

keep a **SharpEye™** on your safety



# 40/40 UV/IR Flame Detector Series

Maximum choice of features in a high performance package



**SharpEye™**

Spectrex offers two versions of the new 40/40 Series UV/IR Flame Detectors:

**Model 40/40L (& LB)** provides a combination of UV and IR sensors, where the IR sensor operates at a wavelength of 2.5-3.0  $\mu\text{m}$ , and can detect hydrocarbon-based fuel and gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic fires.

**Model 40/40L4 (& L4B)** is identical to the 40/40L except that the IR sensor works at a wavelength of 4.5  $\mu\text{m}$  and is only suitable for hydrocarbon-based fires.

The UV/IR flame detector senses radiant energy in the short wave section of both the ultraviolet and infrared portions of the electromagnetic spectrum. The signals from both sensors are analyzed for frequency, intensity and duration. Simultaneous detection of radiant energy in both the UV and IR sensors triggers an alarm signal.

The UV sensor incorporates a special logic circuit that helps prevent false alarms caused by solar radiation.

Due to increased reliability, the 40/40 Series warranty period has been extended to 5 years and is SIL2 (TUV) approved to IEC 61508.

## FEATURES & BENEFITS

- UV/IR Dual-Sensor
- High-Speed Response - 150 msec Response to Saturated Signal
- Solar blind
- Automatic Built-In-Test (BIT)\* and Manual - 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) Models 40/40LB and 40/40L4B only
- 5-Year Warranty
- User Programmable via HART or RS-485
- Ex approved for Zone 1 hazardous area location
  - ATEX
  - IECEx
  - FM/FMC
  - CSA
- 3<sup>rd</sup> party Performance Tested
  - EN54-10 (LPCB)
  - FM3260 (FM)

\*option

## APPLICATIONS (model dependent)

Offshore Oil & Gas installations  
Onshore Oil & Gas installations and pipelines  
Chemical plants  
Petrochemicals plants  
Storage Tank farms  
Aircraft hangars  
Power Generation facilities  
Pharmaceutical Industry

Printing Industry  
Warehouses  
Automotive Industry  
Explosives & Munitions  
Waste Disposal facilities  
Aerospace Industry  
Paint, Polymer and Glue processes

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## GENERAL SPECIFICATIONS

<b>Spectral Response</b>	40/40L-LB: UV: 0.185 - 0.260 μm; IR: 2.5-3.0 μm 40/40L4-L4B: UV: 0.185 - 0.260 μm; IR: 4.4-4.6 μm					
<b>Detection Range</b> (at highest Sensitivity Setting for 1ft <sup>2</sup> (0.1m <sup>2</sup> ) pan fire)	<b>Fuel</b>	<b>ft / m</b>	<b>Fuel</b>	<b>ft / m</b>	<b>Fuel</b>	<b>ft / m</b>
	n-Heptane	50 / 15	Ethanol 95%	25 / 7.5	LPG *	16 / 5
	Gasoline	50 / 15	Methanol	25 / 7.5	Polypropylene Pellets	13 / 4
	Diesel Fuel	37 / 11	IPA (Isopropyl Alcohol)	25 / 7.5	Office Paper	16 / 5
	JP5	37 / 11	Hydrogen**	16 / 5	* 20" (0.5m) high, 8" (0.2m) width	
	Kerosene	37 / 11	Methane*	16 / 5	plume fire ** 40/40L/LB only	
<b>Response Time</b>	Typically 5 seconds. High speed 150 msec response to saturated signal					
<b>Adjustable Time Delay</b>	Up to 30 seconds					
<b>Sensitivity Ranges</b>	1 ft <sup>2</sup> (0.1m <sup>2</sup> ) n-heptane pan fire from 50 ft (15m)					
<b>Field of View</b>	Horizontal 100°; Vertical 95°					
<b>Built-in-Test (BIT)</b>	Automatic (and Manual)					
<b>Temperature Range</b>	Operating: -67°F to +167°F		(-55°C to +75°C)			
	Option: -67°F to +185°F		(-55°C to +85°C)			
	Storage: -67°F to +185°F		(-55°C to +85°C)			
<b>Humidity</b>	Up to 95% non-condensing (withstands up to 100% RH for short periods)					
<b>Heated Optics</b>	To eliminate condensation and icing on the window					

