FlameSpec IR3

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 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.

The detector operates in all weather and light conditions with highest immunity to false alarms.

Key Benefits

- Highest levels of false alarm immunity.
- Detects up to 262 ft. (80m) for a 1 ft2 (0.1m^2) 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 improve false alarm immunity.
- Optimized option for aircraft hangars, helipads & truck loading racks available, see FLS-IR3 CO2L data sheet.
- 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 and 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 for configuration & maintenance - option available.
- Window heater to avoid condensation and icing.
- Stainless steel tilt mount provides horizontal and vertical adjustment.
- SIL 2 capable - option available.

Distributed by DOD Technologies, Inc. | 675 Industrial Drive, Cary, IL 60013 USA
USA Tel: (+1) 815-788-5200 | solutions@dodtec.com | DODtec.com

Version: F120V0010.08 • Apr 2022

FlameSpec-IR3

Triple IR Flame Detector

Model: FLS-IR3

Response Characteristics (not exhaustive)

Fuel	Size	Sensitivity	Distance ft. (m)	Avrg Resp. Time (s)
n-Heptane	1 x 1 ft.	Extreme	262 (80)	7.1
n-Heptane	1 x 1 ft.	Extreme	230 (70)	3.7
n-Heptane	1 x 1 ft.	High	197 (60)	2.7
n-Heptane	1 x 1 ft.	Medium	98 (30)	2.6
n-Heptane	1 x 1 ft.	Low	49 (15)	1.3
n-Heptane	1 x 1 ft.	Very Low	24.5 (7.5)	1.0
Gasoline	2 x 2 ft.	Extreme	328 (100)	5.3
Gasoline	1 x 1 ft.	Extreme	230 (70)	2.8
Gasoline	1 x 1 ft.	Medium	98 (30)	1.5
Methane	32-in Plume	Extreme	148 (45)	2.6
Methane	32-in Plume	Medium	82 (25)	0.6
LPG	32-in Plume	Extreme	180 (55)	3.7
LPG	32-in Plume	Medium	98 (30)	1.4
LPG	32-in Plume	Low	49 (15)	1.5
Diesel	1 x 1 ft.	Extreme	164 (50)	2.6
Diesel	1 x 1 ft.	Medium	79 (24)	3.2
JP5	2 x 2 ft.	Extreme	295 (90)	9.4
JP5	1 x 1 ft.	Extreme	164 (50)	4.5
JP5	1 x 1 ft.	High	148 (45)	4.4
JP5	1 x 1 ft.	Medium	79 (24)	1.8
Kerosene	1 x 1 ft.	Extreme	164 (50)	3.6
Kerosene	1 x 1 ft.	Medium	79 (24)	2.7
Methanol	1 x 1 ft.	Extreme	131 (40)	4.6
Methanol	1 x 1 ft.	High	125 (38)	4.2
Methanol	1 x 1 ft.	Medium	75 (23)	1.5
Ethanol	1 x 1 ft.	Extreme	125 (38)	4.7
Isopropanol	1 x 1 ft.	Extreme	180 (55)	3.6
Isopropanol	1 x 1 ft.	Medium	75 (23)	1.8
Polypropylene	1 x 1 ft.	Extreme	115 (35)	7.8
Polypropylene	1 x 1 ft.	Medium	66 (20)	2.1
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)	1.3
Wood	1 x 1 ft.	Extreme	137 (42)	4.2
Wood	1 x 1 ft.	Medium	74 (22.5)	2.1

Distributed by DOD Technologies, Inc. | 675 Industrial Drive, Cary, IL 60013 USA
USA Tel: (+1) 815-788-5200 | solutions@dodtec.com | DODtec.com

