Spectrex SharpEye™ 40/40D-LB

Ultra Fast Ultraviolet Infrared Flame Detector

The SharpEye 40/40D-LB Ultra Fast UV/IR Flame Detector is part of the leading, next generation SharpEye 40/40 series.

Detects flames with a large variety of hazardous sources, such as hydrocarbon-based fuel and gas, hydroxyl, hydrogen, metal, inorganic, etc.

Featuring ultra fast detection in 20 msec with proven immunity to false alarms, integrating UV and IR optical sensors to ensure flawless performance to keep a SharpEye on your safety!

Features and benefits

Integrating ultraviolet (UV) and infrared (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.

- Superior detection range of hydrogen and hydrocarbon-based fuel and gas fires up to 92 ft (28 m).

- Extended detection range more than doubles detection coverage

- 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)

- Worldwide and regionally certified for hazardous areas

- Performance and reliability approved by recognizable certification bodies

- SIL3 compatible

- Enhanced durability backed up with five-year warranty

- Smart field of view integrity test, allowing flawless operation

- Innovative UV and 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

- Three sensitivity levels, adapting to any application

- Two mode heated optics for impeccable performance in challenging environmental conditions

- Internal log event recorder to analyze past events

Contents

Applications

- Oil and 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
- Waste management facilities
- Hydrogen fuel cell industry
- Pharmaceutical industry
- Printing
- Hazardous materials storage areas
- Food processing
- Silane storage and processing

Ordering information

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Model

Code	Description
-LB	Ultraviolet/infrared (UV/IR)

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 approvals

Code	Description
B	INMETRO
F	USA and Canada Explosion-Proof[1]
C	ATEX/IECX/UKCA
R	EAC CU TR

(1) *Aluminum enclosure: FM, FMC*

Stainless steel enclosure: FM, FMC, CSA US/C

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-1200	Flame simulator (ex proof)
877090	Tilt mount
877670	Flame detector duct mount assembly(ex proof)
789260-2	Flame detector pole mount assembly, 2 in.
789260-1	Flame detector pole mount assembly, 3 in.
789260-3	Flame detector pole mount assembly, 4 in.
794079	USB RS-485 harness kit
877650	Flame detector air shield assembly
877263	Protective cover (Plastic)
877163	Protective cover (Stainless steel)
877563	Field of view limiter

Specifications

Table 1: Detection ranges

At highest sensitivity setting for 1 ft.^{2} (0.1 m^2) pan fire

Fuel	Range (ft./m)
Gasoline	93/28
n-Heptane	93/28
Diesel	70/21
JP5	70/21
Kerosene	70/21
Ethanol 95%	57/17
Isopropyl alcohol (IPA)	70/21
Methanol	57/17
Methane[1]	60/18
Liquefied petroleum gas (LPG)[1]	60/18
Polypropylene pellets	60/18
Office paper	33/10
Hydrogen[1]	70/21
Magnesium alloy	33/10
Gun powder (1.5 in^2 [10 cm^2])	67/20
Fireworks (10 pieces per test)	10/3
Cooking oil	70/21
Mineral oil (20w50)	70/21
Wood	33/10
Ethylene glycol	23/7
Butyl acrylate	70/21
Vinyl acetate	70/21
Flammable adhesive (flash point < 140 °F [60 °C])	70/21
Solvents	70/21
Oil paint	70/21
Jet fuel A1	70/21
Battery[2]	77/23
Ammonia fire[3]	30/9
Silane fire[4]	67/20

(1)   *30-in. (0.75 m) high, 10-in. (0.25 m) wide plume fire*
(2)   *One lithium ion battery cell. Height: 2.6 in. (65 mm). Diameter: 0.72 in. (18.4 mm)*
(3)   *Available for SharpEye 40/40D-M, 40/40D-LB, and 40/40DL-4B only.*
(4)   *Available for SharpEye 40/40D-LB only.*

Table 2: General specifications

Spectral response	Ultraviolet: 0.185 to 0.260 μm Infrared: 2.5 to 3.0 μm

Table 2: General specifications *(continued)*

Detection response time	Standard response: Typically 5 sec at 93 ft. (28 m) Ultra fast response: 20 msec for flash fire pan fire from 10 ft. (3 m) distance via analog voltage output High speed response (explosion): 50 msec for 1 ft. (0.3 m) diameter sphere LPG-air mixture explosion at 32.8 ft. (10 m) distance via analog voltage output
Sensitivity ranges	3 sensitivity ranges
Field of view	Horizontal: 100 ° Vertical: 95 °
Coverage area	12,999 ft^3 (3962 m^3)
Temperature range	Operating: -76 to +185 °F (-60 to +85 °C) Storage: -76 to +185 °F (-60 to +85 °C)
Humidity	Non-condensing relative humidity up to 100%

Table 3: Electrical specifications

Operating voltage	24 Vdc nominal (18-32 Vdc)
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 and one wiring option

Table 4: Typical power consumption (24 Vdc)

Mode	mA	Watts
Normal power consumption without heater	90	2.2
Normal power consumption without heater, with alarm	120	2.9
Low power mode heater with alarm	180	4.3
Standard power mode heater with alarm	320	7.7

Table 5: Outputs

Relays	Alarm, fault, and auxiliary SPST volt-free contacts rated 2A at 30 Vdc
Analog voltage output default [1]	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) default[1]	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 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

[1]   *This output is configurable.*

Table 6: Mechanical specifications

Enclosure options	Electropolished stainless steel 316
	Heavy duty copper free aluminum (less than 1%), polyurethane painted
Tilt mount	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 EN 60529
	NEMA® 250 6P

Approvals

For approvals information, see Spectrex 40/40 Series Certification Information.

For more information: **Spectrex.net**

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