FlameSpec™ IR3-HD

Triple IR Flame Detector with HD Camera

The FlameSpec™ IR3-HD flame detector provides exceptional detection performance of all types of hydrocarbon fires (visible and non-visible).

The detector responds to slow growing fires as well as fast fire eruptions using improved triple IR (IR3) technology operating in all weather and light conditions with highest immunity to false alarms.

The detector also 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 (30 m) allowing responders to know the exact situation before entering the hazardous area. Video and data of events are stored saved quickly to non-volatile memory for post incident investigation. The recordings start one minute before detection and continue for up to four minutes.



Key Benefits

- Highest immunity to false alarms.
- 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 further improve false alarm immunity.
- HD, or composite, video output with automatic HD video recording of events.
- Ultra-fast 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.
- Optimized option for aircraft hangars, helipads & truck loading racks available, see FLS-IR3-HD-CO2L data sheet.
- Detects up to 262 ft. (80 m) for a 1 ft^2 (0.1 m^2) n-heptane fire.
- 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, faults & videos are logged to non-volatile memory.
- Built-in-Test (BIT) – Automatic and manual self-test of window cleanliness and overall detector operation.
- HART® 7, for configuration and maintenance - option available.
- Dirty optics warning for preventive maintenance needs.
- Window heater to avoid condensation and icing.
- Stainless steel tilt mount with horizontal and vertical adjustment.
- Marine approval - MED & DNV Type approval available on request.
- Functional safety - SIL 2 capable - option available.

The FlameSpec™ IR3-HD will detect hydrocarbon 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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Response Characteristics

Fuel	Size	Sensitivity	Distance ft (m)	Avrg Resp.Time (s)
n-Heptane	1 x 1 ft	Extreme	262 (80)	9.0
n-Heptane	1 x 1 ft	Extreme	230 (70)	4.1
n-Heptane	1 x 1 ft	High	197 (60)	3.2
n-Heptane	1 x 1 ft	Medium	98 (30)	2.2
n-Heptane	1 x 1 ft	Low	49 (15)	1.2
n-Heptane	1 x 1 ft	Very Low	24.5 (7.5)	1.6
Diesel	1 x 1 ft	Extreme	164 (50)	2.9
Diesel	1 x 1 ft	Medium	79 (24)	3.9
Ethanol	1 x 1 ft	Extreme	125 (38)	4.2
Ethanol	1 x 1 ft	Medium	75 (23)	1.6
Ethylene Glycol	1 x 1 ft	Extreme	115 (35)	4.0
Ethylene Glycol	1 x 1 ft	Medium	56 (17)	3.4
Gasoline	2 x 2 ft	Extreme	328 (100)	5.3
Gasoline	1 x 1 ft	Extreme	230 (70)	3.6
Gasoline	1 x 1 ft	Medium	98 (30)	1.5
Isopropanol (IPA)	1 x 1 ft	Extreme	180 (55)	3.5
Isopropanol (IPA)	1 x 1 ft	Medium	75 (23)	1.0
JP5	2 x 2 ft	Extreme	295 (90)	9.2
JP5	1 x 1 ft	Extreme	164 (50)	4.1
JP5	1 x 1 ft	High	148 (45)	4.9
JP5	1 x 1 ft	Medium	79 (24)	1.9
Kerosene	1 x 1 ft	Extreme	164 (50)	4.1
Kerosene	1 x 1 ft	Medium	79 (24)	2.5
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)	2.4
LPG	32-in Plume	Extreme	180 (55)	4.8
LPG	32-in Plume	Medium	98 (30)	1.4
LPG	32-in Plume	Low	49 (15)	1.4
Methane	32-in Plume	Extreme	148 (45)	3.3
Methane	32-in Plume	Medium	82 (25)	0.8
Methanol	1 x 1 ft	Extreme	131 (40)	4.1
Methanol	1 x 1 ft	High	125 (38)	5.5
Methanol	1 x 1 ft	Medium	75 (23)	1.2
Polypropylene	1 x 1 ft	Extreme	115 (35)	10.1
Polypropylene	1 x 1 ft	Medium	66 (20)	2.6
Syngas (30%CH_4 70%H_2)	32-in Plume	Medium	49 (15)	0.8
Syngas (30%CH_4 70%H_2)	32-in Plume	Extreme	98 (30)	3.3
Wood	1 x 1 ft	Extreme	148 (45)	3.8
Wood	1 x 1 ft	Medium	74 (22.5)	2.1

