LaserMethane mini (LMm)

Safety Scan
Smart Gas Leak Detection

Authorized Dealer

SA3C50A  SA3C32A

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Identity of the technology - 1

First response and sensitivity
Can detect faster than conventional method
(Detection speed: 0.1 sec)

Detection at distance
By simply pointing the laser beam towards the suspected leak or along the survey line

Detection over the window
Can detect over the window. Measurement of room filled with methane from outside.

Excellent Selectivity for methane gas
Reaction only for methane gas. No false reports.

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Transition of Our Laser Methane Detectors

- **Wide Organic Electroluminescence Display**
- **Visual and Audible Alarm**

The LED lamp flashes when CH4 is detected.
Identity of the technology - 2

**Truly portable and hand held**
Remote measurement, quick and high sensitive detection. Enables safe work event at high and narrow places.

**Wide operating temperature range**
Harsh environment situation from -17° to 50°. Can be used in cold & hot areas.
Application

7.5m around Zone 1

7.5m around the tank

1m around the safety valve

Non-Explosion Proof Area

Explosion Proof Required Area

LNG/LPG Underground Tank

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Model SA3C32A

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Explosion-proof certified detector

LMm has ATEX approval applied for allowing detection in hazardous areas to Zone 1

The LED lamp flashes when CH4 is detected
Model: SA3C50A

Storage Function

Save and display measured values. Email various data. Works with Android device.

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Model: SA3C50A

Green Guide Laser Light

Suitable in bright sunlight outdoors

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New Model : SA3C50A

Display and save measured locations as well as the values and times on the map

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New Model: SA3C50A

- Green Guide Laser Light
- Wide Organic Electroluminescence Display
- Visual and Audible Alarm
- Bluetooth & Internet Access

SA3C50A is not an explosion-proof structure.

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The other settings on the mobile screen.
Bluetooth Setting on SA3C50A (LMm-G)

Push “Enter” Key

The Bluetooth Setting is ready

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How to connect on the mobile screen.

The Connection is completed.

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Data Storage on the mobile screen.

Push “Storage STOP”.

Data Files Stored Per Measurement.

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GPS on the mobile screen.

Data Mapping

“Satellite” View

Location Data Files Stored Per Measurement.

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## Comparison Chart: SA3C50A & SA3C32A

<table>
<thead>
<tr>
<th>Items</th>
<th>SA3C32A</th>
<th>SA3C50A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guide Laser Light Color</td>
<td>Green (Class 3R: 5mW or below)</td>
<td>Green (Class 3R: 5mW or below)</td>
</tr>
<tr>
<td>Certificate</td>
<td>CE (ATEX&amp;EMC)</td>
<td>CE (R&amp;TTE)</td>
</tr>
<tr>
<td>Best Application</td>
<td>Hazardous Areas</td>
<td>Outdoors under strong sunshine</td>
</tr>
<tr>
<td>Operating Time</td>
<td>Approx. 6 hours</td>
<td>Approx. 4.5 hours</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>-17 ~ +50°C</td>
<td>-10 ~ +50°C</td>
</tr>
<tr>
<td>Weight</td>
<td>600g or less</td>
<td>530g or less</td>
</tr>
</tbody>
</table>
Principle of remote detection

- Laser Methan is based on utilization of laser absorption spectrophotometer of methan gas for gas measurement.
- The system detects natural gas leaks by emitting a Laser at particular wavelengths and analyzing the light reflected back from the ground to determine how much was absorbed by the methane in the natural gas.
- The measured gas volume is expressed by the methane column density (ppm-m): methane density (ppm) multiplied by the thickness (m)

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The difference with the Conventional detectors

Conventional Tech.  Our Tech.

Pinpoint Concentration  Average Concentration

Methane Cloud  Methane Cloud

Laser beam

Unit: “ppm”  Unit: “ppm-m”
1. Conventional Issues Before Laser Methane Detector

Why first developed?

- Conventional gas detectors such as:
  - Catalytic combustion detector
  - Flame ionization detector (FID)
  - Semiconductor-type detector

are NOT capable of remote detections.

