

# **Spectrex SharpEye™ 40/40C-L4B**

## **Integrated Ultraviolet/Infrared Flame Detector**



The SharpEye 40/40C-L4B Ultraviolet/Infrared (UV/IR) Flame Detector is part of the leading, next generation SharpEye 40/40 series.

Featuring fast detection in under five seconds with proven immunity to false alarms, the integrated UV and IR optical sensors detect hydrocarbon-based fuel and gas fires, ensuring flawless performance to keep a SharpEye on your safety.



# Features and benefits

Integrating ultraviolet (UV) and infrared (IR) optical sensors for detection of hydrocarbon-based fuel and gas fires.

- Fast detection under five sec
- Proven false alarm immunity
- Unparalleled reliability - 150,000 hours MTBF
- Wide temperature range: -40 °F (-40 °C) to 167 °F (75 °C)
- Worldwide and regionally certified for hazardous areas
- Performance and reliability approved by recognizable certification bodies
- SIL3 compatible
- Enhanced durability backed up by with three-year warranty
- Innovative UV and IR built-in test - continuously validating the optical integrity and the electronic circuitry
- Multiple output options for maximum compatibility with standard infrastructures
- Plug and play - factory calibrated for immediate use in any fire detection system
- Universal wiring option for fast ordering process
- Three sensitivity levels, adapting to any application
- Heated optic for impeccable performance in challenging environmental conditions
- Internal log event recorder to analyze past events

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# Applications

- Oil and gas onshore and offshore installations and pipelines
- Petrochemical and chemical plants
- Storage tank farms
- Aircraft hangars
- Power generation facilities
- Pharmaceutical industry
- Printing industry
- Warehouses
- Automotive industry
- Waste disposal facilities
- Aerospace industry
- Light industrial

## Ordering information

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### Model

| Code | Description                  |
|------|------------------------------|
| -L4B | Ultraviolet/infrared (UV/IR) |

### Wiring

| Code | Description |
|------|-------------|
| -6   | Universal   |

### Operating temperature range

| Code | Description                       |
|------|-----------------------------------|
| 4    | -40 °F (-40 °C) to 167 °F (75 °C) |

### Electrical cable entries

| Code | Description |
|------|-------------|
| 1    | M25         |
| 2    | ¾-in NPT    |

### Enclosure

| Code | Description                   |
|------|-------------------------------|
| A    | Aluminum polyurethane painted |

### Hazardous area approval

| Code | Description                                                                      |
|------|----------------------------------------------------------------------------------|
| B    | Inmetro (pending)                                                                |
| F    | FM, FMC, Canadian Standardization Association (CSA) for United States and Canada |
| C    | ATEC, IECEx                                                                      |
| R    | EAC CU TR                                                                        |

## Tilt mount

| Code | Description                              |
|------|------------------------------------------|
| Y    | Including tilt mount stainless steel 316 |
| N    | Without tilt mount                       |

## Protective cover

| Code | Description         |
|------|---------------------|
| 7    | ABS plastic         |
| 8    | Stainless steel 316 |

## Accessories

| Part number           | Description                           |
|-----------------------|---------------------------------------|
| FS-1200               | Flame simulator (ex proof)            |
| 877090                | Tilt mount                            |
| 877670                | Duct mount                            |
| 789260-2              | U-bolt/pole mount 2-in                |
| 789260-1              | U-bolt/pole mount 3-in                |
| 794079                | USB RS-485 harness kit                |
| 877650                | Air shield                            |
| 877263 <sup>(1)</sup> | Protective cover<br>(Plastic)         |
| 877163                | Protective cover<br>(Stainless steel) |

(1) Supplied free of charge with the detector.

## Specifications

**Table 1: Detection ranges**

At highest sensitivity setting for 1 ft<sup>2</sup> (0.1 m<sup>2</sup>) pan fire

| Fuel              | Range (ft/m) |
|-------------------|--------------|
| Gasoline (petrol) | 93/28        |
| n-Heptane         | 93/28        |
| Diesel            | 70/21        |
| JP5 fuel          | 70/21        |
| Kerosene          | 70/21        |

Table 1: Detection ranges (*continued*)

| Fuel                                                   | Range (ft/m) |
|--------------------------------------------------------|--------------|
| Ethanol 95%                                            | 57/17        |
| Isopropyl alcohol (IPA)                                | 70/21        |
| Methanol                                               | 57/17        |
| Methane <sup>(1)</sup>                                 | 60/18        |
| Liquefied petroleum gas (LPG) <sup>(1)</sup>           | 60/18        |
| Polypropylene pellets                                  | 60/18        |
| Office paper                                           | 33/10        |
| Magnesium alloy                                        | 33/10        |
| Gun powder (1.5 in <sup>2</sup> (10 cm <sup>2</sup> )) | 93/28        |
| Fireworks (10 pieces per test)                         | 10/3         |
| Cooking oil                                            | 70/21        |
| Mineral oil (20w50)                                    | 70/21        |
| Wood                                                   | 33/10        |
| Ethylene glycol                                        | 23/7         |
| Butyl acrylate                                         | 70/21        |
| Vinyl acetate                                          | 70/21        |
| Flammable adhesive (flash point < 60 °C)               | 70/21        |
| Solvents                                               | 70/21        |
| Oil paint                                              | 70/21        |
| Jet fuel A1                                            | 70/21        |
| Battery <sup>(2)</sup>                                 | 75/23        |

