Hazardous Locations Demand Superior Gas Detection!

Quasar 900 provides the most reliable gas detection in all weather conditions!

www.spectrex.net

The SafEye Quasar 900 Series is the very latest open path IR technology and detects a wide range of hydrocarbon gases – including alkanes (methane to hexane) and ethylene.
Path lengths can be up to 660ft (200m). Quasar 900 models can be tailored to protect your high-risk installation.
Reliability and performance is key and is assured with SIL2 approval and successful 3rd party FM performance / function testing to FM and EN standards

Why Open Path Gas Detectors?

Spectrex invented the xenon flash lamp design that revolutionized the open-path gas detection market, which, until then, was plagued by false alarms due to the drawbacks of the previous designs. Now, Open path detectors complement the use of individual point detectors, take executive action and offer many significant benefits including:

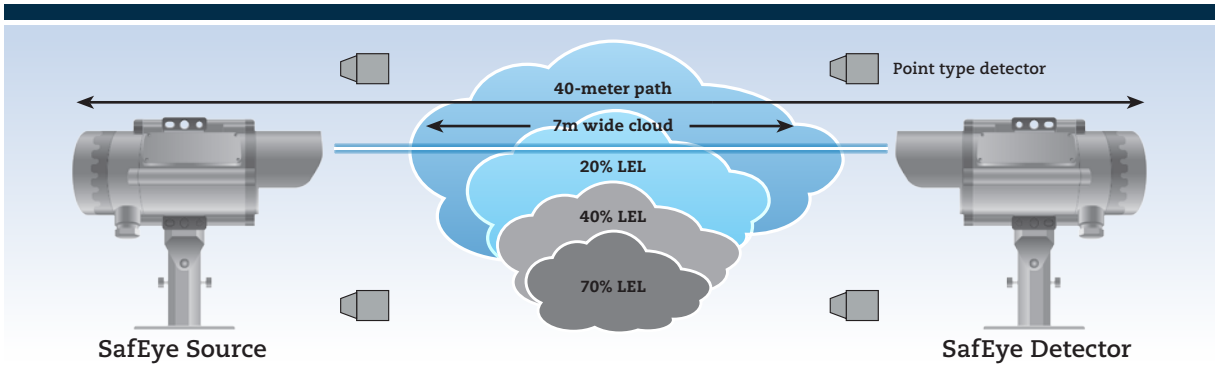
- Wider area coverage
- Most likely method to pick up any leak
- Very high speed of response
- No unrevealed failure modes
- Beam block warning
- Detector location is less critical
- Size of gas hazard indicated

From the Arctic Circle to Middle Eastern Deserts

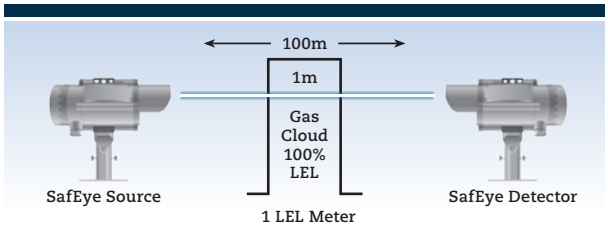
Applications include:

- Offshore platforms & FPSOs
- Petrochemical plants
- Chemical processing plants
- Gas filling and distribution terminals
- Gas transport and pipelines
- Large storage areas & buildings
- Perimeter monitoring

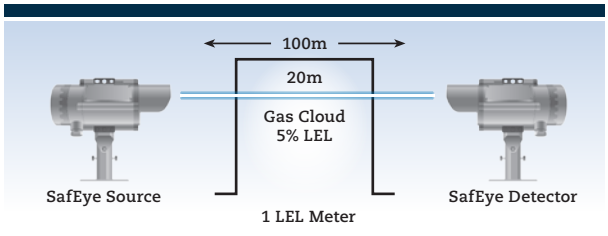
Gas leak can be picked up by Open Path Detectors that point detectors miss!



This scenario shows how the matrix of point type detectors can miss a leak or eventually only see diluted gas levels whereas SafEye 900 Open-Path will, in this case, measure 20% LEL x 7m = 1.4 LEL.m - well above 1 LEL.m alarm level



1 LEL meter (1 LEL.m) = a cloud of 100% LEL methane gas that is 1 meter wide



1 LEL meter (1 LEL.m) = a cloud of 5% LEL methane gas that is 20 meter wide

Don't just take our word for it!

We had Factory Mutual (FM) independently test Quasar 900 to recognized worldwide Function and Performance standards for open-path gas detectors (FM6325 and EN60079-29-4). Guess what – we passed with flying colors!

Why do we do this?

(apart from anything else, it costs a lot). Well, its to give you the assurance that what we say about Quasar 900 is true – and in safety, that's important!

IMMUNITY TO FALSE ALARMS

Quasar 900 is totally immune to interference from sunlight or any other sources of radiation such as flare stacks, arc welding or lightning.

