





# Multispectrum IR Flame Detector Model X3301

**HIGHLIGHTS** 





### **DESCRIPTION**

# Y E A R WARRANTY

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

▲ Complies with FM 3260

X3301 TECHNOLOGY FEATURES

- ▲ 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 d e) in hazardous locations

### **SPECIFICATIONS**

**Operating Voltage** 24 Vdc nominal (18 Vdc minimum, 30 Vdc

maximum). Maximum ripple is 2 volts peak-to-peak

**Power Consumption** 4 watts minimum (without heater), 17 watts at 30 Vdc with EOL resistor installed and heater on maximum

Contacts rated 5 amperes at 30 Vdc Relays

> — Form C (NO and NC contacts) Fire Alarm:

- 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/de-energized

latching/non-latching.

**Current Output** 0-20 mA (± 0.3 mA), with a maximum loop (Optional) resistance of 500 ohms from 18-19.9 Vdc, 600 ohms from 20-30 Vdc

 $-40^{\circ}\text{F to } +167^{\circ}\text{F } (-40^{\circ}\text{C to } +75^{\circ}\text{C}) \\ -67^{\circ}\text{F to } +185^{\circ}\text{F } (-55^{\circ}\text{C to } +85^{\circ}\text{C})$ **Temperature Range** Operating: Storage:

Hazardous location ratings from -55°C to +125°C

**Humidity Range** 0 to 95% relative humidity, can withstand 100%

condensing humidity for short periods of time.

Spectral Sensitivity Range 4 - 5 microns

16 AWG or 2.5 mm<sup>2</sup> shielded cable is recommended. Wiring

**Enclosure Material** Copper-free aluminum (painted) or stainless steel

(316/CF8M Cast)

3/4 inch NPT or M25 **Conduit Entry Size** 

Warranty 5 years

### **Response Characteristics**

	Fuel	Size	Distance Ft (m)	Average Response Time (seconds)***
Medium Sensitivity Very High Sensitivity	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**
	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**
_	Class A	Ø12 in. x 7 in.	50 (15.24)	4**

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

Ø Diamete

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

Shipping Weight Aluminum: 7 lbs. (3.2 kg) 13.8 lbs. (6.3 kg) (Approximate) Stainless Steel:

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. Groupd 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" Nº TC RU C-US. BH02.B.00401

2ExdelICT6/T5 IP66 T6 (Tamb =  $-50^{\circ}$ C to  $+60^{\circ}$ C) T5 (Tamb =  $-50^{\circ}$ C to  $+75^{\circ}$ C) Ex tb IIIC T130°C Db

- OR -

1ExdIICT6/T5/T4 IP66 T6 (Tamb =  $-55^{\circ}$ C to  $+60^{\circ}$ C) T5 (Tamb =  $-55^{\circ}$ C to  $+75^{\circ}$ C) T4 (Tamb =  $-55^{\circ}$ C to  $+125^{\circ}$ C) Ex tb IIIC T130°C Db

## **RUSSIA**



VNIIPO CERTIFICATE OF CONFORMITY TO TECHNICAL REGULATIONS. GOST R 53325-2012 C-US.ПБ01.В.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

(€ 0539 (Ex) || 2 0

Ex d e IIC T6...T5 Gb Ex tb IIIC T130°C T6 (Tamb  $-50^{\circ}$ C to  $+60^{\circ}$ C) T5 (Tamb  $-50^{\circ}$ C to  $+75^{\circ}$ C)

### Flameproof Model

II 2 G II 2 D

Ex d IIC T6...T4 Gb T6 (Tamb  $-55^{\circ}$ C to  $+60^{\circ}$ 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 =  $-50^{\circ}$ C to  $+60^{\circ}$ C) T5 (Tamb =  $-50^{\circ}$ C to  $+75^{\circ}$ C) IP66 - OR -Ex db IIC T6...T4 Gb T6 (Tamb =  $-55^{\circ}$ C to  $+60^{\circ}$ C)

T5 (Tamb =  $-55^{\circ}$ C to  $+75^{\circ}$ C) T4 (Tamb =  $-55^{\circ}$ C to  $+125^{\circ}$ C)

IP66/IP67



### UL-BR 12.0093X

Ex d e IIC T6-T5 Gb IP66/IP67 Ex tb IIIC T130°C

T6 (Tamb =  $-50^{\circ}$ C to  $+60^{\circ}$ C) T5 (Tamb =  $-50^{\circ}$ C to  $+75^{\circ}$ C). - OR -

Ex d IIC T6-T4 Gb IP66/IP67 Ex tb IIIC T130°C

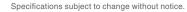
T6 (Tamb =  $-55^{\circ}$ C to  $+60^{\circ}$ C) T5 (Tamb =  $-55^{\circ}$ C to  $+75^{\circ}$ C)

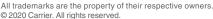
T4 (Tamb =  $-55^{\circ}$ C to  $+125^{\circ}$ C).

**CANADA** QPS



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





Det-Tronics manufacturing system is certified to ISO 9001the world's most recognized quality management standard.





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