## ELECTRICAL SPECIFICATIONS

<b>Operating Voltage</b>	24 VDC nominal (18-32 VDC)					
<b>Power Consumption</b>	Standby: Max. 90mA (110mA with heated window)		Alarm: Max. 130mA (160mA with heated window)			
<b>Cable Entries</b>	2 x 3/4" - 14NPT conduits or 2 x M25 x 1.5 mm ISO					
<b>Wiring</b>	12 - 22AWG (2.5mm <sup>2</sup> - 0.3mm <sup>2</sup> )					
<b>Electrical Input Protection</b>	According to MIL-STD-1275B					
<b>Electromagnetic Compatibility</b>	EMI/RFI protected to EN61326-3 and EN61000-6-3					
<b>Electrical Interface</b>	The detector includes twelve (12) terminals with five (5) wiring options (factory set)					

## OUTPUTS

<b>Relays</b>	Alarm, Fault and Auxiliary SPST volt-free contacts rated 5A at 30 VDC or 250 VAC.					
<b>0-20mA (stepped)</b>	Sink (source option) configuration					
	Fault: 0 +1mA	IR: 8mA ± 5%	Alarm: 20mA ± 5%			
	BIT Fault: 2mA ± 10%	UV: 12mA ± 5%	Resistance Loop: 100-600 Ω			
	Normal: 4mA ± 10%	Warning: 16mA ± 5%				
<b>HART Protocol</b>	Optional HART communications on the 0-20mA analog current (FSK) - used for maintenance, configuration changes and asset management, available in mA source output wiring options					
<b>RS-485</b>	RS-485 Modbus compatible communication link that can be used in computer controlled installations					

## MECHANICAL SPECIFICATIONS

<b>Materials</b>	- Stainless Steel 316L with electro polish finish					
Enclosure options	- Heavy duty copper free aluminum (less than 1%), red epoxy enamel finish					
<b>Mounting</b>	Stainless Steel 316L with electro polish finish					
<b>Dimensions</b>	Detector		4" x 4.6" x 6.18"		(101.6 x 117 x 157 mm)	
<b>Weight</b>	Detector (St.St.)		6.1 lb (2.8 kg)		Tilt mount 2.2 lb (1.0 kg)	
	Detector, aluminum		2.8 lb (1.3 kg)			
<b>Environmental Standards</b>	Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Temp					
<b>Water and Dust</b>	IP66 and IP67 per EN60529, NEMA 250 6P					

## APPROVALS

<b>Hazardous Area</b>	ATEX and IECEx		Ex II 2 GD, Ex de IIB+H2 T5 (-55°C to + 75°C)		Ex de IIB+H2 T4 (-55°C to + 85°C)	
	FM/FMC/CSA		Ex tD A21 IP66/X7 T 95°C		Ex tD A21 IP66/X7 T 105°C	
	Class I Div. 1, Groups B, C & D Class II/III Div. 1, Groups E, F & G					
<b>Performance</b>	EN54-10 (LPCB) FM-3260 (FM)					
<b>Reliability</b>	IEC61508 - SIL2 (TUV) - models 40/40LB and 40/40L4B only					

## ACCESSORIES

<b>Fire Simulator</b>	20/20-311	<b>U-Bolt/Pole Mount</b>	789260-2 (2" pole)	<b>Mini Laptop Kit</b>	777820	<b>Laser Pointer</b>	777166
<b>Tilt Mount</b>	40/40-001		789260-1 (3" pole)	<b>Weather Protector</b>	777163	(Detector area coverage)	
<b>Duct Mount</b>	777670	<b>USB RS485 Harness Kit</b>	794079-5	<b>Air Shield</b>	777161		