

# FlameSpec UV-IR

UV-IR Flame Detector



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

## Introduction

The FlameSpec-UV-IR flame detector provides ultra-fast response, high performance and reliable detection of a large variety of fires including hydrocarbon fires (visible and non-visible), as well as hydrogen and methane/hydrogen mixed fires. The detector addresses slow growing fires as well as fast eruptions of fire using improved UV-IR technology. The detector operates in all weather and light conditions.

## Key Benefits

- High immunity to false alarm
- High sensitivity – up to 100 ft. (30m) for a 1 ft<sup>2</sup> (0.1m<sup>2</sup>) n-heptane pan fire.
- Hydrocarbon and non-hydrocarbon flame detection.
- Ultra-fast detection mode detection within 5 milliseconds for fireballs or explosions
- High speed (<0.5s) model [X5] available for compliance with NFPA 33.
- Four 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 and other relevant events are logged to non-volatile memory
- Built-in-Test (BIT) – Automatic and manual self-test of window cleanliness and overall detector operation.
- 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 compliant - option available.
- Detect high UV (sparks and arcs) or IR levels via auxiliary relay and 4-20mA.

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## UV-IR Flame Detector

Model: FLS-UV-IR

### Response Characteristics

Fuel	Size	Sensitivity	Distance ft. (m)	Avrg Resp.Time (s)
N-Heptane	1 x 1 ft.	Extreme	98 (30)	2.0
N-Heptane	1 x 1 ft.	High	75 (23)	1.7
N-Heptane	1 x 1 ft.	Medium	49 (15)	1.0
N-Heptane	1 x 1 ft.	Low	16 (5)	1.0
Gasoline	2 x 2 ft.	Extreme	197 (60)	3.3
Gasoline	1 x 1 ft.	Extreme	98 (30)	1.8
Gasoline	1 x 1 ft.	Medium	49 (15)	1.3
Methane	32-in Plume	Extreme	59 (18)	1.4
Methane	32-in Plume	Medium	30 (9)	0.9
LPG	32-in Plume	Extreme	75 (23)	1.2
LPG	32-in Plume	High	56 (17)	1.6
LPG	32-in Plume	Medium	33 (10)	1.2
LPG	32-in Plume	Low	13 (4)	1.2
Diesel	1 x 1 ft.	Extreme	75 (23)	2.6
Diesel	1 x 1 ft.	Medium	36 (11)	1.2
JP5	1 x 1 ft.	Extreme	75 (23)	3.3
JP5	1 x 1 ft.	High	56 (17)	1.8
JP5	1 x 1 ft.	Medium	36 (11)	1.2
JP5	1 x 1 ft.	Low	16 (5)	1.2
Kerosene	1 x 1 ft.	Extreme	75 (23)	1.8
Kerosene	1 x 1 ft.	Medium	36 (11)	0.9
Methanol	1 x 1 ft.	Extreme	52 (16)	0.8
Methanol	1 x 1 ft.	High	43 (13)	3.2
Methanol	1 x 1 ft.	Medium	30 (9)	1.3
Methanol	1 x 1 ft.	Low	10 (3)	2.7
Ethanol	1 x 1 ft.	Extreme	62 (19)	4.1
Ethanol	1 x 1 ft.	Medium	31 (9.5)	2.9
Isopropanol	1 x 1 ft.	Extreme	75 (23)	2.2
Isopropanol	1 x 1 ft.	Medium	36 (11)	0.8
Polypropylene	1 x 1 ft.	Extreme	49 (15)	1.4
Polypropylene	1 x 1 ft.	Medium	23 (7)	0.9
Hydrogen	32-in Plume	Extreme	66 (20)	6.4
Hydrogen	32-in Plume	Medium	33 (10)	1.0
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	10.0 (3.0)	No Alarm	10.0 (3.0)	No Alarm
Radiation heater, 2000W	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Halogen lamp (500W) non-shielded	7.0 (2.0)	No Alarm	7.0 (2.0)	No Alarm
Halogen lamp (1000W)	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
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 1s for 1 ft <sup>2</sup> (0.1m <sup>2</sup> ) n-heptane pan fire at 0–50 ft. (0–15m) < 2s 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
ELECTRICAL SPECIFICATIONS	<b>Operating Voltage</b>	24 VDC nominal (18-32 VDC)
	<b>Current Consumption</b>	Standby: 120mA 180mA all systems in operation (including window heater)
	<b>Electrical 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 (isolated) 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
MECHANICAL SPECIFICATIONS	<b>Size</b>	5.51 x 3.54 x 3.54" (140x90x90mm)
	<b>Weight</b>	Detector (Stainless Steel 316): 6.6 lbs. (3.0 kg) Tilt mount (Stainless Steel 316): 3.3 lbs. (1.5 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: 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>IECEX, INMETRO &amp; PESO</b>	Ex db IIC T5 Gb -50°C≤Ta≤75°C Ex db IIC T4 Gb -50°C≤Ta≤85°C
	<b>FMus &amp; FMc</b>	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
	<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-S01</b>	
	<b>Flame simulator, model FLS-FSIM-UV-IR-KIT</b>	
	<b>2" &amp; 3" pole mount adapter, model FLS-PMA-S23</b>	
	<b>Airshield for areas with high airborne contamination, model FLS-ASD-S01</b>	
WARRANTY	<b>5 years</b>	