FlameSpec-IR3

Triple IR Flame Detector

Model: FLS-IR3

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

FlameSpec-IR3

Triple IR Flame Detector

Model: FLS-IR3

FIRE DETECTION	**Detection time and distance**	40ms for fast fire burst or explosion 2.6s for 1 ft² (0.1m²) n-heptane pan fire at 0–100 ft. (0–30m) 7.1s for 1 ft² (0.1m²) 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, 75° Vertical
	Time Delay	Configurable 0-30 seconds
	Built in Test	Automatic and Manual
ELECTRICAL SPECIFICATIONS	**Operating Voltage**	24 VDC nominal (18-32 VDC)
	Current Consumption	Standby: 120mA 180mA all systems in operation (including window heater)
	Electrical Entries	2x cable and conduit entries 3/4" NPT(F) or M25x1.5
	Wiring	12-20AWG (2.5–0.35mm²)
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 (option available)
	Indication	Tri-color LED (Green, Yellow, Red)
	Modbus	RTU compatible on RS-485
MECHANICAL SPECIFICATIONS	**Size**	5.51 x 3.54 x 3.54" (140x90x90mm)
	Weight	Detector (Stainless Steel 316): 6.6 lbs. (3.0 kg) Tilt mount (Stainless Steel 316): 3.3 lbs. (1.5 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 (2m, 24hr); 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, INMETRO & 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	Complies to SIL2, per IEC 61508 (option available)
	MED	DNVGL Certificate Number MED-B-00006AM - units available upon request
ACCESSORIES	**Stainless steel weather cover, model FLS-WCO-S01**	
	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-S01	
WARRANTY	**5 years**	

Distributed by DOD Technologies, Inc. | 675 Industrial Drive, Cary, IL 60013 USA
USA Tel: (+1) 815-788-5200 | solutions@dodtec.com | DODtec.com

FlameSpec
IR3-HD
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 flame detector provides exceptional detection performance of 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 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 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 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.
- Fast flame detection, <1.5 s for standard fire up to 30 m. Option for <0.5s, in compliance with NFPA 33, available.
- Optimized option for aircraft hangars, helipads & truck loading racks available, see FLS-IR3-HD CO2L data sheet.
- Detects up to 262 ft. (80m) for a 1 ft2 ($0.1m^2$) n-heptane fire.
- 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 & videos are logged to non-volatile memory.
- Built-in-Test (BIT) – Automatic and manual self-test of window cleanliness and overall detector operation.
- HART® 7, for configuration and maintenance - option available.
- 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 capable - option available.

Distributed by DOD Technologies, Inc. | 675 Industrial Drive, Cary, IL 60013 USA
USA Tel: (+1) 815-788-5200 | solutions@dodtec.com | DODtec.com
Version: F101V0010.09 • Apr 2022

FlameSpec-IR3-HD

Triple IR Flame Detector

Model: FLS-IR3-HD

Response Characteristics

Fuel	Size	Sensitivity	Distance ft. (m)	Avrg Resp. 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.	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	24.5 (7.5)	1.6
Gasoline	2 x 2 ft.	Extreme	328 (100)	5.3
Gasoline	1 x 1 ft.	Extreme	230 (70)	3.6
Gasoline	1 x 1 ft.	Medium	98 (30)	1.5
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	Medium	98 (30)	1.4
LPG	32-in Plume	Low	49 (15)	1.4
Diesel	1 x 1 ft.	Extreme	164 (50)	2.9
Diesel	1 x 1 ft.	Medium	79 (24)	3.9
JP5	2 x 2 ft.	Extreme	295 (90)	9.2
JP5	1 x 1 ft.	Extreme	164 (50)	4.1
JP5	1 x 1 ft.	High	148 (45)	4.9
JP5	1 x 1 ft.	Medium	79 (24)	1.9
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
Ethanol	1 x 1 ft.	Extreme	125 (38)	4.2
Isopropanol (IPA)	1 x 1 ft.	Extreme	180 (55)	3.5
Isopropanol (IPA)	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
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

Distributed by DOD Technologies, Inc. | 675 Industrial Drive, Cary, IL 60013 USA
USA Tel: (+1) 815-788-5200 | solutions@dodtec.com | DODtec.com

FlameSpec-IR3-HD

Triple IR Flame Detector

Model: FLS-IR3-HD

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

FlameSpec-IR3-HD

Triple IR Flame Detector

Model: FLS-IR3-HD

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 0–100 ft. (0–30m) 9.0s for 1 ft² (0.1m²) 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, 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 (2.5-0.35mm²)
OUTPUTS	**Relays**	SPST volt-free contacts rated 2A at 30 VDC 3 relays: Alarm & Auxiliary – normally open; Fault – normally closed
	0-20 mA (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" (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: 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 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	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	Complies to SIL2, per IEC 61508 - option available
	MED	DNVGL Certificate Number MED-B-00006AM - available upon request
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**	

Distributed by DOD Technologies, Inc. | 675 Industrial Drive, Cary, IL 60013 USA
USA Tel: (+1) 815-788-5200 | solutions@dodtec.com | DODtec.com

Specifications subject to change without notice.