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**Principle**

Methane absorbs a specific wavelength of infrared rays. The laser diode emits infrared laser, receives the diffused lights back and measures the absorption of the lights.

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Calibration and self-check

- Built-in standard gas cell allows calibration and Self-check
- Executes concentration check device start up Auto-calibration
- If a wavelength stability error occurs, the system will automatically conduct an auto-calibration to resume.
Applications - 1

- Industrial and commercial property survey
- Emergency call out
- Gas plant
- Landfill monitoring
- Street survey
- Pipeline survey
Applications - 2

2 Piping in pipe shaft
Buildings, apartment houses, multiple dwelling houses, etc.

It is possible to inspect this type of piping without scaffolding.

3 Remote detection over a long distance
Natural gas transmission pipe, etc.

If the pipe is coated with reflective paint or a reflector plate is set behind the pipe, remote detection over a long distance* can be made in the reflect mode (option).

*Low-range: Up to 50 m
High-range: Up to 150 m

4 Locked room
Ordinary homes, etc.

Even in a house left empty with doors locked, detection is possible through a glass window.
**Exterior**

- Light receiver
- Detection laser output window Marker Laser output window
- Leak detection LED
- Large LCD
- Menu/Enter button
- ▲▼ buttons
- Power button
- Start/Stop button
- Display/Back button
- Volume hole
- Battery pack fixing screw

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**Function**

Menu setup items: 1) Alarm level   2) Offset   3) Sound level   4) Display   5) Language

The value can be adjusted at 1ppm-m step within the range of 0～9999ppm-m.
## Comparison Table

<table>
<thead>
<tr>
<th></th>
<th>Detection method</th>
<th>Detection range</th>
<th>Detectable distance</th>
<th>High/Low range Switching</th>
<th>Detection accuracy</th>
<th>Detection response time</th>
<th>Data storage function</th>
<th>Operating temperature range</th>
<th>Continuous operating time</th>
<th>Battery rechargeable time</th>
<th>Display</th>
<th>ATEX</th>
<th>Enclosure</th>
<th>Dimension</th>
<th>Cubic volume / weight</th>
<th>RbHS Directive</th>
<th>RoHS Directive</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tunable diode laser absorption spectroscopy</td>
<td>1 - 50,000ppm.m</td>
<td>0.5m - 100m</td>
<td>Automatic range adjustment</td>
<td>+/-10% (@2m)</td>
<td>0.1Sek</td>
<td>none</td>
<td>-17°C to +50°C</td>
<td>More than 5 hours</td>
<td>4 hours</td>
<td>Colour LCD</td>
<td>II2G Ex ib op-pr/ is IIA T1</td>
<td>IP54</td>
<td>W70 x D179 x H42mm</td>
<td>0.6kg</td>
<td>Compliant</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>1 - 10,000ppm.m</td>
<td>1 - 150m</td>
<td>L/H range is changed manually</td>
<td>+/-10% (@2m)</td>
<td>0.1Sek</td>
<td>Internal memory SD Karte &amp; RS232 interface</td>
<td>0°C to 40°C</td>
<td>1.5 hours</td>
<td>Black &amp; white</td>
<td>Non-compliant</td>
<td>IP54</td>
<td>W112 x D250 x H248</td>
<td>1.3kg</td>
<td>Non-compliant</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>0 - 99,999ppm.m</td>
<td>30m nominal</td>
<td>not featured</td>
<td></td>
<td>not listed</td>
<td>RS232 interface</td>
<td>-17°C to +50°C</td>
<td>8 hours</td>
<td>black &amp; white LCD</td>
<td>Non-compliant</td>
<td>Non-compliant</td>
<td>W860 x D240 x H240mm</td>
<td>6.4kg</td>
<td>not listed</td>
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Key features & benefits

- Familiar and intuitive Design
- Detectable at distance
- ATEX approval SA3C32A
- Green Guide Laser Light and storage function SA3C50A
- Not just hand held, but truly portable only 600g and fits in the pocket
- Extended battery- 4 hours minimum operation
- Battery Power 5 hours
- Extended temperature range – 17°C to +50°C
- Rugged and drop tested to 1.5m (3m with protector)

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