PERFORMANCE IN ALL WEATHERS

The Quasars 900's high power xenon lamp will compensate for changing weather conditions, including rain, fog, mist, snow and makes it immune to influences from solar radiation, arc-welding, stack flares or vibration from machinery.

The optical lenses are thermostacically heated to prevent the formation of ice and build up of snow on the optics even under severe weather conditions. It also eliminates build up of condensation on the lenses.

Quasar is rated for operation over a very wide temperature range from -67°F to + 149°F (-55°C to + 65°C) - a truly worldwide product

RELIABILITY

Quasar 900 is approved to SIL2 (IEC61508), equipped with heated optics and tolerates a very wide temperature range to provide reliable detection

FAILSAFE

No unrevealed failures. In normal operation, the output signal is 4 to 20 mA, depending on the measured gas concentration.

Sub-4mA signals includes indications for beam blockage (2mA), a fault (1mA). In addition, a continuous self-test of the Quasar 900 will issue a pre-warning signal (3mA) where the detector is still operational but requires some attention – for example when the transmitter or receiver is misaligned or if there is a deposit build-up on the optics. Maintenance without downtime!

BUILT-IN DATA LOGGER

An internal data-logger keeps a detailed record of the previous 100 events.

GAS LIBRARY

The detectors can be calibrated to methane, propane or ethylene. The calibration selection must be determined when ordering.

MINIMUM DETECTABLE LEVEL

Due to Quasar 900's inherent stability and sensitivity, the minimum detectable level is 0.15 LEL.m

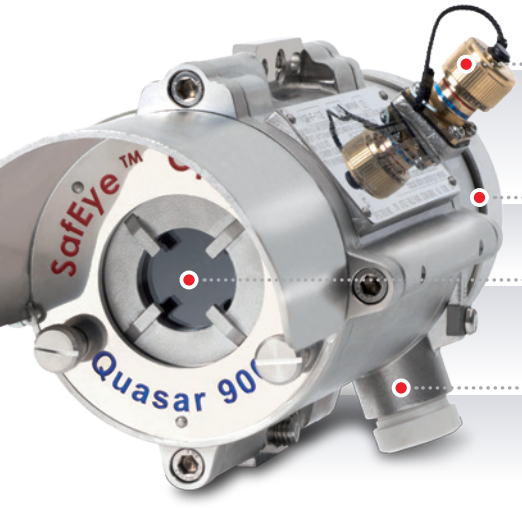
SIMPLE TO ALIGN AND COMMISSION

One person can easily align and commission the system without the need for special training or skills. After an initial coarse adjustment by eye, a telescope is fitted allowing fine adjustment to optimized the adjustment for maximum signal strength.

Installation Options

QUASAR OFFERS OPTIONS FOR YOUR INSTALLATION:

- 0-20mA analog output with HART capability
- RS485 Modbus, where up to 256 detectors can be linked.



I.S. approved conection port for hand held terminal in field or safe area

316L Stainless Steel housing

Heated optics

Electrical entries (x2)
¾" NPT or M25

Worldwide Approvals

- **Hazardous area (Zone 1)**
  FM/FMC, ATEX, IECEx, GOST R Inmetro
- **Performance (3rd party):**
  FM 6325 approved by FM
  EN60079-29-4 tested by FM
- **Reliability:**
  SIL2 (TUV)

HART

HART capabilities within the Quasar 900 can provide digital communications between the field and the safe area. This can provide real time information on the status of an individual detector as well as configuration and historical data of each device, without the need for extra cable cores.

A key feature of HART is that digital signals are transmitted on the same two wires as the 0-20mA current signal.

Useful and useable information available via HART includes:

- Display set-up
- Reconfigure set-up – such as heater control, address
- Display detector status and definition
- Perform detector diagnostics
- Troubleshooting
- View Event Log

Complete Access in the Field or Safe Area

The unique, intrinsically safe approved connection port on the Quasar 900 receiver allows simple connection of various types of handheld unit that will communicate with Quasar 900 in the hazardous area. These handheld devices allow user to check alignment, zero, perform configuration changes, view event log, perform diagnostic functions, in conjunction with Spectrex software.

The handheld units are robust weather-proof devices, certified intrinsically safe for use in a hazardous, classified area.

Two options are available, both able to connect to the intrinsically safe approved connection port on the Quasar 900 receiver.

- HART handheld
- RS485 handheld

For work in a safe area / workshop, other options are available, still connected via the I.S. port. for your convenience.

