



## IR3-HD FLAME DETECTOR

### Introduction

The Buckeye IR3-HD Triple IR flame detector provides ultra-fast response, high performance and reliable detection of all types of hydrocarbon fires (visible and non-visible). The detector addresses slow growing fires as well as fast eruption of fire using improved triple IR (IR3) technology. It operates in all weather and light conditions with highest immunity to false alarms.

- Detection within 40 milliseconds of fireballs or explosions
- Standard fire in only 1.2 seconds from 50 ft. (15m) and 4.1 seconds from 230 ft. (70m).

The detector provides high-definition video output with clear imaging of fire event at up to 100 ft. (30m), allowing rescuers to know the exact situation before entering the hazardous area. It will automatically record a video of a fire event (1 min pre-alarm / up to 3 min post-alarm).

Add to that, the integral HD quality video, with event recording, on top of the proven superior capabilities of Triple IR (IR3) flame detection and you have a very powerful safety tool to

protect your personnel, plant and process.

### Key Benefits

- High Immunity to False Alarm
- Extreme sensitivity – up to 260 ft. (80m) for a 1 ft<sup>2</sup> (0.1m<sup>2</sup>) n-heptane pan fire
- Ultra-fast detection mode – detection within 40 milliseconds for fireballs or explosions
- 1.2 second detection time – for 1 ft<sup>2</sup> (0.1m<sup>2</sup>) n-heptane pan fire at up to 50 ft. (15m) distance
- HD video output with Automatic HD video recording of fire events. Data/Event logger: Alarms, faults and other relevant events are logged to non-volatile memory
- Built-in-Test (BIT) – Automatic and manual self-test of window cleanliness and the overall operation of the detector
- Window heater to avoid condensation and icing
- Tilt mounting bracket can be connected either above or below the detector.



The Buckeye IR3-HD will detect fires and explosions extremely fast and reliably, allowing preventative action to be initiated rapidly and minimize the consequences!



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### Immunity to False Alarm

False Alarm Source	Modulated			Unmodulated		
	Distance ft.		Response	Distance ft.		Response
Sunlight, Direct, Reflected			No Alarm			No Alarm
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	13.1	4.0	No Alarm	13.1	4.0	No Alarm
Radiation heater, 1850W	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
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

### Response Characteristics

Fuel	Pan Size	Distance ft.	m	Avrg Response Time (Sec)
N-Heptane	1 x 1 ft.	262	80	9.0
N-Heptane	1 x 1 ft.	230	70	4.1
N-Heptane	1 x 1 ft.	197	60	3.2
N-Heptane	1 x 1 ft.	98	30	1.5
N-Heptane	1 x 1 ft.	49	15	1.2
Gasoline	2 x 2 ft.	328	100	5.3
Gasoline	1 x 1 ft.	230	70	3.6
Gasoline	1 x 1 ft.	98	30	1.5
Methane	32-in Plume	148	45	3.3
Methane	32-in Plume	82	25	0.8
LPG	32-in Plume	180	55	4.8
LPG	32-in Plume	148	45	2.9
LPG	32-in Plume	98	30	1.4
LPG	32-in Plume	49	15	1.4
Diesel	1 x 1 ft.	164	50	2.9
Diesel	1 x 1 ft.	79	24	3.9
JP5	2 x 2 ft.	295	90	9.2
JP5	1 x 1 ft.	164	50	5.8
JP5	1 x 1 ft.	148	45	4.9
JP5	1 x 1 ft.	79	24	1.9
Kerosene	1 x 1 ft.	164	50	4.1
Kerosene	1 x 1 ft.	79	24	2.5
Methanol	1 x 1 ft.	131	40	4.1
Methanol	1 x 1 ft.	59	18	3.9
Methanol	1 x 1 ft.	75	23	1.2
Methanol	1 x 1 ft.	39	12	1.2
Ethanol	1 x 1 ft.	125	38	4.2
Ethanol	1 x 1 ft.	75	23	1.6
Isopropanol	1 x 1 ft.	180	55	3.5
Isopropanol	1 x 1 ft.	75	23	1.0
Polypropylene	1 x 1 ft.	115	35	10.1
Polypropylene	1 x 1 ft.	66	20	2.6
Paper	1 x 1 ft.	79	24	0.9
Paper	1 x 1 ft.	39	12	0.8



