Spectrex SharpEye™ 40/40C-I

Multispectrum Quad-Sense™ Flame Detector

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

Featuring enhanced performance, advanced long distance detection of hydrocarbon fires at up to 215 ft. (65 m), fast detection in under five seconds and strengthened reliability, the 40/40C-I is based on proven Triple-IR (IR3) technology, ensuring high sensitivity with superior immunity to false alarms and surely keeping a SharpEye on your safety!.

Features and benefits

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

- Advanced long distance detection of hydrocarbon-based fuel and gas fires at up to 215 ft. (65 m)
- Fast detection, under five seconds
- Proven false alarm immunity
- Unparalled reliability - 150,000 hours MTBF
- Best in class temperature range:
  -40 to +185 °F (-40 to +75 °C)
- Enhanced durability backed up by with five-year warranty
- Five sensitivity levels, adapting to any application
- Smart field of view integrity test, allowing flawless operation
- 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
- Two mode heated optics for impeccable performance in challenging environmental conditions
- Worldwide and regionally certified for hazardous areas
- Performance and reliability approved by recognable certification bodies
- SIL3 compatible

Applications examples

- Offshore oil and gas installations
- Onshore oil and gas installations and pipelines
- Chemical plants
- Petrochemical plants
- Storage tank farms
- Fuel and gas processing and storage facilities
- Power generation facilities
- Explosives and munitions
- Fertilizer plants
- Automotive industry
- Vehicle battery charging stations
- Hydroxyl production and storage
- Aerospace industry
- Waste disposal facilities
- Pharmaceutical industry
- Printing industry
- Hazardous materials storage areas
- Food processing
- Light industrial

Specifications

Table 1: General Specifications

Spectral response	Four infrared bands: 4 µm, 4.4 µm, 4.5 µm, 5 µm
Detection ranges (at highest sensitivity setting for 1 ft^2 [0.1 m^2] pan fire)	See Table 3.
Sensitivity ranges	5 sensitive ranges for 1 ft^2 (0.1 m^2) n-heptan pan fire from 50 ft. (15 m) to 215 ft. (65 m)
Field of view	Horizontal: 100°, vertical: 95°
Temperature range	Operating: -40 to +185 °F (-40 to +75 °C) Storage: -40 to +185 °F (-40 to +75 °C)
Humidity	Non-condensing relative humidity up to 100%

Table 2: Detection Response Time

Standard response time	Typically < 5 seconds

Table 3: Detection Range

Fuel	ft/m
Gasoline (Petrol)[1]	215/65
N-Heptane[1]	215/65
Diesel fuel[1]	150/45
Methane[2]	150/45
Liquefied petroleum gas (LPG)[2]	150/45
Kerosene[1]	150/45
Jet fuel JP5[1]	150/45
Jet fuel A1[1]	150/45
Ethanol 95%[1]	57/17
Isopropyl alcohol (IPA)[1]	135/40
Methanol[1]	115/35
Ethylene glycol[1]	23/7
Solvents[1]	177/54
Flammable adhesive (flash point 140 °F < 60 °C)[1]	150/45
Butyl acrylate[1]	177/54
Vinyl acetate[1]	177/54
Oil paint[1]	150/45
Gun powder[3]	141/43
Fireworks[4]	23/7
Magnesium alloy[5]	33/10
Polypropylene pellets[1]	115/35

Table 3: Detection Range *(continued)*

Office paper[1]	83/25
Wood[1]	83/25
Mineral oil (20w50)[1]	150/45
Cooking oil[1]	150/45
Lithium ion battery[6]	200/61

(1) 1 ft x 1 ft (0.3 m x 0.3 m) pan
(2) 2.46 ft. (0.75 m) high, 0.82 ft. (0.25 m) width plume fire
(3) 1.5-in. sq.
(4) 10 pcs per test
(5) Only for UV detector
(6) One cell of battery per test

Table 4: Electrical Specifications

Operating voltage	24 Vdc nominal (18-32 Vdc)
Power consumption	Standby: Max. 3 W (8 W with heated window) Alarm: Max. 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 EN50130
Electromagnetic compatibility	EMI/RFI protected to EN61000-6-3 and EN50130
Electrical interface	The detector includes 17 terminals with one wiring option

Table 5: Outputs

Relays	Alarm, fault, and auxiliary SPST volt-free contacts rated 2 A at 30 Vdc
Analog voltage output	Analog port malfunction: 0 V (< 0.5 V) Nomal: 2 V ± 0.3 V Alarm/Explosion: 5 V ± 0.3 V
0-20 mA (stepped)	±0.3 mA for 2 mA and 4 mA, and ±0.5 mA for 16 mA and 20 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 6: Mechanical Specifications

Enclosure options	Electropolished Stainless Steel 316 Heavy duty copper free aluminum (less than 1%), polyurethane paint
Mounting	Tilt mount material-stainless steel 316 with electro polish finish
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: 2.8 lb. (1.3 kg) Tilt mount: 2.5 lb. (1.1 kg)

Table 6: Mechanical Specifications *(continued)*

Environmental standards	DNV 2-4
Water and dust	IP66 and IP68 per EN60529, NEMA 250 6P

Table 7: Approvals

Hazardous area	ATEX and IECEx	Ex II 2 G D Ex db eb IIC T4 Gb Ex tb IIIC T110 °C Db (-40 °C ≤ T_a ≤ $+75$ °C)
	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 T_a = -40 °C to $+75$ °C NEMA Type Rating 6P
	TR CU (EAC)	Ex db eb IIC T4 Gb X Ex tb IIIC T110 °C Db X (-40 °C ≤ T_a ≤ $+75$ °C)
Marine	MED "Wheelmark" (DNV)	
Performance	EN54-10 (VdS) | FM3260	
Reliability	IEC61508 - SIL3 compatible	

Table 8: Accessories

Accessory	Part number
Flame simulator (Ex proof)	FS-1100
Tilt mount	877090
Duct mount (Ex proof)	877670
U-bolt/pole mount	2-in. (50.8 mm) pole: 789260-2
	3-in. (76.2 mm) pole: 789260-1
USB RS-485 harness kit	794079
Air shield	877650
Protective cover	877263 (conductive ABS plastic)[1]
	877163 (PU painted stainless steel 316)