

# Spectrex SharpEye™ 40/40C-M

## Multispectrum Quad-Sense™ Flame Detector



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

Featuring enhanced performance, advanced long distance detection of hydrogen and hydrocarbon fires, fast detection in under five seconds and strengthened reliability, the SharpEye 40/40C-M is based on proven triple infrared (IR3) technology, ensuring high sensitivity with superior immunity to false alarms and surely keeping a SharpEye on your safety!



# Features and benefits

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

- Advanced long distance detection of hydrogen and hydrocarbon-based fuel and gas fires at up to 215 ft (65 m)
- Fast detection, under five sec
- Proven false alarm immunity
- Unparalleled reliability - 150,000 hours MTBF
- Wide temperature range: -40 °F (-40 °C) to 167 °F (75 °C)
- Enhanced durability backed up by with three-year warranty
- Five sensitivity levels, adapting to any application
- Innovative IR 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
- Heated optic 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
- Hydrogenation (petroleum refining, food processing, and chemical)
- 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
- Pharmaceutical industry
- Printing
- Hazardous materials storage areas
- Food processing
- Light industrial

## Ordering information

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### Model

Code	Description
-M	Quad-Sense triple infrared (IR3)

### Wiring

Code	Description
-6	Universal

### Operating temperature range

Code	Description
4	-40 °F (-40 °C) to 167 °F (75 °C)

### Electrical cable entries

Code	Description
1	M25
2	¾-in NPT

### Enclosure

Code	Description
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	ATEX, 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

## Accessories

Part number	Description
FS-1400	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 <sup>(1)</sup>	Protective cover (Plastic)
877163	Protective cover (Stainless steel)

(1) Supplied free of charge with the detector.

## Specifications

**Table 1: Detection Range**

At highest sensitivity setting for 1 ft<sup>2</sup> (0.1 m<sup>2</sup>) pan fire.

Fuel	Range (ft/m)
Gasoline	215/65
n-Heptane	215/65
Diesel	150/45
JP5	150/45
Kerosene	150/45

Table 1: Detection Range (continued)

Fuel	Range (ft/m)
Ethanol 95%	135/40
Isopropyl alcohol (IPA)	135/40
Methanol	135/40
Methane <sup>(1)</sup>	150/45
Liquefied petroleum gas (LPG) <sup>(1)</sup>	150/45
Polypropylene pellets	115/35
Office paper	83/25
Hydrogen <sup>(1)</sup>	118/36
Gun powder (1.5 in <sup>2</sup> (10 cm <sup>2</sup> ))	141/43
Fireworks (10 pieces per test)	23/7
Cooking oil	150/45
Mineral oil (20w50)	150/45
Wood	83/25
Ethylene glycol	118/36
Butyl acrylate	177/54
Vinyl acetate	177/54
Flammable adhesive (flash point 140 °F (60 °C))	150/45
Solvents	177/54
Oil paint	150/45
Jet fuel A1	150/45
Battery <sup>(2)</sup>	200/61

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

(2) One battery cell

Table 2: General Specifications

Detection response time	Standard response: Typically < 5 sec
Sensitivity ranges	5 sensitivity ranges for 1 ft <sup>2</sup> (0.1 m <sup>2</sup> ) n-heptane pan fire
Field of view	For hydrogen, horizontal: 90 °; vertical: 90 ° For other fuel, horizontal: 80 °; vertical: 80 °
Temperature range	Operating: -40 °F (-40 °C) to 167 °F (75 °C) Storage: -40 °F (-40 °C) to 167 °F (75 °C)
Humidity	Non-condensing relative humidity up to 100%

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 W with heated window)
Cable entries	2 x ¾ in - NPT conduits or 2 x M25 x 1.5 mm ISO

Table 3: Electrical Specifications (continued)

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 and 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: 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 communications on the 0-20 mA 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	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 aluminum: 2.8 lb (1.3 kg) Tilt mount: 2.5 lb (1.1 kg)
Water and dust	IP66 and IP68 per EN 60529, NEMA® 250 6P

# Approvals

## Hazardous area

### ATEX and IECEx

Ex II 2GD  
Ex db eb IIC T4 Gb  
Ex tb IIIC T100 °C Db  
Ta = -40 °C to +75 °C  
IP66/IP68

### FM/FMC/CSA

Class I, Division 1, Groups B, C, and D, T4A  
Class II, III, Division 1, Groups E, F, and G, T4A  
Class I, Division 2, Groups A, B, C, and D, T4  
Ta = -40 °C to +75 °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 T100 °C Db  
Ta = -40 °C to +75 °C  
IP66/IP68

### In Metro

Pending

## Performance

EN54-10 | FM3260

## Reliability

IEC61508 - SIL3 (TUV)









For more information: [www.emerson.com](http://www.emerson.com)

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