

keep a **SharpEye™** on your safety



# 40/40L4-L4B

## UV-IR Flame Detector Series

*Maximum choice of features in a high performance package*



### **SharpEye™**

*Model 40/40L4 (& L4B, with Built-In-Test option) provides a combination of UV and IR sensors, where the IR sensor operates at a wavelength of 4.5  $\mu\text{m}$ , and can detect hydrocarbon-based fuel and gas 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
- Solar blind
- Automatic Built-In-Test (BIT) and Manual - to assure continued reliable operation (in 40/40L4B only)
- 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) Model 40/40L4B only
- 5-Year Warranty
- User Programmable via HART or RS-485
- Hazardous area zones:
  - Zones 1 & 2 with IIC gas group vapors present
  - Zones 21 & 22 with IIIC dust type present
- Ex approved to:
  - ATEX & IECEx
  - FM/FMC/CSA
  - TR CU (EAC)
- 3rd party Performance Approved
  - EN54-10 (VdS)
  - FM3260
- Marine Approval
  - MED 'Wheelmark' approval (DNV)

### 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  
Waste Disposal facilities  
Aerospace Industry  
Paint, Polymer and Glue processes

## GENERAL SPECIFICATIONS

<b>Spectral Response</b>	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	93 / 28	Kerosene	70 / 21	Alcohol 95%	57 / 17
	Gasoline	93 / 28	Methanol	57 / 17	Polypropylene Pellets	60 / 18
	Diesel Fuel	70 / 21	IPA	70 / 21	Office Paper	33 / 10
	JP5	70 / 21	Methane*	60 / 18	LPG *	60 / 18
	* 30" (0.75m) high, 10" (0.25m) width plume fire					
<b>Response Time</b>	Typically 5 seconds					
<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 93 ft (28m)					
<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 (0.3mm <sup>2</sup> - 2.5mm <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 2A at 30V DC					
<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 (not available in FM version)					
<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 G D Ex db eb op is IIC T4 Gb Ex tb op is IIIC T96°C Db (-55°C ≤ Ta ≤ +75°C)	Ex db eb op is IIC T4 Gb Ex tb op is IIIC T106°C Db (-55°C ≤ Ta ≤ +85°C)
	FM/FMC/CSA	Class I Div. 1, Groups B, C & D Class II/III Div. 1, Groups E, F & G	
	TR CU (EAC)	1 Ex db eb op is IIC T4 Gb X Ex tb op is IIIC T96°C Db X (-55°C ≤ Ta ≤ +75°C)	1 Ex db eb op is IIC T4 Gb X Ex tb op is IIIC T96°C Db X (-55°C ≤ Ta ≤ +75°C)
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<b>Performance</b>	EN54-10 (VdS) FM3260		
<b>Reliability</b>	IEC61508 - SIL2 (TUV) - model 40/40L4B only		
<b>Marine</b>	MED 'Wheelmark' approval (DNV)		

## ACCESSORIES

<b>Flame Simulator</b> FS-1200	<b>U-Bolt/Pole Mount</b>	789260-2 (2" pole)	<b>Air Shield</b>	777650	<b>Weather Cover</b>	777163 (St.St) *777263 (Plastic)
<b>Tilt Mount</b>	40/40-001	789260-1 (3" pole)				
<b>Duct Mount</b>	777670	<b>USB RS485 Harness Kit</b>	794079			
		<b>E.O.L Encapsulated Resistor</b>	777915-X			

\*Supplied free of charge with the detector