Senscient ELDS™ Series 1000 for Methane

Overview

This Open Path Gas Detector (OPGD) is specific to Natural Gas / Methane (CH₄). The separate transmitter and receiver assemblies are certified for use in potentially explosive atmospheres and can detect CH₄ over distances of 5 to 200 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™ CH₄ detector offers significant installed and operational cost savings over conventional fixed point flammable gas detectors.

Applications:

Open path Natural Gas / CH₄ gas detectors are used to monitor for fugitive emissions, protect plant from the risk of explosion. These devices are typical 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. compressors, pump sets, pressure reducers, valves and pipe flanges

- Oil & gas exploration rigs
- Oil & gas production platforms
- Gas processing plants
- Gas terminals & processing plant
- Gas compressor & metering stations
- Gas fired power plants
- Petrochemical refineries
- Metals manufacturing plant
- Waste water treatment plants
- Landfill sites

Features:

- Ultra narrow wavelength operation - Improved availability in heavy fog and rain compared to conventional, Infra Red devices
- SimuGas™ daily auto gas testing – No manual intervention or on-going cost for routine gas testing.
- Fastest speed of response (<3 seconds) – Increased safety by providing earlier warning.
- Capable of increased sensitivity to 3 orders of magnitude over conventional IR devices -providing earlier warning
- CH₄ specific – No false alarms from other hydrocarbon gases, as experienced with many other flammable gas detection technologies.
- 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 (CH₄), Ethylene (C₂H₄), Ammonia (NH₃), Carbon Dioxide (CO₂), Hydrogen Sulphide (H₂S), Hydrogen Chloride (HCl), Hydrogen Fluoride (HF) and Multihydrocarbons (MHC). Other gases to be added.
**Specifications:**

<table>
<thead>
<tr>
<th>Gas Ranges</th>
<th>Path Length Format</th>
<th>Sun/Deluge Protection</th>
<th>Mounting</th>
</tr>
</thead>
<tbody>
<tr>
<td>Methane (CH₄) 0-1 LEL.m - See Note 1 below 0-5 LEL.m 0-1000 ppm.m</td>
<td>5-40 m or 40-120 m or 120-200m Individual Transmitter (Tx) &amp; Receiver (Rx)</td>
<td>Tx &amp; Rx supplied with sun / deluge protection</td>
<td>Tx &amp; Rx supplied with mounting brackets incorporating fixing holes / slots for flat surface or metal pole mounting. (Note: mounting poles should be of 4&quot; to 6&quot; [100mm to 150mm] diameter. Fixing bolts / U bolts are not supplied)</td>
</tr>
</tbody>
</table>

**Performance:**

<table>
<thead>
<tr>
<th>Response Time</th>
<th>Repeatability</th>
<th>Linearity</th>
</tr>
</thead>
<tbody>
<tr>
<td>T90 &lt;= 3 seconds</td>
<td>&lt; ± 5% FSD</td>
<td>&lt; ± 5% FSD</td>
</tr>
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</table>

**Environmental:**

<table>
<thead>
<tr>
<th>Ingress Protection</th>
<th>Enclosure Material</th>
<th>Lens Material Tx</th>
<th>Lens Material Rx</th>
<th>Operating Temperature</th>
<th>Humidity</th>
<th>Vibration</th>
<th>EMC</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP66/67 NEMA type 4/4X/6</td>
<td>316L stainless steel</td>
<td>Faceted Optical Glass</td>
<td>Aspheric Optical Glass</td>
<td>-55°C to +60°C (ambient)</td>
<td>0 – 100% RH (non-condensing)</td>
<td>10 – 150 Hz, 2 g</td>
<td>EN50270</td>
</tr>
</tbody>
</table>

**Certification/Approvals:**

<table>
<thead>
<tr>
<th>CSA and UL</th>
<th>GOST-K</th>
<th>GOST-R</th>
<th>InMetro</th>
</tr>
</thead>
<tbody>
<tr>
<td>Class I Div 1 Groups B C &amp; D T5 Class II Div 1 Groups E F &amp; G T5 Class III Div 1 Ex d IIB + H₂ T5 Class I, Zone 1, AEx d IIB + H₂ T5 Tamb = -40°C to +60°C Entry: ¾&quot; NPT</td>
<td>EAC Ex TR CU Coc IExdIIBT5/H2X Entry: M25</td>
<td>EAC Ex TR CU Coc IExdIIBT5/H2X Entry: M25</td>
<td>Ex d IIB+H₂ T5 Gb ou Extb IIIC T100°C Tamb = -40°C to +60°C Db IP66/67 Tamb: -20°C a +60°C Entry: M25</td>
</tr>
</tbody>
</table>

**Safety Integrity**

Suitable for use in SIL2 Safety Systems per IEC 61508

**Electrical:**

<table>
<thead>
<tr>
<th>Operating Voltage</th>
<th>Power Consumption</th>
<th>Outputs (Analog x 2)</th>
<th>Low Signal</th>
<th>Beam Block</th>
<th>Inhibit</th>
<th>Fault</th>
<th>Over range</th>
<th>Output (Digital)</th>
</tr>
</thead>
<tbody>
<tr>
<td>+24V DC, (+18 to +32V DC)</td>
<td>Tx = 12 W (max), Rx = 10 W (max)</td>
<td>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</td>
<td>3 mA (configurable 1 to 4 mA)</td>
<td>2.5 mA (configurable 0 to 3.5 mA)</td>
<td>2 mA (configurable 1 to 3.5 mA)</td>
<td>0.5 mA (configurable 0 to 1 mA)</td>
<td>21.5 mA (configurable 20 to 21.9 mA)</td>
<td>HART 7.1 &amp; MODBUS RTU supported</td>
</tr>
</tbody>
</table>

**Optical:**

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

<table>
<thead>
<tr>
<th>Alignment</th>
<th>Obscuration</th>
<th>Heated Optics</th>
<th>Laser Beam</th>
<th>Certification/Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>+/- 0.5°</td>
<td>&lt;= 95%</td>
<td>Tx &amp; Rx lenses are continuously heated.</td>
<td>Class 1 (Eye Safe) IEC 60825-1</td>
<td>CSA and UL Class I Div 1 Groups B C &amp; D T5 Class II Div 1 Groups E F &amp; G T5 Class III Div 1 Ex d IIB + H₂ T5 Class I, Zone 1, AEx d IIB + H₂ T5 Tamb = -40°C to +60°C Entry: ¾&quot; NPT</td>
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**Calibration:**

Factory calibrated for life, no routine calibration required.

**Ordering Information:**

To order / specify: Senscient ELDS 1000, Gas type: CH₄ Measuring Range: e.g. 0-1 LEL.m Path length: e.g. 5-40m Certification: e.g. ATEX

**Accessories:**

Approved Interface terminal (PC) Interface terminal (Tablet) Optical Alignment Scope Gassing Cell (Optional) Snow Cowl (Optional)

**Notes:**

*Note 1: FM performance approval on this range Approval No. FM3049893*