SPECTREX INC.

SafEye 400 SERIES

Flash Type UV Open Path Gas Detector

Well-Proven High Reliability

Main Features

Proven Technology
Used in highly sensitive areas to detect low toxic gas (H_2S, NH_3, Aromatics) concentration levels to activate alarms measures only when specific hazardous concentration levels are exceeded.

Cost Saving
One system can replace several point gas detectors in a straight line of sight, up to 330ft (100m). Low cost of ownership, much lower installation cost!

Fast Response
Adjustable light source flash rate gives high sensitivity and extremely fast detection time, up to 10 sec.

Harsh Environment
Specially designed to perform under extreme conditions such as high-speed airflows, humidity and corrosive gases where point detectors may not be effective.

Low Maintenance
High reliability, simple installation, alignment and maintenance, equipment not subject to poisoning.

Standard Interface Options
Standard 4-20 mA outputs or RS-485 output to allow networking (up to 64 detectors) to a central monitoring/PC system.
This feature also enables easy maintenance, local and remote diagnostic tools.

UV Open Path (Line Of Sight) Gas Detection System provides sensitive (PPM level) monitoring of Hydrogen Sulfide (H_2S), Ammonia and Aromatic gases.

SafEye Model 400 Open Path (line of sight) Gas Detector monitors toxic and aromatic gases at low concentrations over an optical path of up to 330ft (100m). The system has a fast response time of up to 10 seconds.

With its unique flashing light source, SafEye open path gas detector is immune to false alarms, which can be caused by direct or reflected radiation from sunlight, flares, illumination and other "black body" radiation sources.

The SafEye gas detection system can be used in highly sensitive areas to detect low gas concentration levels or in industrial applications where alarm condition is activated only when specific hazardous concentration levels are exceeded.

The SafEye, due to its special optics design, provides for an alignment tolerance of ±1/2° in all directions and is protected against false gas reading and alarms which are caused by partial obscuration and blocking, misalignment, vibration, flexing or tilts.

The SafEye unique flash source gives a very powerful radiation signal (10KW in a flicker frequency of 1-100KHz) for a very short time, less than one millisecond at pre-selected intervals. This patented feature enables the detector to address only the high intensity and ultra fast signals that correspond to fast changes in gas concentration, while ignoring all other background radiation.

An optional RS-485 output provides data communication for a single system or a network (as many as 64 detectors) to a host computer for central monitoring.

The SafEye system contains built-in temperature sensors located in the gas sensor compartment. Each SafEye unit is factory calibrated through the entire operating temperature range. The temperature compensating mechanism allows correct operation in changing and extreme temperatures while maintaining the system's accuracy. Its internal microprocessor will automatically compensate for low signals with its internal Automatic Gain Control (AGC).

General Specifications

Detected Gases

Detection of toxic gases such as hydrogen sulfide (H_2S), Ammonia (NH_3) and aromatic hydrocarbons such as Benzene, Toluene, Xylene, Styrene, etc.

Detection Range and Response Time

Model No.	410	411	412	413	414
Distance (ft)	3.3-13	6.6-26	23-82.5	49.5-165	99-330
Distance (m)	1-4	2-8	7-25	15-50	30-100
Response Time	1 sec.	2 sec.	5 sec.	10 sec.	10 sec.
Detected gas	H_2S	H_2S	H_2S	H_2S	H_2S

Model No.	420	421	422	423
Distance (ft)	3.3-13	6.6-26	23-82.5	49.5-165
Distance (m)	1-4	2-8	7-25	15-50
Response Time	1 sec.	2 sec.	5 sec.	10 sec.
Detected gas	Ammonia, Benzene/Xylene, Toluene, CS_2			

Immunity to False Alarm

Is not influenced by solar radiation, hydrocarbon flames and other external IR radiation sources.

Spectral Response

200-300 µm

Sensitivity Range

0-500 PPM.m Standard
0-200 PPM.m by dip-switch setting

Displacement/Misalignment Tolerance

± 1/2˚

Drift

Long-term ± 5% of full scale

Temperature Range

-40˚F (-40˚C) to 131˚F (55˚C)

Electrical Specifications

Power Supply

Standard - 24 VDC (18-32 VDC)

Power Consumption

Detector: 150mA @ 24 VDC (200 mA Peak)
Source: 100mA @ 24 VDC (220 mA Peak)

Electrical Connection

2 x 3/4″ - 14NPT conduits
or 2 x M25 x 1.5 mm ISO

Electrical Input Protection

Complete electrical interface protection against reversed polarity voltage, surges and spikes according to MIL-STD-1275A