These take the form of cable harnesses to connect with our Mini Laptop kit (p/n 777820-1) or to your own PC/laptop, using free Spectrex software

GENERAL SPECIFICATIONS

Detection Range	**Model**	**901**	**902**	**903**	**904**
	Feet	23-66	50-132	115-330	265-660
	Meters	7-20	15-40	35-100	80-200
Detected Gas	C1-C8				
Response Time	3 sec.				
Immunity to False Alarm	Not influenced by solar radiation, hydrocarbon flames and other external IR radiation sources.				
Sensitivity Range	0-5 LEL.m methane and propane 0-8 LEL.m ethylene				
Spectral Response	2.0 - 3.0µm				
Displacement/Misalignment Tolerance	±0.5°				
Drift	±7.5% of the reading or ±4% of the full scale (whichever is greater)				
Minimum Detectable Level	0.15 LEL.m				
Temperature Range	–67°F (–55°C) to 149°F (65°C)				
Humidity	Up to 95% non-condensing (withstands up to 100% RH for short periods)				
Heated Optics	To eliminate condensation and icing on the window				
Warranty	Safety system – 3 years Flash source bulb – 10 years				

ELECTRICAL SPECIFICATIONS

Power Supply	24VDC nominal (18-32 VDC)
Power Consumption (peak includes heated optics)	Detector: 250mA (300mA Peak) Source: 250mA (300mA Peak)
Warm Up Time	30 sec for transmitter and receiver
Electrical Connection (specify)	2 x 3/4" – 14NPT conduits or 2 x M25 x 1.5mm ISO
Electrical Input Protection	per MIL-STD-1275B
Electromagnetic Compatibility	EMI/RFI protected per EN50270

OUTPUTS – INTERFACES

0-20mA Current Output	Sink (source option) configuration - maximum load of 500 ohm at 18-32 VDC			
	Gas reading	4-20mA	Obscuration/beam block	2mA
	Normal, zero reading	4mA	Zero calibration mode	1mA
	Maintenance call	3mA	Fault	0mA
	Misalignment	2.5mA		
RS-485 Interface – Modbus Compatible	The RS-485 input/output provides complete data information to a PC and receives control commands from the PC or handheld unit			
HART	HART communications on 0-20mA analog current (FSK) – used for maintenance and asset management			
Visual Status Indicator	3 color LED: Green – Power on, Yellow – Fault, Red – Alarm			

MECHANICAL SPECIFICATIONS

Hazardous Area Approval	ATEX/IECEx	Approved per Ex d e ib [ib Gb] IIB + H2 T4 Gb Ex tb IIIC T135°C Db The detector or source units have a combination of approvals. Each is a single enclosure (Exd) with integral, segregated rear terminal section (Exe) and intrinsically safe (Exia) data-port for external in-situ connection to Hand-Held Diagnostic unit.
	FM/FMC	Approved per Class I Div 1 Groups B, C and D Class II,III Div 1 Groups E, F and G
	Inmetro	Approved per Ex d e ib [ib Gb] IIB+H2 T4 Gb
Performance	Approved per FM6325 and tested by FM per EN60079-29-4	
Reliability	SIL2 per IEC61508 (TUV)	
Enclosure	The source and detector housings are stainless steel 316L with electro polish finish. The circuit boards are conformal coated and protected from mechanical vibrations. The tilt mount is also stainless steel 316L.	
Dimensions	Detector/Source	10.5 x 5.1 x 5.1 inch (267 x 130 x 130mm)
	Tilt Mount	4.7 x 4.7 x 5.5 inch (120 x 120 x 158mm)
Weight	Detector/Source	11lb (5kg)
	Tilt Mount	4.2lb (1.9kg)
Water and Dust Tight	IP66 and IP68 NEMA 250 6P	
Environmental	Meets MIL-STD-810C for Humidity, Salt and Fog, Vibration, Mechanical Shock, High and Low Temperature	

ACCESSORIES

Tilt Mount	P/N 888270	**HART Harness Kit**	P/N 888815
Pole Mount (U-bolt 5 inch)	P/N 799225	**USB/RS485 Harness Converter Kit**	P/N 794079-8
Commissioning Kit	P/N 888247	**Mini Laptop Kit**	P/N 777820-1
HART Hand-Held Diagnostic Unit	P/N 888810	**Sunshade**	P/N 888263

Accessories

COMMISSIONING KIT
P/N 888247

The Commissioning/Alignment Kit is required for commissioning and maintenance checks.
Only one kit is required per site, Includes: Alignment Telescope, Magnetic Mode Selector, Function Check Filters (2) and set of Socket keys for access to units

SUNSHADE, STAINLESS STEEL
P/N 888263

TILT MOUNT
P/N 888270

POLE MOUNT (U-Bolt, 5 inch)
P/N 799225

Communication, Diagnostics, Set-up

Commissioning, maintenance and diagnostics tools for the Quasar 900 Series, which provides verification, status and instructions for changing detector parameters.

HART HAND-HELD DIAGNOSTIC UNIT
P/N 888810
Certified I.S. (EExia) for use in the hazardous area and connects to I.S. port on 900.

