Product Data Sheet
00913-0200-4978, Rev AA
March 2021

Spectrex SharpEye™ 40/40C-LB

Integrated UV/IR Flame Detector

The SharpEye 40/40C-LB UV/IR flame detector is part of the leading, next generation SharpEye 40/40 series.

Featuring fast detectionin under five seconds with proven immunity to false alarms, the integrated UV and IR optical sensors detect flames with a large variety of hazardous sources, such as hydrocarbon-based fuel and gas, hydroxyl, hydrogen, metal, inorganic, etc., ensuring flawless performance to keep a SharpEye on your safety!

SPECTREX

Features and benefits

Integrating UV and IR optical sensors for detection of fires from a large variety of hazardous sources, such as hydrocarbon-based fuel and gas, hydroxyl, hydrogen, metal, inorganic, etc.

- Fast detection under five seconds
- Proven false alarm immunity
- Unparalled reliability - 150,000 hours MTBF
- Wide temperature range:
  -40 to +185 °F (-40 to +75 °C)
- Worldwide and regionally certified for hazardous areas
- Performance and reliability approved by recognable certification bodies
- SIL3 compatible
- Enhanced durability backed up by with five-year warranty
- Smart field of view integrity test, allowing flawless operation
- Innovative UV & IR Built-In-Test - continiously 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
- Three sensitivity levels, adapting to any application
- Two mode heated optics for impeccable performance in challenging environmental conditions

Contents

Applications examples

- Offshore oil and gas installations
- Onshore oil and gas installations and pipelines
- Chemical plants
- Petrochemical plants
- Storage tank farms
- Aircraft hangars
- Power generation facilities
- Explosives and munitions
- Automotive industry
- Aerospace industry
- Waste disposal facilities
- Hydrogen fuel cell industry
- Hydrogen vehicle parking and refueling
- Battery charging areas
- Pharmaceutical industry
- Printing industry
- Refinary hydrogenation
- Warehouses
- Space industry hydroxyl propellant
- Static fuel cell systems
- Light industrial

Specifications

Table 1: General Specifications

Spectral response	UV: 0.185–0.260 µm; IR: 2.5–3.0 µm
Detection ranges (at highest sensitivity setting for 1 ft^2 [0.1 m^2] pan fire)	See Table 3.
Sensitivity ranges	2 sensitive ranges for 1 ft^2 (0.1 m^2) n-heptan pan fire
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
Hydrogen(1)	37/11
Gasoline (Petrol)(2)	50/15
N-Heptane(2)	50/15
Diesel fuel(2)	37/11
Methane(3)	26/8
Liquefied petroleum gas (LPG)(3)	43/13
Kerosene(2)	37/11
Jet fuel JP5(2)	37/11
Jet fuel A1(2)	37/11
Ethanol 95%(2)	57/17
Isopropyl alcohol (IPA)(2)	25/7.5
Methanol(2)	25/7.5
Ethylene glycol(2)	12/3.7
Solvents(2)	37/11
Flammable adhesive (flash point 140 °F < 60 °C)(2)	37/11
Butyl acrylate(2)	37/11
Vinyl acetate(2)	37/11
Oil paint(2)	37/11
Gun powder(4)	33/10
Fireworks(5)	5/1.6
Magnesium alloy(6)	33/10

Table 3: Detection Range *(continued)*

Polypropylene pellets(2)	33/10
Office paper(2)	16/5
Wood(2)	16/5
Mineral oil (20w50)(2)	37/11
Cooking oil(2)	37/11
Lithium ion battery(7)	39/12

(1) *2.46 ft. (0.75 m) high, 0.82 ft. (0.25 m) width plume fire*
(2) *1 ft x 1 ft (0.3 m x 0.3 m) pan*
(3) *2.46 ft. (0.75 m) high, 0.82 ft. (0.25 m) width plume fire*
(4) *1.5-in. sq.*
(5) *10 pcs per test*
(6) *Only for UV detector*
(7) *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)	Fault: 0 ±1 mA 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 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

Table 6: Mechanical Specifications *(continued)*

Mounting	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)
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) IP66/68
	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 Type 6P; IP 66/68 2 m for 45 minutes
	TR CU (EAC)	II 2 GD 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-1200
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)

(1) *Supplied free of charge with the detector*

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For more information: **www.emerson.com**