

Spectrex SharpEye™ 40/40D-I

Ultra Fast Multispectrum Quad-Sense™ Flame Detector



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!

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Features and benefits

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

- 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

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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

Ordering information

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Model

Code	Description
-I	Quad-Sense™ triple infrared (IR3)

Wiring

Code	Description
-6	Universal

Operating temperature range

Code	Description
3	-76 °F (-60 °C) to 185 °F (85 °C)

Electrical cable entries

Code	Description
1	M25
2	¾-in NPT

Enclosure

Code	Description
S	Stainless steel 316
A	Aluminum polyurethane painted

Hazardous area approval

Code	Description
B	Inmetro (pending)
F	FM, FMC, Canadian Standardization Association (CSA) for United States and Canada
C	ATEC, IECEX
R	EAC CU TR

Tilt mount

Code	Description
Y	Including tilt mount stainless steel 316
N	Without tilt mount

Protective cover

Code	Description
7	ABS plastic
8	Stainless steel 316

Special option (optional)

Code	Description
H	Enhanced Hot CO ₂ discrimination

Accessories

Part number	Description
FS-1100	Flame simulator (ex proof)
877090	Tilt mount
877670	Duct mount
789260-2	U-bolt/pole mount 2-in
789260-1	U-bolt/pole mount 3-in
794079	USB RS-485 harness kit
877650	Air shield
877263 ⁽¹⁾	Protective cover (Plastic)

Part number	Description
877163	Protective cover (Stainless steel)

(1) Supplied free of charge with the detector.

Specifications

Table 1: Detection Ranges

At highest sensitivity setting for 1 ft² (0.1 m²) pan fire.

Fuel	Range (ft/m)
Gasoline	300/90
n-Heptane	300/90
Diesel	210/63
JP5	210/63
Kerosene	210/63
Ethanol 95%	185/55
Isopropyl alcohol (IPA)	185/55
Methanol	185/55
Methane ⁽¹⁾	210/63
Liquefied petroleum gas (LPG) ⁽¹⁾	210/63
Polypropylene pellets	163/49
Office paper	115/34
Gun powder (1.5 in ² (10 cm ²))	197/60
Fireworks (10 pieces per test)	33/10
Cooking oil	210/63
Mineral oil (20w50)	210/63
Wood	111/34
Ethylene glycol	164/50
Butyl acrylate	246/75
Vinyl acetate	246/75
Flammable adhesive (flash point < 140 °F (60 °C))	210/63
Solvents	246/75
Oil paint	210/63
Jet A1	210/63
Battery ⁽²⁾	279/85

(1) 30 in (0.75 m) high, 10 in (0.25 m) wide plume fire

(2) One battery cell

Table 2: General Specifications

Spectral response	Four infrared (IR) bands between 4 μm and 5 μm
Detection response time	<ul style="list-style-type: none"> ■ Standard response: Typically < 2 sec at 131 ft (40 m) and 10 sec at 300 ft (90 m) ■ Ultra fast response: Typically < 1 sec at 100 ft (30 m) ■ 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
Sensitivity ranges	6 sensitivity ranges for 1 ft ² (0.1 m ²) n-heptane pan fire
Field of view	Horizontal: 100 ° Vertical: 95 °
Temperature range	Operating: -76 °F (-60 °C) to 185 °F (85 °C) ⁽¹⁾ Storage: -76 °F (-60 °C) to 185 °F (85 °C) ⁽¹⁾
Humidity	Non-condensing relative humidity up to 100%

(1) Self declaration

Table 3: Electrical Specifications

Operating voltage	24 Vdc nominal (18-32 Vdc)
Power consumption	Standby: Maximum 3 W (8 W with heated window) Alarm: Maximum 4.2 W (9.6 W with heated window)
Cable entries	2 x ¾-in - 14 NPT conduits or 2 x M25 x 1.5 mm ISO
Electrical input protection	According to EN 50130
Electromagnetic compatibility	EMI/RFI protected to EN61000-6-3 and EN 50130
Electrical interface	The detector includes 17 terminals, one wiring option

Table 4: Outputs

Relays	Alarm, fault, and auxiliary SPST volt-free contacts rated 2 A at 30 Vdc
Analog output	Analog port malfunction: 0 V (<0.5 V) Normal: 2 V \pm 0.3 V Alarm/explosion: 5 V \pm 0.3 V
0-20 mA (stepped)	Fault: 0 \pm 1 mA Built-in test (BIT) fault: 2 mA \pm 0.3 mA Normal: 4 mA \pm 0.3 mA Warning: 16 mA \pm 0.3 mA Alarm: 20 mA \pm 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

Table 5: Mechanical Specifications

Enclosure options	Electropolished stainless steel 316 Heavy duty copper free aluminum (less than 1%), polyurethane painted
Mounting	Electropolished stainless steel 316
Dimensions	Detector: 4 x 4.6 x 6.18 in (100.6 x 117 x 155 mm)
Weight	Detector stainless steel: 6.3 lb (2.9 kg) Detector aluminum: 2.8 lb (1.3 kg) Tilt mount: 2.5 lb (1.1 kg)
Environmental standards	DNV 2-4
Water and dust	IP66 and IP68 per EN60529 NEMA® 250 6P

Approvals

Hazardous area

ATEX and IECEx

Ex II 2GD
Ex db eb IIC T4 Gb
Ex tb IIIC T110 °C Db
Ta = -50 °C to +85 °C
IP66/IP68

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

TR CU (EAC)

1Ex d e IIC T4 Gb
Ex tb IIIC T110 °C Db
Ta = -60 °C to +85 °C
IP66/IP68

In Metro

Pending

Marine

MED "Wheelmark" (DNV)

Performance

EN54-10 | FM3260

Reliability

IEC61508 - SIL3 (TUV)

For more information: www.emerson.com

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