

BIOGAS 3000

Geotech



FIXED BIOGAS AND LANDFILL GAS ANALYSER | ANAEROBIC DIGESTION

The ATEX and IECEx certified BIOGAS 3000 builds on field proven, robust gas analysis technology to offer cost effective online monitoring with local data outputs.



FEATURES

- CH₄ CO₂ & O₂ - standard measurements
- H₂S, H₂ and CO - choice of up to two optional measurements
- Modular design enabling hot-swap for serviceability and onsite maintenance
- User calibration function to maintain accuracy & ensure data reliability in extreme temperatures
- ATEX and IECEx certified for use in potentially explosive gas atmospheres - zone 2
- ISO / IEC 17025 calibration for optimal accuracy
- Ability to monitor the gas control process before and after desulphurisation
- Continuous monitoring option
- Up to 4 sample points to monitor the complete gas control process
- IP65 rated for weather proofing
- Built in liquid level monitoring with a dedicated alarm to inform the user that the contents of the catchpot requires emptying or an optional automated moisture removal drain
- Gas alarms & fault notifications
- 6 x 4-20mA outputs
- Modbus RTU communication
- Optional Profibus and Profinet communication
- Clear, visual and informative colour display
- Optional heater to extend operating temperature range to -20°C
- Extended Warranty & Service pack options through approved global service centres

SECTOR

- Biogas
- Landfill gas

APPLICATIONS

- Agricultural waste
- Biogas upgrading
- Landfill gas monitoring
- Farm waste AD (small scale)
- Gas flaring
- Mixed food waste AD
- Sewage/waste water treatment AD



BENEFITS

- Customisable to site requirements
- Zero operational downtime for servicing
- Product reliability and longevity
- Protect expensive capital equipment from damaging gases
- Maximise operational efficiency through optimising the AD process
- Operational within hazardous areas
- Ease of operation, integration and installation
- Minimal through-life costs
- Local support for peace of mind

BIOGAS 3000

TECHNICAL SPECIFICATIONS


GENERAL SPECIFICATION				
Number of sampling points	1-4			
Gases to be monitored	CH ₄ , CO ₂ and O ₂ with optional H ₂ S, H ₂ and CO (choice of up to 5)			
Reading intervals	User definable, with a continuous ¹ CH ₄ , CO ₂ and O ₂ option available			
Operating temperature range	0°C to +50°C without heater, -20°C to +50°C with heater			
POWER				
Mains options	110-230 VAC 50/60 Hz			
Consumption	155W max.			
Backup memory	Lithium manganese dioxide backup battery for memory retention			
GAS RANGES				
Gases measured	CH ₄ and CO ₂	By dual wavelength infrared cell with reference channel		
	O ₂	By internal electrochemical cell		
	H ₂ S / H ₂ / CO	By internal / external electrochemical cell		
	Cell	Range	Typical accuracy (range : accuracy)*	
Standard gas cells	CH ₄	0-100%	0-70% : ±0.5% (vol)	70-100% : ±1.5% (vol)
	CO ₂	0-100%	0-60% : ±0.5% (vol)	60-100% : ±1.5% (vol)
	O ₂	0-25%	0-25% : ±1.0% (vol)	
	Cell	Range	Typical accuracy (range : accuracy)*	
			Internal accuracy	External accuracy
Optional gas cells	H ₂ S	0-50ppm	±1.5% FS	±1.5% FS
	H ₂ S	0-200ppm	±2.0% FS	±1.5% FS
	H ₂ S	0-500ppm	±2.0% FS	±2.0% FS
	H ₂ S	0-1,000ppm	±2.0% FS	±2.0% FS
	H ₂ S	0-5,000ppm	±2.0% FS	±100ppm or 5% of reading (if greater)
	H ₂ S	0-10,000ppm	±5.0% FS	±200ppm or 5% of reading (if greater)
	CO	0-1,000ppm	±2.0% FS	±3.0% FS
	H ₂	0-1,000ppm	±2.5% FS	±1.5% FS
			Range	Response time
Response time, T90**	CH ₄	≤10 seconds	H ₂ S (0-50ppm)	≤30 seconds
	CO ₂	≤10 seconds	H ₂ S (0-200ppm)	≤35 seconds
	O ₂	≤20 seconds	H ₂ S (0-500ppm)	≤35 seconds
			H ₂ S (0-1,000ppm)	≤35 seconds
	H ₂	<90 seconds	H ₂ S (0-5,000ppm)	≤40 seconds
	CO	<30 seconds	H ₂ S (0-10,000ppm)	≤40 seconds
** Times are taken from the point gas enters the BIOGAS 3000 module. Sample times will vary depending on length of sample pipe				
Cell lifetime	O ₂ cell is 3 years in air, all other cells 2 years in air			

