

FlameSpec

IR3-HD CO2L

Triple IR Flame Detector



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

Introduction

The FlameSpec-IR3-HD CO2L flame detector has been optimised to provide fast, robust detection for a wide range of heavy hydrocarbon fires, where combustion exhaust gases may be present.

The detector also provides a high-definition (HD) colour video output of the monitored area with clear imaging of events and personnel up to 100 ft. (30m) 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.

Typical applications include:

- Aircraft hangars
- Hardened aircraft shelters
- Helipads (Onshore, Offshore, Hospitals)
- Areas with high vehicle activity:
 - Waste recycling facilities
 - Road / Rail tanker loading racks

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.
- Detects up to 262 ft. (80m) for a 1 ft² (0.1m²) n-heptane fire.
- 5 selectable sensitivity levels.
- Data/Event logger: Alarms, faults & videos are logged to non-volatile memory.
- Universal outputs, 3 and 4 wire, 4-20 mA sink / source, Fire, Auxiliary and Fault Relays. RS485 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 preventive maintenance needs.
- Window heater to avoid condensation and icing.
- Stainless steel tilt mount with horizontal and vertical adjustment.
- SIL 2 compliant - suitable for use as part of a SIL 2 compliant safety system.

FlameSpec-IR3-HD

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Model: FLS-IR3-HD CO2L

Response Characteristics

Fuel	Size	Sensitivity	Distance ft. (m)	Avrg Resp. 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
Gasoline	1 x 1 ft.	Extreme	230 (70)	3.2
Gasoline	1 x 1 ft.	Medium	98 (30)	1.0
Diesel	1 x 1 ft.	Extreme	164 (50)	3.6
Diesel	1 x 1 ft.	Medium	79 (24)	2.4
JP5	2 x 2 ft.	Extreme	292 (80)	10.3
JP5	1 x 1 ft.	Extreme	164 (50)	3.6
JP5	1 x 1 ft.	High	148 (45)	3.2
JP5	2 x 2 ft.	Medium	148 (45)	3.2
JP5	1 x 1 ft.	Medium	82 (25)	1.4
JP5	1 x 1 ft.	Low	39 (12)	1.2
JP5	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
Polypropylene	1 x 1 ft.	Extreme	115 (35)	3.3
Polypropylene	1 x 1 ft.	Medium	66 (20)	3.3
Isopropanol (IPA)	1 x 1 ft.	Extreme	180 (55)	2.5
Isopropanol (IPA)	1 x 1 ft.	Medium	75 (23)	1.2
Wood	1 x 1 ft.	Extreme	131 (40)	5.7
Wood	1 x 1 ft.	Medium	66 (20)	1.0

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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, 300W	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Fluorescent, 70W (3x23.3W)	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, 1850W	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Radiation heater, 1850W with water droplets on sensors	2.0 (0.5)	No Alarm	2.0 (0.5)	No Alarm
Quartz lamp (1000W) 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 160Wx3	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	40ms for fast fire burst or explosion 1.5s for 1ft ² (0.1m ²) n-heptane pan fire at 0–100ft. (0–30m) 4.2s for 1ft ² (0.1m ²) n-heptane pan fire at 100–262ft. (30–80m)
	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 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: 180mA Maximum: 300mA (including window heater)
	Conduit Entries	2x cable and conduit entries 3/4" NPT(F) or M25x1.5
	Wiring	12-20AWG (2.5-0.35mm ²)
OUTPUTS	Relays	SPST volt-free contacts rated 2A at 30VDC 3 relays: Alarm & Auxiliary—normally open; Fault—normally closed
	0-20mA (stepped) current output	3 wire and 4 wire configurations (sink and source) HART@rev7.0
	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" (200x130x130mm)
	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: II2GD 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 & PESO	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
	EAC CU TR	1Exd IIC T5 Gb or 1Ex de IIC T5 Gb and Ex tb IIIC T95°C Db -55°C≤Ta≤75°C 1Exd IIC T4 Gb or 1Ex de IIC T4 Gb and Ex tb IIIC T105°C Db -55°C≤Ta≤85°C
	Performance	ANSI FM 3260 EN 54-10
	Functional safety	Complies to SIL2, per IEC 61508
	ACCESSORIES	Stainless steel weather cover, model FLS-WCO-S02 Flame simulator, model FLS-FSIM-IR3-KIT 2" & 3" pole mount adapter, model FLS-PMA-S23 Airshield for areas with high airborne contamination, model FLS-ASD-S02 Paint shield / cover
WARRANTY	5 years	