

## Senscient ELDS™ Series 1000 for Carbon Dioxide

### Overview

This Open Path Gas Detector (OPGD) is specific to Carbon Dioxide (CO<sub>2</sub>). The separate transmitter and receiver assemblies are certified for use in potentially explosive atmospheres and can detect CO<sub>2</sub> over distances of 5 to 120 metres.

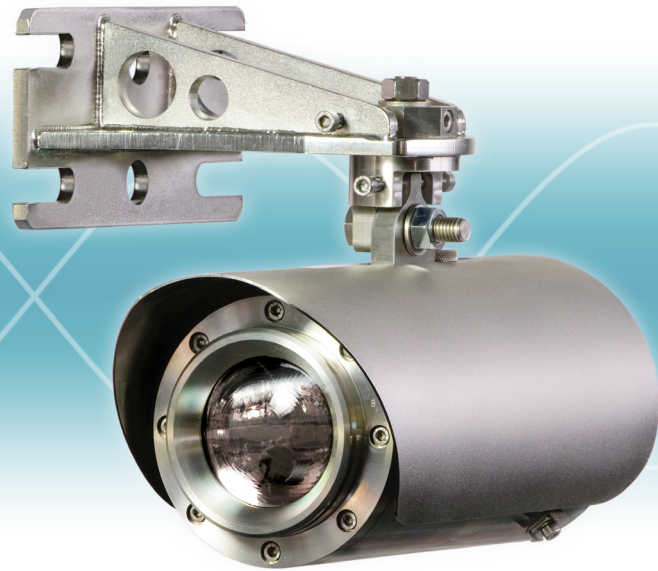
Constructed in high grade corrosion resistant 316L Stainless Steel this device is ideally suited for onshore and offshore, open and enclosed environments.

With no consumable parts and the patented daily auto-self testing facility; called SimuGas™; the Senscient ELDS™ CO<sub>2</sub> detector offers significant installed and operational cost savings over conventional fixed point toxic gas detectors.

### Applications:

Open path CO<sub>2</sub> gas detectors are used to monitor for fugitive emissions, protect personnel and warn of plant failure. These devices are typically located to provide a detection barrier around the perimeter of a plant, process or storage area; or positioned in close proximity to specific items of plant, that pose a real risk of gas escape: e.g. pump sets, pressure reducers, valves and pipe flanges.

- CO<sub>2</sub> carbon capture transportation
- CO<sub>2</sub> carbon capture storage
- CO<sub>2</sub> carbon capture re-injection
- Petrochemical Plant
- Chemical Plant
- Power Generation
- Steel Manufacturing
- Brewing and Soft Drinks



### Carbon Dioxide Open Path Gas Detector

#### Features:

- Fastest speed of response (<3 seconds) – Increased safety by providing earlier warning.
- Operates up to 120 metres – Significant installation cost savings over multiple fixed point gas detectors.
- No consumable parts – No on-going cost for replacement sensing elements and associated service labour.
- SimuGas™ daily auto gas testing – No manual intervention or on-going cost for routine gas testing.
- CO<sub>2</sub> specific – No false alarms from interference gases as experienced with many fixed point toxic gas detectors.
- Bluetooth™ connectivity – No physical intervention needed for interrogation, event log downloading and trouble shooting.

#### About Senscient ELDS™

Senscient's Enhanced Laser Diode Spectroscopy (ELDS™) product range builds upon the proven benefits of laser based gas sensing, taking this sensing principle to the next level. Patented technologies such as the Harmonic Fingerprint™ and SimuGas™ provide the highest levels of gas specificity, false alarm rejection and safety integrity in the most challenging operating conditions.

Detectable gases include: Methane (CH<sub>4</sub>), Ethylene (C<sub>2</sub>H<sub>4</sub>), Ammonia (NH<sub>3</sub>), Carbon Dioxide (CO<sub>2</sub>), Hydrogen Sulphide (H<sub>2</sub>S), Hydrogen Chloride (HCl) and Hydrogen Fluoride (HF). Other gases to be added.

