

## Features

- UV/IR dual spectrum design
- 20 millisecond response to saturated signal
- 4-20mA output (source)
- Multiple detection levels
- 90°/90° cone of vision
- User-programmable configuration
- Mil-spec electronic components
- FM & CENELEC Approved



## UV/IR Flame Detector SharpEye™ 20/20L & 20/20LB

### Description

The new generation of SharpEye UV/IR optical flame detectors, combines State-of-the-Art technology with existing proven performance equipment. Detection performance is controlled by a micro-processor and easily adapted to all environments, applications and requirements. The result is a unique and superior flame detector which provides excellent detection sensitivity with extreme immunity to false alarms.

Both the 20/20-L & 20/20-LB are self-contained dual spectrum flame detectors designed to detect hydrocarbon based fuel fires and non-organic fires. The detector senses energy in the short wave section of both the ultraviolet and infrared portions of the electromagnetic spectrum. The sensor band pass has been carefully selected to ensure the greatest degree of spectral matching to the radiant energy emissions of fire, and the lowest degree of matching to non-fire stimuli.

The UV channel incorporates a special logic circuit that minimizes false alarms caused by solar radiation and other non-fire UV sources. The UV channel sensitivity is stabilized over the working temperature range.

The IR sensor is sensitive to radiation over the range of 2.5 to 3.0 micron. The IR channel will register a detection signal, at the appropriate level, when the detector's IR sensor is exposed to radiation on the appropriate frequency range.

Only radiation in this range lasting for a preset time and threshold, having an intermittent pattern characteristic to fire will register an alarm signal. The signals from both sensors are analyzed for frequency, intensity and duration. Simultaneous matching of radiant energy in both the UV and IR sensors triggers an alarm signal.

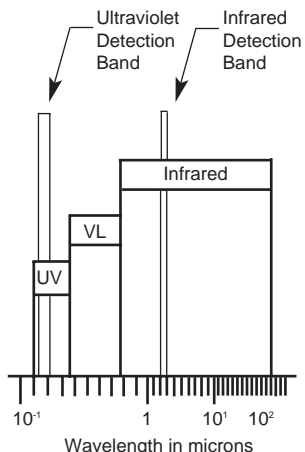
In addition to the basic alarm evaluation circuit, the 20/20-LB incorporates an automatic self-test function that verifies the cleanliness of the lens and proper operation of the radiation sensors and internal electronic circuits. This function is called the BIT or Built-in-Test\*.

Both detectors utilize Mil-spec electronic components and materials. The M.T.B.F (Mean Time Between Failures) is calculated to be 100,000 hours (11+ years). This outstanding performance permits a 3-year manufacturer's warranty on the entire detector, not just the sensors.

\* = *only on LB model*

## General Specifications:

### Spectral response:



### Detection range:

- 1 sq. ft. gasoline at 50 ft. (15m)
  - 1 sq. ft. n-heptane fire at 50 ft. (15m)
  - 1 sq. ft. diesel oil at 25 ft. (7.5m)
  - 1 sq. ft. 95% alcohol fire at 12 ft. (3.5m)
  - 1 sq. ft. JP4 fire at 37 ft. (11m)
  - 1 sq. ft. kerosene fire at 37ft (11m)
- (1 sq. ft. = 0.3x0.3m<sup>2</sup>)

### Response time:

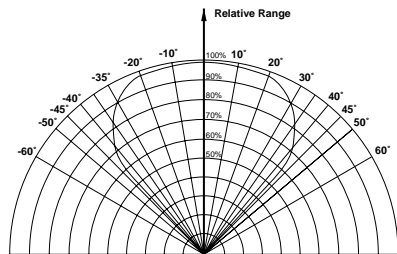
Typical 3 second for 1 sq. ft. gasoline fire  
20msec. Response to a Saturated Signal

### Time delay:

Adjustable time delay up to 30 seconds

### Field of view:

90° Horizontal  
90° Vertical



### Electrical:

Operating voltage 18-32 VDC  
Power consumption; maximum  
100 mA in standby  
125 mA in alarm

### Electrical interface:

Standard 4-wire connection with cascading capability or 0-20mA output (source).

Complete electrical interface protection.

### Electrical connection:

Standard - two 3/4 14NPT conduits  
Option - two M25 x 1.5 conduits

### Three dry contact relays:

#### Alarm:

2 Amps at 30VDC  
0.5 Amps at 250 VAC

#### Fault & accessory:

Fault:	0mA	+0.5mA
Normal:	4mA	±5%
IR Detection:	8mA	±5%
UV Detection:	12mA	±5%
Warning:	16mA	±5%
Alarm:	20mA	±5%

#### Environmental standards:

Designed per - 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 VIII

#### Temperature range:

**Operating:**  
-40°C (-40°F) to 70°C (160°F)

**Operating option:**  
-40°C (-40°F) to 85°C (185°F)

**Storage:**  
-55°C (-65°F) to 85°C (185°F)

**Explosion-proof:**  
CENELEC Approved  
EExD IIB + T5 (70°) T4 (85°)  
Per En 50014 & En 50018

**Water & dust tight:**  
IP66 & 67 per BS • En60529  
equivalent to NEMA 250 6P

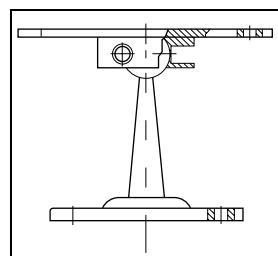


Illustration of Swivel Mount

### Industry standard:

FM Approved  
Class I, Div. 1, Groups B, C, & D  
Class II, Div. 1, Groups E, F, & G

### Physical design:

The standard detector housing is a heavy-duty copper-free aluminum. The housing is finished in white epoxy enamel and is also available in Stainless Steel\*\* upon request. The view window is protected by a performance-engineered honey-comb wire mesh guard. Both the viewing window and back cover are each sealed with special "O" rings to prevent intrusion of dust, salt spray, and foam/water fire fighting agents. The circuit boards are conformably coated and shock-mounted to minimize damage from mechanical vibration and impact. The detector is explosion-proof and is designed per MIL-STD-810-C. Dimensions - base: 13.2cm x 13.2cm (5.2"x5.2") height: 12cm (4.7"). The detector weighs 3.7kg (8.1 lb.) in the standard aluminum enclosure and 6.5kg or (14.3 lb.) in the Stainless Steel enclosure.

### Applications:

The UV/IR optical flame detectors are designed as general-purpose flame detectors. They offer applications in a wide range of industrial and commercial facilities, where the threat of accidental fires involve hydrocarbon fuels such as gasoline, hydraulic fluid, paint, solvents, aviation fuel, propane, and hyperbolic fuels (H<sub>2</sub>/O<sub>2</sub>), such as, hydrazine and ammonia which emit typical hydrogen flames.

### Field applications include:

**Aircraft** - facilities, commercial, military, hangars, nose dock, underwing/overwing  
**Automotive** - manufacturing, paint spray booths, test cell, wet benching  
**Chemical** - storage facilities - commercial & industrial  
**Glue** - manufacturing & curing  
**Munitions Handling** - storage  
**Petrochemical Facilities**  
**Printing** - presses & facilities  
**Paint Manufacturing Facilities**  
**Power Generation** - generators, boilers, pump houses  
**Warehousing** - flammable liquids

\*\*carries an additional charge

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