FlameSpec™ IR3

Triple IR Flame Detector

The FlameSpec™ IR3 flame detector provides ultra-fast response, high performance and reliable detection of all types of hydrocarbon fires (visible and non-visible).

The detector addresses slow growing fires as well as fast eruption of fire using improved triple IR (IR3) technology.

The detector operates in all weather and light conditions with highest immunity to false alarms.



Key Benefits

- Highest levels of false alarm immunity.
- Detects up to 262 ft (80 m) for a 1 ft^2 (0.1 m^2) n-heptane pan fire.
- Hydrocarbon flame detection. Three wavelengths, in the infrared spectral range of 4.0 to 5.0 µm, with clear separation.
- Each sensor has the same field of view to improve false alarm immunity.
- Optimized hangar mode option for aircraft hangars, helipads & truck loading racks available, see FLS-IR3-CO2L data sheet.
- Ultra-fast detection mode – detection within 40 milliseconds for fireballs or explosions.
- Fast flame detection, <1.5 s for standard fire up to 30 m. Option for <0.5 s, in compliance with NFPA 33, available.
- 5 selectable 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 and faults 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 provides horizontal and vertical adjustment.
- Marine approvals - MED & DNV Type approval available on request.
- Functional safety - SIL 2 capable - option available.

The FlameSpec™ IR3 will detect fires and explosions extremely quickly, thereby allowing mitigation steps to be initiated more rapidly to limit event escalation.

FGD® FIRE & GAS DETECTION TECHNOLOGIES, INC.

Fire and Gas Detection Technologies, Inc. | 2570 E. Cerritos Ave, Anaheim, CA 92806 USA
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Model: FLS-IR3

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Response Characteristics

Fuel	Size	Sensitivity	Distance ft (m)	Avrg Resp.Time (s)
n-Heptane	1 x 1 ft	Extreme	262 (80)	7.1
n-Heptane	1 x 1 ft	Extreme	230 (70)	3.7
n-Heptane	1 x 1 ft	High	197 (60)	2.7
n-Heptane	1 x 1 ft	Medium	98 (30)	2.6
n-Heptane	1 x 1 ft	Low	49 (15)	1.3
n-Heptane	1 x 1 ft	Very Low	24.5 (7.5)	1.0
Diesel	1 x 1 ft	Extreme	164 (50)	2.6
Diesel	1 x 1 ft	Medium	79 (24)	3.2
Ethanol	1 x 1 ft	Extreme	125 (38)	4.7
Ethylene Glycol	1 x 1 ft	Extreme	115 (35)	6.6
Ethylene Glycol	1 x 1 ft	Medium	56 (17)	1.5
Gasoline	2 x 2 ft	Extreme	328 (100)	5.3
Gasoline	1 x 1 ft	Extreme	230 (70)	2.8
Gasoline	1 x 1 ft	Medium	98 (30)	1.5
JP5	2 x 2 ft	Extreme	295 (90)	9.4
JP5	1 x 1 ft	Extreme	164 (50)	4.5
JP5	1 x 1 ft	High	148 (45)	4.4
JP5	1 x 1 ft	Medium	79 (24)	1.8
Kerosene	1 x 1 ft	Extreme	164 (50)	3.6
Kerosene	1 x 1 ft	Medium	79 (24)	2.7
Isopropanol (IPA)	1 x 1 ft	Extreme	180 (55)	3.6
Isopropanol (IPA)	1 x 1 ft	Medium	75 (23)	1.8
Lithium Ion Battery	5 cells 3.7 V 1.5 AH	Extreme	62 (19)	3.4
Lithium Ion Battery	5 cells 3.7 V 1.5 AH	Medium	43 (13)	2.6
LPG	32-in Plume	Extreme	180 (55)	3.7
LPG	32-in Plume	Medium	98 (30)	1.4
LPG	32-in Plume	Low	49 (15)	1.5
Methane	32-in Plume	Extreme	148 (45)	2.6
Methane	32-in Plume	Medium	82 (25)	0.6
Methanol	1 x 1 ft	Extreme	131 (40)	4.6
Methanol	1 x 1 ft	High	125 (38)	4.2
Methanol	1 x 1 ft	Medium	75 (23)	1.5
Polypropylene	1 x 1 ft	Extreme	115 (35)	7.8
Polypropylene	1 x 1 ft	Medium	66 (20)	2.1
Syngas (30%CH_4 70%H_2)	32-in Plume	Medium	49 (15)	1.3
Syngas (30%CH_4 70%H_2)	32-in Plume	Extreme	98 (30)	3.3
Wood	1 x 1 ft	Medium	74 (22.5)	2.1
Wood	1 x 1 ft	Extreme	137 (42)	4.2

