



**SharpEye™**

**CCTV Flame Detector**

**20/20CTIN (NTSC) & 20/20CTIP (PAL)**

- Triple-Spectrum Design
- Highly Immune to False Alarms
- Live Color Video Image
- Sensitivity Selection
- User-Programmable Configuration
- Automatic and Manual Built-In-Test
- Explosion-Proof
- Standard Video Output (Avail. in NTSC or PAL)
- Standard 4-Wire Connection
- M.T.B.F. Minimum 43,000 Hours
- RS-485 MOD BUS Compatible

### **3-Year Warranty**

The Spectrex SharpEye CCTV Flame detector is a self-contained, triple-spectrum, optical flame detector that incorporates a video color camera. The detector's IR sensors and spectral band pass filters have been 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 color video camera enables the user to investigate the monitored area, to identify the fire's source and location, and help select the best response to the situation (activation of fire suppression means). Configuration can be made to issue a live color video picture signal at all times, on request or only when a fire is detected. Therefore, the detector is also useful for standard CCTV purposes.

The patented triple IR circuit design scans for oscillating IR radiation (1 to 10 Hz) in the spectral bands ranging from 4.0 to 5.0 microns. This highly advanced detector uses a programmed algorithm, which checks the ratio and correlation of data received by the three sensors. Only detection of radiation emissions matching the spectral fingerprint of fire will produce an alarm, making the CCTV Flame Detector



**NEW!  
Color CCTV**

highly immune to false alarms.

The SharpEye CCTV Flame Detector is extremely sensitive. It can detect a 1x1 sq. ft. gasoline pan fire at 100 ft. in less than 3 seconds. The sensitivity is user-programmable, offering 4 ranges of detection.

The CCTV Flame Detector incorporates both Automatic and Manual BIT (Built-In-Test).

The video signal output of the CCTV Flame Detector is standard NTSC (PAL version is also available). A 4-20 mA and RS-485 interface as well as the standard alarm, accessory and fault relays make the CCTV Flame Detector the most diverse detector available.

The CCTV Flame Detector utilizes Mil.-Spec. electronic components and materials. The MTBF (Mean Time Between Failures) is calculated to be 43,000 hours (5 years). This outstanding performance permits a 3-year warranty on the entire detector, not just the sensors.

The patented Triple IR design offers twice the detection distance of any conventional IR or UV/IR detector.

**Applications:**

The CCTV Flame Detector has been designed as a general-purpose flame detector and video imager with special emphasis on immunity to false alarms. It has applications in a wide range of industrial and commercial facilities, where the threat of accidental fire involves hydrocarbon fuels such as gasoline, hydraulic fluid, paint, various solvents, aviation fuel, natural gas, propane, acetylene, etc. The unique feature of identifying the fire source and location by the visual mode incorporated in the small and compact flame detector provides more accurate information to the user and enables optimal response for fire control and suppression.

**Field applications include:**

**Automotive**—parts manufacturing, paint spray booths, wet bench manufacturing

**Aircraft**—hangars (commercial & military), maintenance areas including landing gear pits, aircraft under-wing and over-wing protection

**Offshore**—platforms, oil rigs and FPSO

**Onshore**—refineries, pipelines and storage areas

**Ammunition**—production, handling and storage

**Petrochemical facilities**

**Chemical industry**

**Printing**—presses and facilities

**Nuclear power plants**

**Power generation**—pumps, generators, and unmanned stations

**Tank farms** with fixed or floating roofs

**Warehousing**—storing flammable and toxic gases and liquids

**General Specifications:****Spectral Response:**

Three IR band channels + CCTV image.

**Detection Range:**

1 sq. ft. gasoline fire at 200 ft. (60m)\*  
 1 sq. ft. n-heptane fire at 200ft. (60m)\*  
 1 sq. ft. diesel oil fire at 100 ft. (30m)\*  
 1 sq. ft. 95% alcohol fire at 150 ft. (45m)\*  
 4 sq. ft. JP4 fire at 150 ft. (45m)\*

*\*Highest sensitivity setting*

**CCTV Picture:**

The CCTV picture enables the user to identify a 1x1 foot gasoline flame from a distance of 100 ft. (30m) offering a "live video" image of the monitored area.

