



- Less than 5 msec Response Time
- Highly Immune to False Alarms
- Distinguishes Fire and Vapor Explosion from Other Non-threatening Radiation Sources
- 90°/70° Cone of Vision
- Designed and Built to MIL Spec
- Explosion-Proof – Meets Cenelec Requirements
- MTBF Minimum 100,000 Hours

**3-Year Warranty**

Fire detector **Model 20/20F** with its ultra-fast response is designed to meet two important requirements:

- fast response time (less than 5 milliseconds)
- high reliability (immune to false alarms)

Model 20/20F Flame Detector is the new derivative of our well-known Armored Vehicle Explosion Suppression System (The SAFE System). Over 20,000 of these flame detectors have been protecting armored vehicles and other military applications, with proven performance, durability and reliability, over the past 10 years.

The 20/20F has a continuously self-adjusting, pre-set detection level. Its level of sensitivity is maintained over a wide temperature range, and is independent of background radiation.

The 20/20F Flame Detector is an industrial version of the military detector that is housed in an Ex housing, and it is produced and tested to the highest standards of performance. The detector is sensitive to radiation in two frequency ranges of the electromagnetic spectrum: the infra red (IR) and the ultraviolet (UV). Only simultaneous sensing within these two ranges of radiation will result in a detector output pulse.

The ultra high-speed detector has been tested by the US Air Force Fire Research Laboratory at Tyndall A/F Base and the following test results have been recorded:

Material	Description	Time to Detection
RS41	Incendiary Composition	2-5 msec.
M206	IR Flare Composition	3-4 msec.
M14	Propellant	12-41 msec.

# SharpEye™ 20/20F UV/IR High Speed Flame Detector

## Applications:

The 20/20F High Speed Ultraviolet Optical Flame Detector is designed specifically for high-speed applications involving explosives and propellant fires, invisible hydrogen flames and other hydroxy-flames like silane, ammonia, etc.

## Field Applications Include:

- Automated explosives wet-bench applications
- Fireworks manufacturing facilities
- Munitions manufacturing processing, handling and storage facilities
- Warehouses containing propellants and explosives
- Space shuttle fueling areas
- Ammonia and related industries
- Fumigants and fertilizers industries
- Waste disposal facilities

## General Specifications:

### Spectral Response:

UV: 0.185 – 0.260 microns  
IR: 2.5 – 3 microns

### Response Time:

Max. 5 msec 5" (13cm) gasoline pan fire at a distance of 1 ft. (30cm).  
Typical 5 seconds for a 1-sq.-ft. (30x30) gasoline pan fire at 20 ft. (6m).

**Field of View:** 90° horizontal, 70° vertical

### Temperature Range:

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

**Humidity:** Relative humidity of up to 95% for the operational temperature.

## Environmental Standards:

Designed to MIL-STD-810C.

**High Temp.** – Method 501.1 Proc. II

**Low Temp.** – Method 502.1 Proc. I

**Humidity** – Method 507.1 Proc. IV

**Vibration** – Method 514.2 Proc. VIII

**Dust** – Method 510.1 Proc. I

**Salt Fog** – Method 509.1 Proc. I

**Mechanical Shock** – Method 516.1 Proc. I

**Water and Dust:**

IP66 and 67 per En60529  
NEMA 250 6P

## Electrical Specifications:

### Power Supply:

Operating Voltage: 18-32 VDC

### Power Consumption:

Max. 30 mA in standby  
Max. 80 mA in alarm

### Electrical Connection:

Standard two ¾" 14 NPT cable entries.  
Optional two M25 x 1.5 cable entries.

### Electrical Input Protection:

Complete electrical interface protection against reversed polarity voltage, surges, and spikes according to MIL-STD-1275.

### Electromagnetic Compatibility:

The detector is designed and approved according to the following EMC requirements:

Electrostatic Discharge (ESD)	IEC801-2: 1984
Conducted Emission	EN55022 Class A
Radiated Emission	EN55022 Class A
Radiated Immunity	IEC801-3: 1984
EFT/B	IEC801-4: 1988

## Outputs:

### \* Dry Contact Relays:

Alarm: 5 Amps at 30 VDC & 250 VAC  
Fault: 5 Amps at 30 VDC & 250 VAC

### \* Analog Output:

4.0 – 4.7 VDC

## False Alarm:

The detector does not provide a detection signal under any of the following conditions.

### Immunity to False Alarm Sources

Radiation Source Description	Immunity Distance Limit
Vehicle Headlight – MS 53023-1	IAD
Vehicle Infrared Light – MS 53024-1 or normal 50 watts	IAD
Incandescent clear glass light, 100 watts	IAD
Incandescent frosted light, 100 watts	IAD
Flashlight	IAD
Fluorescent light, 40 watts	IAD
Sunlight	IAD
Red dome light – MS 51073-1	IAD
Radiation heater, 1500 watts	IAD
Radiation heater, 1000 watts with fan	IAD
Lit cigar	IAD
Lit cigarette	IAD

Notes: IAD = Immune at Any Distance.

## Explosion-Proof Enclosure:

\* **Designed to meet FM** – For use in hazardous (classified) locations  
Class I Div. 1, Groups B, C & D  
Class II Div. 1, Groups E, F & G

### \* Cenelec approved

EExd IIB + H<sub>2</sub> T5 (70°)  
Per En 50014 & 50018  
EExde IIB + H<sub>2</sub> T5 (70°)  
Per 50014, 50018, & 50019

### \* ATEX approved

ATEX 1161 and 1165  
Per CE 0518 Ex II 2G

## Physical Specifications:

**Dimensions:** 4.7" x 5.2" x 5.2"  
(120 x 132 x 132 mm)

### Weight:

Aluminum	8.1 lb (3.7 Kg)
St.St. 316	14.3 lb (6.5 Kg)
Base (St.St. only)	3.7 lb (1.7 Kg)

### Mechanical Design:

The standard detector housing is heavy-duty, copper-free (less than 1%) aluminum. The housing is finished in white epoxy enamel and is also available in 316 Stainless Steel\* upon request. The viewing window and back cover are each sealed with special "O" rings to prevent intrusion of dust, salt spray, foam, water, and other fire fighting agents. The circuit boards are conformably coated and shock mounted to minimize damage from mechanical vibration and impact.

\* Carries an additional charge.