MINI LAPTOP KIT
P/N 777820-1
Preloaded with Spectrex software. For use in Safe area only. Connects, for convenience, to port on 900 or RS 485 terminals.

If, instead, user wishes to use their own HART handheld or PC / laptop in safe area, we offer:

HART HARNESS KIT
P/N 888815
For standard HART Hand-Held (I.S.) to connect between the Hand-Held and the I.S. Port on 900, including a harness.

USB RS485 HARNESS CONVERTER KIT
P/N 794079-8
With RS485/USB converter, kit is used with Spectrex Host software, enables the user to connect to any available PC or laptop. For use in safe area only. Connects, for convenience, to connection port on 900 or RS485 terminals

How to choose your new
Quasar 900

Quasar 900 Part numbers

Model	=	Receiver	+	Transmitter	Installation Distance
901		QR-X-11X	+	QT-X-11X	23-66 ft / 7-20m
902		QR-X-11X	+	QT-X-21X	50-132 ft / 15-40m
903		QR-X-11X	+	QT-X-31X	115-330 ft / 35-100m
904		QR-X-11X	+	QT-X-41X	265-660 ft / 80-200m

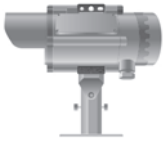
Part no. code for specific requirements

RECEIVER

QR - X - 1 1 X

- **C:** ATEX
- **F:** FM
- **B:** Inmetro

- **1:** M25
- **2:** ¾" NPT



TRANSMITTER

QT - X - X 1 X

- **C:** ATEX
- **F:** FM
- **B:** Inmetro

- **1:** 7-20m: *Short Range*
- **2:** 15-40m: *Medium Range 1*
- **3:** 35-100m: *Medium Range 2*
- **4:** 80-200m: *Long Range*

- **1:** M25
- **2:** ¾" NPT

For more information view manual or website **www.spectrex.net**

For all technical assistance or support, contact a Spectrex office or your local distributor listed online.
Specifications subject to change

SPECTREX

Headquaters:
218 Little Falls Road
Cedar Grove, NJ 07009,
USA
Tel: +1 (973) 239 8398
Fax: +1 (973) 239 7614
spectrex@spectrex.net
www.spectrex.net

YOUR LOCAL SPECTREX OFFICE:

Texas (USA)
Mr. Jay Cooley,
Regional Sales Manager
16203 Park Row, Suite 150
Houston, Texas 77084,
USA
Tel: +1 (832) 321 5229
jay@spectrex.net

Europe
Mr. Ian Buchanan,
Regional Manager
6 Applecross Road
Glasgow G66 3TJ,
United Kingdom
Tel: +44 (0) 141 578 0693
ian@spectrex.net

Asia
Mr. Deryk Walker,
Regional Sales Manager
59 Fen Ji Hu, Danshui
New Taipei City 25163,
Taiwan (ROC)
Tel: +886 2 8626 2893
deryk@spectrex.net