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Immunity to False Alarm

False Alarm Source	Modulated		Unmodulated	
	Distance ft (m)	Response	Distance ft (m)	Response
Sunlight, (direct or reflected)	No response		No response	
Sunlight, (direct or reflected) with water droplets on sensors	No response		No response	
Incandescent frosted glass light, 300 W	2.0 (0.5)	No alarm	2.0 (0.5)	No alarm
Fluorescent, 70 W (3 x 23.3 W)	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	12.0 (3.5)	No alarm	12.0 (3.5)	No alarm
Radiation heater, 1850 W	2.0 (0.5)	No alarm	2.0 (0.5)	No alarm
Radiation heater, 1850 W with water droplets on the sensors	2.0 (0.5)	No alarm	2.0 (0.5)	No alarm
Quartz lamp (1000 W) shielded	2.0 (0.5)	No alarm	2.0 (0.5)	No alarm
Quartz lamp (500W) non-shielded	2.0 (0.5)	No alarm	2.0 (0.5)	No alarm
Mercury vapor lamp 160 W x 3	2.0 (0.5)	No alarm	2.0 (0.5)	No alarm
Car 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	**Detection Time and Distance**	40 ms for fast fire burst or explosion 2.6 s for 1 ft² (0.1m²) n-heptane pan fire at 0 – 100 ft (0 – 30m) 7.1 s for 1 ft² (0.1m²) n-heptane pan fire at 100 – 262 ft (30 – 80m)
	Sensitivity Range	5 sensitivity ranges: Extreme, High, Medium, Low, Very Low
	Field of View (IR Detection)	90° Horizontal, 80° Vertical
	Time Delay	Configurable 0-30 seconds
	Built in Test	Automatic and Manual
ELECTRICAL SPECIFICATIONS	**Operating Voltage**	24 VDC nominal (18 - 32 VDC)
	Current Consumption	Standby: 120 mA 180 mA all systems in operation (including window heater)
	Electrical Entries	2x cable and conduit entries 3/4" NPT(F) or M25 x 1.5
	Wiring	14 - 17 AWG (2.5 – 1.0 mm²)
OUTPUTS	**Relays**	SPST volt-free contacts rated 2A at 30 VDC 3 relays: Alarm & Auxiliary – normally open; Fault – normally closed
	0-20 mA (Stepped) Current Output	3 wire and 4 wire (isolated) configurations (sink and source) HART® rev 7.0 (option available)
	Indication	Tri-color LED (Green, Yellow, Red)
	Modbus	RTU compatible on RS-485
MECHANICAL SPECIFICATIONS	**Size**	5.83 x 4.65 x 4.65" (148 x 118 x 118 mm)
	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 +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 T6 Gb or Ex db eb IIC T6 Gb and Ex tb IIIC T80°C Db -55°C<Ta<60°C 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
	ECAS, IECEx, INMETRO & PESO	Ex db IIC T6 Gb -50°C≤Ta≤60°C 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; T6 -50°C≤Ta≤60°C
	Performance	ANSI FM 3260 EN 54-10, as standard, VdS certified option available upon request - ASx1 model
	Functional Safety	Certified SIL2 capable, per IEC 61508:2010 High & Low demand (option available)
	Marine	DNV Type Approval & MED-B-00006AM - units available upon request

ACCESSORIES	**Tilt mount, model FLS-TMO-S01**	**High vibration mounting bracket, model FLS-VMO-S01**
	Weather cover, model FLS-WCO-S01	**Flame simulator, model FLS-FSIM-IR3-KIT**
	2" & 3" pole mount adapter, model FLS-PMA-S23	**Airshield, model FLS-ASD-S01**
	Duct mount with window, model FLS-DMW-S01	**Duct mount for airshield, model FLS-DMX-S01**
WARRANTY	**5 years**	

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