

GASCLAM 2

GROUND GAS MONITOR



Key Features

- Continuous gas (methane, carbon dioxide, oxygen, hydrogen sulphide, carbon monoxide and total VOC) monitoring with configurable logging intervals
- Continuous atmospheric borehole pressure and monitoring with configurable logging intervals
- Battery powered deployment for up to 3 months (dependant on logging frequency)
- External power option for extended deployments
- Intrinsically safe for use in explosive atmospheres

Key Benefits

- Optimized site management with insights from continuous monitoring
- Improve site characterization and event flagging helps reduce risks
- Demonstrates due diligence and regulatory compliance
- Supports an industry recognized best practice approach to ground-gas monitoring
- Aids selection of cost effective solutions

Ease of Use

- Fits in to standard 50 mm/2" borehole
- Reduces number of site visits
- Simple PC software to download and analyze data



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Unrivaled Gas Detection

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V2.2
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Continuous Ground Gas Monitoring

Using spot measurements to understand ground-gas behaviors can lead to uncertain or misleading results. Uncertainty exists as concentration changes over time and spot sampling only provides a snap shot of the ground gas at that instant.

Considerable published material from experts who measure ground-gas and perform risk assessments question whether traditional methods of collecting data are adequate. The need for greater granularity of data was the reason for developing the patented GasClam 2.

GasClam 2 continuously measures and collects ground gas concentration data, as well as parameters that are known to control it - subsurface pressure and atmospheric pressure.

In combination, this data reduces uncertainty by providing the full picture of what is happening below ground. Also, by observing the process controlling the ground gas regime, you can predict how it will change in the future.

Using GasClam 2 therefore provides multiple financial benefits. The first saving comes from reducing the number of site visits by a field engineer. The second saving comes from reducing the overall length of monitoring programs as legislative data requirements can be met quicker. The third, and largest saving, is made by designing appropriate, rather than over engineered solutions, based on complete and robust data.



Applications include

- Brownfield site investigation
- Landfill perimeter monitoring and control
- Shale and Coal Bed Methane/ Seam Gas site monitoring
- Vapor intrusion studies
- Waste Management
- Refineries and petroleum storage monitoring

Accessories

- External power supply cable
- External power supply / communication adaptor
- External level sensor



GASCLAM

Specifications and Pricing

Gas	Method/Type	Range	Resolution	Accuracy
CH4**	Infrared	0-100% or 0-5%	1% of FSD above 50% 0.5% below 50%	+/- 2% FSD
CO2**	Infrared	0-100% or 0-5%	1% of FSD above 50% 0.5% below 50%	+/- 2% FSD
O2	Electrochemical	0-25%	0.1% vol	+/-5% of reading +/- 1 digit
DUAL CO/H2S				
CO*	Electrochemical	0-500ppm	1ppm	+/- 3ppm at 0 +/- 5% at 250ppm
H2S*	Electrochemical	0-200ppm	1ppm	+/- 1ppm at 0 +/- 2% at 100ppm
SINGLE				
VOC*	PID	0-4000ppm	1ppm	+/- 5% of reading +/- 1 digit
ENVIRONMENTAL				
Barometric Pressure	Piezoelectric	800 to 1200 mBar	1 mBar	
Borehole Pressure	Piezoelectric	800 to 1200 mBar	1 mBar	
Temperature	Internal Chip	-5°C to +50°C or 22°F to 122°F	0.1°C or 1°F	
Water Depth*	Piezoelectric	0 — 25m (various available)	0.01 m	



POWER OPTIONS

Internal: Option of Lithium primary cells or Duracell Alkaline D-Cells or Rechargeable battery pack
External: Accepts intrinsically safe external power supply for extended and/or rapid monitoring

Typical Battery Life (hourly sampling)

Lithium primary cells - 3 months
Alkaline cells - 1 month
Rechargeable battery pack - 3 weeks

Case

High quality stainless steel

Weight

7.5 kg (16.8 lbs)

Dimensions

Overall length: 90cm (35.4 in) —
Borehole tube length: 83cm (32.6 in)
Head diameter: 11cm (4.3 in) —
Borehole tube diameter: 4.7cm (1.85 in)

Protection

IP68 rated (continuous submersion)

Operation Temp
-20°C to +50°C (-4°F to 122°F)

Approvals

EMC, ATEX 0105 X
CE
Ex II 2G Ex d ib [ib] IIB T4
IECEX Ex d ib [ib] IIB T4 Gb
CSA C (US & Canadian approvals)
Class 1, Zone 1
(A)Ex d id IIB T4

Patents

European and World-wide Patented

Gasclam	Description
BMSSRBXG-X12OXX	GasClam (0-5 CH4, 0-100 CH4)
BMSSRBXG-X13OCV	GasClam (0-5 CH4, 0-5 CO2)+CO+VOC
BMSSRBXG-X13ODV	GasClam (0-5 CH4, 0-5 CO2)+H2S/CO+VOC
BMSSRBXG-X13OXX	GasClam (0-5 CH4, 0-5 CO2)
BMSSRBXG-X14OXX	GasClam (0-5 CH4, 0-100 CO2)
BMSSRBXG-X24OCV	GasClam (0-100 CH4 & CO2)+CO+VOC
BMSSRBXG-X24ODV	GasClam (0-100 CH4 & CO2)+H2S/CO+VOC
BMSSRBXG-X24ODX	GasClam (0-100 CH4 & CO2)+H2S/CO
BMSSRBXG-X24OXV	GasClam (0-100 CH4 & CO2)+VOC
BMSSRBXG-X24OXX	GasClam (0-100 CH4 & CO2)
BMSSRBXG-X34OXX	GasClam (0-5 & 0-100 CO2)
BMSSRBXG-XXXXXV	GasClam with VOC Sensor

FOR OTHER COMBINATIONS OF SENSORS IN THE GASCLAM, PLEASE CONTACT ION SCIENCE INC.



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Accessories	Description
25030	RS232 Communication Cable
25031	Push Button Control
25109	Moisture Filter Section Cover - Long
25033	Rubber Collar
25062	Charger NiMH ECH 1.1
25065	Re-chargeable Battery Pack
A-25083	GasClam Accessory Kit
A-25066	O-Ring (Filter sect bott + batt comp) pack of 5
A-25067	O-Ring (Filter section top) pack of 5
A-25064	GasClam Snorkel Assembly
A-25114	Moisture Filter Pack of 3 (From 2012 onwards)

