

## 40/40I Triple IR (IR3) Flame Detector



### Features

- Triple Spectrum Design - for long distance detection and high false alarm immunity
- Sensitivity Selection - to ensure no zone crossover detection
- 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 (VdS)
  - FM3260 (FM for Spectrex, Inc.)
  - DNV Marine Approval

### Description

The SharpEye™ 40/40I Triple IR (IR3) Flame Detector detects fuel and gas fires at long distances with the highest immunity to false alarms. The 40/40I IR3 can detect a 1ft<sup>2</sup> (0.1m<sup>2</sup>) gasoline pan fire at 215 ft (65m) in less than 5 seconds.

The 40/40I is the most durable and weather resistant flame detector 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:

Three IR Bands

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

### Fuel:

n-Heptane	215 ft (65m)
Gasoline	215 ft (65m)
Diesel Fuel	150 ft (45m)
JP5	150 ft (45m)
Kerosene	150 ft (45m)
Ethanol 95%	135 ft (40m)
Methanol	115 ft (35m)
IPA (Isopropyl Alcohol)	135 ft (40m)
Methane*	100 ft (30m)
LPG*	100 ft (30m)
Polypropylene Pellets	16 ft (5m)
Office Paper	33 ft (10m)

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

**Response Time:** Typically 5 seconds.

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

### Sensitivity Ranges:

4 Sensitive ranges for 1 ft<sup>2</sup> (0.1m<sup>2</sup>) n-heptane pan fire from 50 ft (15m) to 215 ft. (65m)

**Field of View:** 100° horizontal, 95° 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 ±10%
Normal:	4mA ±10%
Warning:	16mA ±5%
Alarm:	20mA ±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 / FMC / CSA

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

### Performance:

EN54-10 (VdS)  
FM-3260 (FM)  
DNV Marine Approval

### Reliability:

IEC 61508 - SIL2 (TUV)

## Accessories

**Fire Simulator:** 20/20-310

**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)