F-GUARD IR3 CO₂L

Triple IR Flame Detector

gastech

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

The FlameSpec-IR3 CO2L flame detector has been optimized to provide a fast, robust detection of a wide range of heavy hydrocarbon fires, where combustion exhaust gases may be present, and standard IR3 detectors might false alarm.

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 FEATURES

- **Highest levels of false alarm immunity.**
- **Detects up to 262 ft. (80m) for a 1 ft2 (0.1m2) 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 further improve false alarm immunity.**
- **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 <0.5s, 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 & 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, as standard. Enhanced configuration & maintenance.**
- **Window heater to avoid condensation and icing.**
- **Stainless steel tilt mount provides horizontal and vertical adjustment.**
- **SIL 2 compliant - suitable for use as part of a SIL 2 compliant safety system.**

False Alarm Source	Modulated			Unmodulated		
	Distance			Distance		
	ft.	m	Response	ft.	m	Response
Sunlight, Direct, 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	0.6	No Alarm	2.0	0.6	No Alarm
Fluorescent, 70W (3x23.3W)	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Electric arc	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Arc welding	12	4.0	No Alarm	12	4.0	No Alarm
Radiation heater, 1850W	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Radiation heater, 1850W with water droplets on sensors	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Quartz lamp (1000W) shielded	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Quartz lamp (500W) non-shielded	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Mercury vapor lamp 160Wx3	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Car Exhausts	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Projector led	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Solenoid bell	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Soldering iron	2.0	0.6	No Alarm	2.0	0.6	No Alarm
Electric Drill	2.0	0.6	No Alarm	2.0	0.6	No Alarm

RESPONSE CHARACTERISTICS

| Fuel | Size | Sensitivity | Distance | | Avrg Resp. |
			ft.	m	Time (s)
N-Heptane	1 x 1 ft.	Extreme	262	80	4.6
N-Heptane	1 x 1 ft.	Extreme	230	70	3.7
N-Heptane	1 x 1 ft.	High	197	60	1.1
N-Heptane	1 x 1 ft.	Medium	98	30	1.4
N-Heptane	1 x 1 ft.	Low	49	15	1.1
Gasoline	1 x 1 ft.	Extreme	230	70	3.6
Gasoline	1 x 1 ft.	Medium	98	30	1.5
Diesel	1 x 1 ft.	Extreme	164	50	3.6
Diesel	1 x 1 ft.	Medium	79	24	3.2
JP5	2 x 2 ft.	Extreme	292	80	11.0
JP5	1 x 1 ft.	Extreme	164	50	3.6
JP5	1 x 1 ft.	High	148	45	3.5
JP5	2 x 2 ft.	Medium	148	45	3.5
JP5	1 x 1 ft.	Medium	82	25	1.5
JP5	1 x 1 ft.	Low	39	12	1.5
JP5	1 x 1 ft.	Very Low	20	6	1.3
Kerosene	1 x 1 ft.	Extreme	164	50	3.8
Kerosene	1 x 1 ft.	Medium	82	25	1.6
Polypropylene	1 x 1 ft.	Extreme	115	35	3.3
Polypropylene	1 x 1 ft.	Medium	66	20	2.1
Isopropanol IPA	1 x 1 ft.	Extreme	180	55	2.8
Isopropanol IPA	1 x 1 ft.	Medium	75	23	1.2
Wood	1 x 1 ft.	Extreme	131	40	5.0
Wood	1 x 1 ft.	Medium	66	20	1.2

F-GUARD IR3-HD

SPECIFICATIONS   Specifications subject to change without notice

FIRE DETECTION	**Detection time and distance**	40ms for fast fire burst or explosion 1.5s for 1 ft^2 (0.1m^2) pan fire at 0–100 ft. (0–30m) 4.1s for 1 ft^2 (0.1m^2) pan fire at 100–230 ft. (30–70m)
	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
ELECTRICAL SPECIFICATIONS	**Operating Voltage**	24 VDC nominal (18-32 VDC)
	Current Consumption	Standby: 180mA Maximum: 300mA all systems in operation (including window heater)
	Electrical Entries	2x 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 30 VDC 3 relays: Alarm & Auxiliary – normally open; Fault– normally closed
	0-20mA (stepped) current output	3 wire and 4 wire (isolated) configurations (sink and source) HART® rev 7.0
	Indication	Tri-color LED
	Modbus	RTU compatible on RS-485
	Digital (for video)	IP network IEEE 802.3 100Base-T
	Composite video	NTSC or PAL
MECHANICAL SPECIFICATIONS	**Size**	140 x 90 x 90mm
	Weight	Detector (Stainless Steel 316): 3.0 kg Tilt mount (Stainless Steel 316): 1.5 kg
ENVIRONMENTAL SPECIFICATIONS	**Temperature Range**	Operating: -67°F to +167°F (-55°C to +75°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* *All products designed and tested to relevant approval standards	**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 & PESO	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
	EAC CU TR	1Ex d IIC T5 Gb or 1Ex de IIC T5 Gb and Ex tb IIIC T95°C Db -55°C≤Ta≤75°C 1Ex d 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 (pending)	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
WARRANTY		5 years

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