



# 40/40D-I

## MULTISPECTRUM FLAME DETECTOR



P/N 95911

### Description

The SharpEye™ 40/40D-I Multispectrum Quad-Sense™ flame detector is part of the leading, next generation SharpEye 40/40 series.

Featuring superior, longest distance detection of hydrocarbon fires at up to 300 ft (90 m), exceptional ultra-fast detection in under 50 msec and unparalleled reliability, the 40/40D-I is based on proven Triple-IR (IR3) technology, ensuring highest sensitivity with proven immunity to false alarms and absolutely keeping a SharpEye on your safety.

Multi-Spectrum Quad-Sense™ flame detector - integrating four infrared (IR) sensors to further improve differentiation of flame sources from non-flame background radiation.

### Features

- Superior longest distance detection of hydrocarbon-based fuel and gas fires at up to 300 ft (90 m)
- Ultra fast detection, high speed response under 50 msec
- Proven false alarm immunity
- Unparalleled reliability - 150,000 hours MTBF
- Best in class temperature range: -76°F (-60°C) to 185°F (85°C)
- Enhanced durability backed up by five-year warranty
- Six sensitivity levels, adapting to any application
- Smart field of view integrity test, allowing flawless operation
- Innovative infrared built-in test - continuously validating the optical integrity and the electronic circuitry
- Multiple output options for maximum compatibility with standard infrastructures
- Plug and play - factory calibrated for immediate use in any fire detection system
- Universal wiring option for fast ordering process
- Two mode heated optics for impeccable performance in challenging environmental conditions
- Worldwide and regionally certified for hazardous areas
- Performance and reliability approved by recognizable certification bodies
- SIL3 compatible
- Internal log event recorder to analyze past events
- ¾ in (20 mm) NPT Electrical Cable Entries
- Stainless Steel 316 Enclosure

### Applications

- Oil & gas onshore and offshore installations and pipelines
- Chemical and petrochemical plants
- Storage tank farms
- Fuel and gas processing and storage facilities
- Power generation
- Explosives and munitions
- Fertilizer plants
- Automotive industry
- Vehicle battery charging stations
- Hydroxyl production and storage
- Aerospace industry
- Waste management facilities
- Pharmaceutical industry
- Printing
- Warehouses
- Hazardous materials storage areas
- Food processing



General Specifications						
<b>Spectral Response</b>	Four infrared (IR) bands between 4 μm and 5 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>
	Gasoline	300/90	Liquefied petroleum gas (LPG)(1)	210/63	Ethylene glycol	164/50
	n-Heptane	300/90	Polypropylene pellets	163/49	Butyl acrylate	246/75
	Diesel	210/63	Office paper	115/34	Vinyl acetate	246/75
	JP5	210/63	Gun powder (1.5 in <sup>2</sup> (10 cm <sup>2</sup> ))	197/60	Flammable adhesive (flash point < 140 °F (60 °C))	210/63
	Kerosene	210/63	Fireworks (10 pieces per test)	33/10	Solvents	246/75
	Ethanol 95%	185/55	Cooking oil	210/63	Oil paint	210/63
	Isopropyl alcohol (IPA)	185/55	Mineral oil (20w50)	210/63	Jet A1	210/63
	Methanol	185/55	Wood	111/34	Battery(2)	279/85
	Methane(1)	210/63				
	(1) 30 in (0.75 m) high, 10 in (0.25 m) wide plume fire (2) One battery cell					
<b>Response Time</b>	<ul style="list-style-type: none"> <li>■ Standard response: Typically &lt; 2 sec at 131 ft (40 m) and 10 sec at 300 ft (90 m)</li> <li>■ Ultra fast response: Typically &lt; 1 sec at 100 ft (30 m)</li> <li>■ High speed response (explosion): 50 msec for 1 ft (0.30 m) diameter sphere LPG/air mixture explosion at 32.8 ft (10 m) via analog voltage output</li> </ul>					
<b>Sensitivity Ranges</b>	6 sensitivity ranges for 1 ft <sup>2</sup> (0.1 m <sup>2</sup> ) n-heptane pan fire					
<b>Field of View</b>	Horizontal: 100° Vertical: 95°					
<b>Temperature Range</b>	Operating: -76°F (-60°C) to 185°F (85°C) (Self-Declaration) Storage: -76°F (-60°C) to 185°F (85°C) (Self-Declaration)					
<b>Humidity</b>	Non-condensing relative humidity up to 100%					

