FlameSpec IR3

Triple IR Flame Detector

The FlameSpec IR3 will detect fires and explosions extremely fast allowing preventative action to be initiated more rapidly and minimize the consequences!

Introduction

The FlameSpec-IR3 flame detector provides ultra-fast response, high performance and reliable detection of all types of hydrocarbon fires (visible and non-visible). The detector addresses slow growing fires as well as fast eruption of fire using improved triple IR (IR3) technology. It operates in all weather and light conditions with highest immunity to false alarms.

- Detection within 40 milliseconds of fireballs or explosions
- Standard fire in only 1.3 seconds from 50 ft. (15m) and 3.7 seconds from 230 ft. (70m).

Add to that, the integral event recording, on top of the proven superior capabilities of Triple IR (IR3) flame detection and you have a very powerful safety tool to protect your personnel, plant and process.

Key Benefits

- High immunity to false alarm.
- Extreme sensitivity – up to 260 ft. (80m) for a 1 ft^2 ($0.1m^2$) n-heptane pan fire.
- Ultra-fast detection mode – detection within 40 milliseconds for fireballs or explosions.
- 1.3 seconds detection time – for 1 ft^2 ($0.1m^2$) n-heptane pan fire at up to 50 ft. (15m) distance.
- Data/Event logger – alarms, faults and other relevant events are logged to non-volatile memory.
- Built-in-Test (BIT) – Automatic and manual self-test of window cleanliness and the overall operation of the detector.
- HART 7 models available - Easy configuration and diagnostic capability.
- Window heater to avoid condensation and icing.
- Stainless steel tilt mount with horizontal and vertical adjustment. Optional mounting adapters available for retrofit installations.
- SIL 2 compliant models available - suitable for use as part of a SIL 2 compliant safety system.

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FIRE & GAS DETECTION TECHNOLOGIES INC.

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FlameSpec-IR3

Triple IR Flame Detector

Model: FLS-IR3

FIRE DETECTION	**Detection time and distance**	40ms for fast fire burst or explosion 2.6s for 1 ft^2 ($0.1m^2$) pan fire at 0–100 ft. (0–30m) 3.7s for 1 ft^2 ($0.1m^2$) pan fire at 100–230 ft. (30–70m)
	Field of view (IR detection)	90° Horizontal, 75° Vertical
	Time Delay	Configurable 0-30 seconds
	Built in Test	Automatic and Manual
ELECTRICAL SPECIFICATIONS	**Operating Voltage**	24 VDC nominal (18-32 VDC)
	Current Consumption	Standby: 120mA 180mA all systems in operation (including window heater)
	Electrical Entries	2x cable and conduit entries 3/4" 14NPT or M25x1.5
	Wiring	12-20AWG ($2.5–0.35mm^2$)
OUTPUTS	**Relays**	SPDT volt-free contacts rated 2A at 30 VDC Alarm – normally open and normally closed; Fault – normally closed
	0-20mA (stepped) current output	3 wire and 4 wire (isolated) configurations (sink and source) HART - units available upon request
	Indication	Tri-color LED (Green, Yellow, Red)
	Modbus	RTU compatible on RS-485
MECHANICAL SPECIFICATIONS	**Size**	5.51 x 3.54 x 3.54" (140x90x90mm)
	Weight	Detector (Stainless Steel 316): 6.6 lbs. (3.0 kg) Tilt mount (Stainless Steel 316): 3.3 lbs. (1.5 kg)
ENVIRONMENTAL SPECIFICATIONS	**Temperature Range**	Operating: -67°F to +185°F (-55°C to +85°C) Storage: -67°F to +185°F (-55°C to +85°C)
	Humidity	Up to 99% (RH), non-condensing
	Ingress Protection	IP66 & 68 (2m, 24hr); NEMA 4X & 6P
APPROVALS	**ATEX**	ATEX: II 2 G D Ex db IIC T5 Gb or Ex db eb IIC T5 Gb and Ex tb IIIC T95°C Db -55°C<Ta<75°C Ex db IIC T4 Gb or Ex db eb IIC T4 Gb and Ex tb IIIC T105°C Db -55°C<Ta<85°C
	IECEx and INMETRO	Ex db IIC T5 Gb -50°C≤Ta≤75°C Ex db IIC T4 Gb -50°C≤Ta≤85°C
	FMus & FMc	Class I, Div. 1, Groups B, C & D; T4 Class I, Zone 1, AEx/Ex db IIC T4 Gb T4 -50°C≤Ta≤85°C T5 -50°C≤Ta≤75°C
	EAC CU TR	1Ex d IIC T5 Gb or 1Ex de IIC T5 Gb and Ex tb IIIC T95°C Db -55°C≤Ta≤75°C 1Ex d IIC T4 Gb or 1Ex de IIC T4 Gb and Ex tb IIIC T105°C Db -55°C≤Ta≤85°C
	Performance	ANSI FM 3260 EN 54-10
	Functional safety	Complies to SIL2, per IEC 61508 - units available upon request
	MED	DNVGL Certificate Number MED-B-00006AM - units available upon request
ACCESSORIES	**Stainless steel weather cover**	
	Flame simulator, model FLS-FSIM-IR3-KIT	
	2" & 3" pole mount adapter	
	Mounting adapters for retrofit installations	
WARRANTY	**5 years**	

