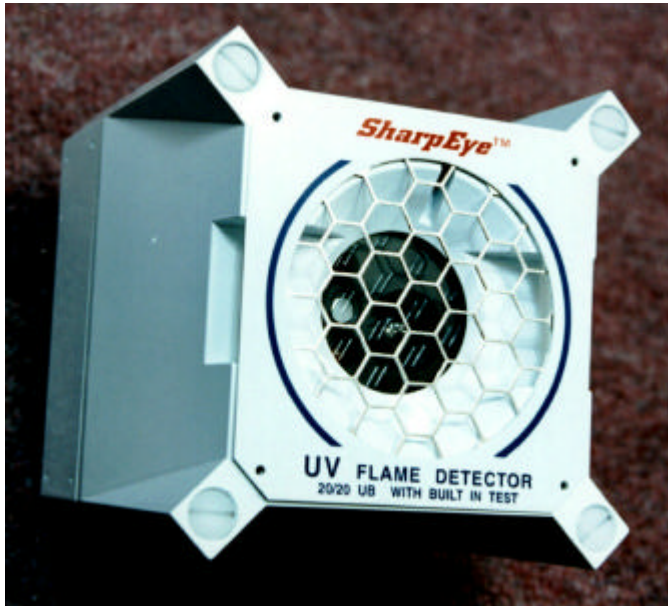




SharpEye™ 20/20U-UB **UV Flame Detector**



UV Spectrum Design
Explosion-Proof
Typical 3-Second Response
4-20mA Output (Source)
Multiple Detection Levels – Pre-Alarm and Alarm
90°/90° Cone of Vision
Standard 4-Wire Connection
Adjustable Time Delay
MTBF Minimum 100,000 Hours
FM, Cenelec and ATEX Approved
Unitized – No Separate Controller Required

3-Year Warranty

The **SharpEye 20/20U and 20/20UB Flame Detectors** offer improved Ultra Violet (UV) optical sensors created from Spectrex's continued commitment to R and D. This state-of-the-art design combines industry performance requirements and up-to-date electronic microprocessor technology. The UV sensor band pass has been carefully selected to ensure the greatest degree of spectral matching to the radiant energy emissions of fire. Flame is detected typically within 3 sec. for a 1 sq. ft. pan gasoline fire. A unique Fast UV Flame Detector Model (20/20FU) detects within several milliseconds a saturated UV signal caused by an explosion or a large fire.

The microprocessor design allows for unique field programmability by easy dip switch and makes these flame detectors easily adaptable to all environments, applications and requirements. Multiple detection levels allow for pre-alarm and alarm response. Both detectors now offer programmable time delay of up to 30 seconds.

The **SharpEye UV Flame Detector** incorporates a special logic circuit that helps prevent false alarms caused by solar radiation. The UV sensor is sensitive to radiation over the range of 0.185-0.260 microns. This combination of sensor and Spectrex's detection logic will sense, analyze and distinguish between a fire event and a false alarm stimulus. It is important to note that this detector must not be exposed to UV

radiation sources such as: electrical arcs, sparks and welding, etc.

In addition to the basic alarm evaluation circuit, the 20/20UB* incorporates the added feature of Built-in-Test (BIT) which enables the flame detector to continuously perform (at predetermined time intervals) automatic full-featured tests of the detector's internal electronic circuits, UV sensors and the detector's window for cleanliness.

Both U and UB models are self-contained, optical flame detectors that function as stand-alone units directly connected to external devices such as alarm systems or automatic fire extinguishing systems. The same detector can form part of a more complex system where a plurality of detectors and other devices are integrated through a dedicated control unit. SharpEye detectors offer LED indications located inside the detector's front window.

SharpEye 20/20U and 20/20UB Detectors only utilize Mil-spec electronic components and materials. The detector's input circuit is protected against reversed polarity voltage transients, surges and spikes as per MIL-STD-1275. The MTBF (Mean Time Between Failures) is calculated to be 100,000 hours (11+ years). This outstanding performance permits a 3-year warranty on the entire detector, not just the sensors.

