



## Hazardous Locations Demand Superior Gas Detection!

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

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:

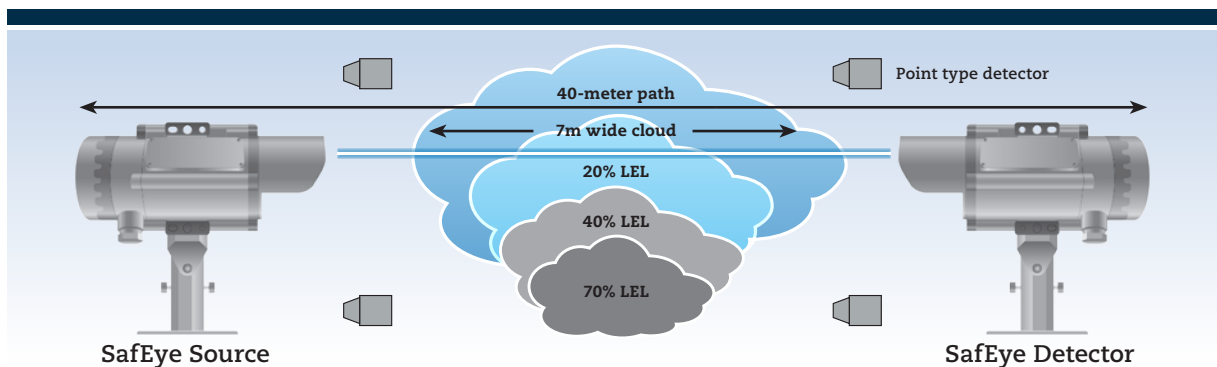
- Wider area coverage
- Most likely method to pick up any leak
- Very high speed of response
- No unrevealed failure modes
- Beam block warning
- Detector location is less critical
- Size of gas hazard indicated

# From the Arctic Circle to Middle Eastern Deserts

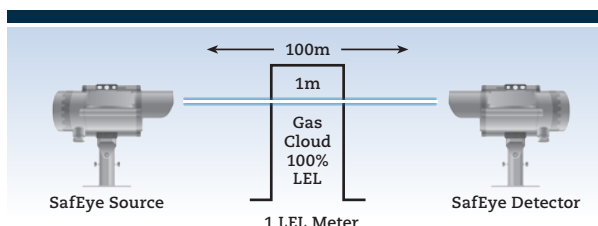
## Applications include:

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

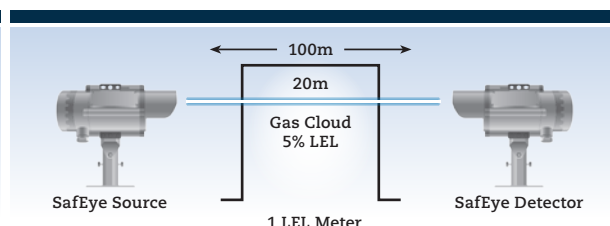
**Gas leak can be picked up by Open Path Detectors that point detectors miss!**



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 thermostatically 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.

## Worldwide Approvals

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

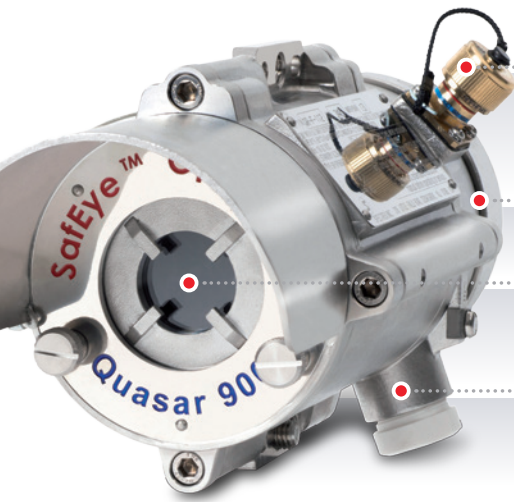
## HART

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



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

316L Stainless Steel housing

Heated optics

Electrical entries (x2)  
3/4" NPT or M25







## 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 your own PC/laptop, using free Spectrex software



## GENERAL SPECIFICATIONS

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

## ELECTRICAL SPECIFICATIONS

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

## OUTPUTS – INTERFACES

|   |   |        |                        |     |
|---|---|--------|------------------------|-----|
| <b>0-20mA Current Output</b>                | 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  |                        |     |
| <b>RS-485 Interface – Modbus Compatible</b> | The RS-485 input/output provides complete data information to a PC and receives control commands from the PC or handheld unit |        |                        |     |
| <b>HART</b>                                 | HART communications on 0-20mA analog current (FSK) – used for maintenance and asset management                                |        |                        |     |
| <b>Visual Status Indicator</b>              | 3 color LED: Green – Power on, Yellow – Fault, Red – Alarm  |        |                        |     |

