

# FlameSpec UV-IR

UV-IR Flame Detector



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

## 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 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
- Hydrogen and Hydrocarbons flame detection.
- Ultra-fast detection mode detection within 5 milliseconds for fireballs or explosions
- High sensitivity – up to 100 ft. (30m) for a 1 ft<sup>2</sup> (0.1m<sup>2</sup>) n-heptane pan fire
- 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.
- Window heater to avoid condensation and icing
- Tilt mounting bracket can be connected either above or below the detector
- UV and IR warning levels – 0-20mA – Current output warning when elevated UV or IR radiation is detected.

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Model: FLS-UV-IR

## 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	10.0 (3.0)	No Alarm	10.0 (3.0)	No Alarm
Radiation heater, 2000W	2.0 (0.6)	No Alarm	2.0 (0.6)	No Alarm
Halogen lamp (500W) non-shielded	7.0 (2.0)	No Alarm	7.0 (2.0)	No Alarm
Halogen lamp (1000W)	2.0 (0.6)	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

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### 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
Paper	1 x 1 ft.	Extreme	33 (10)	1.2
Paper	1 x 1 ft.	Medium	23 (7)	1.0
H <sub>2</sub>	32-in Plume	Extreme	66 (20)	6.4
H <sub>2</sub>	32-in Plume	Medium	33 (10)	1.0

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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>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 conduit entries 3/4" 14NPT or M25x1.5
	<b>Wiring</b>	12-20AWG (2.5-0.35mm <sup>2</sup> )
OUTPUTS	<b>Relays</b>	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 (isolated) configurations (sink and source)
	<b>Indication</b>	Tri-color LED
	<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 +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)
	<b>Humidity</b>	Up to 99% (RH), non-condensing
	<b>Ingress Protection</b>	IP66 & 68 (2m, 24hr); NEMA 4X & 6P
APPROVALS*	<b>Explosion proof</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 IECEX Ex db IIC T5 Gb -50°C≤Ta≤75°C Ex db IIC T4 Gb -50°C≤Ta≤85°C FM & 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
	<b>Performance</b>	ANSI FM 3260 EN 54-10
	<b>Functional safety</b> (pending)	SIL2, per IEC 61508
	<b>DNV GL</b>	Designed to meet standard 2.4 for open deck locations Temperature class D; Vibration Class A, B and C
	<b>EAC TR CU</b>	
	<b>Weather shield</b>	
	<b>Adapters</b> for connecting different mounts	
WARRANTY	<b>5 years</b>	

\*Approvals in process. All products designed and tested to relevant approval standards