Electrical Specifications	
<b>Operating Voltage</b>	24 VDC nominal (18-32 VDC)
<b>Power Consumption</b>	Standby: Maximum 3 W (8 W with heated window) Alarm: Maximum 4.2 W (9.6 W with heated window)
<b>Cable Entries</b>	2 x 3/4" - 14NPT conduits or 2 x M25 x 1.5 mm ISO
<b>Electrical Input Protection</b>	According to EN 50130
<b>Electromagnetic Compatibility</b>	EMI/RFI protected to EN61000-6-3 and EN 50130
<b>Electrical Interface</b>	The detector includes 17 terminals, one wiring option



Outputs	
Relays	Alarm, Fault and Auxiliary SPST volt-free contacts rated 2A at 30 VDC
Analog Output	Analog port malfunction: 0 V (<0.5 V) Normal: 2 V ± 0.3 V Alarm/explosion: 5 V ± 0.3 V
0-20 mA (stepped)	Fault: 0 ± 1 mA Built-in test (BIT) fault: 2 mA ± 0.3 mA Normal: 4 mA ± 0.3 mA Warning: 16 mA ± 0.3 mA Alarm: 20 mA ± 0.3 mA
HART Protocol	HART communication on the 0-20 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	Stainless Steel 316 with electro polish finish
Mounting	Stainless Steel 316L with electro polish finish
Dimensions	Detector: 4 x 4.6 x 6.18 in (100.6 x 117 x 155 mm)
Weight	Detector (SST) 6.3 lb (2.9 kg)                      Tilt mount: 2.5 lb (1.1 kg)
Environmental Standards	DNV 2-4
Water and Dust	IP66 and IP68 per EN60529 NEMA <sup>®</sup> 250 6P

Terminal	Function	Terminal	Function
T1	24 Vdc (+)	T10	0-20 mA (+)
T2	24 Vdc (-)	T11	0-20 mA (-)
T3	External built-in test (BIT) switch	T12	Alarm output (40/40D models)
T4	Fault relay - normally open	T13	RS485 (+)
T5	Fault relay	T14	RS485 (-)
T6	Fault relay - normally closed	T15	Accessory relay - normally open
T7	Alarm relay - normally open	T16	Accessory relay
T8	Alarm relay	T17	Accessory relay - normally closed
T9	Alarm relay - normally closed		

Approvals	
Hazardous Area	FM/FMC/CSA Class I Division 1, Groups B, C, and D, T4 Class II/III Division 1, Groups E, F, and G, T4 Class I, Division 2, Groups B, C, and D, T4 Ta = -50 °C to +85 °C Type 6P; IP 66/68 6.6 ft (2 m) for 45 minutes
Performance	EN54-10   FM3260
Reliability	IEC61508 - SIL3 (TUV)
Marine	MED 'Wheelmark' approval (DNV)



## Ordering Information

Model Number	Description	P/N
40/40D-I	Detector, Flame, IR3, Stainless Steel, 85C, 40/40D-I-632SFN7	95911
877090	Mount, Tilt, for 40/40D Flame Detector	95910
877670	Mount, Duct, for 40/40D Flame Detector	95909
789260-2	Mount, U-Bolt/Pole, 2 in Pole, for 40/40D Flame Detector	95908
789260-1	Mount, U-Bolt/Pole, 3 in Pole, for Tilt Mount Flame Detector	98675
794079	Kit, Wire-Harness, USB RS-485, for 40/40D	95904
877650	Shield, Air, for 40/40D Flame Detector	95905
877263 <sup>1</sup>	Cover, Protective, Plastic, for Detector, Flame, 40/40D	95906
877163	Cover, Protective, Stainless Steel, for Detector, Flame, 40/40D	95907
FS-1100	Simulator, Flame, FS-1100, For IR3 Flame Detectors	97235

<sup>1</sup> Supplied free of charge with the detector.

*Note: Approvals/Listings maintained by and manufactured by Spectrex Inc.*

The seller makes no warranties, express or implied, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose, except as expressly stated in the seller's sales contract or sales acknowledgment form. Every attempt is made to keep our product information up-to-date and accurate. All specific applications cannot be covered, nor can all requirements be anticipated. All specifications are subject to change without notice.



1102 Rupcich Drive  
 Millennium Park  
 Crown Point, IN 46307  
 TEL: (219) 663-1600 FAX: (219) 663-4562  
 e-mail: [info@janusfiresystems.com](mailto:info@janusfiresystems.com)  
[www.janusfiresystems.com](http://www.janusfiresystems.com)