## MECHANICAL SPECIFICATIONS

|                                |  |  |
|--------------------------------|--|--|
| <b>Hazardous Area Approval</b> | ATEX&IECEX   | Ex II 2(2)G D<br>Ex db eb ib [ib Gb] IIB + H2 T4 Gb<br>Ex tb IIIC T135°C Db<br>Ta = -55°C to +65°C |
|                                | FM/FMC   | Class I Div 1 Groups B, C and D<br>Class II,III Div 1 Groups E, F and G                            |
|                                | TR CU/EAC  | 1Ex d e ib [ib Gb] IIB + H2 T4 Gb X<br>Ex tb IIIC T135°C Db X                                      |
|                                | Inmetro  | Ex db eb ib [ib Gb] IIB_H2 T4 Gb<br>Ex tb IIIC T135°C Db   |
|                                |  |  |
| <b>Performance</b>             | Approved per FM6325 and tested by FM per EN60079-29-4  |  |
| <b>Reliability</b>             | SIL2 per IEC61508 (TUV)  |  |
| <b>Enclosure</b>               | 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. |  |
| <b>Dimensions</b>              | 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)   |
| <b>Weight</b>                  | Detector/Source  | 11lb (5kg)   |
|                                | Tilt Mount   | 4.2lb (1.9kg)  |
| <b>Water and Dust Tight</b>    | IP66 and IP68<br>NEMA 250 6P   |  |
| <b>Environmental</b>           | Meets MIL-STD-810C for Humidity, Salt and Fog, Vibration, Mechanical Shock, High and Low Temperature   |  |

## ACCESSORIES

|                                     |            |  |            |
|-------------------------------------|------------|--|------------|
| <b>Tilt Mount</b>                   | P/N 888270 | <b>HART Hand-Held Diagnostic Unit</b>  | P/N 888810 |
| <b>Wall Mount</b>                   | P/N 799255 | <b>HART Harness Kit</b>                | P/N 888815 |
| <b>U-Bolt/Pole Mount (4-5 inch)</b> | P/N 799225 | <b>USB/RS485 Harness Converter Kit</b> | P/N 794079 |
| <b>U-Bolt/Pole Mount (2-3 inch)</b> | P/N 888140 | <b>Weather Cover</b>                   | P/N 888263 |
| <b>Commissioning Kit</b>            | P/N 888247 |  |            |

## 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, 4–5 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.

*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

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



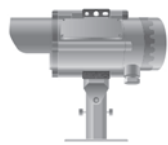
RECEIVER

**QR****- X -**

↓  
**C:** ATEX  
**F:** FM  
**B:** Inmetro  
**R:** TR CU

**1****1****X**

↓  
**1:** M25  
**2:** ¾" NPT



TRANSMITTER

**QT****- X -**

↓  
**C:** ATEX  
**F:** FM  
**B:** Inmetro  
**R:** TR CU

**X**

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

**1****X**

↓  
**1:** M25  
**2:** ¾" NPT

## System Part no. model definition

**90X**

**1:** 7÷20m: (23÷66ft)  
**2:** 15÷40m: (50÷132ft)  
**3:** 35÷100m: (115÷330ft)  
**4:** 80÷200m: (256÷660ft)

**- X -**

**C:** ATEX  
**F:** FM  
**B:** Inmetro  
**R:** TR CU

**X**

**1:** M25  
**2:** ¾" NPT

**X**

**O:** No  
**G:** Yes

**X**

**1:** Methane  
**2:** Propane  
**3:** Ethylene



For more information view manual or website [www.spectrex.net](http://www.spectrex.net)

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



Headquarters: 8200 Market Blvd, Chanhassen, MN 55317, USA  
 Tel: +1 (973) 239-8398 | +1 (800) 452-2107 (US only) | Fax: +1 (973) 239-7614  
 E-mail: [spectrex.csc.rmtna@emerson.com](mailto:spectrex.csc.rmtna@emerson.com) | [www.spectrex.net](http://www.spectrex.net)