DET-TRONICS®

SPECIFICATION DATA

AUTOMATIC i

Shown with Q9033A
Aluminum Mounting Arm

# Multispectrum IR Flame Detector
# Model 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 0–20 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 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.

**Spectral Sensitivity Range** 4 - 5 microns

**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 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**

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.

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

**DEMKO 01 ATEX 130204X**
Increased Safety Model
0539 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

Flameproof Model
0539 II 2 G
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 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).

**CANADA**
**QPS**

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

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