

# FlameSpec IR3-H2-HD

Triple IR Hydrogen Flame Detector



The FlameSpec IR3-H2-HD will detect fires and explosions extremely reliable and fast allowing preventative action to be initiated rapidly and minimize the consequences!

## Introduction

The FlameSpec-IR3-H2-HD flame detector provides ultra-fast response, high performance and reliable detection of hydrogen (H<sub>2</sub>) 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.

In addition, the detector provides high-definition (HD) video output of the monitored area with near IR filtered imaging of fire events and personnel at distances up to 100 ft. (30m). This allows the rescue team to be aware of the exact situation before entering the hazardous area. The detector automatically records fire events (1 minute pre- and up to 3 minutes post-alarm initiation). 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).
- HD video output with Automatic HD video recording of fire events.
- Data/Event logger – alarms, faults and other relevant events are logged to non-volatile memory.
- Ethernet communication – in addition to the standard methods, such as 4-20mA and Modbus.
- 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-HD

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Model: FLS-IR3-H2-HD

FIRE DETECTION	<b>Detection time and distance</b>	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)
	<b>Field of view (IR detection)</b>	90° Horizontal, 75° Vertical
	<b>Alarm Delay</b>	0-30 seconds (Adjustable)
	<b>Built in Test</b>	Automatic and Manual
VIDEO FUNCTIONALITY	<b>HD Video</b>	Near IR filtered imaging of fire and people at 100 ft. (30m) distance
	<b>Video recording of alarm events</b>	1-minute pre-event and 3 minutes post-event
	<b>System integration protocol</b>	ONVIF (Open Network Video Interface Forum) Profile S
ELECTRICAL SPECIFICATIONS	<b>Operating Voltage</b>	24 VDC nominal (18-32 VDC)
	<b>Current Consumption</b>	Standby: 180mA Maximum: 250mA all systems in operation (including window heater)
	<b>Conduit Entries</b>	2x cable and conduit entries 3/4" 14NPT or M25x1.5
	<b>Wiring</b>	12-20AWG (2.5-0.35mm <sup>2</sup> )
OUTPUTS	<b>Relays</b>	SPST volt-free contacts rated 2A at 30 VDC Alarm – normally open; Fault – normally closed
	<b>0-20mA (stepped) current output</b>	3 wire and 4 wire configurations (sink and source) HART - units available upon request
	<b>Indication</b>	Tri-color LED (Green, Yellow, Red)
	<b>Modbus</b>	RTU compatible on RS-485
	<b>Digital (for video)</b>	IP network IEEE 802.3 10Base-t
	<b>Composite video</b>	NTSC or PAL
MECHANICAL SPECIFICATIONS	<b>Size</b>	7.87 x 5.12 x 5.12" (200x130x130mm)
	<b>Weight</b>	Detector (Stainless Steel 316): 9.8 lbs. (4.4 kg) Tilt mount (Stainless Steel 316): 5.4 lbs. (2.4 kg)
ENVIRONMENTAL SPECIFICATIONS	<b>Temperature Range</b>	Operating: -67°F to +185°F (-55°C to +85°C) Storage: -67°F to +185°F (-55°C to +85°C)
	<b>Humidity</b>	Up to 99% (RH), non-condensing
	<b>Ingress Protection</b>	IP66 & 68; NEMA 4X & 6P
APPROVALS	<b>ATEX</b>	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
	<b>FMus &amp; FMc</b>	Class I, Div. 1, Groups B, C & D; T4 T4 -50°C≤Ta≤85°C T5 -50°C≤Ta≤75°C
	<b>EAC CU TR</b>	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
	<b>Performance</b>	ANSI FM 3260
	<b>Functional safety</b>	Complies to SIL2, per IEC 61508 - units available upon request
	ACCESSORIES	<b>Stainless steel weather cover</b>
<b>Flame simulator, model FLS-FSIM-IR3-H2-KIT</b>		
<b>2" &amp; 3" pole mount adapters</b>		
<b>Mounting adapters for retrofit installations</b>		
WARRANTY	<b>5 years</b>	

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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	2.0 (0.6)	No Alarm	2.0 (0.6)	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
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 <sub>2</sub>	32-in Plume	Extreme	98 (30)	1.5
H <sub>2</sub>	32-in Plume	High	98 (30)	1.5
H <sub>2</sub>	32-in Plume	Medium	66 (20)	1.5
H <sub>2</sub>	32-in Plume	Low	33 (10)	1.5
Methanol	1 x 1 ft.	Extreme	59 (18)	4.3
Methanol	1 x 1 ft.	Medium	30 (9)	3.0