



Protect•IR
 Multispectrum IR Flame Detector
 X3302

DESCRIPTION



The X3302 brings state-of-the-art IR flame detection to the difficult task of detecting invisible hydrogen flames.

Focusing on the water-band IR emissions of hydrogen flame, the X3302 overcomes the limited detection range and false alarm tendencies of other flame detectors by employing field proven multispectrum infrared (MIR) technology. The result is unsurpassed flame sensitivity with discrimination of non-flame sources in situations where traditional flame detectors are unsuitable.

Utilizing the X3301's multi-patented* signal processing algorithms, the X3302 provides a breakthrough in flame detection/surveillance of hazardous materials that produce mostly water vapor, and little or no CO₂ in the combustion process. The detection capability of the X3302 is double that of traditional UV and UVIR detectors. At the same time, it attains complete solar resistance and insensitivity to artificial lights, lightning, and "blackbody" radiation, which still plague other detection technologies.

The X3302 provides superior performance in applications that are at the extremes, and where background IR radiation is a normal condition:

- Hangars with hydrogen or hypergolic fueled vehicles
- Refineries hydrogen storage areas
- Chemical loading racks
- Hydrogen compressor areas
- Hydrogen cooled generators
- Fertilizer plants
- Silane storage
- Gas plants
- Refrigerator buildings

FEATURES AND BENEFITS

Protect•IR TECHNOLOGY FEATURES

- ATEX Compliant.
- Certified performance
- Extended detection range.
- New standard set for cone of vision.
- Maximum false alarm rejection.
- Microprocessor controlled heated optics.
- Calibrated manual/magnetic optical check for each sensor eliminates need for testing with external test lamp.
- RFI and EMC Directive Compliant.
- Event logging with time and date stamp.
- International certifications.
- Integral wiring compartment for ease of installation.
- Total solar resistance.

BENEFITS

- Lowest cost of coverage.
- Ability to detect smaller fires earlier.
- Better detection zoning capability.
- Best combination of flame detection and false alarm rejection.
- Low maintenance costs.
- Reliable fault diagnostics.
- Suitable for heavy industrial applications.
- Explosion/flame proof or increased safety installations (EEx de) in hazardous locations.
- Easily retrofitted to controller based systems.

* Multispectrum technology advancements are covered under the following U.S. Patents: 5,995,008, 5,804,825 and 5,850,182.

SPECIFICATIONS

Operating Voltage 24 vdc. Operating range is 18 to 32 vdc.

Power Consumption 4 watts minimum (without heater), 17 watts at 32 vdc with EOL resistor installed and heater on maximum.

Relays Contacts rated 5 amperes at 30 vdc.

Fire Alarm: — Form C (NO and NC contacts)
— normally de-energized
— latching/non-latching.

Fault: — Form A (NO contacts)
— normally energized
— latching/non-latching.

Auxiliary: — Form C (NO and NC contacts)
— normally energized
— latching/non-latching.

Current Output (Optional) 4–20 mA, with a maximum loop resistance of 500 ohms from 18–19.9 vdc, 600 ohms from 20–32 vdc.

Temperature Range

Operating: –40°F to +167°F (–40°C to +75°C).
Storage: –67°F to +185°F (–55°C to +85°C).

Hazardous location ratings from –55°C to +125°C available on extended temperature model.

Humidity Range 0 to 95% relative humidity, can withstand 100% condensing humidity for short periods of time.

Certification

Class I, Div. 1, Groups B, C & D;
Class II, Div. 1, Groups E, F, & G;
Class I, Div. 2, Groups A, B, C & D (T3C);
Class II, Div. 2, Groups F & G (T3C);
Class III.
NEMA/Type 4X.



Increased Safety Model
0539 Ⓢ II 2 GD
EEx de IIC T5–T6,
DEMKO 01 ATEX 130204
T6 (Tamb = –55°C to +60°C).
T5 (Tamb = –55°C to +75°C).
IP66.

Flameproof Model
0539 Ⓢ II 2 GD
EEx d IIC T4–T6,
DEMKO 01 ATEX 130204
T6 (Tamb = –55°C to +60°C).
T5 (Tamb = –55°C to +75°C).
T4 (Tamb = –55°C to +125°C).
IP66.

Wiring 14 AWG (2.08 mm²) or 16 AWG (1.31 mm²) shielded cable is recommended.

Enclosure Material Copper-free aluminum or 316 stainless steel.

Conduit Entry Size 3/4 inch NPT or 25 mm.

Warranty 5 years, sensor and electronics.

Shipping Weight (Approximate) **Aluminum:** 6 pounds (2.7 kg).
Stainless Steel: 10 pounds (4.5 kg).

Response

Very High Sensitivity

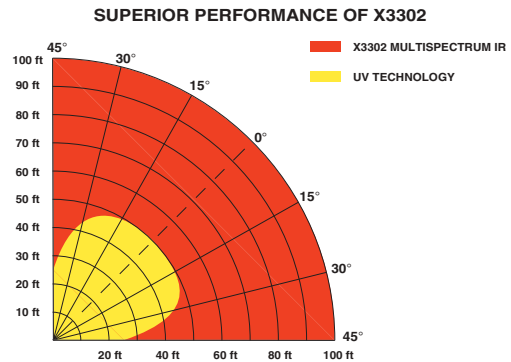
Fuel	Size/ Flow Rate	Distance feet (m)	Average Response Time (seconds)
Hydrogen	24 in. plume/ 100 SLPM*	100 (30.5)	2
Methanol	1 x 1 foot	70 (21.3)	2

*Standard Liters Per Minute (Standard conditions defined as +25°C and 14.696 PSIA).

Field of View

Very High Sensitivity

Fuel	Size/ Flow Rate	Distance feet (m)	Horiz.	Avg. Horiz. Response Time (seconds)	Vert.	Avg. Vert. Response Time (seconds)
Hydrogen	24 in. plume/ 100 SLPM	100 (30.5)	+45°	4	+45°	3
			–45°	3	–30°	3
Methanol	1 x 1 ft.	70 (21.3)	+45°	2	+45°	2
			–45°	3	–30°	2



HORIZONTAL FIELD OF VIEW TO HYDROGEN FIRE (24 INCH PLUME, WITH 100 SLPM FLOW RATE)

DETECTOR	ON AXIS DISTANCE IN FEET	OFF AXIS DISTANCE IN FEET
X3302	100	100
UV TECHNOLOGY	50	25



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Specifications subject to change without notice.