

keep a **SharpEye™** on your safety



# 40/40UFL

## ULTRA FAST UV-IR

*Combined Explosion and High Sensitivity Flame Detector*



**SharpEye™**

*The new SharpEye UV-IR High-Speed Optical Flame detector 40/40UFL is designed to meet two major requirements:*

- High-Speed Response (20 msec)
- High Reliability (immunity to false alarm)

*This detector is based on our well known military detector used in Armored Vehicle Explosion Suppression System combined with the industrial UV-IR detector 40/40LB.*

*The 40/40UFL can detect hydrocarbon-based fuel and gas fires, hydroxyl and hydrogen fires, as well as metal and inorganic 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.*

### FEATURES & BENEFITS

- UV/IR Dual-Sensor
- High-Speed Response - 20 msec to flash fire
- Solar blind
- Automatic 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
  - Analogue output for fast detection
  - 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 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)
- 3<sup>rd</sup> party performance
  - EN54-10 (VdS)
  - FM3260

### APPLICATIONS (model dependent)

Explosives & munitions	Warehouses
Offshore Oil & Gas	Automotive industry
Onshore Oil & Gas	Waste disposal facilities
Petrochemical plants	Aerospace industry
Storage tank farms	Hydrogen Fuel Cell Industry
Aircraft hangars	Hydrogen Vehicle Parking & Refueling
Chemical plants	Battery Charging Areas
Power generation facilities	Refinery Hydrogenation
Pharmaceutical industry	Space Industry Hydroxyl Propellant
Printing industry	Static Fuel Cell Systems

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## GENERAL SPECIFICATIONS

<b>Spectral Response</b>	UV: 0.185 - 0.260 $\mu$ m; IR: 2.5-3.0 $\mu$ m					
<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	66 / 20	Ethanol 95%	25 / 7.5	LPG*	43 / 13
	Gasoline	66 / 20	Methanol	26 / 8	Polypropylene Pellets	43 / 13
	Diesel Fuel	49 / 15	IPA (Isopropyl Alcohol)	43 / 13	Ammonia**	20 / 6
	JP5	50 / 15	Hydrogen*	37 / 11	Silane**	6 / 1.8
	Kerosene	50 / 15	Methane*	26 / 8	Office Paper	16 / 5
	* 30" (0.75m) high, 10" (0.25m) width plume fire					
	**20" (0.5m) high, 8" (0.2m) width plume fire					
<b>Response Time</b>	Typically 3 seconds. High speed 20 msec to flash fire					
<b>Adjustable Time Delay</b>	Up to 30 seconds					
<b>Field of View</b>	Horizontal 100°; Vertical 95°					
<b>Built-in-Test (BIT)</b>	Automatic					
<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 1.5mm 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>Analogue Output</b> <b>0-20mA (stepped)</b>	4-4.7V at detection Sink (source option) configuration					
	Fault: 0 +1mA	IR: 8mA $\pm$ 5%	Alarm: 20mA $\pm$ 5%			
	BIT Fault: 2mA $\pm$ 10%	UV: 12mA $\pm$ 5%	Resistance Loop: 100-600 $\Omega$			
	Normal: 4mA $\pm$ 10%	Warning: 16mA $\pm$ 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					
<b>Enclosure options</b>	- 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)					
	Detector, aluminum 2.8 lb (1.3 kg)					
	Tilt mount 2.2 lb (1.0 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 $\leq$ Ta $\leq$ +75°C)	Ex db eb op is IIC T4 Gb Ex tb op is IIIC T106°C Db (-55°C $\leq$ Ta $\leq$ +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 $\leq$ Ta $\leq$ +75°C)	1 Ex db eb op is IIC T4 Gb X Ex db eb mb op is II T4 Gb X Ex tb op is IIIC T106°C Db X Ex tb op is IIIC T98°C Db X (-55°C $\leq$ Ta $\leq$ +85°C)
<b>Performance</b>	EN54-10 (VdS) FM3260		
<b>Reliability</b>	IEC61508 - SIL2 (TUV)		

## ACCESSORIES

<b>Flame Simulator FS-1200</b>	<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