Electromagnetic Compatibility

EMI/RFI protected CE Marked

Outputs

4-20mA

The 4-20mA current output is source configuration
Resistance Loop 100-600 Ω

RS-485

Serial communication for full control with maintenance and trouble shooting facility can be integrated for a network of max 64 detectors

Relays

	Type	Normal Position	Maximum Ratings
Alarm	SPDT	NO, NC	2A at 30VDC or 0.5 at 250 VAC
Accessory	SPST	Open	5A at 30VDC or 250VAC
Fault	SPST	Closed	5A at 30VDC or 250 VAC

Mechanical Specifications

Dimensions

5.2" (132mm) x 5.2" (132mm) x max. 11" (280mm)

Weight

Al. Encl.	Detector: max 8.8 lb (4 kg)	Source: max 10.8 lb (4.9 kg)
St. Encl.	Detector: max 14.3 lb (6.5 kg)	Source: max 16.7 lb (7.6 kg)

Mechanical Design

The standard detector housing is heavy-duty, copper-free (less than 1%) aluminum. The housing is finished in white epoxy enamel and is also available in 316L Stainless Steel* upon request.
** Carries an additional charge.*

Environmental Standards

Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical shock, High Temp, Low Temp

Water and Dust Tight

IP66 and 67
NEMA 250 6P

Hazardous Area Approvals

ATEX / Cenelec

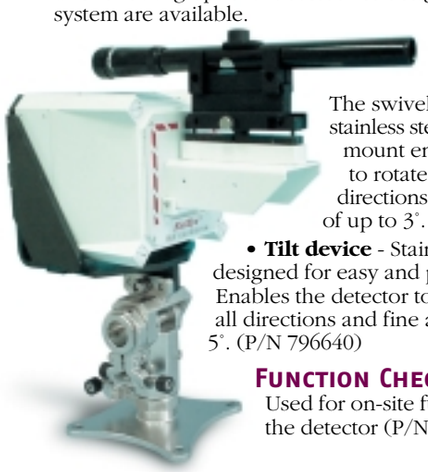
EX II 2G EExd IIB + H_2 T6 (55˚C)
EX II 2G EExde IIB + H_2 T6 (55˚C)

UL

UL No. - E209870, Class I Groups C and D Hazardous Location

Accessories

The following optional accessories designed for the SafEye system are available.



Mounting

• **Swivel mount** - The swivel mount is made of stainless steel 316L. The swivel mount enables the detector to rotate up to 30˚ in all directions and fine alignment of up to 3˚. (P/N 794765).

• **Tilt device** - Stainless steel 316L, designed for easy and precise alignment. Enables the detector to rotate up to 30˚ in all directions and fine alignment of up to 5˚. (P/N 796640)

Function Check Filter

Used for on-site functional testing of the detector (P/N 794260).

Alignment Telescope

Is used for simple on-site alignment of the detector with the light source. (P/N 794110)

Magnetic Switch

The magnetic mode selector is used in the field to change the detector's modes for alignment and calibration procedures (P/N 790285).

Typical Applications

The Series 400 SafEye system may be used to monitor toxic gas concentration in various applications such as:

• Petrochemical, pharmaceutical, and other chemical storage and production areas of aromatic hydrocarbons, such as Benzene, Toluene, Xylene, etc. • Toxic chemical storage sites and hazardous waste disposal areas. • Detection of H_2S in desulfurization processes at refineries, oil platforms, pipelines, refueling stations and fuel storage facilities. • Transportation depots and shipping warehouses of solvents (aromatic and polymers origin), degreasing and cleaning solvents. • Styrene monomer, polymers, plastic industries. • Ammonia production facilities, storage and transportation. • Air conditioning, refrigeration and agriculture application areas for ammonia and derivatives. • Semiconductor industry in which ammonia concentration monitoring is required.

Contact Information

New Jersey

218 Little Falls Road, Cedar Grove, NJ 07009, USA
Tel: +1 (973) 239-8398, 1 (800) 452-2107 *(Toll free US only),* Fax: +1 (973) 239-7614
e-mail: spectrex@spectrex-inc.com

UK

6 Applecross Road, Glasgow G66 3TJ,
United Kingdom
Tel: +44 (0) 141 578 0693, Fax: +44 (0) 141 578 9689
e-mail: ian@spectrex-inc.com

Houston

4723 Hidden Springs, Houston, TX 77084, USA
Tel: +1 (281) 463-6772, Fax: +1 (281) 463-1134
e-mail: Jspectrex@aol.com

Represented by:

SPECTREX INC.

DS-G-400, November 2003
Patent No. US 5,281,816; US 6,061,141; EP 0584389