

FlameSpec™ IR3-Stretch2

Triple IR Flame Detector for Energy Transition

The FlameSpec™ Stretch2 flame detector provides unrivaled response, high performance and reliable detection for a number of fires found in Energy Transition applications, such as hydrogen and hydrocarbon fires.

The detector addresses slow growing fires as well as fast eruptions of fire using improved IR3 technology. The detector operates in all weathers and light conditions.

These features, along with the built-in event logger, provide additional means to study the cause and development of fire events.

Key Benefits

- High immunity to false alarm, including arc welding.
- Detects, hydrogen flames and hydrocarbon fires using three infrared wavelengths, 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.
- 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.
- Additional dirty optics warning for preventive maintenance needs.
- HART® 7 for configuration & maintenance.
- Heated window to avoid condensation and icing.
- Stainless steel tilt mount with horizontal and vertical adjustment.
- Functional safety - SIL 2 capable.



The FlameSpec-IR3-Stretch2 detector offers the fastest detection of fires and explosions, providing extra time that can be used to reduce damage to plant & property and initiate the evacuation of people.

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Response Characteristics

| Fuel | Size | Sensitivity | Distance ft. (m) | Avg Resp.Time (s) |
|---|-------------|-------------|------------------|-------------------|
| n-Heptane | 1 x 1 ft. | Extreme | 180 (55) | 3.3 |
| n-Heptane | 1 x 1 ft. | High | 131 (40) | 3.4 |
| n-Heptane | 1 x 1 ft. | Medium | 82 (25) | 2 |
| n-Heptane | 1 x 1 ft. | Low | 49 (15) | 1.7 |
| n-Heptane | 1 x 1 ft. | Very Low | 25 (7.5) | 1.2 |
| Gasoline | 1 x 1 ft. | Extreme | 131 (40) | 7.3 |
| Gasoline | 1 x 1 ft | Medium | 98 (30) | 2.2 |
| Methane | 32-in Plume | Extreme | 66 (20) | 4.4 |
| Methane | 32-in Plume | Medium | 52 (16) | 2.2 |
| Methane | 32-in Plume | Low | 26 (8) | 2.9 |
| Methane | 32-in Plume | Very Low | 13 (4) | 4.2 |
| LPG | 32-in Plume | Extreme | 102 (31) | 3.7 |
| LPG | 32-in Plume | High | 75 (23) | 2.7 |
| LPG | 32-in Plume | Medium | 39 (12) | 3 |
| LPG | 32-in Plume | Low | 20 (6) | 0.9 |
| LPG | 32-in Plume | Very Low | 10 (3) | 1 |
| Diesel | 1 x 1 ft | Extreme | 164 (50) | 5.6 |
| Diesel | 1 x 1 ft | Medium | 49 (15) | 4.2 |
| Jet fuel | 1 x 1 ft | Extreme | 147 (45) | 5.1 |
| Jet fuel | 1 x 1 ft | High | 131 (40) | 4 |
| Jet fuel | 1 x 1 ft | Medium | 49 (15) | 3.3 |
| Jet fuel | 1 x 1 ft | Low | 25 (7.5) | 1 |
| Jet fuel | 1 x 1 ft | Very Low | 13 (4) | 2.7 |
| H ₂ | 32-in Plume | Extreme | 98 (30) | 4 |
| H ₂ | 32-in Plume | Medium | 66 (20) | 4 |
| H ₂ | 32-in Plume | Low | 33 (10) | 3.9 |
| H ₂ | 32-in Plume | Very Low | 16 (5) | 3.6 |
| Kerosene | 1 x 1 ft. | Extreme | 164 (50) | 4.8 |
| Kerosene | 1 x 1 ft. | High | 131 (40) | 4.4 |
| Kerosene | 1 x 1 ft. | Medium | 49 (15) | 3.8 |
| Kerosene | 1 x 1 ft. | Low | 25 (7.5) | 2.9 |
| Kerosene | 1 x 1 ft. | Very Low | 13 (4) | 1.4 |
| Methanol | 1 x 1 ft. | Medium | 36 (11) | 3.2 |
| Ethanol | 1 x 1 ft. | Medium | 46 (14) | 2.7 |
| Isopropanol (IPA) | 1 x 1 ft. | Medium | 66 (20) | 2.6 |
| Ethylene glycol | 1 x 1 ft. | Medium | 26 (8) | 4.7 |
| Syngas (30%CH ₄ :70%H ₂) | 32-in Plume | Extreme | 82 (25) | 3.9 |