*Plus accuracy of calibration gas used

© Product designs and specifications are subject to change without notice. User is responsible for determining suitability of product.

BIOGAS 3000

TECHNICAL SPECIFICATIONS CONTINUED

PUMP	
Flow	300ml / min typically
Flow-fail point	Flow rate less than 75ml/min or vacuum greater than 350mbar
Maximum vacuum restart	-375 mbar
COMMUNICATIONS	
Output channels	Up to six analogue 4-20mA output channels that are user configurable for current sink or source inputs plus Modbus RTU digital output.
	Optional Profibus module
	Optional Profinet module
Alarm notifications	1 x fault relay
	7 x user-configurable alarms that can trigger a relay when above or below a set value. In addition, one can be used to indicate to the operator when the catchpot is full and requires emptying.
Relay outputs	Single pole changeover 6A 24Vdc relay volt free
ENVIRONMENT CONDITIONS	
Operating pressures	-350 mbar to +350 mbar
IP rating	IP65
Humidity	0-95% non-condensing humidity
PHYSICAL	
Weight	36.5kg
Size	650 x 600 x 210mm (with supplied wall mounting brackets)
Enclosure	Stainless steel, 600 x 600 x 210mm, IP65 rated
Operation keys	Alpha-numeric keypad with 'tactile' membrane
Display	Ultra-clear high resolution 4.3" full colour TFT
Moisture removal filters	User replaceable microfibre filter and 2.0µm ptfе water traps
Heater option	Optional 100W mains powered ATEX certified heater for 110V or 230V mains supply
CERTIFICATION RATING	
ISO17025	Calibrated under UKAS accreditation (certificate number 4533)
ATEX / IECEx marking	 II 3G Ex nA nC IIA T1 Gc (-20°C ≤ Ta ≤ +50°C)
BS EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use
BS EN 50270:2006	Electromagnetic compatibility- electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen

¹ Continuous option will include a minimum 3 minute daily air purge





FIXED BIOMETHANE ANALYSER | BIOGAS UPGRADING

The BIOMETHANE 3000 is designed for high accuracy methane and oxygen readings for biomethane applications, providing customers with the peace of mind that at first stage production, they will have quality readings above the 95% methane level and below the 1% oxygen level.



SECTOR

Biogas upgrading

APPLICATIONS

- Biogas upgrading
- Agricultural waste
- Farm waste AD
- Mixed food waste AD
- Sewage/waste water treatment AD
- Vehicle fuel
- Biomethane productions

FEATURES

- CH₄ - improved accuracy 90-100%
- O₂ - improved accuracy below 1% to 2 d.p
- Modular design enabling hot-swap for serviceability and onsite maintenance
- Fully automated calibration function to maintain CH₄ accuracy and ensure data reliability in extreme temperatures
- ATEX and IECEx certified* for use in potentially explosive gas atmospheres - zone 2
- ISO / IEC 17025 calibration for optimal accuracy
- Continuous monitoring of 1 sample point
- IP65 rated for weather proofing
- Built in liquid level monitoring with a dedicated alarm
- Optional automated moisture removal drain
- Dedicated alarm to inform the user that the auto calibration needs attention
- Gas alarms & fault notifications
- 6 x 4-20mA outputs
- Modbus RTU communication
- Optional Profibus, Profinet and Ethernet communication
- Clear, visual and informative colour display
- Wide operating temperature range
- Extended Warranty & Service pack options through approved global service centres
- Heater as standard

BENEFITS

- Customisable to site requirements
- Protects against O₂ issues
- Zero operational downtime for servicing
- Product reliability and longevity
- Prevents the risk of injecting poor quality gas into the grid network
- Maximise operational efficiency through optimising the AD process
- Operational within hazardous areas
- Ease of operation, integration and installation
- Minimal through-life costs
- Local support for peace of mind

*Does not apply to auto calibration section.

