FlameSpec™ IR3-StretcH2

Triple IR Flame Detector for Energy Transition

The FlameSpec™ StretcH2 flame detector provides unrivaled response, high performance and reliable detection for a number of fires found in Energy Transition applications, such as hydrogen and hydrocarbon fires.

The detector addresses slow growing fires as well as fast eruptions of fire using improved IR3 technology. The detector operates in all weathers and light conditions.

These features, along with the built-in event logger, provide additional means to study the cause and development of fire events.

Key Benefits

- High immunity to false alarm, including arc welding.

- Detects, hydrogen flames and hydrocarbon fires using three infrared wavelengths, with clear separation.

- Each sensor has the same field of view to further improve false alarm immunity.

- Ultra-fast detection mode detection within 40 milliseconds for fireballs or explosions.

- 5 selectable sensitivity levels.

- Universal outputs, 3 and 4 wire, 4-20 mA sink / source, Fire, Auxiliary and Fault Relays. RS485 port using Modbus RTU.

- Event logger: Alarms & faults are logged to non-volatile memory.

- Built-in-Test (BIT) – Automatic and manual self-test of window cleanliness and overall detector operation.

- Additional dirty optics warning for preventive maintenance needs.

- HART® 7 for configuration & maintenance.

- Heated window to avoid condensation and icing.

- Stainless steel tilt mount with horizontal and vertical adjustment.

- Functional safety - SIL 2 capable.

The FlameSpec-IR3-StretcH2 detector offers the fastest detection of fires and explosions, providing extra time that can be used to reduce damage to plant & property and initiate the evacuation of people.

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Response Characteristics

Fuel	Size	Sensitivity	Distance ft. (m)	Avrg Resp.Time (s)
n-Heptane	1 x 1 ft.	Extreme	180 (55)	3.3
n-Heptane	1 x 1 ft.	High	131 (40)	3.4
n-Heptane	1 x 1 ft.	Medium	82 (25)	2
n-Heptane	1 x 1 ft.	Low	49 (15)	1.7
n-Heptane	1 x 1 ft.	Very Low	25 (7.5)	1.2
Gasoline	1 x 1 ft.	Extreme	131 (40)	7.3
Gasoline	1 x 1 ft	Medium	98 (30)	2.2
Methane	32-in Plume	Extreme	66 (20)	4.4
Methane	32-in Plume	Medium	52 (16)	2.2
Methane	32-in Plume	Low	26 (8)	2.9
Methane	32-in Plume	Very Low	13 (4)	4.2
LPG	32-in Plume	Extreme	102 (31)	3.7
LPG	32-in Plume	High	75 (23)	2.7
LPG	32-in Plume	Medium	39 (12)	3
LPG	32-in Plume	Low	20 (6)	0.9
LPG	32-in Plume	Very Low	10 (3)	1
Diesel	1 x 1 ft	Extreme	164 (50)	5.6
Diesel	1 x 1 ft	Medium	49 (15)	4.2
Jet fuel	1 x 1 ft	Extreme	147 (45)	5.1
Jet fuel	1 x 1 ft	High	131 (40)	4
Jet fuel	1 x 1 ft	Medium	49 (15)	3.3
Jet fuel	1 x 1 ft	Low	25 (7.5)	1
Jet fuel	1 x 1 ft	Very Low	13 (4)	2.7
H_2	32-in Plume	Extreme	98 (30)	4
H_2	32-in Plume	Medium	66 (20)	4
H_2	32-in Plume	Low	33 (10)	3.9
H_2	32-in Plume	Very Low	16 (5)	3.6
Kerosene	1 x 1 ft.	Extreme	164 (50)	4.8
Kerosene	1 x 1 ft.	High	131 (40)	4.4
Kerosene	1 x 1 ft.	Medium	49 (15)	3.8
Kerosene	1 x 1 ft.	Low	25 (7.5)	2.9
Kerosene	1 x 1 ft.	Very Low	13 (4)	1.4
Methanol	1 x 1 ft.	Medium	36 (11)	3.2
Ethanol	1 x 1 ft.	Medium	46 (14)	2.7
Isopropanol (IPA)	1 x 1 ft.	Medium	66 (20)	2.6
Ethylene glycol	1 x 1 ft.	Medium	26 (8)	4.7
Syngas (30%CH_4:70%H_2)	32-in Plume	Extreme	82 (25)	3.9

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Immunity to False Alarm

False Alarm Source	Modulated		Unmodulated	
	Distance ft. (m)	Response	Distance ft. (m)	Response
Sunlight, (direct or reflected)	No response		No response	
Sunlight, (direct or reflected) with water droplets on sensors	No response		No response	
Incandescent frosted glass light, 300W	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Fluorescent, 70W (3x23.3W)	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Arc welding	11.5 (3)	No Alarm	11.5 (3)	No Alarm
Radiation heater, 1850W	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Quartz lamp (500W) shielded	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Quartz lamp (500W) non-shielded	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Mercury vapor lamp 160Wx3	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Car exhausts	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Projector led	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Solenoid bell	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Soldering iron	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Electric drill	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm

Part Numbers

FLS-IR3-H2-AS13	Triple IR (IR3) Flame Detector for hydrocarbon and hydrogen fires. SS316 Stainless Steel Housing with 2 x M25 Entries & one certified plug.
FLS-IR3-H2-AS23	Triple IR (IR3) Flame Detector for hydrocarbon and hydrogen fires. SS316 Stainless Steel Housing with 2 x 3/4 NPT Entries & one certified plug.

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FIRE DETECTION	Detection Time and Distance	40ms for fast fire burst or explosion 3.7s for 32" (0.8m) hydrogen fire at 100 ft. (30m)
	Sensitivity Range	5 sensitivity ranges: Extreme, High, Medium, Low, Very Low
	Field of View (IR Detection)	90° Horizontal, 80° 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" NPT(F) or M25x1.5
	Wiring	14-17 AWG (2.5−1.0 mm²)
OUTPUTS	Relays	SPST volt-free contacts rated 2A at 30 VDC 3 relays: Alarm & Auxiliary − normally open; Fault − normally closed
	0-20mA (Stepped) Current Output	3 wire and 4 wire (isolated) configurations (sink and source) HART® rev 7.0
	Indication	Tri-color LED (Green, Yellow, Red)
	Modbus	RTU compatible on RS-485
MECHANICAL SPECIFICATIONS	Size	5.83 x 4.65 x 4.65" (148 x 118 x 118 mm)
	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 T6 Gb or Ex db eb IIC T6 Gb and Ex tb IIIC T80°C Db -55°C<Ta<60°C 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, INMETRO & PESO	Ex db IIC T6 Gb -50°C≤Ta≤60°C 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; T6 -50°C≤Ta≤60°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, as standard, VdS certified option available upon request.
	Functional Safety	Certified SIL2 capable, per IEC 61508:2010 High & Low demand
ACCESSORIES	Tilt mount, model FLS-TMO-S01	High vibration mounting bracket, model FLS-VMO-S01
	Weather cover, model FLS-WCO-S01	Flame simulator, model FLS-FSIM-IR3-H2-KIT
	2" & 3" pole mount adapter, model FLS-PMA-S23	Airshield, model FLS-ASD-S01
	Duct mount with window, model FLS-DMW-S01	Duct mount for airshield, model FLS-DMX-S01
WARRANTY	5 years	

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