IR3-HD Triple IR Flame Detector

The IR3-HD flame detector provides exceptional detection performance for 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 the 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. (30m), allowing responders to know the exact situation before entering the hazardous area. Video and data of events are stored and 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 Alarm

- Hydrocarbon flame detection: 3 wavelengths, infrared spectral range (4.0 to 5.0µm), with clear separation

- Detects 262 ft. (80 m) for a 1 ft^2 (0.1 m^2) n-heptane fire

- Ultra-fast detection mode – detection within 40 milliseconds for fireballs or explosions

- Fast flame detection: <1.5s for standard fire up to 30m. Option for <0.5s in compliance with NFPA 33

- HD or composite video output with automatic HD video recording of alarms, faults & videos to non-volatile memory

- Built-in-Test (BIT) – Automatic and manual self-test of window cleanliness and overall detector operation

- Window heater to avoid condensation/icing.

- Stainless steel tilt mount with horizontal and vertical adjustment

- Optimized option for aircraft hangers, helipads & truck loading racks available. See FIK-IR3-HD-CO2L data sheet

- Universal outputs, 3 and 4 wire, 4-20 mA sink/source, Fire, Auxiliary, and Fault Relays. RS485 port using Modbus RTU

Mackay
Marine Electronics & Satellite Communications
www.mackaymarine.com

ORDERING

FIK-IR3-HD-AS11	IR3 Flame Detector, SS316, 2 x M25 entries, Color VID, standard configuration
FIK-IR3-HD-AS11-H	IR3 Flame Detector, SS316, 2 x M25 entries, Color VID, process industry (SIL 2-HART®)
FIK-IR3-HD-AS21	IR3 Flame Detector, SS316, 2 x ¾" NPT entries, Color VID, standard configuration
FIK-IR3-HD-AS12	IR3 Flame Detector, SS316, 2 x M25 entries, Near IR VID (SIL 2-HART®)
FIK-IR3-HD-AS12-H	IR3 Flame Detector, SS316, 2 x M25 entries, Near IR VID, process industry (SIL 2-HART®)
FIK-IR3-HD-AS22	IR3 Flame Detector, SS316, 2 x ¾" NPT entries, Near IR VID (SIL 2-HART®)
FIK-IR3-HD-AS13	IR3 Flame Detector, SS316, 2 x M25 entries, Color VID, CO2L (SIL 2-HART®)[1]
FIK-IR3-HD-AS23	IR3 Flame Detector, SS316, 2 x ¾" NPT entries, Color VID, CO2L (SIL 2-HART®)[1]
FIK-IR3-HD-AS14	IR3 Flame Detector, SS316, 2 x M25 entries, Near IR VID, CO2L (SIL 2-HART®)[1]
FIK-IR3-HD-AS24	IR3 Flame Detector, SS316, 2 x ¾" NPT entries, Near IR VID, CO2L (SIL 2-HART®)[1]
FIK-IR3-HD-AS15	IR3 Flame Detector, SS316, 2 x M25 entries, Near IR VID, NFPA 33 (SIL 2-HART®)[2]
FIK-IR3-HD-AS25	IR3 Flame Detector, SS316, 2 x ¾" NPT entries, Near IR VID, NFPA 33 (SIL 2-HART®)[2]
ACCESSORIES	
FIK-TMO-S02	Tilt Mount, SS316, HD Detector (shown above)
FIK-WCO-S02	Weather Cover, SS316, hd Detector
FIK-PMA-S23	Pole Mount Adapter, 2 and 3 inch
FIK-PMA-S06	Pole Mount Adapter, 6 inch
FIK-ASD-S02	AIRSHIELD, HD Detector [3]
FIK-FSIM-IR3-KIT	Flame Simulator Kit, IR3 Detector
FIK-USB/RS485	USB/RS485 Converter Kit [4]

[1] Optimized option for hangers, helidecks, and petroleum loading racks. See FIK-IR3-HD-CO2L data sheet.
[2] Automotive / Spray booth
[3] Provides protection against dust, snow and other interferences.
[4] For PC/Laptop USB port. Includes FLS Flame Detector Communicator software.