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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 (500 W) 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 2.2 s for 1 ft² (0.1 m²) n-heptane pan fire at 0 – 100 ft (0 – 30 m) 9 s for 1 ft² (0.1 m²) n-heptane pan fire at 100 – 262 ft (30 – 80 m)
	Sensitivity Range	5 sensitivity ranges: Extreme, High, Medium, Low, Very Low
	Field of View (IR detection)	90° Horizontal, 80° Vertical
	Time Delay	0 - 30 seconds
	Built in Test	Automatic and Manual
VIDEO FUNCTIONALITY	**HD Video**	Color HD, as standard. Near IR filtered option (X2 available on request)
	Video Recoding of Alarm Events	1 minute pre-event and up to 3 minutes post-event
	System Integration Protocol	ONVIF (Open Network Video Interface Forum) Profile S
ELECTRICAL SPECIFICATIONS	**Operating Voltage**	24 VDC nominal (18-32 VDC)
	Current Consumption	Standby: 180 mA Maximum: 300 mA (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
	0-20mA (stepped) Current Output	3 wire and 4 wire configurations (sink and source) HART® rev 7.0 (option available)
	Indication	Tri-color LED (Green, Yellow, Red)
	Modbus	RTU compatible on RS-485
	Digital (for Video)	IP network IEEE 802.3 100Base-T
	Composite Video	NTSC or PAL
MECHANICAL SPECIFICATIONS	**Size**	7.87 x 5.12 x 5.12" (200 x 130 x 130 mm)
	Weight	Detector (Stainless Steel 316): 9.8 lbs. (4.4 kg) Tilt mount (Stainless Steel 316): 5.4 lbs. (2.4 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; 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 T85°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 or Ex db eb IIC T6 Gb and Ex tb IIIC T85°C Db -50°C<Ta<60°C Ex db IIC T5 Gb or Ex db eb IIC T5 Gb and Ex tb IIIC T95°C Db -50°C<Ta<75°C Ex db IIC T4 Gb or Ex db eb IIC T4 Gb and Ex tb IIIC T105°C Db -50°C<Ta<85°C
	FMus & FMc	Class I, Div. 1, Groups B, C & D; T4 -50°C≤Ta≤85°C or T5 -50° C≤Ta≤75°C or T6 -50°C≤Ta≤60°C Class II/III, Div. 1, Groups E, F, G; T4 -50°C≤Ta≤85°C or T5 -50°C≤Ta≤75°C or T6 -50°C≤Ta≤60°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 Class I, Zone 1, AEx/Ex db IIC T5 Gb or Class I, Zone 1, AEx/Ex db eb IIC T6 Gb -50°C≤Ta≤60°C Zone 21, AEx/Ex tb IIIC T105°C Db -50°C≤Ta≤85°C or Zone 21, AEx/Ex tb IIIC T95°C Db -50°C≤Ta≤75°C or Zone 21, AEx/Ex tb IIIC T80°C Db -50°C≤Ta≤60°C
	Performance	ANSI FM 3260 EN 54-10
	Functional Safety	Certified SIL2 capable, per IEC 61508:2010 High & Low demand (option available)
	Marine	DNV Type approval & MED-B-00006AM - available upon request
ACCESSORIES	**Tilt mount, model FLS-TMO-S02**	**Paint shield / cover**
	Weather cover, model FLS-WCO-S02	**Flame simulator, model FLS-FSIM-IR3-KIT**
	2" & 3" pole mount adapter, model FLS-PMA-S23	**Airshield, model FLS-ASD-S02**
	Duct mount with window, model FLS-DMW-S02	**Duct mount for airshield, model FLS-DMX-S02**
WARRANTY	**5 years**	

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