

# SafEye Xenon 800

## Open-Path Combustible Gas Detection System





Open-path gas detection system uses advanced Xenon Flash Source technology for fast, reliable detection of a wide range of hydrocarbons. Detects combustible gases below the lower explosive limit (LEL) over an open path up to 120 meters.

**Advanced features, proven design.**

The reliable technology used in the SafEye Xenon 800 Gas Detection System has excellent operational records in installations ranging from the African deserts to hot and humid regions of Asia, the wet and cold North Sea, and the dry cold regions of Alaska. New and advanced features include:

- Improved low-profile stainless steel housing for easy installation and alignment
- Heated detector and source optics eliminate icing, condensation, and snow on optical surfaces
- A unique combination of triple optics and dual-spectrum sensor allows the system to maintain operational integrity in up to 90% signal obscuration
- A 10-year warranty covers Xenon Flash Lamp
- 3mA maintenance call output
- Optional general purpose or intrinsically safe hand-held diagnostic/calibration unit

**Other features and benefits**

- High sensitivity and fast response to hydrocarbon gases C1 – C8
- Standard 4 –20 mA output and relay contacts

- RS-485 Modbus output
- Immunity to solar radiation, hydrocarbon flames, and other external IR radiation sources
- Automatic gain control
- One-person commissioning
- Robust stainless steel tilt mount
- Tested for performance to FM6325
- 3-year warranty for complete SafEye Xenon 800 System

**Applications**

Proven suitability for virtually all applications; indoor and outdoor installations in:

- Offshore oil and gas exploration and production
- Fence line emission monitoring at industrial sites
- Petrochemical storage areas
- LNG/LPG storage, pumping and filling
- Pipelines
- Paint booths and paint production
- Bus terminals [natural gas-powered vehicles]

## Description

The SafEye Xenon 800 detector uses a dual-beam concept. One detector wavelength is chosen as the reference that measures and adjusts for environmental effects, but is unaffected by gas within the beam path. The second sample wavelength is chosen to measure the target gas. The ratio of the two beams is continuously compared. When no gas is present, the two signals are equal. When a hydrocarbon gas cloud

crosses the beam, the sample signal is absorbed or reduced in proportion to the amount of gas present, while the reference is not. If obscuration of the beam occurs as a result of fog, rain, or other adverse weather conditions, both beams are affected equally.

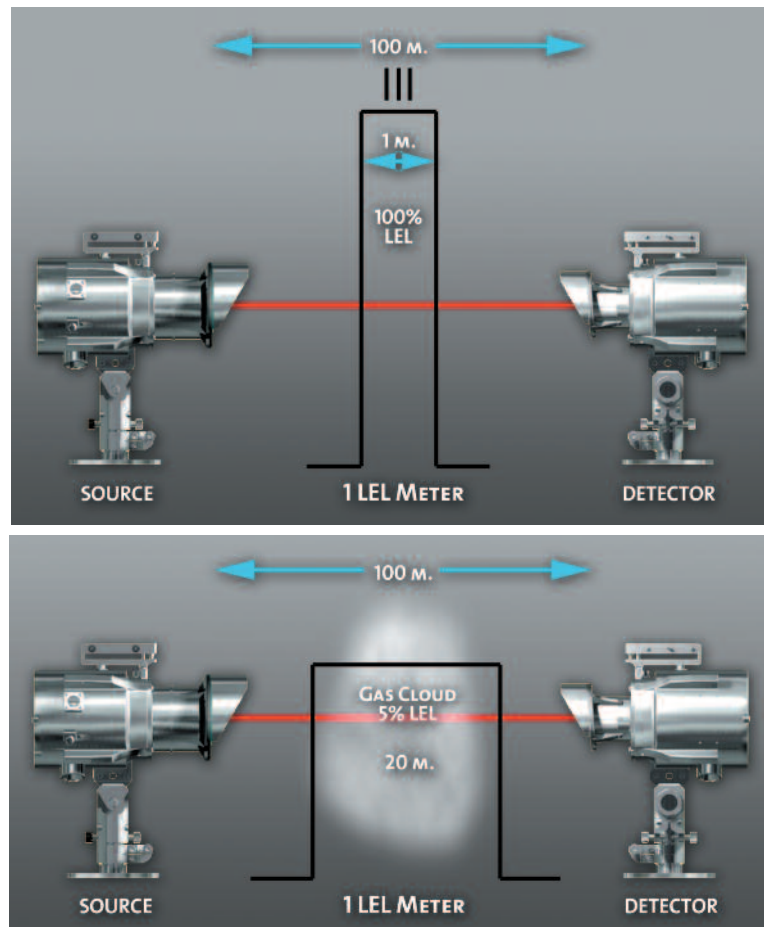
The SafEye Xenon 800 Detector also compensates for water vapor, a common

problem associated with outdoor monitoring. The automatic gain control enables the detector to operate in extreme environmental conditions, where signal obscuration levels of up to 90% can exist. In addition, the SafEye Xenon 800 Gas Detection System has a built-in temperature sensor to automatically compensate for temperature changes, and heated optics to eliminate icing, condensation, and snow on the optics.