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SPECIFICATIONS

FIRE DETECTION	**Detection time and distance**	40ms for fast fire burst or explosion
		1.5s for 1 ft² (0.1m²) n-heptane pan fire at 100 ft. (30m)
		4.0s for 1 ft² (0.1m²) n-heptane pan fire 230 ft. (70m)
	Sensitivity Range	5 sensitivity ranges: Extreme, High, Medium, Low, Very Low
	Field of view (IR detection)	90° Horizontal, 75° 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 recording of alarm events	1-minute pre-event and 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: 180mA
		Maximum: 300mA all systems in operation (including window heater)
	Conduit Entries	2x cable and conduit entries: 3/4"NPT(F) or M25x1.5
	Wiring	12-20AWG (4.0-0.50mm²)
OUTPUTS	**Relays**	SPST volt-free contacts rated 2A at 30 VDC
		Alarm – normally open
		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 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 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
	FMus & FMc	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
	Performance	ANSI FM 3260
		EN 54-10
	Functional Safety	Complies with SIL2, per IEC 61508 - option available
	CSFM	Listing 7210-2010:0524
WARRANTY	**5 Years**	

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IMMUNITY TO FALSE ALARMS
(modulated/unmodulated)

False Alarm Source	Maximum Distance in ft. (m)
Sunlight, Direct, Reflected	No response at any distance
Sunlight, Direct, Reflected, with water drops on sensors	No response at any distance
Incandescent frosted glass light, 300W	2.0 (0.5)
Fluorescent, 70W (3x23.3W)	2.0 (0.5)
Electric arc	2.0 (0.5)
Arc welding	12.0 (3.5)
Radiation heater, 1850W	2.0 (0.5)
Radiation Heater, 1850W with water droplets on sensors	2.0 (0.5)
Quartz lamp (1000W) shielded	2.0 (0.5)
Quartz lamp (500W) non-shielded	2.0 (0.5)
Quartz lamp (500W) non-shielded with water drops on sensors	2.0 (0.5)
Mercury vapor lamp 160Wx3	2.0 (0.5)
Car Exhausts	2.0 (0.5)
Projector LED	2.0 (0.5)
Solenoid bell	2.0 (0.5)
Soldering iron	2.0 (0.5)
Electric Drill	2.0 (0.5)

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RESPONSE CHARACTERISTICS (Standard models, X1 and X2)

Fuel	Size	Sensitivity	Distance ft. (m)	Average Response 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.	Extreme	98 (30)	1.5
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	25 (7.5)	1.6
Gasoline	1 x 1 ft.	Extreme	230 (70)	3.6
Gasoline	2 x 2 ft.	Extreme	328 (100)	5.3
Gasoline	1 x 1 ft.	Medium	98 (30)	1.5
Gasoline	1 x 1 ft.	Very Low	25 (7.5)	1.8
Methane	32-in Plume	Extreme	148 (45)	3.3
Methane	32-in Plume	Medium	82 (25)	0.8
LPG	32-in Plume	Extreme	180 (55)	4.8
LPG	32-in Plume	High	148 (45)	2.9
LPG	32-in Plume	Medium	98 (30)	1.4
LPG	32-in Plume	Low	49 (15)	1.4
LPG	32-in Plume	Very Low	25 (7.5)	1.8
Diesel	1 x 1 ft.	Extreme	164 (50)	2.9
Diesel	1 x 1 ft.	Medium	79 (24)	3.9
JP5	1 x 1 ft.	Extreme	164 (50)	5.8
JP5	2 x 2 ft.	Extreme	295 (90)	9.2
JP5	1 x 1 ft.	High	148 (45)	4.9
JP5	1 x 1 ft.	Medium	79 (24)	1.9
JP5	1 x 1 ft.	Low	39 (12)	8.8
JP5	1 x 1 ft.	Very Low	20 (6)	1.5
Kerosene	1 x 1 ft.	Extreme	164 (50)	4.1
Kerosene	1 x 1 ft.	Medium	79 (24)	2.5
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
Methanol	1 x 1 ft.	Low	39 (12)	1.2
Methanol	1 x 1 ft.	Very Low	18 (5.5)	1.1

Ethanol	1 x 1 ft.	Extreme	125 (38)	4.2
Ethanol	1 x 1 ft.	Medium	75 (23)	1.6
Isopropanol	1 x 1 ft.	Extreme	180 (55)	3.5
Isopropanol	1 x 1 ft.	Medium	75 (23)	1.0
Polypropylene	1 x 1 ft.	Extreme	115 (35)	10.1
Polypropylene	1 x 1 ft.	Medium	66 (20)	2.6
Paper	1 x 1 ft.	Extreme	79 (24)	0.9
Paper	1 x 1 ft.	Medium	39 (12)	0.8
Syngas (30%CH_4:70%H_2)	32-in Plume	Extreme	98 (30)	3.3
Syngas (30%CH_4:70%H_2)	32-in Plume	Medium	49 (15)	0.8
Wood	1 x 1 ft.	Extreme	148 (45)	3.8
Wood	1 x 1 ft.	Medium	74 (22.5)	2.1

RESPONSE CHARACTERISTICS (Models X3, X4, X5)

For performance details of models 3, 4 and 5, the following documents are available on request:

- Model 3 and 4 – hangar/helideck F101V0023.06
- Model 5 – fast response enclosed space / automotive / spray paint booth applications, F101V0024.06.

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