* BIT only on UB model

Applications:

The 20/20U and UB Ultraviolet Optical Flame Detectors are designed as general purpose flame detectors for high speed applications. These detectors have a wide range of applications in both industrial and commercial applications, where the threat of accidental fire may involve hydrocarbon fuels such as: gasoline, hydraulic fluid, paint, solvents, aviation fuel, acetylene, metal fires, pyrotechnic fires, hydrazine and hypergolic fuel fires.

Field Applications Include:

- Aircraft Hangar Storage Facility
- Automated Wetbench Applications
- Automotive Assembly
- Control Rooms
- Hyperbaric Chambers
- Industrial Manufacturing Facilities
- Munitions Manufacturing
- Power Generation
- Printing
- Warehouses

General Specifications:

Spectral Response:

UV: 0.185 – 0.260 microns.

Detection Range:

- 1 sq. ft. gasoline fire at 50 ft. (15 m)
- 1 sq. ft. diesel oil fire at 37 ft. (11 m)
- 1 sq. ft. alcohol fire at 37 ft. (11 m)
- 1 sq. ft. n-heptane fire at 50 ft. (15 m)

Response Time: Typical 3 seconds for a 1 sq.ft. pan gasoline fire.

Time Delay: Adjustable time delay up to 30 seconds.

Field of View:

90° horizontal, 90° vertical.

Built-In-Test: Manual and Automatic BIT in Model 20/20UB only.

Temperature Range:

Operating:

-40°F (-40°C) to 160°F (70°C)

Operating Option:

-40°F (-40°C) to 185°F (85°C)

Storage:

-65°F (-55°C) to 185°F (85°C)

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

Electrical Specifications:

Power Supply:

Operating Voltage: 18-32 VDC

Power Consumption:

Max. 80 mA in standby
Max. 120 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: 2 Amps at 30 VDC
0.5 Amps at 250 VAC

Accessory: 5 Amps at 30 VDC & 250 VAC

Fault: 5 Amps at 30 VDC & 250 VAC

* 4-20 mA Current Output:

The 4-20mA is source.

Fault:	0 ± 0.5 mA
Normal:	4 mA ± 5%
Warning:	16 mA ± 5%
Alarm:	20 mA ± 5%
Resistance Loop:	100-600 Ohms

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 is protected by a performance-engineered honeycomb wire mesh guard. Both 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.

False Alarm:

The detector will not provide an alarm or a warning signal as a reaction to the radiation source specified below.

Immunity to False Alarm Sources

Radiation Source	Immunity Distance ft (m)
Sunlight	IAD
Indirect or reflected sunlight	IAD
Incandescent frosted glass light, 100 W	IAD
Incandescent clear glass light, rough service, 100 W	IAD
Fluorescent light with white enamel reflector, standard office or shop, 40 W (or two 20 W)	IAD
Bright colored clothing, including red and safety orange	IAD
Flashlight (MX 991/U)	IAD
Radiation heater, 1500 W	IAD
Radiation heater, 1000 W with fan	IAD
Lit cigar or cigarette	5 ft (1.5m)
Match, wood, stick including flare up	13.3 ft (4m)

Notes: IAD = Immune at Any Distance.

UV flame detectors are sensitive to false alarm from UV radiation sources such as transformers, electric motors, welding, spikes, etc. (that may be present in the protected area or far away).

Explosion-Proof Enclosure:

* **FM approved** – 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 + H₂ T5 (70°) T4 (85°)
Per En 50014 & 50018
EExde IIB + H₂ T5 (70°)
Per 50014, 50018, & 50019

* **ATEX approved**

ATEX 1162 and 1160
Per CE 0518 Ex II 2G

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 Tight:

IP66 and 67 per En60529
NEMA 250 6P

DS-F-UV, July 2002

The information in this document is subject to change without notice.