

FlameSpec IR3-H2

Triple IR Hydrogen Flame Detector



The FlameSpec IR3-H2 detector offers extremely fast detection of hydrogen fires and explosions, providing the extra, extremely valuable time that, in many cases, will make all the difference

Introduction

The FlameSpec-IR3-H2 flame detector provides ultra-fast response, high performance and reliable detection of hydrogen fires. The detector addresses slow growing fires as well as fast eruptions of fire using improved IR3 technology. The detector operates in all weather 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.
- Ultra-fast detection mode detection within 40 milliseconds for Hydrogen fireballs or explosions.
- Hydrogen flame detection.
- High sensitivity – up to 100 ft. (30m).
- Data/Event logger – alarms, faults and other relevant events are logged to non-volatile memory.
- Built-in-Test (BIT) – Automatic and manual internal 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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FlameSpec-IR3-H2

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Model: FLS-IR3-H2

FIRE DETECTION	Detection time and distance	40ms for fast burst of explosion 1.5s for 32" (0.8m) hydrogen fire at 0-66 ft. (0-20m) 4s for 32" (0.8m) hydrogen fire at 66-100 ft. (20-30m)
	Field of view (IR detection)	90° Horizontal, 75° Vertical
	Alarm Delay	0-30 seconds (Adjustable)
	Built in Test	Automatic and Manual
ELECTRICAL SPECIFICATIONS	Operating Voltage	24 VDC nominal (18-32 VDC)
	Current Consumption	Standby: 120mA Maximum: 180mA all systems in operation (including window heater)
	Conduit 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 +167°F (-55°C to +75°C) Option: -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
	Functional safety	Complies to SIL2, per IEC 61508 - units available upon request
	ACCESSORIES	Stainless steel weather cover Flame simulator, model FLS-FSIM-IR3-H2-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	3.0 (1.0)	No Alarm	3.0 (1.0)	No Alarm
Arc welding	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Radiation heater, 2000W	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Halogen lamp (1000W)	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Halogen 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
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

Response Characteristics

Fuel	Size	Sensitivity	Distance ft. (m)	Avrg Resp. Time (s)
H ₂	32-in Plume	Extreme	98 (30)	1.3
H ₂	32-in Plume	Medium	66 (20)	1.5
H ₂	32-in Plume	Low	33 (10)	1.4
Methanol	1 x 1 ft.	Extreme	59 (18)	4.2
Methanol	1 x 1 ft.	Medium	30 (9)	2.9