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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 |
| Arc welding | 11.5 (3) | No Alarm | 11.5 (3) | No Alarm |
| Radiation heater, 1850W | 2.0 (0.5) | No Alarm | 2.0 (0.5) | No Alarm |
| Quartz lamp (500W) 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 |

Part Numbers

| | |
|-----------------|--|
| FLS-IR3-H2-AS13 | Triple IR (IR3) Flame Detector for hydrocarbon and hydrogen fires. SS316 Stainless Steel Housing with 2 x M25 Entries & one certified plug. |
| FLS-IR3-H2-AS23 | Triple IR (IR3) Flame Detector for hydrocarbon and hydrogen fires. SS316 Stainless Steel Housing with 2 x 3/4 NPT Entries & one certified plug. |

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Triple IR Flame Detection for Energy Transition

| | | |
|-------------------------------------|---|--|
| FIRE DETECTION | Detection Time and Distance | 40ms for fast fire burst or explosion 3.7s for 32" (0.8m) hydrogen fire at 100 ft. (30m) |
| | Sensitivity Range | 5 sensitivity ranges: Extreme, High, Medium, Low, Very Low |
| | Field of View (IR Detection) | 90° Horizontal, 80° 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 | 14-17 AWG (2.5-1.0 mm ²) |
| OUTPUTS | Relays | SPST volt-free contacts rated 2A at 30 VDC 3 relays: Alarm & Auxiliary – normally open; Fault – normally closed |
| | 0-20mA (Stepped) | 3 wire and 4 wire (isolated) configurations (sink and source) |
| | Current Output | HART® rev 7.0 |
| | Indication | Tri-color LED (Green, Yellow, Red) |
| MECHANICAL SPECIFICATIONS | Modbus | RTU compatible on RS-485 |
| | Size | 5.83 x 4.65 x 4.65" (148 x 118 x 118 mm) |
| ENVIRONMENTAL SPECIFICATIONS | Weight | Detector (Stainless Steel 316): 6.6 lbs. (3.0 kg) Tilt mount (Stainless Steel 316): 3.3 lbs. (1.5 kg) |
| | Temperature Range | Operating: -67°F to +185°F (-55°C to +85°C) Storage: -67°F to +185°F (-55°C to +85°C) |
| APPROVALS | Humidity | Up to 99% (RH), non-condensing |
| | Ingress Protection | IP66 & 68 (2m, 24hr); NEMA 4X & 6P |
| IECEx, INMETRO & PESO | ATEX | ATEX: II 2 G D Ex db IIC T6 Gb or Ex db eb IIC T6 Gb and Ex tb IIIC T80°C Db -55°C<Ta<60°C 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 T6 Gb -50°C≤Ta≤60°C 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; T6 -50°C≤Ta≤60°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, as standard, VdS certified option available upon request. |
| | Functional Safety | Certified SIL2 capable, per IEC 61508:2010 High & Low demand |
| ACCESSORIES | Tilt mount, model FLS-TMO-S01 | High vibration mounting bracket, model FLS-VMO-S01 |
| | Weather cover, model FLS-WCO-S01 | Flame simulator, model FLS-FSIM-IR3-H2-KIT |
| | 2" & 3" pole mount adapter, model FLS-PMA-S23 | Airshield, model FLS-ASD-S01 |
| | Duct mount with window, model FLS-DMW-S01 | Duct mount for airshield, model FLS-DMX-S01 |
| WARRANTY | 5 years | |