div. Groups B+, C and D; Class II Div. Groups E, F and G
	Provides for installation of a swivel mount
	CENELEC EExd II+ H2 T6

#### Flame Proof Per:

\*Highest sensitivity setting  
 +Requires seal at detector

**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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#### Offices and representatives worldwide

For further information:

### Ordering Information

(Aluminum housing except where noted)

Description	P/N
FlameGard UV Flame Detector	805400
FlameGard UV Flame Detector with Self-Test	805401
FlameGard UV/IR Flame Detector	805402
FlameGard UV/IR Flame Detector with Self-Test	805403
FlameGard UV/IR Flame Detector with Self-Test and Stainless Steel Housing	1005893
FlameGard IR3 Flame Detector	805399
FlameGard IR3 Flame Detector and Stainless Steel Housing	10077102

#### Options

Swivel Mount	697323
FlameGard Fire Simulator-UV/IR	805405
FlameGard Fire Simulator IR <sup>3</sup>	SM