Q-900, February 2017

SPECTREX

SafEye XENON 700S

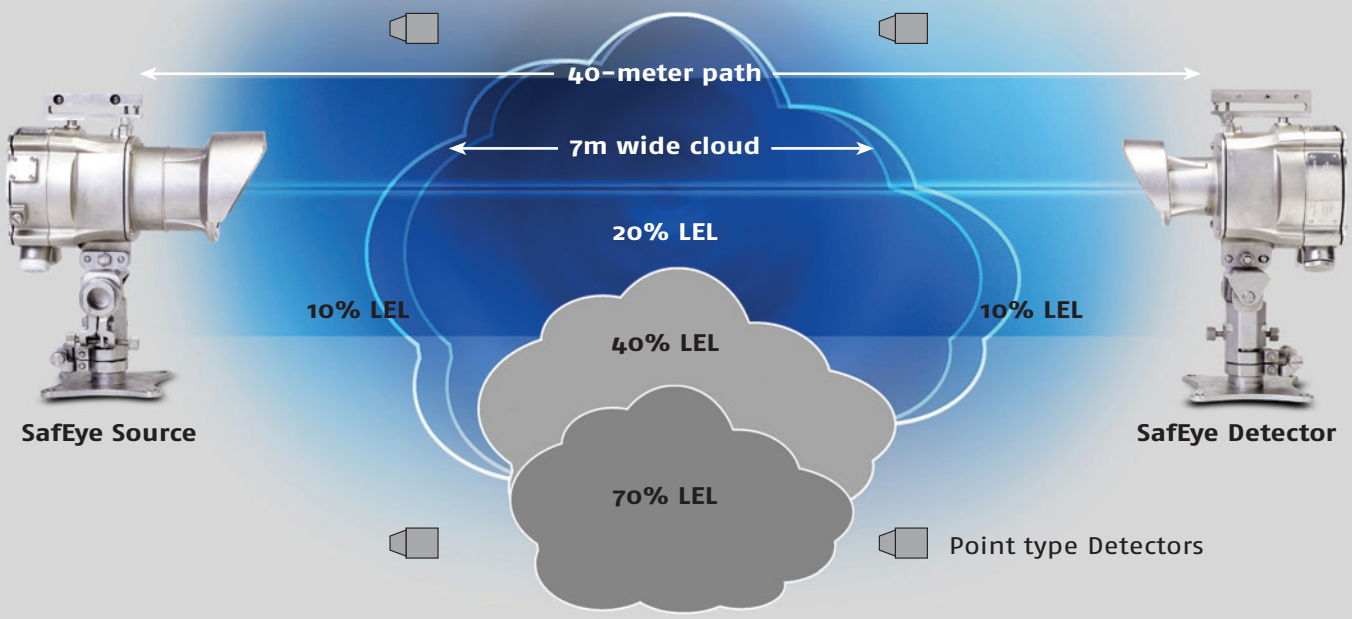
OPEN-PATH GAS DETECTION SYSTEM

SIL2 APPROVED BY TUV

WE INVENTED IT... WE PERFECTED IT!

LEL.METERS

Open-path Gas Detection Concepts



This scenario shows how the matrix of point type detectors can miss a leak or eventually only see diluted gas levels whereas SafEye 700S Open-Path will, in this case, measure 20% LEL x 7 m = 1.4 LEL.m - well above 1 LEL.m alarm level

Not all gas clouds are hazardous - only if a flammable gas cloud or plume is wide enough to allow flame acceleration to speeds greater than 100 m/sec does it become a significant threat.

- Just as an athlete performing the long jump needs a run-up distance, so too a flame front needs distance to reach the velocities which cause the damaging effects of over-pressure, pressure pulse and windage.
- The generally accepted quantity of gas that creates the potential to cause consequential damage if ignited is a cloud of the size 5 m diameter a stoichiometric concentration (about 200% LEL).
- To provide a safety margin, this concentration is halved to 100% LEL. Thus an open path beam traversing this cloud would indicate 5 LEL.m.
- Location of the SafEye 700S Open-Path Gas Detector is less important than with point type detectors as it provides a warning alarm from a diluted gas cloud and does not need to be close to the leakage source.
- Point type detectors measure gas at their location in terms of % LEL, whereas open-path gas detectors measure the amount of gas anywhere along the length of the path, in terms of the integral of concentration and length (LEL x meters).

LEL.METERS

Detector output = gas cloud length (m) x gas cloud concentration (LEL)

The unit of measurement is LEL.meters:
100% LEL of the gas = 1 LEL
1 LEL.meter = 1 LEL x 1 meter

Therefore:
20 m x 5% LEL = 1 LEL.meter
1 m x 100% LEL = 1 LEL.meter
10 m x 10% LEL = 1 LEL.meter

Highest Quality backed by

3-year warranty for the 700S-system

10-year warranty for Xenon Flash Bulb

Integrates well-proven and superior Xenon Flash technology which has an excellent operational record in many installations ranging from the deserts of Africa and Asia and the very hot and humid Far East, to the wet and cold North Sea and the dry and cold regions of Alaska.

- **Proven Technology**
  The NEW SafEye Version is based on proven technology and performance. Thousands of first generation Flash Type SafEye are installed on offshore platforms, FPSO's, refineries, and other onshore applications operated by British Petroleum (BP), Shell, ExxonMobil, Statoil, and others.
- **One-Person Commissioning and Installation**
  One person can simply and easily align and commission SafEye with separate horizontal and vertical adjustments.
- **Fast Response**
  Direct reading, high sensitivity and fast response (3 sec) ensures instant action and maximum safety.
- **Harsh Environment**
  Well-proven in harsh environments (rain, snow, fog, hot and humid weather), up to 90% beam blockage, an excellent operational record in many installations worldwide.
  - Heated Optics on the source and detector increase the temperature of the optical surface to reduce icing, condensation and snow.
  - Resilient and excellent performance withstanding extreme vibrations, displacement and shock.
  - Solar blind and immune to false alarms from industrial environments.
- **Reliable**
  Fully approved by TUV to SIL2 (IEC 61508)
- **Detects a Wide Range of Gases**
  Reliable detection of gas leaks including a wide range of gaseous hydrocarbons, such as: Alkanes, Alkenes (C1-C8), Alcohols, LNG, LPG, Ethylene, etc.
- **Cost Effective**
  Less units needed for protection compared with point type detection.
  One system can replace from 5 to 20 point gas detectors. Low cost of ownership, much lower installation cost!
- **Large Misalignment Tolerance**
  Provides relatively wide angle of view, better than 1°, to withstand vibration, mechanical shock and displacements.
- **Standard Interface Options**
  Standard 4-20 mA output with a new mode (3 mA) "Maintenance call" or RS-485, Modbus-compatible output to allow networking (up to 256 detectors) to a central monitoring / PC system. This feature also enables easy maintenance, local and remote diagnostic tools.
- **No Poisoning Effect**
  Electro-optical system, not affected by chemicals.
- **Rugged Construction**
  Stainless steel 316L, IP66/67, Zone 1 ready design.

