Fike®

IR3-CO2L-HD Triple IR Flame Detector

Introduction

The IR3-HD CO2L flame detector has been optimized to provide fast, robust detection for a wide range of heavy hydrocarbon fires, where combustion exhaust gases may be present. Typical applications include aircraft hangars, hardened aircraft shelters, helipads (onshore, offshore, hospitals), and areas with high vehicle activity (e.g., waste recycling facilities or road/rail tanker loading racks).

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

- High immunity to false alarms.
- Hydrocarbon flame detection with 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 mode – detection within 40 milliseconds for fireballs or explosions.
- Detects up to 262 ft. (80m) for a $1ft^2$ ($0.1m^2$) n-heptane fire.
- 5 selectable sensitivity levels.
- Data/Event logger: Alarms, faults & videos are logged to non-volatile memory.
- Universal outputs: 3 & 4 wire, 4-20 mA sink/source, Fire, Auiliary & Fault Relays. RS-485 port using Modbus RTU.
- Built-in-Test (BIT) – Automatic and manual self-test of window cleanliness and overall detector operation.
- HART® 7 as standard – Easy configuration and diagnostic capability, including dirty optics warning for preventative maintenance needs.
- Window heater to avoid condensation and icing.
- Stainless steel tilt mount with horizontal and vertical adjustment.
- Funtional safety – SIL 2 capable.

Response Characteristics

Fuel	Size	Sensitivity	Distance ft. (m)	Average Response Time (s)
N-Heptane	1 x 1 ft.	Extreme	262 (80)	4.2
N-Heptane	1 x 1 ft.	High	197 (60)	3.7
N-Heptane	1 x 1 ft.	Medium	98 (30)	0.8
N-Heptane	1 x 1 ft.	Low	49 (15)	1.2
N-Heptane	1 x 1 ft.	Very Low	24.5 (7.5)	1.0
Diesel	1 x 1 ft.	Extreme	164 (50)	3.6
Diesel	1 x 1 ft.	Medium	82 (25)	2.4
Gasoline	1 x 1 ft.	Extreme	230 (70)	3.2
Gasoline	1 x 1 ft.	Medium	98 (30)	1.0
Isopropanol (IPA)	1 x 1 ft.	Extreme	180 (55)	2.5
Isopropanol (IPA)	1 x 1 ft.	Medium	75 (23)	1.2
Jet Fuel	2 x 2 ft.	Extreme	262 (80)	9.2
Jet Fuel	1 x 1 ft.	Extreme	164 (50)	3.6
Jet Fuel	1 x 1 ft.	High	148 (45)	3.2
Jet Fuel	2 x 2 ft.	Medium	148 (45)	3.2
Jet Fuel	1 x 1 ft.	Medium	82 (25)	1.4
Jet Fuel	1 x 1 ft.	Low	39 (12)	1.2
Jet Fuel	1 x 1 ft.	Very Low	20 (6)	1.1
Kerosene	1 x 1 ft.	Extreme	164 (50)	3.5
Kerosene	1 x 1 ft.	Medium	82 (25)	1.2
Lithium Ion Battery	5 cells, 3.7V, 1.5 AH	Extreme	49 (15)	4.9
Lithium Ion Battery	5 cells, 3.7V, 1.5 AH	Medium	33 (10)	3.7
Polypropylene	1 x 1 ft.	Extreme	115 (35)	3.3
Polypropylene	1 x 1 ft.	Medium	66 (20)	3.3
Wood	1 x 1 ft.	Extreme	148 (45)	5.7
Wood	1 x 1 ft.	Medium	75 (23)	1.0

Immunity to False Alarm (modulated and unmodulated)*

False Alarm Source	Distance ft. (m)	Response
Sunlight (direct or reflected)	No response	
Sunlight (direct or reflected) with water drops on sensors	No response	
Incandescent frosted glass light, 300W	No response	
Fluorescent, 70W (3 x 23.3W)	No response	
Electric arc	No response	
Arc welding	11.5 (3.5)	No Alarm
Radiation heater, 1850W	No response	
Radiation Heater, 1850W with water droplets on sensors	No response	
Quartz lamp (1000W) shielded	No response	
Quartz lamp (500W) non-shielded	No response	
Mercury vapor lamp 160W x 3	No response	
Car Exhausts	No response	
Projector LED	No response	
Solenoid bell	No response	
Soldering iron	No response	
Electric Drill	No response	

*The shortest distance for no response test was 2 ft. (0.5m).

Ordering

FIK-IR3-HD-AS13	IR3 Flame Detector, SS316, 2 x M25 entries, Color VID, CO2L (SIL 2-HART®)
FIK-IR3-HD-AS23	IR3 Flame Detector, SS316, 2 x ¾" NPT entries, Color VID, CO2L (SIL 2-HART®)
FIK-IR3-HD-AS14	IR3 Flame Detector, SS316, 2 x M25 entries, Near IR VID, CO2L (SIL 2-HART®)
FIK-IR3-HD-AS24	IR3 Flame Detector, SS316, 2 x ¾" NPT entries, Near IR VID, CO2L (SIL 2-HART®)

Refer to Fike documents P.1.264.01, P26962, and P26146 for Flame Detector accessories.

Specifications

FIRE DETECTION	Detection time and distance	40ms for fast fire burst or explosion
		1.5s for 1 ft^2 (0.1m^2) n-heptane pan fire at 0-100 ft. (0-30m)
		4.2s for 1 ft^2 (0.1m^2) 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	0-30 seconds
	Built in Test	Automatic and Manual
VIDEO FUNCTIONALITY	HD Video	Color HD, as standard. Near IR filtered option (X4 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 (including window heater)
	Conduit Entries	2x cable and conduit entries: 3/4"NPT(F) or M25x1.5
	Wiring	14-17 AWG (2.5-1.0 mm^2)
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
	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	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
	IECEx	Ex db IIC Gb T6 or Ex db eb IIC Gb T6 and Ex tb IIIC T80°C Db -50°C≤Ta≤60°C
		Ex db IIC Gb T5 or Ex db eb IIC Gb T5 and Ex tb IIIC T95°C Db -55°C<Ta<75°C
		Ex db IIC Gb T4 or Ex db eb IIC Gb T4 and Ex tb IIIC T105°C Db -55°C<Ta<85°C
	FMus & FMc	Class I, Div. 1, Groups B, C & D; T4
		Class II/III, Div. 1, Groups E, F, G; T4
		T4 Ta= -50°C≤Ta≤85°C or T5 Ta = -50°C≤Ta≤75°C or T6 Ta = -50°C≤Ta≤60°C
		Class I, Zone 1, AEx/Ex db IIC Gb T4 or Class I, Zone 1, AEx/Ex db eb IIC Gb T4 Zone 21, AEx/Ex tb IIIC T105°C Db -50°C≤Ta≤85°C
		Class I, Zone 1, AEx/Ex db IIC Gb T5 or Class I, Zone 1, AEx/Ex db eb IIC Gb T5 Zone 21, AEx/Ex tb IIIC T95°C Db -50°C≤Ta≤75°C
		Class I, Zone 1, AEx/Ex db IIC Gb T6 or Class I, Zone 1, AEx/Ex db eb IIC Gb T6 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 (option available)
	Marine	DNV Type Approval
WARRANTY	5 Years	