

## 40/40R Single IR Flame Detector



### Features

- Sensitivity Selection
- Automatic and Manual Built-In-Test (BIT) - to assure continued reliable operation
- Heated window - for operation in harsh weather conditions (snow, ice, condensation)
- Multiple output options for maximum flexibility and compatibility
  - Relays (3) for Alarm, Fault, and Auxiliary
  - 0-20mA (stepped)
  - HART Protocol for maintenance and asset management
  - RS-485, Modbus Compatible
- High Reliability - MTBF - minimum 150,000 hours
- Approved to Safety Integrity Level 2 (SIL2 - TUV)
- 5-Year Manufacturer's Warranty
- User Programmable via HART or RS-485
- Ex approved for Zone 1 hazardous area location
  - ATEX
  - IECEx
  - FM/FMC
  - CSA
- 3rd party Performance Tested
  - EN54-10 (LPCB)
  - FM3260 (FM for Spectrex, Inc.)

### Description

The SharpEye™ 40/40R single IR Flame Detector detects hydrocarbon-based fuel and gas fires using advanced flame analysis tools. The detector provides early warning of flaming fires working at 4.5µm for maximum sensitivity, and immunity to false alarms from IR sources such as sunlight and IR projectors.

The new design is the most durable and weather resistant single IR flame detectors currently on the market. Its new features include a heated window, to eliminate condensation and icing; HART capabilities, for digital communications; lower power requirements; and a compact lighter design.

Due to increased reliability, the Spectrex Manufacturer's Warranty period for the 40/40 Series has been extended to 5 years and is SIL2 (TUV) approved to IEC 61508.

## General Specifications

### Spectral Response:

Single band IR: 4.4-4.6  $\mu\text{m}$

**Detection Range:** at highest Sensitivity Setting for 1ft.<sup>2</sup> (0.1m<sup>2</sup>) pan fire

### Fuel:

|                         |              |
|-------------------------|--------------|
| n-Heptane               | 50 ft (15m)  |
| Gasoline                | 50 ft (15m)  |
| Diesel Fuel             | 37 ft (11m)  |
| JP5                     | 37 ft (11m)  |
| Kerosene                | 37 ft (11m)  |
| Ethanol 95%             | 25 ft (7.5m) |
| Methanol                | 25 ft (7.5m) |
| IPA (Isopropyl Alcohol) | 25 ft (7.5m) |
| Methane*                | 16 ft (5m)   |
| LPG*                    | 16 ft (5m)   |
| Polypropylene Pellets   | 10 ft (3m)   |
| Office Paper            | 20 ft (6m)   |

\*20" (0.5m) high, 8" (0.2m) width plume fire

**Response Time:** Typically 5 seconds.

**Adjustable Time Delay:** Up to 30 seconds

### Sensitivity Ranges:

2 ranges, 1 ft<sup>2</sup> (0.1m<sup>2</sup>) n-heptane pan fire from 15 ft (5m) or 50 ft (15m)

**Field of View:** 90° horizontal, 90° vertical

### Built-in-Test (BIT):

Automatic (and Manual)

### Temperature Range:

Operating:  
-67°F (-55°C) to +167°F (+75°C)

Option:  
-67°F (-55°C) to +185°F (+85°C)

Storage:  
-67°F (-55°C) to +185°F (+85°C)

### Humidity:

Up to 95% non-condensing (withstands up to 100% RH for short periods)

### Heated Optics:

To eliminate condensation and icing on the window

## Electrical Specifications

### Operating Voltage:

24 VDC nominal (18-32 VDC)

### Power Consumption:

Standby: Max.90mA (110mA with heated window)

Alarm: Max. 130mA (160mA with heated window)

### Cable Entries:

2 x 3/4" - 14NPT conduits  
or 2 x M25 x 1.5 mm ISO

### Wiring:

12 - 22AWG (2.5mm<sup>2</sup> - 0.3mm<sup>2</sup>)

### Electrical Input Protection:

According to MIL-STD-1275B

### Electromagnetic Compatibility:

EMI/RFI protected to EN61326-3 & EN61000-6-3

### Electrical Interface:

The detector includes twelve (12) terminals with five (5) wiring options (factory set)

## Outputs

### Relays:

Alarm, Fault and Auxiliary  
SPST volt-free contacts rated 5A at 30 VDC or 250 VAC

### 0-20mA (stepped):

Sink (source option) configuration

|                  |               |
|------------------|---------------|
| Fault:           | 0 +1mA        |
| BIT Fault:       | 2mA $\pm$ 10% |
| Normal:          | 4mA $\pm$ 10% |
| Warning:         | 16mA $\pm$ 5% |
| Alarm:           | 20mA $\pm$ 5% |
| Resistance Loop: | 100-600 ohms  |

### HART Protocol:

HART communication on the 0-20mA analog current (FSK) - used for maintenance, configuration changes and asset management

### RS-485:

RS-485 Modbus compatible communication link that can be used in computer controlled installations

## Mechanical Specifications

### Enclosure Options:

- Stainless Steel 316L with electro polish finish
- Heavy duty copper free aluminum (less than 1%), red epoxy enamel finish - ATEX approved models only

### Mounting:

Stainless Steel 316L with electro polish finish

### Dimensions:

Detector 4"x 4.6"x 6.1" (102 x117 x157mm)

### Weight:

|                    |                |
|--------------------|----------------|
| Detector (St.St.)  | 6.1 lb (2.8kg) |
| Detector, aluminum | 2.8 lb (1.3kg) |
| Tilt Mount         | 2.2 lb (1.0kg) |

### Environmental Standards:

Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Temp

### Water and Dust:

IP66 and IP67 per EN60529  
NEMA 250 6P

## Approvals

### Hazardous Area:

ATEX and IECEx  
Ex II 2 GD  
Ex de IIB+H2 T5 (-55°C to +75°C)  
Ex tD A21 IP66/X7 T 95°C  
Ex de IIB+H2 T4 (-55°C to +85°C)  
Ex tD A21 IP66/X7 T 105°C

FM / CSA

Class I Div. 1, Groups B, C & D  
Class II/III Div. 1, Groups E, F & G

### Performance:

EN54-10 (LPCB)  
FM-3260 (FM)

### Reliability:

IEC 61508 - SIL2 (TUV)

## Accessories

**Fire Simulator:** 20/20-312

**Tilt Mount:** 40/40-001

**Weather Protector:** 777163

**Air Shield:** 777650

**Laser Pointer:** 777166  
(Detector area coverage)

**U-Bolt/Pole Mount:** 789260-2 (2" pole)  
789260-1 (3" pole)