TYPICAL APPLICATIONS

Oil Rigs
SafEye Open Path Gas Detection System provides alarm and shutdown signals that enable emergency and preventive measures.

Onshore Oil & Gas Industry
Many process and storage areas in the modern refinery are protected by the SafEye systems.

FPSO Vessels
SafEye Open Path Systems protect duct, air intakes and HVAC providing warning and alarm in case of migration of dangerous gas concentrations.

Process Plants & Pipelines
LNG/LPG and Polymers are being monitored by the SafEye system that detects at LEL levels.

Open-Path Applications:

- Offshore Oil & Gas drilling and production
- Petrochemical and Chemical storage and production areas
- Storage & loading of hazardous materials and waste areas
- Engine & Turbine air intake and modules
- LNG-LPG storage, pumping and filling
- Fence-line emission monitoring
- Storage Tank Farm protection
- Paint industries, including paint-booths
- Bus terminals (natural gas powered)
- Waste disposal and processing

PRODUCT DESCRIPTION

The SafEye 700S Optical Open Path (Line-of-Sight) Gas Detection System employs "spectral fingerprint" analysis of the atmosphere using the Differential Optical Absorption Spectroscopy (DOAS) technique in a unique (patented) method.

SafEye 700S consists of an advanced Xenon Flash infrared transmitter (source) and infrared detector (receiver), separated over a line of sight from 13 ft. (4 m) up to 460 ft. (140 m) to detect and quantify flammable gas presence, even when challenged by extremely harsh environments where dust, fog, rain, snow or vibration can cause a high reduction of signal.

The SafEye 700S analyzes atmospheric absorption at three selected spectral bands, two in a region where the target gas absorbs and one where it does not absorb. The ratio between these absorption lines can provide accurate information of the gas concentration along an optical path.

The reference sensor detects beam blockage, compensates for changing humidity and detects failed light source or dirty optics.

SafEye's source and detector units are both housed in low profile, rugged and stainless steel enclosures.

SafEye 700S includes heated optics on the transmitter (source) and receiver (detector) to address icing, condensation and snow.

Modern accessories include an Intrinsically Safe approved, Hand-Held Unit which is an all-in-one Diagnostic / Calibration / Interrogation plug-in unit that assists one-person installation and maintenance.

PRODUCT SPECIFICATIONS

General Specifications

Detection Range

	Model	701S	702S	703S	721S	722S	723S
	ft	13-66	50-230	165-460	13-66	50-230	165-460
	m	4-20	15-70	50-140	4-20	15-70	50-140
	Detected gas	C_1-C_8			Ethylene		

Response Time	T90 - 3 sec.
Immunity to False Alarm	Not influenced by solar radiation, hydrocarbon flames and other external IR radiation sources
Spectral Response	2.0 - 4.0 µm.
Sensitivity Range	0 - 5 LEL.m (optional 0 - 2 LEL.m)
Displacement/Misalignment Tolerance	±1˚
Accuracy	±5% of full scale or ±10% of the reading, whichever is greater
Repeatability	±5% of the reading
Temperature Range	-40˚F (-40˚C) to 131˚F (55˚C)
Warranty	SafEye system - 3 years Flash source bulb - 10 years

Outputs – Interfaces

4-20 mA Current Output — Sink (source option) configuration

Maximum load	600Ω at 18-32 VAC
4-20mA	Gas reading
4mA	Normal, zero reading
3mA	Maintenance call
2mA	Obscuration/misalignment /beam block
1mA	Zero calibration mode
0mA	Fault

HART Protocol	HART communications on the 0-20mA analog current (FSK) - used for maintenance, configuration changes and asset management, available in mA source output wiring options
RS-485 Interface - Modbus Compatible	The RS-485 input/output provides complete data information to a PC and receives control commands from the PC or handheld unit
Relays	Alarm, Fault and Accessory SPST volt-free contacts rated 5A at 30 VDC or 250 VAC Fault relay normally closed, others normally open

Electrical Specifications

Power Supply		24 VDC nominal (18-32 VDC)
Power Consumption (peak includes heated optics)		Detector: 150mA (300 mA Peak) Source: 100mA (300 mA Peak)
Electrical Connection (specify)		2 x 3/4" - 14NPT conduits or 2 x M25 x 1.5 mm ISO
Electric Input Protection		According to MIL-STD-1275B
Electromagnetic Compatibility		EMI/RFI protected against EN 50270 & CE Marked

