

# FlameSpec UV-IR-HD

UV/IR Flame Detector



The FlameSpec UV-IR-HD detects fires and explosions extremely quickly, thereby allowing mitigation steps to be initiated more rapidly to limit event escalation.

## Introduction

The FlameSpec-UV-IR-HD flame detector provides ultra-fast response, high performance and reliable detection of a large variety of fires including hydrocarbon fires (visible and non-visible), hydrogen and methane/hydrogen mixed fires.

The detector addresses slow growing fires as well as fast eruptions of fire using improved UV-IR technology operating in all weather and light conditions.

The detector provides a high-definition (HD) color video output of the monitored area with clear imaging of fire events and personnel at distances up to 100 ft. (30m) allowing responders to know the exact situation before entering the hazardous area.

Video and data of events are quickly stored to non-volatile memory. The recordings start one minute before detection and continue for up to four minutes, the event video can be used for post incident investigation.

## Key Benefits

- High immunity to False Alarm.
- Hydrocarbon and non-hydrocarbon flame detection.
- High sensitivity – up to 100 ft. (30m) for a 1 ft<sup>2</sup> (0.1m<sup>2</sup>) n-heptane fire.
- Ultra-fast detection within 5 milliseconds for fireballs or explosions.
- High speed (<0.5s) model [X5] available for compliance with NFPA 33.
- HD or composite video output with automatic recording of fire events.
- Data/Event logger: Alarms, faults & videos as well as other relevant events are logged to non-volatile memory.
- Universal outputs, 3 and 4 wire, 4-20 mA sink / source, Fire, Auxiliary and Fault Relays. RS485 port using Modbus RTU.
- 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 - option available.
- Window heater to avoid condensation and icing.
- Stainless steel tilt mount with horizontal and vertical adjustment.
- SIL 2 capable - option available.
- Detect high UV (sparks and arcs) or IR levels via auxiliary relay and 4-20mA.

# FlameSpec-UV-IR-HD

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Model: FLS-UV-IR-HD

## Response Characteristics

Fuel	Size	Sensitivity	Distance ft. (m)	Avrg Resp. Time (s)
N-Heptane	1 x 1 ft.	Extreme	98 (30)	3.0
N-Heptane	1 x 1 ft.	Medium	49 (15)	1.5
Gasoline	2 x 2 ft.	Extreme	164 (50)	8.1
Gasoline	1 x 1 ft.	Extreme	98 (30)	2.9
Methane	32-in Plume	Extreme	59 (18)	4.8
LPG	32-in Plume	Extreme	75 (23)	3.2
LPG	32-in Plume	Medium	33 (10)	0.6
Diesel	1 x 1 ft.	Extreme	75 (23)	3.0
JP5	1 x 1 ft.	Extreme	75 (23)	3.1
JP5	1 x 1 ft.	Medium	33 (10)	2.1
Kerosene	1 x 1 ft.	Extreme	75 (23)	2.5
Methanol	1 x 1 ft.	Extreme	59 (18)	3.8
Methanol	1 x 1 ft.	Medium	26 (8)	2.2
Ethanol	1 x 1 ft.	Extreme	72 (22)	3.8
Isopropanol	1 x 1 ft.	Extreme	75 (23)	3.0
Polypropylene	1 x 1 ft.	Extreme	49 (15)	3.1
Paper	1 x 1 ft.	Extreme	33 (10)	3.9
Hydrogen	32-in Plume	Extreme	66 (20)	3.6
Syngas (30%CH <sub>4</sub> :70%H <sub>2</sub> )	32-in Plume	Extreme	59 (18)	3.2
Syngas (30%CH <sub>4</sub> :70%H <sub>2</sub> )	32-in Plume	Medium	33 (10)	1.2

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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 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Fluorescent, 70W (3x23.3W)	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Electric arc	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Arc welding	7.0 (2.0)	No Alarm	7.0 (2.0)	No Alarm
Radiation heater, 2000W	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Quartz lamp (500W) non-shielded	10.0 (3.0)	No Alarm	3.0 (1.0)	No Alarm
Mercury vapor lamp 160Wx3	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
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

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FIRE DETECTION	<b>Detection time and distance</b>	5ms for fast burst of explosion 1.5s for 1 ft <sup>2</sup> (0.1m <sup>2</sup> ) n-heptane pan fire at 0–50 ft. (0–15m) <3s for 1 ft <sup>2</sup> (0.1m <sup>2</sup> ) n-heptane pan fire at 50–100 ft. (15–30m)
	<b>Sensitivity Range</b>	4 sensitivity ranges: Extreme, High, Medium, Low
	<b>Field of view (IR detection)</b>	90° Horizontal, 80° Vertical
	<b>Time Delay</b>	0–30 seconds
	<b>Built in Test</b>	Automatic and Manual
VIDEO FUNCTIONALITY	<b>HD Video</b>	Color HD, as standard. Near IR filtered option (X2 available on request)
	<b>Video recording of alarm event</b>	1-minute pre-event and up to 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: 300mA (including window heater)
	<b>Conduit Entries</b>	2x cable and conduit entries 3/4" NPT(F) 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 3 relays: Alarm & Auxiliary – normally open; Fault – normally closed
	<b>0-20mA (stepped) current output</b>	3 wire and 4 wire configurations (sink and source) HART® rev 7.0 (option available)
	<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 100Base-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 (2m, 24hr); NEMA 4X & 6P
APPROVALS	<b>ATEX</b>	ATEX: II2GD 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>IECEx &amp; PESO</b>	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 -50°C≤Ta≤85°C or T5 -50°C≤Ta≤75°C Class II/III, Div. 1, Groups E, F, G; T4 -50°C≤Ta≤85°C or T5 -50°C≤Ta≤75°C Class I, Zone 1, AEx/Ex db IIC T4 Gb or Class I, Zone 1, AEx/Ex db eb IIC T4 Gb -50°C≤Ta≤85°C Class I, Zone 1, AEx/Ex db IIC T5 Gb or Class I, Zone 1, AEx/Ex db eb IIC T5 Gb -50°C≤Ta≤75°C Zone 21, AEx/Ex tb IIIC T95°C Db -50°C≤Ta≤75°C or Zone 21, AEx/Ex tb IIIC T105°C Db -50°C≤Ta≤85°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 EN 54-10
	<b>Functional safety</b>	Complies to SIL2, per IEC 61508 (option available)
ACCESSORIES	<b>Stainless steel weather cover, model FLS-WCO-S02</b>	
	<b>Flame simulator, model FLS-FSIM-UV-IR-KIT</b>	
	<b>2" &amp; 3" pole mount adapters, model FLS-PMA-S23</b>	
	<b>Airshield for areas with high airborne contamination, model FLS-ASD-S02</b> <b>Paint shield / cover</b>	
WARRANTY	<b>5 Years</b>	