

**AUTOMATIC****Protect•IR®**

## Multispectrum IR Flame Detector with Pulse Output X3301

**DESCRIPTION**

The Protect•IR® Multispectrum IR Flame Detector is the future generation detector for performance and technology. The detector utilizes multi-patented\* signal processing algorithms supported by an embedded 32-bit microprocessor to provide continuous protection in the presence of false alarm sources and environments with infrared radiation present. It is suitable for indoor and

outdoor applications that require the highest level of false alarm rejection and fire detection performance. The detector is available in aluminum or 316 stainless steel for installation in the harshest environments. The Protect•IR has a detection range to n-Heptane of 210 feet, and a solid cone of vision for methane. The detector provides a pulse output for easy retrofit into existing Det-Tronics controller based systems, as well as fire alarm and fault relays.

The X3301 provides superior performance in applications that are at the extremes, and where background infrared radiation is a normal condition:

- Hangars
- Offshore production platforms
- Offshore production ships
- Refineries
- Production facilities
- Loading racks
- Compressor stations
- Turbine enclosures
- Airport water curtains.

\*X3301 technology advancements are covered under the following U.S. Patents: 5,995,008, 5,804,825 and 5,850,182.

**FEATURES AND BENEFITS****Protect•ir TECHNOLOGY FEATURES**

- FM 3260 (2000).
- ATEX Directive compliant.
- Certified performance to multiple fuel types.
- Extended detection range.
- New standard set for cone of vision.
- Maximum false alarm rejection.
- Reliable flame detection with modulated IR background.
- Pulse output for compatibility with controller based systems.
- Microprocessor controlled heated optics.
- Calibrated automatic 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.
- Solar resistance.

**BENEFITS**

- Single detector for multiple fuels.
- Low cost of coverage.
- Ability to detect smaller fires earlier.
- Solid cone of vision to 100 feet for methane.
- 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 (R7404, R7494).

# 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.

**Wiring** 14 AWG (2.08 mm<sup>2</sup>) or 16 AWG (1.31 mm<sup>2</sup>) shielded cable recommended.

**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 flameproof model.

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

**Response Characteristics**

	Fuel	Size	Distance Ft (m)	Average Response Time (seconds)
<b>Very High Sensitivity</b>	n-Heptane	1 x 1 foot	210 (64)*	11
	n-Heptane**	1 x 1 foot	210 (64)*	6
	n-Heptane	1 x 1 foot	100 (30.5)	3
	n-Heptane	6 in. x 6 in.	80 (24.4)	3
	Isopropanol	6 in. x 6 in.	70 (21.3)	4
	Diesel**	1 x 1 foot	150 (45.7)*	14
	Ethanol	1 x 1 foot	210 (64)	11
	Methanol	6 in. x 6 in.	40 (12.2)	3
	Methanol	1 x 1 foot	150 (45.7)*	18
	Methanol**	1 x 1 foot	150 (45.7)*	7
	Methane	30 inch plume	100 (30.5)	3
	JP-5**	1 x 1 foot	150 (45.7)*	2
	JP-5**	2 x 2 feet	210 (64)*	4
JP-5**	2 x 2 feet	100 (30.5)	2	
Office Paper 0.5 lb.	19" x 19" x 8"	100 (30.5)	4	
Corrugated Panel	18" x 36"	100 (30.5)	8	
<b>Medium Sensitivity</b>	n-Heptane	1 x 1 foot	100 (30.5)	12
	n-Heptane	1 x 1 foot	50 (15.2)	2
	Diesel**	1 x 1 foot	70 (21.3)	4
	Ethanol	1 x 1 foot	85 (25.9)	13
	Methanol	1 x 1 foot	70 (21.3)	10
	Methane	30 inch plume	65 (19.8)	3
	Methane	30 inch plume	55 (16.8)	2
	JP-5**	2 x 2 feet	100 (30.5)	3
	Office Paper 0.5 lb.	19" x 19" x 8"	50 (15.2)	6
	Corrugated Panel	18" x 36"	50 (15.2)	2

\* Outdoor test condition.  
 \*\* 10 second pre-burn from ignition.

**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 (Ex) 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 (Ex) 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.

**Enclosure Material** Copper-free aluminum or 316 stainless steel.

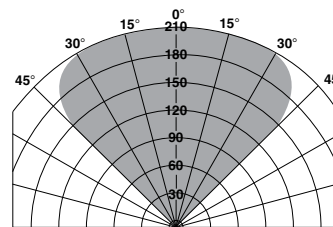
**Conduit Entry Size** 3/4 inch NPT or 25 mm.

**Warranty** 5 years.

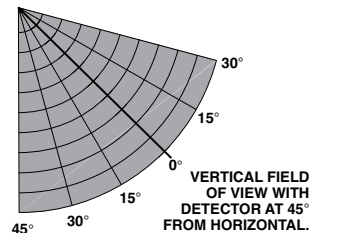
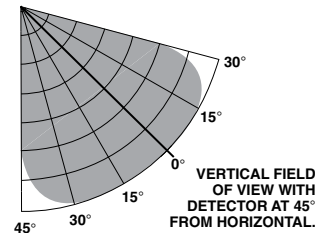
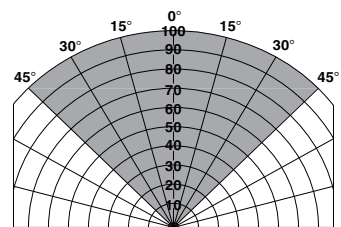
**Shipping Weight** Aluminum: 6 pounds (2.7 kg).  
Stainless Steel: 10 pounds (4.5 kg).

**Field of View** 90° horizontal by 75° vertical, at a minimum of 70% of the on-axis detection distance.

Field of View at Indicated Distance in Feet for n-Heptane



Field of View at Indicated Distance in Feet for Methane



Specifications subject to change without notice.

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