

Shown with Q9033B Stainless Steel Mounting Arm



Shown with Q9033A Aluminum Mounting Arm

# Multispectrum IR Flame Detector Model X3301

## SPECIFICATION DATA



### DESCRIPTION



The X3301 is a multispectrum infrared (MIR) flame detector. It provides unsurpassed detection of fires from light to heavy hydrocarbon fuels combined with the highest degree of false alarm rejection. The detector has Division and Zone explosion-proof ratings and is suitable for use in indoor and outdoor applications.

The X3301 contains three IR sensors with their associated signal processing circuitry. The standard output configuration includes fire alarm, fault and auxiliary relays, with an isolated 0–20 mA output model with optional HART communication.

The detector 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
- Automotive Painting
- LNG/LPG
- Gas Separation Plants
- Warehousing
- Marine

### HIGHLIGHTS

#### X3301 TECHNOLOGY FEATURES

- ▲ Complies with FM 3260
- ▲ EN54 certified
- ▲ Certified SIL 2 capable
- ▲ ATEX Directive compliant
- ▲ Certified performance to multiple fuel types and fire sizes
- ▲ EQP models available
- ▲ Long detection range to carbonaceous fires
- ▲ HART models available
- ▲ FDT/DTM capable
- ▲ Multiple sensitivity levels
- ▲ Maximum false alarm rejection
- ▲ Calibrated automatic optical integrity
- ▲ Reliable flame detection with modulated IR background
- ▲ Microprocessor controlled heated optics
- ▲ Third-party approved options for detector verification include Magnetic Optical Integrity and Manual Optical Integrity tests
- ▲ Tri-color LED indicates detector status and field-of-view (FOV)
- ▲ RFI and EMC Directive compliant
- ▲ Event logging with time and date stamp
- ▲ Integral wiring compartment for ease of installation
- ▲ Operates under adverse weather conditions and in dirty environments

#### BENEFITS

- ▲ Single detector for multiple hydrocarbon fuels
- ▲ Low cost of coverage
- ▲ Ability to detect smaller fires earlier
- ▲ Detection range of up to 125 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 (Ex d) or increased safety installations (Ex e) in hazardous locations

# SPECIFICATIONS

<b>Operating Voltage</b>	24 Vdc nominal (18 Vdc minimum, 30 Vdc maximum). Maximum ripple is 2 volts peak-to-peak
<b>Power Consumption</b>	4 watts minimum (without heater), 17 watts at 30 Vdc with EOL resistor installed and heater on maximum
<b>Relays</b>	Contacts rated 5 amperes at 30 Vdc <u>Fire Alarm:</u> — Form C (NO and NC contacts) — normally de-energized — latching/non-latching <u>Fault:</u> — Form A (NO contacts) — normally energized — latching/non-latching <u>Auxiliary:</u> — Form C (NO and NC contacts) — normally energized/de-energized — latching/non-latching.
<b>Current Output (Optional)</b>	0–20 mA (± 0.3 mA), with a maximum loop resistance of 500 ohms from 18–19.9 Vdc, 600 ohms from 20–30 Vdc
<b>Temperature Range</b>	<u>Operating:</u> –40°F to +167°F (–40°C to +75°C) <u>Storage:</u> –67°F to +185°F (–55°C to +85°C)  Hazardous location ratings from –55°C to +125°C
<b>Humidity Range</b>	0 to 95% relative humidity, can withstand 100% condensing humidity for short periods of time.
<b>Spectral Sensitivity Range</b>	4 - 5 microns
<b>Wiring</b>	16 AWG or 2.5 mm <sup>2</sup> shielded cable is recommended.
<b>Enclosure Material</b>	Copper-free aluminum (painted) or stainless steel (316/CF8M Cast)
<b>Conduit Entry Size</b>	3/4 inch NPT or M25
<b>Warranty</b>	5 years
<b>Response Characteristics</b>	

	Fuel	Size	Distance Ft (m)	Average Response Time (seconds)***
<b>Very High Sensitivity</b>	n-Heptane	1 x 1 foot	265 (80.7)*	22
	n-Heptane	1 x 1 foot	250 (76.2)	17
	n-Heptane	1 x 1 foot	100 (30.5)	3
	n-Heptane	6 in. x 6 in.	100 (24.4)	7
	Isopropanol	6 in. x 6 in.	70 (21.3)	6
	Diesel	1 x 1 foot	175 (53.3)	6**
	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)	7
	Methanol	1 x 1 foot	150 (45.7)	5**
	Methane	32 inch plume	125 (38.1)	5
	Propane	32 inch plume	125 (38.1)	5
	Jet A	1 x 1 foot	150 (45.7)	4**
	JP-5	2 x 2 feet	235 (71.6)	3**
JP-8	1 x 1 foot	150 (45.7)	5**	
Class A	Ø12 in. x 7 in.	150 (45.7)	3**	
<b>Medium Sensitivity</b>	n-Heptane	1 x 1 foot	100 (30.5)	7
	n-Heptane	1 x 1 foot	50 (15.24)	<2
	Diesel	1 x 1 foot	70 (21.3)	4**
	Ethanol	1 x 1 foot	85 (25.9)	7
	Methanol	1 x 1 foot	70 (21.3)	6
	Methane	32 inch plume	70 (21.3)	6
	Methane	32 inch plume	55 (16.8)	4
	Propane	32 inch plume	75 (22.8)	<5
	JP-5	2 x 2 feet	150 (45.7)	3**
	JP-8	1 x 1 foot	150 (45.7)	5**
	Class A	Ø12 in. x 7 in.	50 (15.24)	4**