Mechanical Specifications

Enclosure		The source and detector housings are stainless steel 316L with electropolish finish. The circuit boards are conformal coated and protected from mechanical vibrations. The tilt mount is also Stainless Steel 316L
Dimensions	Detector Source Tilt Mount	8.2 x 5.7 x 6 inch (210 x 145 x 154 mm) 10 x 5.3 x 6.9 inch (255 x 135 x 175 mm) 4.7 x 4.7 x 5.5 inch (120 x 120 x 140 mm)
Weight	Detector Source Tilt Mount	9.2 Lb (4.2 Kg.) 10.1 Lb (4.6 Kg) 4.2 Lb (1.9 Kg)
Water and Dust Tight		IP66 and IP67 NEMA 250 6P
Environmental		Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical Shock, High Temp, Low Temp

Approvals

Hazardous Area Approval	IECEx	Ex d e ia [ia Ga] IIC T5 Gb Ta = -40°C to +55°C
Reliability		IEC61508 - SIL2 (TUV)
Other		TR CU/EAC

Accessories

Tilt Mount	P/N 799640
Pole Mount (U-Bolt 2-3 inch)	P/N 888140
Pole Mount (U-Bolt 4-5 inch)	P/N799225
Wall Mount	P/N 799255
HART Hand-held Diagnostic Unit	P/N 888810
USB/RS485 Harness Converter Kit	P/N 794079
Commission Kit	P/N 799247
Weather Cover for the Source Unit	P/N 799267
Weather Cover for the Detector Unit	P/N 799250
Mini Laptop Kit	P/N 777820

Headquarters

8200 Market Boulevard,
Chanhassen, MN 55317, USA

Tel: +1 (973) 239-8398
Fax: +1 (973) 239-7614

www.spectrex.net
spectrex@spectrex.net

Texas (USA)

Mr. Jay Cooley,
Regional Sales Manager

16203 Park Row, Suite 150 Huston,
Texas 77084, USA

Tel: +1 (832) 321-5229
Jay.Cooley@Emerson.com

Far East

Mr. Deryk Walker,
Regional Sales Manager

59 Fen Ji Hu, Danshui
Taipei Country 25163, Taiwan (ROC)

Tel: +886 2 8626-2893, Cel: +886 926 664-232
Deryk.Walker@Emerson.com

Represented by:

DS-G-700S, April 2017

SPECTREX

SafEye

300 SERIES GAS DETECTION SYSTEMS FOR

AIR DUCT

- **Faster response and more reliable results**
- **More effective and more economical...**
  Compared to 'Point' Type Detectors or 'Sample Draw' Systems!

Reliable High Speed Detection

Main Features

High Sensitivity

- Alarm up to 0.5 LEL.m
- 5 times more sensitive than the normal Open Path equipment

Fast Response

- Fast response time of 2 seconds
- 5 to 10 times faster than the commonly used Open Path detector and 20-50 times faster than the Point Detector.

Low Maintenance

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

Proven Technology

Used in air ducts on FPSO's and offshore rigs for British Petroleum (BP), Shell and ABB Lummus for turbines, air intakes, etc.

Harsh Environment

Specially designed to perform under extreme conditions such as high-speed airflows, high temperatures (up to 158˚F (70˚C)), humidity and corrosive gases, where point detectors may not be effective.

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.

SafEye 300 Duct Open Path Detectors were specially designed and are widely used to monitor and alarm against ingress of hazardous gas concentrations into air intakes of turbine engines and HVAC air ducts. Formation and migration of gas clouds and their possible penetration into safe places, control rooms, turbine engines, etc. is a substantial risk that needs to be addressed.

Users, designers and safety and operational engineers are increasingly required to provide for adequate and fast detection and alarm to protect these hazards.

For duct applications, over a small path across an air inlet, the system is designed to respond with a very high sensitivity, full scale of 1 LEL.m for 2-6.6 ft. (0.6-2 m) wide inlet and full scale of 2.5 LEL.m for 6.6-23 ft. (2-7 m) wide inlet.

The SafEye 300 Duct system, due to its special optics design, provides for a misalignment tolerance of 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.

Each SafEye unit is factory calibrated in a temperature cycle run at 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).

The SafEye 300 Duct system can be factory calibrated to gas mixtures that are associated with offshore production and processing and onshore installations.