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Immunity to False Alarm

False Alarm Source	Modulated		Unmodulated	
	Distance ft. (m)	Response	Distance ft. (m)	Response
Sunlight, Direct, Reflected		No Alarm		No Alarm
Incandescent frosted glass light, 300W	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Fluorescent, 70W (3x23.3W)	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Electric arc	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Arc welding	20.0 (6.0)	No Alarm	20.0 (6.0)	No Alarm
Radiation heater, 1850W	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Quartz lamp (1000W) shielded	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Quartz lamp (500W) non-shielded	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Mercury vapor lamp 160Wx3	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Car Exhausts	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Projector led	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Solenoid bell	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Soldering iron	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Electric Drill	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm

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Response Characteristics

Fuel	Size	Sensitivity	Distance ft. (m)	Avrg Resp. Time (s)
N-Heptane	1 x 1 ft.	Extreme	262 (80)	7.1
N-Heptane	1 x 1 ft.	Extreme	230 (70)	3.7
N-Heptane	1 x 1 ft.	High	197 (60)	2.7
N-Heptane	1 x 1 ft.	Medium	98 (30)	2.6
N-Heptane	1 x 1 ft.	Low	49 (15)	1.3
Gasoline	2 x 2 ft.	Extreme	328 (100)	5.3
Gasoline	1 x 1 ft.	Extreme	230 (70)	2.8
Gasoline	1 x 1 ft.	Medium	98 (30)	1.5
Methane	32-in Plume	Extreme	148 (45)	2.6
Methane	32-in Plume	Medium	82 (25)	0.6
LPG	32-in Plume	Extreme	180 (55)	3.7
LPG	32-in Plume	High	148 (45)	2.6
LPG	32-in Plume	Medium	98 (30)	1.4
LPG	32-in Plume	Low	49 (15)	1.5
Diesel	1 x 1 ft.	Extreme	164 (50)	2.6
Diesel	1 x 1 ft.	Medium	79 (24)	3.2
JP5	2 x 2 ft.	Extreme	295 (90)	9.4
JP5	1 x 1 ft.	Extreme	164 (50)	4.5
JP5	1 x 1 ft.	High	148 (45)	4.4
JP5	1 x 1 ft.	Medium	79 (24)	1.8
JP5	1 x 1 ft.	Low	39 (12)	10.1
Kerosene	1 x 1 ft.	Extreme	164 (50)	3.6
Kerosene	1 x 1 ft.	Medium	79 (24)	2.7
Methanol	1 x 1 ft.	Extreme	131 (40)	4.6
Methanol	1 x 1 ft.	High	125 (38)	4.2
Methanol	1 x 1 ft.	Medium	75 (23)	1.5
Methanol	1 x 1 ft.	Low	39 (12)	1.3
Ethanol	1 x 1 ft.	Extreme	125 (38)	4.7
Isopropanol	1 x 1 ft.	Extreme	180 (55)	3.6
Isopropanol	1 x 1 ft.	Medium	75 (23)	1.8
Polypropylene	1 x 1 ft.	Extreme	115 (35)	7.8
Polypropylene	1 x 1 ft.	Medium	66 (20)	2.1
Paper	1 x 1 ft.	Extreme	79 (24)	1.1
Paper	1 x 1 ft.	Medium	39 (12)	1.1

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