\* Outdoor test condition.      \*\*\* Add 2 seconds for EQP Model.  
\*\* 10 second pre-burn from ignition.      Ø Diameter

NOTE: Refer to the X3301 instruction manual (95-8704) for additional sensitivity levels.

<b>Shipping Weight (Approximate)</b>	<u>Aluminum:</u> 7 lbs. (3.2 kg)
	<u>Stainless Steel:</u> 13.8 lbs. (6.3 kg)

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

**Certification**



Class I, Div. 1, Groups B, C & D (T4A)  
Class II, Div 1, Groups E, F & G (T4A)  
Class I, Div. 2, Groups A, B, C & D (T3C)  
Class II, Div 2, Group F & G (T3C)  
Class III  
Enclosure NEMA/Type 4X per NEMA 250

For FM and CSA Zone approval information, refer to the X3301 instruction manual (95-8704)



**IEC 61508**  
Certified SIL 2 Capable.  
Applies to specific models –  
Refer to the SIL 2 Certified X3301 Safety manual (95-8720)

**RUSSIA & KAZAKHSTAN**



VNIIFTRI  
CERTIFICATE OF CONFORMITY TO "TP TC 012/2011"  
№ TC RU C-US. BH02.B.00401

2ExdeIICT6/T5 IP66  
T6 (Tamb = –50°C to +60°C)  
T5 (Tamb = –50°C to +75°C)  
Ex tb IIIC T130°C Db  
– OR –  
1ExdIICT6/T5/T4 IP66  
T6 (Tamb = –55°C to +60°C)  
T5 (Tamb = –55°C to +75°C)  
T4 (Tamb = –55°C to +125°C)  
Ex tb IIIC T130°C Db

**RUSSIA**



VNIPO  
CERTIFICATE OF CONFORMITY TO TECHNICAL REGULATIONS,  
GOST R 53325-2012  
C-US.П501.B.02910



Approvals to EN54-10. See instruction manual for details.



**US Coast Guard**  
Coast Guard Approval No. 161.002/49/0.



**DNV**  
Type Approval Certificate Number TAA00000V2  
DNV Certificate Number MED-B-9427



**DEMKO 01 ATEX 130204X**

Increased Safety Model  
II 2 G  
CE 0539 Ex II 2 D

Ex de IIC T6...T5 Gb  
Ex tb IIIC T130°C  
T6 (Tamb = –50°C to +60°C)  
T5 (Tamb = –50°C to +75°C)  
IP66

Flameproof Model

II 2 G  
CE 0539 Ex II 2 D

Ex d IIC T6...T4 Gb  
T6 (Tamb = –55°C to +60°C)  
T5 (Tamb = –55°C to +75°C)  
T4 (Tamb = –55°C to +125°C)  
IP66/IP67



**IECEx Certificate of Conformity**

IECEx ULD 06.0017X  
Ex db eb IIC T6...T5 Gb  
Ex tb IIIC T130°C  
T6 (Tamb = –50°C to +60°C)  
T5 (Tamb = –50°C to +75°C)  
IP66  
– OR –  
Ex db IIC T6...T4 Gb  
T6 (Tamb = –55°C to +60°C)  
T5 (Tamb = –55°C to +75°C)  
T4 (Tamb = –55°C to +125°C)  
IP66/IP67



**UL-BR 12.0093X**

Ex de IIC T6-T5 Gb IP66/IP67  
Ex tb IIIC T130°C  
T6 (Tamb = –50°C to +60°C)  
T5 (Tamb = –50°C to +75°C).  
– OR –  
Ex d IIC T6-T4 Gb IP66/IP67  
Ex tb IIIC T130°C  
T6 (Tamb = –55°C to +60°C)  
T5 (Tamb = –55°C to +75°C)  
T4 (Tamb = –55°C to +125°C).

**CANADA**

**QPS**



ULC/ORD-C386:2015  
ULC S529-09  
QPS Cert # LR1371-1R1



**Corporate Office**  
6901 West 110<sup>th</sup> Street  
Minneapolis, MN 55438 USA  
www.det-tronics.com

Phone: +1 952.941.5665  
Toll-free: +1 800.765.3473  
Fax: 952.829.8750  
det-tronics@carrier.com

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