The state-of-the-art multi-spectral infrared technology of ESP Safety’s Model IPES-IR3 Flame Detector affords the highest sensitivity in detecting flames from combustible vapors gases within a wide field of view. It is preferred where UV in other detectors may be a problem with false signal triggers.

IPES-IR3’s advanced detection technology ensures rapid flame recognition and alarm signaling. In addition, IPES-IR3’s selective, multi-spectral technology virtually eliminates false alarms. It ignores false triggers from sources such as direct or indirect sunlight, arc welder flash, resistive heaters, fluorescent, halogen, and incandescent light.

IPES-IR3 sends an alarm only when data from three different IR wavelengths agree that a flame or fire is present in the field of view. Upon confirmation of flame or fire, the IPES-IR3 transfers alarm signals to receiving control devices located in control and operations rooms and to fire alarms and burglar/fire alarm systems. While operating, the IPES-IR3 transmits detector-status information via:

- 4-20 mA analog output
- A standard RS-485 communication channel under protocol Modbus RTU
- Relay outputs

The IPES-IR3 Flame Detector is constructed with an explosion-proof housing for use in hazardous (classified) locations. It meets the certifications and requirements of Class I, Division 1, Group B, C & D, T4.

Applications
- Drilling and production platforms
- Shipping tankers, freighters, and other vessels
- Fuel loading facilities
- Refineries, bulk terminals, and tank farms
- LNG/LPG processing and storage facilities
- Compressor stations and pipeline facilities
- Petrochemical, paint, and fertilizer plants
- Power plants and gas turbine facilities
- Transportation facilities (airports and subways)
- Oil and gas fired boilers / furnaces
- Aircraft hangars

Features and Benefits
- Multi-spectral IR detection provides the highest level of flame and fire sensitivity.
- Multi-spectral IR detection provides optimal rejection of false alarms.
- Power-on self-test and frequent sensor self-test ensure system integrity and correct operation.
- Heated optics, secondary heater function helps to prevent condensation problems.
- Explosion-proof package allows for hazardous environment operation.
- Tri-color status LED on the device is easily viewable for a visual report of the device’s operating status.
- Continuous monitoring of the optical path for obstruction or reduced transmission affords maximum reliability.
- Power consumption of <3W means low power costs, protection against surges.
- Digital, analog and relay outputs provide reliable status information across a range of communication formats.
- Industry standard for remote alarm and fault indication ensure reliability and consistency.
- Extended detection range provides a greater area of protection.
- 5-year warranty – long, reliable product life; low cost to operate over time.
**Specifications**

**FLAME DETECTOR**

**IR3**

**Certifications**

- **FM Approved**
  - Class I, Division 1
  - Groups B, C & D
  - T4 Ta = -40°F to +167°F
    - (-40°C to +75°C)
  - IP66

- **IECEx**
  - Ex d IIC T4
  - (-40°F to +185°F)
  - (-40°C to +85°C)
  - CE Mark for IECEx
  - IP66

**Electrical Characteristics**

- **Operating Voltage**: 18 to 32 VDC
- **Power consumption**:
  - <2 W, standby
  - <3 W, during alarm
  - <7.5 W, with heater on maximum
- **Analog Outputs**: 4-20mA
  - Analog signal: Current
  - Fault signal: 2 mA ± 0.1 mA
  - Ready signal: 4 mA ± 0.1 mA
  - Fire signal: 18 mA ± 0.1 mA
  - Test Mode: 8 mA ± 0.1 mA
- **Digital Outputs**: RS 485, Modbus RTU, Profibus
- **Relay Contact**:
  - Fire Alarm: - normally open relay
  - - closed on fire detection
  - - latching or non-latching
  - Fault: - normally closed relay
    - open on fault detection
- **Operating Temperature**: -40°F to +185°F
- **Extended Operating Temperature (By Request)**: -75°F to +255°F
- **Storage Temperature**: -76°F to +185°F
- **Humidity**: Up to 95 % Relative humidity, non-condensing
  - (withstands up to 100% RH for short periods)
- **Wiring**: 14 AWG (2.08 mm2) or 16 AWG (1.31 mm2)
  - Shielded cable is recommended
- **SIL Rating**: SIL 3
- **Ingress Protection**: IP66

**Mechanical Characteristics**

- **Material**: 316 Stainless Steel
- **Cable Entry**: 3/4" NPT
- **Weight**: 11 lbs (5.0 kg)
- **Warranty**: 5 years

**Response Time**

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Size</th>
<th>Distance Feet (M)</th>
<th>Typical Response Time (Sec.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Heptane</td>
<td>1 ft x 1 ft</td>
<td>210 (64.0)</td>
<td>6.0</td>
</tr>
<tr>
<td>Methanol</td>
<td>1 ft x 1 ft</td>
<td>150 (45.7)</td>
<td>7.0</td>
</tr>
<tr>
<td>JP5</td>
<td>2 ft x 2 ft</td>
<td>210 (64.0)</td>
<td>4.5</td>
</tr>
</tbody>
</table>

**Field of View**

<table>
<thead>
<tr>
<th>Fuel</th>
<th>Horizontal (left)</th>
<th>Horizontal (right)</th>
<th>Vertical (up)</th>
<th>Vertical (down)</th>
<th>Min. Distance Feet (down)</th>
<th>Avg Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Heptane</td>
<td>90°</td>
<td>90°</td>
<td>90°</td>
<td>90°</td>
<td>56.1 (17.1)</td>
<td>3 sec.</td>
</tr>
<tr>
<td>Methanol</td>
<td>90°</td>
<td>90°</td>
<td>90°</td>
<td>90°</td>
<td>41.0 (12.5)</td>
<td>3 sec.</td>
</tr>
<tr>
<td>JP5</td>
<td>90°</td>
<td>90°</td>
<td>90°</td>
<td>90°</td>
<td>82.0 (25.0)</td>
<td>3 sec.</td>
</tr>
</tbody>
</table>

**Certifications**

- **Class I, Division 1**
  - Groups B, C & D
  - T4 Ta = -40°F to +167°F
  - (-40°C to +75°C)
  - IP66

- **CE Mark for EMC (TUV)**
- **CE Mark for IECEx**
- **Ex d IIC T4**
  - (-40°F to +185°F)
  - (-40°C to +85°C)
  - IP66

**Dimensions**

In inches (millimeters)

- **Adjustable Pivot**: 5.45" (138.43mm)
- **Base**: 5.96" (151.30mm)
- **Height**: 8.39" (213.16mm)

The IR3 can be adjusted to cover a wide angular range.