(1) 30-in (0.75 m) high, 10-in (0.25 m) wide plume fire

(2) One battery cell

Table 2: General specifications

|                         |                                                                                            |
|-------------------------|--------------------------------------------------------------------------------------------|
| Spectral response       | Ultraviolet: 0.185 to 0.260 $\mu\text{m}$<br>Infrared: 4.3 to 4.8 $\mu\text{m}$            |
| Detection response time | Standard response: Typically 5 sec                                                         |
| Sensitivity ranges      | 3 sensitivity ranges for 1 ft <sup>2</sup> (0.1 m <sup>2</sup> ) n-heptane pan fire        |
| Field of view           | Horizontal: 100 °<br>Vertical: 95 °                                                        |
| Temperature range       | Operating: -40 °F (-40 °C) to 167 °F (75 °C)<br>Storage: -40 °F (-40 °C) to 167 °F (75 °C) |
| Humidity                | Non-condensing relative humidity up to 100%                                                |

Table 3: Electrical specifications

|                   |                            |
|-------------------|----------------------------|
| Operating voltage | 24 Vdc nominal (18-32 Vdc) |
|-------------------|----------------------------|

Table 3: Electrical specifications (continued)

|                               |                                                                                                  |
|-------------------------------|--------------------------------------------------------------------------------------------------|
| Power consumption             | Standby: Maximum 3 W (8 W with heated window)<br>Alarm: Maximum 4.2 W (9.6 W with heated window) |
| Cable entries                 | 2 x ¾-in - 14 NPT conduits or 2 x M25 x 1.5 mm ISO                                               |
| Electrical input protection   | According to EN 50130                                                                            |
| Electromagnetic compatibility | EMI/RFI protected to EN61000-6-3 and EN 50130                                                    |
| Electrical interface          | The detector includes 17 terminals and one wiring option                                         |

Table 4: Outputs

|                   |                                                                                                                                                                        |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Relays            | Alarm, fault, and auxiliary<br>SPST volt-free contacts rated 2A at 30 Vdc                                                                                              |
| Analog output     | Analog port malfunction: 0 V (< 0.5 V)<br>Normal: 2 V ± 0.3 V<br>Alarm: 5 V ± 0.3 V                                                                                    |
| 0-20 mA (stepped) | Fault: 0 ± 1 mA<br>Built-in test (BIT) fault: 2 mA ± 0.3 mA<br>Normal: 4 mA ± 0.3 mA<br>Warning: 16 mA ± 0.3 mA<br>Alarm: 20 mA ± 0.3 mA                               |
| HART® protocol    | HART communication on the 0-20 mA analog current (FSK) used for maintenance, configuration changes, and asset management, available in mA source output wiring options |
| RS-485            | RS-485 Modbus®-compatible communication link that can be used in computer controlled installations                                                                     |

Table 5: Mechanical specifications

|                   |                                                                      |
|-------------------|----------------------------------------------------------------------|
| Enclosure options | Heavy duty copper free aluminum (less than 1%), polyurethane painted |
| Tilt mount        | Electropolished stainless steel 316                                  |
| Dimensions        | Detector: 4 x 4.6 x 6.18 in (100.6 x 117 x 155 mm)                   |
| Weight            | Detector aluminum: 2.8 lb (1.3 kg)<br>Tilt mount: 2.5 lb (1.1 kg)    |
| Water and dust    | IP66 and IP68 per EN 60529, NEMA® 250 6P                             |

# Approvals

## Hazardous area

### ATEX and IECEx

Ex II 2GD  
Ex db eb IIC T4 Gb  
Ex tb IIIC T100 °C Db  
Ta = -40 °C to +75 °C  
IP66/IP68

### FM/FMC/CSA

Class I, Division 1, Groups B, C, and D, T4A  
Class II, III, Division 1, Groups E, F, and G, T4A  
Class I, Division 2, Groups A, B, C, and D, T4  
Ta = -40 °C to +75 °C  
Type 6P; IP 66/68 6.6 ft (2 m) for 45 minutes

### TR CU (EAC)

1Ex d e IIC T4 Gb  
Ex tb IIIC T100 °C Db  
Ta = -40 °C to +75 °C  
IP66/IP68

### In Metro

Pending

## Performance

EN54-10 | FM3260

## Reliability

IEC61508 - SIL3 (TUV)







For more information: [www.emerson.com](http://www.emerson.com)

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