

Flame Detectors – Fire Safety for Oil and Gas Industry

NX-IR4-Q

Quad-IR (IR4) Flame Detectors

Longer & wider detection range, even detecting the hydrogen flames



The new-developed NX-IR4 -Q, Quad-IR Flame Detector is specifically designed for detection of both hydrocarbon and/or hydrogen flames.

Its new features includes an automatic visual integrity by means of "No External Reflector" as well as a heated windows to eliminate condensation and icing.

Due to increased reliability, the NX series is SIL-2 (TÜV) approved to IEC61508.

The NX-IR4 is available with the following output configurations:

- Alarm and fault relays
- 4-20mA stepped output
- RS 485 Modbus
- HART Communications (option)

Features & Benefits

- ◆ **Multi-Spectrum IR (IR4 : Quad-IR) Sensor Array**
 - detecting the invisible hydrogen flames as well as the typical hydrocarbon-based fires at increasingly longer distance
- ◆ **Slim-sized & Light-weight design**
- ◆ **Increased detection coverage**
 - up to 80m or max.120°
- ◆ **Optical Path Monitoring without external reflector**
 - greatly reduces fault and maintenance where salt, heavy rain, sand or snow are constantly present
- ◆ **Approved to Safety Integrity Level 2 (SIL2-TÜV)**
- ◆ **Global Certifications**
 - ATEX / IECEx for hazardous areas
 - FM3260 for performance : (pending)
 - SIL2(TUV) : IEC61508 for reliability

Applications

- Offshore/onshore Oil & Gas installations and pipelines
- Petrochemical & chemical plants
- Storage tank farms
- Power generation facility
- Hydrogen fuel cell industry
- Hydrogen vehicle parking & refueling
- Refinery hydrogenation
- Explosive & munitions
- Waste disposal facility
- Automotive
- Warehouses
- Aircraft hangers

Specification Data of Flame Detectors

GENERAL SPECIFICATIONS

Spectrum Response	Four IR Bands					
Detection Range (at highest sensitivity setting for 1ft ² (0.1m ²) pan fire)	Fuel	ft(m)	Fuel	ft(m)	Fuel	ft(m)
	n-Heptane	265(81)	Ethanol 95%	210(64)	LPG*	150(45)
	Gasoline	250(76)	Methanol	150(46)	Polypropylene Pelletes	115(35)
	Diesel	175(53)	IPA(Isopropyl Alcohol)	210(64)	Ammonia**	60(18)
	JP5	175(53)	Hydrogen*	125(38)	Silane**	7(2)
	Kerosene	150(46)	Methane*	150(45)	Office paper	82(25)
	*30"(0.75m) high, 10"(0.25m) width plume fire / **20"(0.5m) high, 8"(0.2m) width plume fire					
Response Time	Typically 5 seconds *High Speed (NX-IR4-THH/NX-30UVIR-HH): typ. 3 sec , High speed 20msec flash fire					
Adjustable Time Delay	Up to 20 seconds					
Sensitivity Range	4 sensitivity ranges for 1ft ² (0.1m ²) n-heptane pan fire					
Field of View	Horizontally/vertically typical. 90° & max.120°					
Built-in-Test	Automatic self-check to verify the lens cleanliness/electronic circuits & etc					
Temperature Range	Operational/Storage : -40°C to +75°C (-40°F to +167°F)					
Humidity	0 to 95% RH, non-condensing					
Heated Optics (Optional)	To eliminate condensation and icing on the window					

ELECTRICAL SPECIFICATIONS

Operating Voltage	24VDC nominal (18-32VDC)					
Power Consumption	Standby: max. 75mA (100mA with heated window) Alarm: max. 90mA (120mA with heated window)					
Cable Entry	2 x M20 x1.5mm (ISO)					
Wiring	AWG 26-16 (Str 0.13mm ² to 1.5mm ²)					
Electromagnetic Compatibility	Complies with EN 61000-6-4 and EN 50130-4					

OUTPUTS

Relays	Alarm, Fault SPDT volt-free contacts rated 5A at 30VDC					
0-20mA (analog)	Sink/Source Configuration Fault: 0 +1mA Normal: 4mA±10%A Alarm: 20mA±5% BIT Fault: 2mA±10% Warning: 16mA±5%					
HART Protocol <optional>	HART communications on the 0-20mA analog current(FSK) -used for maintenance, configuration changes and asset management					
RS-485 <optional>	RS-485 Modbus compatible communication link that can be used in computer controlled installations					

MECHANICAL SPECIFICATIONS

Enclosure Materials	- Heavy duty copper free aluminum (less than 1%) with bright grey anodizing finish - Stainless Steel 316 with electro polish finish (Optional)					
Mounting(Tilt Mount)	Stainless Steel 316 with electro polish finish					
Dimensions	Detector: 66(D) x 161(L) mm					
Weight	Detector (Aluminum/SS316): 1.0 kg/1.7 kg, Tilt mount (SS316.): 0.3kg					
Water and Dust	IP67 per EN60529					

APPROVALS

Hazardous Area	ATEX and IECEx Exdb IIC T5 Gb (Ta -40°C to +75°C), Ex tb IIIC T100°C Db, IP67					
Performance	FM3260 (pending) , EN-54-10 (pending)					
Reliability	SIL2 (TÜV) - IEC61508					

ACCESSORIES

Flame Simulator	FS-TL-10Ex (up to 25m for multi-IR and 15m for UV/IR)					
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