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FIRE DETECTION	<b>Detection time and distance</b>	40ms for fast fire burst or explosion 1.5s for 1 ft <sup>2</sup> (0.1m <sup>2</sup> ) pan fire at 0–100 ft. (0–30m) 4.1s for 1 ft <sup>2</sup> (0.1m <sup>2</sup> ) pan fire at 100–230 ft. (30–70m)
	<b>Field of view (IR detection)</b>	90° Horizontal, 75° Vertical
	<b>Time Delay</b>	0-30 seconds
	<b>Built in Test</b>	Automatic and Manual
VIDEO FUNCTIONALITY	<b>HD Video</b>	Allows clear imaging of fire and people at 100 ft. (30m) distance
	<b>Video recording of alarm events</b>	1 minute pre-event and up to 3 minutes post-event
	<b>System integration protocol</b>	ONVIF (Open Network Video Interface Forum) Profile S
ELECTRICAL SPECIFICATIONS	<b>Operating Voltage</b>	24 VDC nominal (18-32 VDC)
	<b>Current Consumption</b>	Standby: 180mA Maximum: 250mA all systems in operation (including window heater)
	<b>Conduit Entries</b>	2x conduit entries 3/4" 14NPT or M25x1.5
	<b>Wiring</b>	12-20AWG (2.5-0.35mm <sup>2</sup> )
OUTPUTS	<b>Relays</b>	Volt-free contacts rated 2A at 30 VDC Alarm – normally open Fault – normally closed
	<b>0-20mA (stepped) current output</b>	3 wire and 4 wire configurations (sink and source)
	<b>Indication</b>	Tri-color LED
	<b>Modbus</b>	RTU compatible on RS-485
	<b>Digital (for video)</b>	IP network IEEE 802.3 10Base-t
	<b>Composite video</b>	NTSC or PAL
MECHANICAL SPECIFICATIONS	<b>Size</b>	7.87 x 5.12 x 5.12" (200x130x130mm)
	<b>Weight</b>	Detector (Stainless Steel 316): 9.8 lbs. (4.4 kg) Tilt mount (Stainless Steel 316): 5.4 lbs. (2.4 kg)
ENVIRONMENTAL SPECIFICATIONS	<b>Temperature Range</b>	Operating: -67°F to +167°F (-55°C to +75°C) Option: -67°F to +185°F (-55°C to +85°C) Storage: -67°F to +185°F (-55°C to +85°C)
	<b>Humidity</b>	Up to 99% (RH), non-condensing
	<b>Ingress Protection</b>	IP66 & 67; NEMA 250 4X & 6P
APPROVALS*	<b>Explosion proof</b>	ATEX: II 2 G D Ex db eb IIC T5 Gb -55°C<Ta<75°C or Ex db eb IIC T4 Gb -55°C<Ta<85°C Ex tb IIIC T95°C Db -55°C<Ta<75°C Ex tb IIIC T105°C Db -55°C<Ta<85°C IECEx (pending) Ex db eb IIC T5 Gb -55°C<Ta<75°C or Ex db eb IIC T4 Gb -55°C<Ta<85°C Ex tb IIIC T95°C Db -55°C<Ta<75°C Ex tb IIIC T105°C Db -55°C<Ta<85°C FMU & FMC (pending) Class I, Div. 1, Groups B, C & D; Class II, Div. 1, Groups E, F & G; Class III
	<b>Performance (pending)</b>	ANSI FM 3260 EN 54-10
	<b>Functional safety (pending)</b>	SIL2, per IEC 61508
	<b>DNV GL (pending)</b>	Standard DNVGL-CG-0339 for open deck locations Temperature class D; Vibration Class A, B and C
	<b>EAC CU TR (pending)</b>	
	<b>Weather shield</b>	
	<b>Adapters for connecting different mounts</b>	
WARRANTY	<b>5 years</b>	

\*All products designed and tested to relevant approval standards

