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 μm, 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

Spectral Response — UV: 0.185 - 0.260 μm; IR: 4.4-4.6 μm

Detection Range
(at highest Sensitivity Setting
for 1ft^2 (0.1m^2) pan fire)

Fuel	ft / m	Fuel	ft / m	Fuel	ft / m
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

Response Time — Typically 5 seconds

Adjustable Time Delay — Up to 30 seconds

Sensitivity Ranges — 1 ft^2 (0.1m^2) n-heptane pan fire from 93 ft (28m)

Field of View — Horizontal 100°; Vertical 95°

Built-in-Test (BIT) — Automatic (and Manual)

Temperature Range
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)

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 (0.3mm^2 - 2.5mm^2)

Electrical Input Protection — According to MIL-STD-1275B

Electromagnetic Compatibility — EMI/RFI protected to EN61326-3 and 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 2A at 30V DC

0-20mA (stepped) — 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%		

HART Protocol — 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

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

MECHANICAL SPECIFICATIONS

Materials
Enclosure options
- Stainless Steel 316L with electro polish finish
- Heavy duty copper free aluminum (less than 1%), red epoxy enamel finish (not available in FM version)

Mounting — Stainless Steel 316L with electro polish finish

Dimensions — Detector 4" x 4.6" x 6.18" (101.6 x 117 x 157 mm)

Weight
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)	

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 G D		
	Ex db eb op is IIC T4 Gb	Ex db eb op is IIC T4 Gb	
	Ex tb op is IIIC T96°C Db	Ex tb op is IIIC T106°C Db	
	(-55°C ≤ Ta ≤ +75°C)	(-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	1 Ex db eb op is IIC T4 Gb X	1 Ex db eb op is IIC T4 Gb X
	Ex tb op is IIIC T96°C Db X	Ex tb op is IIIC T96°C Db X	Ex tb op is IIIC T96°C Db X
	(–55°C ≤ Ta ≤ +75°C)	(–55°C ≤ Ta ≤ +75°C)	(–55°C ≤ Ta ≤ +75°C)

Performance
EN54-10 (VdS)
FM3260

Reliability — IEC61508 - SIL2 (TUV) - model 40/40L4B only

Marine — MED 'Wheelmark' approval (DNV)

ACCESSORIES

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

*Supplied free of charge with the detector