General Specifications

Detected Gases	Simultaneous detection of C1-C8 flammable gases
Detection Range and Response Time	Model: 301 / 302 Distance: 2-11.5ft (0.6-3.5m) / 9.9-49.5ft (3-15m) Response Time: 2 sec. / 5 sec.
Immunity to False Alarm	Not influenced by solar radiation, hydrocarbon flames, other external IR radiation sources, high airflows and high loaded streams
Spectral Response	3.0-4.0 µm
Sensitivity Range	0-2.5 LEL.m Standard; 0-1 LEL.m by dip-switch setting
Misalignment Tolerance	±2˚
Drift	Long-term ±5% of full scale
Temperature Range	-40˚F (-40˚C) to 158˚F (70˚C)

Electrical Specifications

Power Supply	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	According to MIL-STD-1275B
Electromagnetic Compatibility	EMI/RFI protected CE Marked

Outputs

0-20mA Sink (source option) configuration	Maximum load: 600Ω at 18-32V DC 4-20mA: Gas reading 4mA: Normal, zero reading 2mA: Obscuration/misalignment /beam block 1mA: Zero calibration mode 0mA: Fault
HART Protocol	HART communications on the 0-20mA analog current (FSK) - used for maintenance, configuration changes and asset management
RS-485	The RS-485 input/output provides complete data information to a PC and receives control commands from the PC or handheld unit

Relays

	Type	Normal Position	Maximum Ratings
Alarm	SPDT	NO, NC	2A at 30V DC
Accessory	SPST	Open	5A at 30V DC
Fault	SPST	Closed	5A at 30V DC

Mechanical Specifications

Dimensions		5.2" (132mm) x 5.2" (132mm) x max. 4.7" (120mm)
Weight	Al. Encl.	Detector: max 8.7 lb (3.7 kg) Source: max 8.58 lb (3.9 kg)
	St. Encl.	Detector: max 13.4 lb (6.1 kg) Source: max 13.84 lb (6.3 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 316 Stainless Steel
Environmental Standards		Meets MIL-STD-810C for Humidity, Salt & Fog, Vibration, Mechanical shock, High Temp, Low Temp
Water and Dust Tight		IP66 and 67 per EN60529 NEMA 250 6P

Hazardous Area Approvals

FM	Class I, Division 1, Groups B, C and D, Dust Ignition proof for Class II, Division 1, Groups E, F and G. Performance per Class no. 6325

Accessories

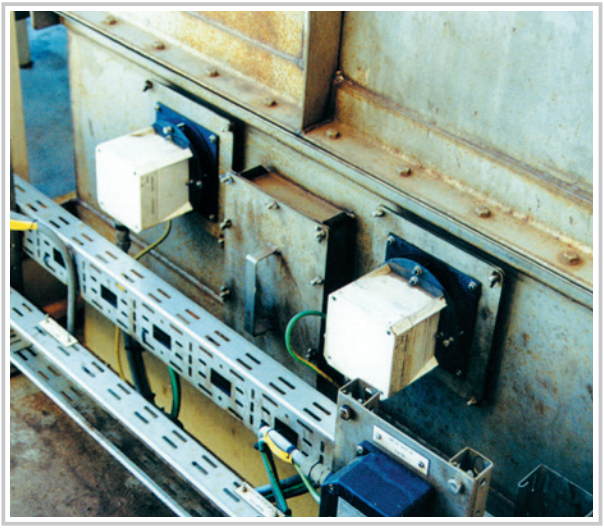
The following optional accessories designed for the SafEye system are available.

Duct Mounting
The duct mount interfaces between the detector and the duct surface.

The duct mount enables the detector's alignment up to 3° in all directions (P/N 794716).

Commissioning / Alignment Kit for standard and duct type units is required for commissioning and future maintenance checks. Only one kit is required per site.

The kit includes an Alignment Telescope P/N 794110, a Magnetic Mode Selector P/N 790285 and a Function Check Filter P/N 794220-1÷5 for system testing along with socket keys for access to units (P/N 792247).



Air Duct Installation on ETAP Platform in the North Sea

Typical Applications

Offshore Oil & Gas Rigs and FPSOs; Onshore Oil & Gas Terminals; Storage Farms and Filling Stations; Petrochemical and Chemical Industries; Power Utilities and Turbines areas; Automotive, Painting, Printing, Pharmaceutical Industries and many more.

Specific applications include:

- HVAC ducts (Heating Ventilation Air Conditioning) in accommodations areas
- Air ducts in process areas
- Stacks and exhaust towers
- Compressors and generators enclosures
- Curing ovens and drying equipment, printing equipment
- Engine & Turbine air intake and exhaust
- Air intake to safety enclosures
- Paint-booths and paint production and drying processes
- Air ventilation shafts

SPECTREX

Headquarters

8200 Market Boulevard,
Chanhassen, MN 55317, USA

Tel: +1 (973) 239-8398
Fax: +1 (973) 239-7614

www.spectrex.net
spectrex@spectrex.net

Texas (USA)

Mr. Jay Cooley,
Regional Sales Manager

16203 Park Row, Suite 150 Huston,
Texas 77084, USA

Tel: +1 (832) 321-5229
jay.cooley@emerson.com

Far East

Mr. Deryk Walker,
Regional Sales Manager

59 Fen Ji Hu, Danshui
Taipei Country 25163, Taiwan (ROC)

Tel: +886 2 8626-2893, Cel: +886 926 664-232
deryk.walker@emerson.com

Represented by: