ESP Safety’s Model IPES-IR/UV Flame Detector provides superior sensitivity for fires from oil and petrochemical products. It is also indicated for a wide range of other fire types including metal fires.

IPES-IR/UV’s advanced detection technology includes optical filters configured for maximum sensitivity to radiation produced by flame or fire and ensures rapid flame recognition and alarm signaling. Upon fire recognition within its 90-degree field of view, the IPES-IR/UV signals a change in state from normal operation to fire in any OEM or proprietary alarm and response system.

In addition, via integrated ultraviolet (UV) and infrared (IR) sensors, the IPES-IR/UV monitors in specific regions of both spectral ranges. In the infrared spectrum, the device is configured for sensitivity to wavelengths in the range of 4.2 to 4.6 microns, allowing optimal sensitivity to combustible gas fires while rejecting false signals from incandescent lamps, sunlight and hot objects. For ultraviolet (UV) radiation, the device is configured for sensitivity in the range of 180 to 250 nanometers, making the sensor “blind” to sunlight and radiation from heated objects but still able to “see” the UV radiation emitted by a flame. With these settings, the IPES-IR/UV detects and alarms for only those characteristic wavelength emissions from the UV and IR spectrum that indicate actual flame or fire.

The combination of multiple sensors and wavelength range settings makes the IPES-IR/UV an excellent choice for elimination of false positive indicators caused by non-flame sources of radiation such as artificial lighting, direct and indirect sunlight, lightning, arc welding and metal grinding.

While operating, the IPES-IR/UV generates detector-status information via:
- A standard RS-485 communication channel under protocol Modbus RTU
- 4-20 mA analog output
- Relay outputs

The IPES-IR/UV is constructed in an explosion-proof housing for use in hazardous (classified) locations and meets the industry certifications and requirements of Class I, Division 1, Group B, C &

**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**
- 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
- Automatic and manual self-tests ensure system integrity and correct operation
- Continuous monitoring of the optical path for obstruction or reduced transmission affords maximum reliability
- Industry standard for remote alarm and fault indication
- Combines both IR sensor configuration and UV sensor configuration
- Color status LED
- Explosion-proof package allows for hazardous environment operation
- Heated optics, secondary heater function helps to prevent condensation problems
Specifications

Certifications

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

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

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

- **IEC**
  - Ex d IIC T4
  - (-40°F to +185°F)
  - (-40°C to +85°C)
  - IP66

Electrical Characteristics

- **Voltage**: 18 to 32 VDC
- **Power**:
  - < 2.0 W, standby
  - < 3.0 W, during alarm
  - < 5.0 W, self test
  - < 7.3 W, maximum with heated window & alarm
- **Outputs**:
  1) Analog signal: 4 - 20 mA
     - 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
  2) RS 485, Modbus RTU
  3) Relay:
     - Fire: - normally open relay
       - closed on fire detection
       - latching / non-latching
     - Fault: - normally closed relay
       - open on fault detection

Operating Temperature

- -40°F to +185°F (-40°C to +85°C)

Extended Operating Temperature (By Request)

- -75°F to +255°F (-60°C to +125°C)

Storage Temperature

- -76°F to +185°F (-40°C to +85°C)

Humidity

- Up to 95% Relative humidity
- (withstands up to 100% RH for short periods)

Wiring

- 14 AWG (2.08 mm) or 16 AWG (1.31 mm)
- Shielded cable is recommended

Mechanical Characteristics:

- **Material**: Aluminum or 316 Stainless Steel
- **Cable Entry**: 3/4" NPT
- **Weight**:
  - Aluminum: 5.5 lbs (2.5 kg)
  - Stainless Steel: 11 lbs (5.0 kg)
- **Warranty**: 5 years

Response:

<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>100 (30)</td>
<td>5.0</td>
</tr>
<tr>
<td>Methanol</td>
<td>1 ft x 1 ft</td>
<td>85 (26)</td>
<td>4.9</td>
</tr>
<tr>
<td>JP5</td>
<td>2 ft x 2 ft</td>
<td>100 (30)</td>
<td>5.0</td>
</tr>
</tbody>
</table>

Field of View

The detector has a 90° field of view (horizontal) with the highest sensitivity lying along the central axis.

Viewing Angle

![Viewing Angle Diagram](image)

Dimensions

in inches (millimeters)

The IR3 can be adjusted to cover a Wide Angular Range

![Dimensions Diagram](image)