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BIOMETHANE 3000

TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATION				
Number of sampling points	1			
Gases to be monitored	CH ₄ , CO ₂ and O ₂ with optional H ₂ S, H ₂ and CO (choice of up to 4)			
Reading intervals	Continuous ¹ CH ₄ , CO ₂ and O ₂ measurement with user definable fourth gas reading			
Operating temperature range	-20°C to +50°C			
POWER				
Mains options	110-230 Vac 50/60 Hz			
Consumption	155W maximum			
Backup memory	Lithium manganese dioxide backup battery for memory retention			
GAS RANGES				
Gases measured	CH ₄ and CO ₂	By dual wavelength infrared cell with reference channel		
	O ₂	By internal electrochemical cell		
	H ₂ S / H ₂ / CO	By external electrochemical cell		
	Cell	Range	Typical accuracy (range : accuracy)*	
Standard gas cells	CH ₄	0-100%	0-100% : ±0.5% (vol)	
	CO ₂	0-100%	0-60% : ±0.5% (vol)	60-100% : ±1.5% (vol)
	O ₂	0-25%	0-1% : ±0.05% (vol)	1-2% : ±0.10% (vol) 2-25% : ±1.0% (vol)
	Cell	Range	Typical accuracy (range : accuracy)*	
			Module cell	System cell
Optional gas cells	H ₂ S	0-50ppm	±1.5% FS	±1.5% FS
	H ₂ S	0-200ppm	±2.0% FS	±1.5% FS
	H ₂ S	0-500ppm	±2.0% FS	±2.0% FS
	H ₂ S	0-1,000ppm	±2.0% FS	±2.0%
	H ₂ S	0-5,000ppm	±2.0% FS	±100ppm or 5% of reading (if greater)
	H ₂ S	0-10,000ppm	±5.0% FS	±200ppm or 5% of reading (if greater)
	CO	0-1,000ppm	±2.0% FS	±3.0% FS
	H ₂	0-1,000ppm	±2.5% FS	±1.5%
	Range	Response time	Range	Response time
Response time, T90**	CH ₄	≤10 seconds	H ₂ S (0-50ppm)	≤30 seconds
	CO ₂	≤10 seconds	H ₂ S (0-200ppm)	≤35 seconds
	O ₂	≤10 seconds	H ₂ S (0-500ppm)	≤35 seconds
	H ₂	<90 seconds	H ₂ S (0-1,000ppm)	≤35 seconds
	CO	<30 seconds	H ₂ S (0-5,000ppm)	≤40 seconds
			H ₂ S (0-10,000ppm)	≤40 seconds
Cell lifetime	O ₂ cell is 3 years in air, all other cells 2 years in air			


*Plus accuracy of calibration gas used

**Times are taken from the point gas enters the BIOMETHANE 3000 module. Sample times will vary depending on length of sample pipe

¹ The process will be paused during an auto calibration

BIOMETHANE 3000

TECHNICAL SPECIFICATIONS CONTINUED

PUMP	
Flow	300ml / minute typically. Please note that the default operation of the pump is always off and uses the positive pressure of the gas at the sample point
Flow-fail point	Flow rate less than 75ml / minute or vacuum greater than 350 mbar
Maximum vacuum restart	-375 mbar
COMMUNICATIONS	
Output channels	Up to six analogue 4-20mA output channels that are user configurable for current sink or source inputs plus Modbus RTU over RS-485
	Optional Profibus, Profinet or Ethernet module
Alarm notifications	1 x fault relay
	7 x user-configurable alarms that can trigger a relay when above or below a set value and one to inform the operator of the results of the autocalibration. In addition, one can be used to indicate to the operator when the catchpot is full and requires emptying
Relay outputs	Single pole changeover 6A 24Vdc relay volt free
ENVIRONMENT CONDITIONS	
Operating pressures	-350 mbar to +350 mbar*
IP rating	IP65
Humidity	0-95% non-condensing humidity
PHYSICAL	
Size	650 x 600 x 210mm (with supplied wall mounting brackets) per enclosure (2 enclosures)
Weight	Maximum 36.5kg per enclosure
Enclosure	Stainless steel, 600 x 600 x 210mm, IP65 rated
Operation keys	Alpha-numeric keypad with 'tactile' membrane
Display	480 x 272 pixel RGB TFT display, 96mm x 55mm
Moisture removal filters	User replaceable microfibre filter and 2.0µm PTFE water traps
Heater	100W mains powered ATEX certified heater for 110V or 230V mains supply
CERTIFICATION RATING	
ISO17025	Calibrated under UKAS accreditation (certificate number 4533)
ATEX / IECEx marking	 II 3G Ex nA nC IIA T1 Gc (-20°C ≤ Ta ≤ +50°C) (main system only)
BS EN 61010-1:2010	Safety requirements for electrical equipment for measurement, control, and laboratory use
BS EN 50270:2006	Electromagnetic compatibility- electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen

