DATA SHEET

IR3-H2-HD Triple IR Hydrogen Flame Detector

The IR3-H2-HD flame detector provides ultra-fast response, high performance and reliable detection for a number of fires found in Energy Transition applications. The detector addresses slow growing fires as well as fast eruptions of fire using improved IR3 technology. The detector operates in all weather and light conditions.

The detector provides high-definition (HD) video output of the monitored area with clear imaging of a fire event and of personnel at distances up to 100 ft. (30m). This allows the rescue team to be aware of 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 alarm, including arc welding.
- Ultra-fast detection mode detection within 40 milliseconds for Hydrogen fireballs or explosions.
- Detects hydrogen, ammonia, methane & Syngas flames: 3 infrared wavelengths with clear separation.
- Five selectable sensitivity levels.
- HD or composite video output with automatic HD video recording of events.
- Data/Event logger – alarms, faults and other relevant events 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.
- Window heater to avoid condensation and icing
- Stainless steel tilt mount, adjustable horizontally/vertically.

ORDERING

FIK-IR3-H2-HD-AS11	IR3 Hydrogen Flame Detector, SS316, 2 x M25 entries, Near IR VID, standard configuration
FIK-IR3-H2-HD-AS11-H	IR3 Hydrogen Flame Detector, SS316, 2 x M25 entries, Near IR VID, process industry (SIL 2 – HART®)
FIK-IR3-H2-HD-AS21	IR3 Hydrogen Flame Detector, SS316, 2 x 3/4” NPT entries, Near IR VID, standard configuration
FIK-IR3-H2-HD-AS21-H	IR3 Hydrogen Flame Detector, SS316, 2 x 3/4" NPT entries, Near IR VID, process industry (SIL 2 - HART®)
FIK-IR3-H2-HD-AS12	IR3 Hydrogen Flame Detector, SS316, 2 x M25 entries, Color VID (SIL 2-HART®)
FIK-IR3-H2-HD-AS22	IR3 Hydrogen Flame Detector, SS316, 2 x 3/4” NPT entries, Color VID (SIL 2-HART®)
FIK-IR3-H2-HD-AS15	IR3 Hydrogen Flame Detector, SS316, 2 x M25 entries, Near IR VID, NFPA 33 (SIL 2-HART®)[1]
FIK-IR3-H2-HD-AS25	IR3 Hydrogen Flame Detector, SS316, 2 x 3/4"NPT entries, Near IR VID, NFPA 33 (SIL 2-HART®)[1]
FIK-TMO-S01	Tilt Mount, Stainless Steel (shown above)
FLS-FSIM-IR3-H2-KIT	Flame Simulator Kit, IR3-H2
FIK-USB/RS485	RS-485 to USB Converter Kit[2]
FLS-WCO-S02	Weather Cover, Stainless Steel[3]
FLS-PMA-S23	2” and 3” Pole Mount Adaptor

[1] Automotive / Spray booth
[2] Converts detector RS-485 comms network to USB for connection to a computer port.
[3] Used only in very hot or cold environments.

P.1.241.01-6, 4/23

SPECIFICATIONS

FIRE DETECTION	**Detection time and distance**	40ms for fast burst or explosion 1.5s for 32" (0.8m) hydrogen fire at 0-66 ft. (0-20m) 4s for 32" (0.8m) hydrogen fire at 66-100 ft. (20-30m)
	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 (adjustable)
	Built in Test	Automatic and Manual
VIDEO FUNCTIONALITY	**HD Video**	Near-IR filtered HD, as standard. Color HD 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 all systems in operation (including window heater)
	Conduit Entries	2x cable and conduit entries 3/4" NPT(F) or M25x1.5
	Wiring	12-20AWG (4.0-0.50mm^2)
OUTPUTS	**Relays**	SPST volt-free contacts rated 2A at 30 VDC Alarm – normally open Auxiliary – normally open Fault – normally closed
	0-20mA (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 10Base-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**	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	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
	Performance	ANSI FM3260
	Functional Safety	Complies with SIL2, per IEC 61508 (option available)
	CSFM	Listing 7210-2010:0524
WARRANTY	**5 Years**	

IMMUNITY TO FALSE ALARMS AT EXTREME SENSITIVITY (modulated/unmodulated)

False Alarm Source	Maximum Distance in ft. (m)
Sunlight, Direct, Reflected	No response at any distance
Sunlight, Direct, Reflected, with water drops on sensors	No response at any distance
Incandescent frosted glass light, 300W	2.0 (0.5)
Fluorescent, 70W (3x23.3W)	2.0 (0.5)
Electric arc	3.0 (1.0)
Arc welding	2.0 (0.5)
Radiation heater, 1850W	2.0 (0.5)
Radiation Heater, 1850W with water droplets on sensors	2.0 (0.5)
Quartz lamp (1000W) shielded	2.0 (0.5)
Quartz lamp (500W) non-shielded	2.0 (0.5)
Quartz lamp (500W) non-shielded with water drops on sensors	2.0 (0.5)
Mercury vapor lamp 160Wx3	2.0 (0.5)
Car Exhausts	2.0 (0.5)
Projector LED	2.0 (0.5)
Solenoid bell	2.0 (0.5)
Soldering iron	2.0 (0.5)
Electric Drill	2.0 (0.5)

IR3-H2-HD RESPONSE CHARACTERISTICS (Standard Models, X1 & X2)

Fuel	Size	Sensitivity	Distance ft. (m)	Average Response Time (Sec)
Hydrogen (H_2)	32-in Plume	Extreme	98 (30)	1.5
Hydrogen (H_2)	32-in Plume	Medium	66 (20)	1.5
Hydrogen (H_2)	32-in Plume	Low	66 (20)	1.4
Hydrogen (H_2)	32-in Plume	Very Low	16 (5)	1.3
Methanol	1 x 1 ft.	Extreme	59 (18)	4.2
Methanol	1 x 1 ft.	Medium	30 (9)	2.9
Methanol	1 x 1 ft.	Very Low	10 (3)	3.6
Methane	32-in Plume	Extreme	66 (20)	1.7
Methane	32-in Plume	Medium	66 (20)	0.9
Methane	32-in Plume	Low	66 (20)	1.1
Methane	32-in Plume	Very Low	13 (4)	0.8
Syngas (30%CH_4:70%H_2)	32-in Plume	Extreme	82 (25)	3.6
Syngas (30%CH_4:70%H_2)	32-in Plume	Medium	82 (25)	2.8
Syngas (30%CH_4:70%H_2)	32-in Plume	Low	82 (25)	1.1
Syngas (30%CH_4:70%H_2)	32-in Plume	Very Low	13 (4)	2.2

For performance details of model 5, the following document is available on request:

- Model 5 provides fast response for enclosed space/automotive/spray paint booth applications, see document F101V0024.06.