DET-TRONICS
United Technologies

AUTOMATIC i



Shown with Q9033A
Aluminum Mounting Arm

Multispectrum IR Flame Detector
X3301

HART COMMUNICATION PROTOCOL

FDT Group Member

DESCRIPTION

5 YEAR 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 to 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
- Reliable flame detection with modulated IR background
- 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
- 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
- Solid cone of vision 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.

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/de-energized
— latching/non-latching.

Current Output (Optional)
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.

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.

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

Wiring
16 AWG or 2.5 mm^2 shielded cable is recommended.

Enclosure Material
Copper-free aluminum (painted) or stainless steel (316/CF8M Cast).

Conduit Entry Size
3/4 inch NPT or M25.

Warranty
5 years.

Response Characteristics

	Fuel	Size	Distance Ft (m)	Average Response Time (seconds)***
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**
Medium Sensitivity	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 Diameter
NOTE: Refer to the X3301 instruction manual (95-8704) for additional sensitivity levels.

Shipping Weight (Approximate)
Aluminum: 7 lbs. (3.2 kg).
Stainless Steel: 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. Groupd F & G (T3C);
Class III
Enclosure NEMA/Type 4X.

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
TP TC 012/2011
TC RU C-US. ГБ06.B.00418
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
VNIIPO
CERTIFICATE OF CONFORMITY TO TECHNICAL REGULATIONS,
GOST R 53325-2012
C-US.ПБ01.B.02910

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

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

DEMKO 01 ATEX 130204X
Increased Safety Model
CE 0539 Ex II 2 G
II 2 D
Ex d e IIC T6...T5 Gb
Ex tb IIIC T130°C
T6 (Tamb –50°C to +60°C)
T5 (Tamb –50°C to +75°C)
IP66/IP67.

Flameproof Model
CE 0539 Ex II 2 G
II 2 D
Ex d IIC T6...T4 Gb
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)
IP66/IP67.

IECEx Certificate of Conformity
IECEx ULD 06.0017X
Ex d e IIC T6...T5 Gb
Ex tb IIIC T130°C
T6 (Tamb = –50°C to +60°C)
T5 (Tamb = –50°C to +75°C)
IP66/IP67.
– OR –
Ex d IIC T6...T4 Gb
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)
IP66/IP67.

UL-BR 12.0093X
Ex d e 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).

DNV
Type Approval Certificate Number A-13995.
DNV Certificate Number MED-B-9427.