*Pressures will need regulating in order not to damage the system. This is the responsibility of the user.



BIOGAS 300



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FIXED GAS ANALYSER | ANAEROBIC DIGESTION

Easy to self-install, operate and maintain, the BIOGAS 300 is a cost effective fixed system biogas analyser for CH₄ monitoring. Ideal for 500kW or reduced scale Anaerobic Digestion plants, from agricultural to food waste typical applications.



SECTOR

Biogas

APPLICATIONS

- Farm waste AD (small scale)
- Mixed food waste AD
- Agricultural waste (small scale)

FEATURES

- Simple to operate - push button operation
- 0-100% CH₄ measurement
- Single sample point monitoring
- Easy to read backlit display through transparent enclosure door
- Last reading stored for on-screen viewing
- IP65 rated ABS enclosure
- Modbus data output

BENEFITS

- No training required
- Zero service downtime, optional hot-swap
- Simple user calibration
- Field proven technology
- Quick and easy self-installation
- Low cost of ownership
- Compact self-contained system

OPTIONS

(AVAILABLE AT PURCHASE OR LATER)

- 4-20mA output (with optional isolator) as an alternative to Modbus
- Pumped version



BIOGAS 300

TECHNICAL SPECIFICATIONS

GENERAL SPECIFICATION		
Number of sampling points	1	
Gases monitored	CH ₄	
Sample pressure	Non-pump version suitable for +10 to +50 mb sample points Pumped version suitable for -100 to +350 mb sample points	
Operating temperature range	0°C to +50°C	
Detects low flow and blockages		
Reading obtained by user pressing sample button		
POWER		
Mains	110-240 Vac 50/60 Hz	
Power	12W	
Real time clock back up	Lithium manganese dioxide coin cell	
GAS RANGES		
Gases measured	CH ₄	By dual wavelength infrared cell with reference channel
Range	CH ₄	0-100%
Typical accuracy- after calibration*	CH ₄	±2.0% vol
Response time, T90	CH ₄	120 seconds**
PUMP (OPTIONAL)		
Flow	100ml/min typically	
Maximum vacuum restart	-100mb	
Maximum sample pipe length	50 meters***	
COMMUNICATION OPTIONS		
Output channels	Modbus (as standard) 4-20mA current sink (optional) 4-20mA current source via a loop powered isolator (optional)	
PHYSICAL		
Weight	max 10 kg	
Size	500 x 400 x 200mm	
Enclosure	ABS, IP65 rated (with supplied wall mounting brackets)	
Operation keys	Tactile five button membrane keypad and sample button	
Display	Liquid crystal display with 20 x 2 characters and white LED backlight	
Moisture removal filters	User replaceable inline PTFE filter and coalescing filters	
COMPLIANCE		
BS EN 61010-1: 2010	Safety requirements for electrical equipment for measurement, control, and laboratory use. Part 1: General requirements	
BS EN 50270: 2006	Electromagnetic compatibility- electrical apparatus for the detection and measurement of combustible gases, toxic gases or oxygen	

* Plus accuracy of calibration gas used.

** T90 taken from point gas enters the system at ambient pressure and 100ml / min flow rate.
Different applications will increase or decrease time accordingly.

*** Note: sample pipe length will affect response times.