**Response Time:** Typical 5 seconds.

**Time Delay:** Up to 30 seconds.

**Sensitivity Range:**

Four Sensitivity Ranges set by dip-switch for gasoline pan fire 1x1 ft.<sup>2</sup> (30x30cm<sup>2</sup>).

Setting	Detection Range
1	50 ft. (15m)
2	100 ft. (30m)
3	150 ft. (45m)
4	200 ft. (60m)

**Field of View:**

**Flame:** 90° Horiz. / 90° Vert.

**Video Image:**

CTIP (PAL): 90° Horiz. / 65° Vert.

CTIN (NTSC): 70° Horiz. / 50° Vert.

**Built-In-Test:**

Manual and Automatic BIT

**Temperature Range:**

**Operating:** 14°F (-10°C) to 113°F (45°C)

**Storage:** -22°F (-30°C) to 140°F (60°C)

**Operation without video image:**  
 -40°F (-40°C) to 160°F (70°C)

**Humidity:**

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

**Electrical Specifications:**

**Operating Voltage:** 18-32 VDC

**Power Consumption:**

Max. 150mA in stand-by  
 Max. 200mA in alarm

**Electrical Connection:**

Standard two 3/4 in. 14 NPT cable entries. Optional two M25x1.5 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 Sink and can be supplied as source.

Fault:	0 ± 0.5 mA
BIT Fault:	2 ± 0.5 mA
Normal:	5 ± 0.5 mA
Warning:	10 ± 1 mA
Alarm:	15 ± 1 mA
Resistance Loop:	100-600 Ω

**RS-485 Communication:**

The detector is equipped with an RS-485 communication link that can be used in installations with computerized controllers. The RS-485 is MOD BUS compatible.

**Color Video Image:**

Accessible via a standard NTSC video output connection (PAL version also available) that can be connected to standard video equipment for viewing, recording, scanning video images from a number of detectors.

**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
Electric arc [12mm (15/32 in) gap at 4000 V alternating current, 60 Hz]	IAD
Arc welding [4 mm (5/32 in) rod; 240 A]	See table below
Ambient light extremes (darkness to bright light with snow, water, rain, desert glare, and fog)	IAD
Bright-colored clothing, including red and safety orange	IAD
Movie light, 625 W quartz DWY lamp (Sylvania S.G.-55 or equivalent)	6.5 ft (2m)
Quartz lamp (1000 W)	10 ft (3m)
Mercury vapor lamp	IAD
Match, wood, stick including flare up	10 ft (3m)

**Notes:** IAD = Immune at Any Distance  
All sources are chopped from 0 to 20 Hz.

The detector immunity to welding distance specified below:

SW Setting	Detection Range	Immunity Distance
1	50 ft (15 m)	> 13 ft ( 4 m)
2	100 ft (30 m)	> 20 ft ( 6 m)
3	150 ft (45 m)	> 30 ft ( 9 m)
4	200 ft (60 m)	> 40 ft (12 m)



**Explosion-Proof Enclosure:**

**UL Approved:**

UL No. E209870  
Class I, Groups C and D  
Hazardous Location

**CENELEC Approved:**

EExd IIB + H2 T5 (70°)  
Per En 50014 & 50018  
EExde IIB + H2 T5 (70°)  
Per En 50014, 50018 and 50019

**ATEX Approved:**

ATEX 1163 & 1164  
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 firefighting agents. The circuit boards are conformably coated and shock-mounted to minimize damage from mechanical vibration and impact.

*\*\*Carries an additional charge.*

**Environmental Standards:**

According 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 & Dust:** IP66 & 67 per En60529 NEMA 250 6P