THORNE & DERRICK INTERNATIONAL
Thorne & Derrick
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www.heatingandprocess.com

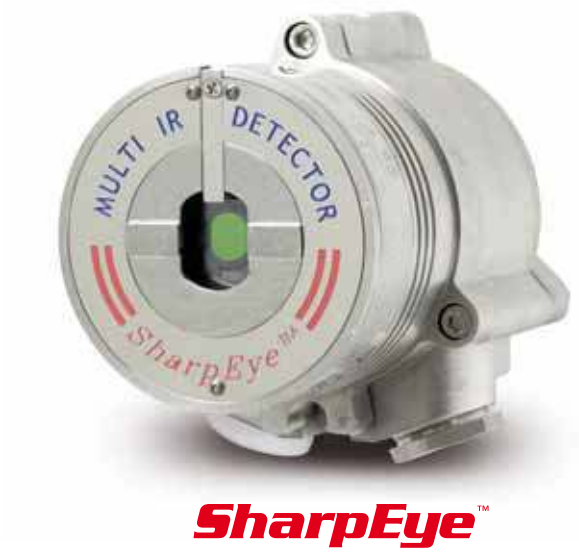
keep a SharpEye™ on your safety

40/40M | 40/40I | 40/40L-LB | 40/40L4-L4B | 40/40U-UB | 40/40R

40/40M

Multi IR Flame Detector

Superior performance, reliability and immunity to false alarms



The new 40/40M Multi IR Flame Detector is specifically designed for detection of hydrocarbon and hydrogen flames. It detects hydrocarbon-based fuel and gas fires at long distances with the highest immunity to false alarms. The 40/40M can detect a gasoline pan fire at 215 ft (65m) or a hydrogen flame at 100 ft (30m) in less than 5 seconds.

The 40/40M 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 40/40 Series warranty period has been extended to 5 years and is SIL2 (TUV) approved to IEC 61508.

FEATURES & BENEFITS

- Multi Spectrum Design - for long distance detection of hydrocarbons and hydrogen flames
- 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 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 (LPCB)
  - FM3260 (FM)

APPLICATIONS

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
Hydrogen Fuel Cell Industry
Hydrogen Vehicle Parking & Refueling
Battery Charging areas
Refinery Hydrogenation
Space Industry hydroxyl propellant
Static Fuel Cell systems

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SPECTREX INC.

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GENERAL SPECIFICATIONS

Spectral Response	Multi IR Bands

Detection Range (at highest Sensitivity Setting for 1ft² (0.1m²) pan fire)

Fuel	ft / m	Fuel	ft / m	Fuel	ft / m
n-Heptane	215 / 65	Ethanol 95%	135 / 40	LPG *	100 / 30
Gasoline	215 / 65	Methanol	115 / 35	Polypropylene Pellets	16 / 5
Diesel Fuel	150 / 45	IPA (Isopropyl Alcohol)	135 / 40	Office Paper	33 / 10
JP5	150 / 45	Hydrogen*	100 / 30	* 20" (0.5m) high, 8" (0.2m) width plume fire	
Kerosene	150 / 45	Methane*	100 / 30		

Response Time	Typically 5 seconds
Adjustable Time Delay	Up to 30 seconds
Sensitivity Ranges	4 Sensitive ranges for 1 ft² (0.1m²) n-heptane pan fire from 50 ft (15m) to 215 ft (65m)
Field of View	Horizontal 67°, Vertical 70° for Gasoline Horizontal 80°, Vertical 80° for Hydrogen
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 (2.5mm² - 0.3mm²)
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 5A at 30 VDC or 250 VAC.
0-20mA (stepped)	Sink (source option) configuration Fault: 0 +1mA Normal: 4mA ± 10% Alarm: 20mA ± 5% BIT Fault: 2mA ± 10% Warning: 16mA ± 5% Resistance Loop: 100-600 Ω
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
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 GD, Ex de IIC T5 (-55°C to +75°C) Ex tD A21 IP66/X7 T 95°C	Ex de IIC 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 (LPCB) FM-3260 (FM)		
Reliability	IEC61508 - SIL2 (TUV)		

ACCESSORIES

Fire Simulator	20/20-313	**U-Bolt/Pole Mount**	789260-2 (2" pole)	**Mini Laptop Kit**	777820	**Laser Pointer**	777166
Tilt Mount	40/40-001		789260-1 (3" pole)	**Weather Protector**	777163	(Detector area coverage)	
Duct Mount	777670	**USB RS485 Harness Kit**	794079-5	**Air Shield**	777161		