## Open path theory

Diffusion point-type gas detectors measure the amount of gas over a small area. The SafEye 800 Open Path Gas Detection System measures the gas cloud concentration over many meters where the gas concentration will not be uniform. Instead of the gas measurement unit of % LEL for the flammable gas, widely used for point-type gas detectors, the unit of measurement for open path is the LEL meter.

An LEL meter is defined as an integral of the gas concentration along the optical path expressed in units of concentration multiplied by distance:  
100% LEL x 1 meter = 1 LEL meter  
5% LEL x 20 meter = 1 LEL meter



## Installation and operation

Both source and detector are mounted on a robust stainless steel tilt mount with a small installation footprint and easy X and Y axis adjustments. After the source and detector are mounted with a clear line of sight, alignment is easily completed

using a telescope. A handheld diagnostic unit can be used to check that the installation and alignment have been completed successfully.

The same hand-held unit can be used for maintenance, troubleshooting and configuration, providing information on the detector status, current gas reading, detector signals, and serial number.

## Typical Product Specification

<b>Detected gases:</b>	Simultaneous C1 to C8 flammable gases	
<b>Detection response time:</b>	<5S	
<b>Operating range:</b>	3 versions available: 4 to 20 m, 15 to 70 m or 50 to 120 m	
<b>Immunity to false alarms:</b>	Unaffected by solar radiation, hydrocarbon flames and other external IR radiation sources	
<b>Spectral response:</b>	2.0 to 4.0 micron	
<b>Start-up time:</b>	< 60 s	
<b>Sensitivity ranges:</b>	Standard 0 to 5 LEL-m, optional 0 to 2 LEL-m	
<b>Displacement/misalignment tolerance for continued operation:</b>	± 1°	
<b>Drift, long term:</b>	± 5% FS per year	
<b>Temperature range:</b>	Operating -40° to +55 °C, Storage -40° to +65 °C	
<b>Power supply:</b>	18 to 32 VDC	
<b>Power consumption:</b>	Detector 100 mA @ 24 VDC [200 mA peak], Source 220 mA @ 24 VDC [300 mA peak]	
<b>Electrical connection:</b>	2 x 3/4" -14 NPT connections or 2 x M25 x 1.5 connections (selected through ATO)	
<b>Heated window:</b>	Eliminates icing, condensation, and snow on optics	
<b>Output, mA:</b>	4 to 20 mA sink [sourcing configurable via jumper], maximum loop resistance 600 ohms 0 mA – fault 1 mA – zero calibration 2 mA – beam block/obscuration/misalignment 3 mA – maintenance call 4 to 20 mA – normal operation	
<b>Output, relay:</b>	Alarm, fault and accessory with SPST dry contacts, contact rating 5A at 30 VDC or 250 VAC [resistive]	
<b>RS-485 Interface:</b>	The Modbus compatible RS-485 input/output provides complete data information to a PC and receives control commands from the PC or handheld unit. It also allows networking of up to 247 detectors	
<b>Humidity:</b>	95% RH, non condensing	
<b>Approvals:</b>	US, Canada, Europe, Australia (IECEx Scheme) FM approved Intrinsically safe for use in Class I, Div 1 Groups A, B, C, D	
<b>SafEye Xenon 800 System &amp; Handheld Unit</b>		
<b>SafEye Xenon 800 System</b>	ATEX Marking:  II(2) G Ex ib [ib] IIC T6 -40°C ≤ Ta ≤ +70°C FM approved Class I, Div.1 Groups A,B, C, D, Class I, Div 2 Groups A, B, C, D	IECEx Scheme Marking: Detector: Ex d e ib[ib] IIC T6 Ex d ib nA [ib] IIC T6 Source: Ex d e ib IIC T6 Ex d ib nA IIC T6
	ATEX Marking: Detector:  II 2(2) G Ex d e ib[ib] IIC T6 II 3(2) G Ex nA d ib[ib] IIC T6 Source:  II 2 G Ex d e ib IIC T6 II 3 G Ex nA d ib IIC T6 -40°C ≤ Ta ≤ +55°C	
<b>Performance:</b>	Tested to FM6325	
<b>Ingress protection:</b>	IP66/x7, NEMA 4X	
<b>Detector and source housing material:</b>	Stainless steel 316	
<b>Tilt mount material:</b>	Stainless steel 316	
<b>Weight:</b>	Detector 12.8 pounds, source 14.3 pounds, tilt mount 4.2 pounds	
<b>Dimensions:</b>	Detector 9.7" x 6" x 6.1" Source 11" x 5.6" x 6.1"	
<b>Tilt mount:</b>	4.7" x 4.7" x 5.5"	
<b>Warranty:</b>	3 years for SafEye Xenon 800 system, 10 years for Xenon Flash Lamp	
<b>Accessories:</b>	Handheld diagnostic/calibration unit, (GP and intrinsically safe versions available) Alignment kit, includes telescope and test filter	

## Ordering information

An ATO is available upon request from [msagasdetection.com](http://msagasdetection.com) or by calling **1-800-MSA-INST**.

**Note:** This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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