

# SafEye

FLASH TYPE UV OPEN PATH GAS DETECTOR

# 400 SERIES



**WELL-PROVEN HIGH RELIABILITY**



## MAIN FEATURES

### PROVEN TECHNOLOGY

Used in highly sensitive areas to detect low toxic gas (H<sub>2</sub>S, NH<sub>3</sub>, 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<sub>2</sub>S), 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  $\pm 1/2^\circ$  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

<b>Detected Gases</b>	Detection of toxic gases such as hydrogen sulfide (H <sub>2</sub> S), Ammonia (NH <sub>3</sub> ) and aromatic hydrocarbons such as Benzene, Toluene, Xylene, Styrene, etc.						
<b>Detection Range and Response Time</b>	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 <sub>2</sub> S	H <sub>2</sub> S	H <sub>2</sub> S	H <sub>2</sub> S	H <sub>2</sub> S	
	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 <sub>2</sub>					
	<b>Immunity to False Alarm</b>	Is not influenced by solar radiation, hydrocarbon flames and other external IR radiation sources.					
	<b>Spectral Response</b>	200-300 μm					
<b>Sensitivity Range</b>	0-500 PPM.m Standard 0-200 PPM.m by dip-switch setting						
<b>Displacement/Misalignment Tolerance</b>	± 1/2°						
<b>Drift</b>	Long-term ± 5% of full scale						
<b>Temperature Range</b>	-40°F (-40°C) to 131°F (55°C)						

## ELECTRICAL SPECIFICATIONS

<b>Power Supply</b>	Standard - 24 VDC (18-32 VDC)
<b>Power Consumption</b>	Detector: 150mA @ 24 VDC (200 mA Peak) Source: 100mA @ 24 VDC (220 mA Peak)
<b>Electrical Connection</b>	2 x 3/4" - 14NPT conduits or 2 x M25 x 1.5 mm ISO
<b>Electrical Input Protection</b>	Complete electrical interface protection against reversed polarity voltage, surges and spikes according to MIL-STD-1275A
<b>Electromagnetic Compatibility</b>	EMI/RFI protected CE Marked

## OUTPUTS

<b>4-20mA</b>	The 4-20mA current output is source configuration Resistance Loop 100-600 Ω			
<b>RS-485</b>	Serial communication for full control with maintenance and trouble shooting facility can be integrated for a network of max 64 detectors			
<b>Relays</b>	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

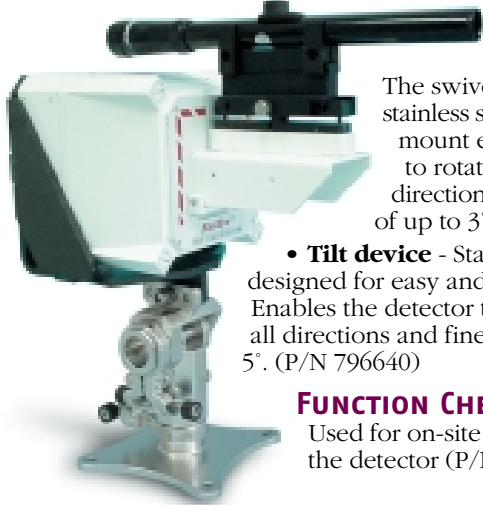
<b>Dimensions</b>	5.2" (132mm) x 5.2" (132mm) x max. 11" (280mm)		
<b>Weight</b>	Al. Encl.	Detector: max 8.8 lb (4 kg)	Source: max 10.8 lb (4.9 kg)
	St. Encl.	Detector: max 14.3 lb (6.5 kg)	Source: max 16.7 lb (7.6 kg)
<b>Mechanical Design</b>	The standard detector housing is heavy-duty, copper-free (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.		
<b>Environmental Standards</b>	Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical shock, High Temp, Low Temp		
<b>Water and Dust Tight</b>	IP66 and 67 NEMA 250 6P		

## HAZARDOUS AREA APPROVALS

<b>ATEX / Cenelec</b>	EX II 2G EExd IIB + H <sub>2</sub> T6 (55°C) EX II 2G EExde IIB + H <sub>2</sub> T6 (55°C)
<b>UL</b>	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<sub>2</sub>S 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

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