## Specifications:

Gas Ranges	Carbon Dioxide (CO <sub>2</sub> )
Path Length	0-300,000 ppm.m
Format	5-40 m or 40-120m
	Individual Transmitter (Tx) & Receiver (Rx)

## Performance:

Response Time	T90 =< 3 seconds
Repeatability	< ± 5% FSD
Linearity	< ± 5% FSD

## Environmental:

Ingress Protection	IP66/67 NEMA type 4/4X/6
Enclosure Material	316L stainless steel
Lens Material Tx	Faceted Optical Glass
Lens Material Rx	Aspheric Optical Glass
Operating Temperature	-40°C to +60°C (ambient)
Humidity	0 – 100% RH (non-condensing)
Vibration	10 – 150 Hz, 2 g
EMC	EN50270

## Certification/Approvals:

### CSA and UL

Class I Div 1 Groups B C & D T5  
Class II Div 1 Groups E F & G T5  
Class III Div 1  
Ex d IIB + H<sub>2</sub> T5  
Class I, Zone 1, AEx d IIB + H<sub>2</sub> T5  
Tamb = -40°C to +60°C  
Entry: ¾" NPT

### GOST-R

1EXDIIBT5/H<sub>2</sub>X  
Entry: M25

### InMetro

Ex d UB + H<sub>2</sub> T5 Gb  
Ex tD A21 IP66/67 T100°C  
-40°C < Tas +60°C  
Entry: M25

### ATEX / IECEx

II 2 GD Exd IIB + H<sub>2</sub> T5  
Tamb -40°C to +60°C Gb  
and Ex tb IIIC T100°C  
Tamb = -40°C to +60°C Db IP66/67  
Entry: M25

## Safety Integrity

Suitable for use in SIL2 Safety Systems per IEC 61508

## Electrical:

Operating Voltage	Tx & Rx +24V DC, (+18 to +32V DC)
Power Consumption	Tx = 12 W (max), Rx = 10 W (max)
Outputs (Analog x 2)	4-20 mA, Configurable for 2 wire isolated or single wire, sink or source. Primary range on 4-20mA(1) Secondary range on 4-20mA(2), Note: Secondary range is typically greater than the primary. 3 mA (configurable 1 to 4 mA) 2.5 mA (configurable 0 to 3.5 mA) 2 mA (configurable 1 to 3.5 mA) 0.5 mA (configurable 0 to 1 mA) 21.5 mA (configurable 20 to 21.9 mA)
Low Signal Beam Block Inhibit Fault Over range	HART 7.1 & MODBUS RTU supported
Output (Digital)	

## Mechanical:

Size	Tx/Rx 140 mm dia. x 300 mm
Weight	Tx/Rx 12 kg each (c/w bracket)
Sun / Deluge Protection	Tx & Rx supplied with sun / deluge protection
Mounting	Tx & Rx supplied with mounting brackets incorporating fixing holes / slots for flat surface or metal pole mounting. (Note: mounting poles should be of 4" to 6" [100mm to 150mm] diameter. Fixing bolts / U bolts are not supplied)

## Optical:

Uses HARMONIC FINGERPRINT™ to ensure no false alarms during adverse environmental conditions, misalignment or partial obscuration.

Alignment	+/- 0.5°
Obscuration	> 95%
Heated Optics	Tx & Rx lenses are continuously heated.
Laser Beam	Class 1 (Eye Safe) IEC 60825-1

## Calibration :

Factory calibrated for life, no routine calibration required.

## Ordering Information:

To order / specify:	Senscient ELDS 1000,
Gas type:	CO <sub>2</sub>
Measuring Range:	0-300,000 ppm.m
Path length:	e.g. 5-40m
Certification:	e.g. ATEX

## Accessories

Optical alignment scope with transport case  
Approved industrial computer, c/w SITE software

Distributed by:

