Anaero Technology

GAS MONITOR FOR BATCH AND AUTO-FED DIGESTERS

Overview

The Chimera is an automatic gas composition instrument by Anaero Technology that offers a significant advancement in the semi-continuous analysis of gases, enabling accurate measurements of gas concentrations with flows as low as 40ml/h from 15 separate channels. The default configuration measures CH_4% and CO_2%. However, the gas sensors are modular and so the Chimera can be additionally configured to measure (N_2O, CO). Also available is the Chimera Max which allows pumped sampling from gas bags for **electrochemical analysis**, expanding the gas measurement ports to 8 and possible gases to H_2, H_2S, O_2 , N_2O, NH_3 ,CO.

In contrast to traditional methods that are either complex and costly (e.g gas chromatography (GC)), or limited and time demanding (e.g hand-held monitors, manometer type systems), the Chimera offers a practical alternative that captures the best of both worlds. It provides a more efficient, flexible, and scalable approach to gas monitoring, ensuring reliable data without compromising gas composition analysis.

The Chimera 15-channel gas composition monitor includes the system software, electronics, and hose connections.

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PRODUCT FEATURES

Feature	Description
Sequential Gas Analysis	• Measures up to 15 gas channels sequentially • Base model CH_4 and CO_2 • Provides real-time data for volumes as low as 40ml • Simple calibration can be completed yourself
Gas storage and Output	• Output gas from all channels can be individually stored in bags or discharged
Customisable Configuration	• Compatible with Anaero Technology flow meters • Works with other reactor systems given that there is gas hose line for the input. • Modular gas sensors can be switched out for 4 different gases (with Chimera Max up to 8)
Moisture Management	• Sensors designed to minimise moisture interference through regular flushing of measurement chambers • Installed with gas filters
Data Storage & Connectivity	• Local data storage with 32GB SD card • Wi-Fi capability for remote monitoring • USB connectivity
Software Interface	• Easy configuration of channel activation • Adjustable reading intervals and sequence management • Measurement data automatically stored in CSV format for simple integration
Non-Intrusive Monitoring	• Maintains reactor headspace pressure during measurements • Online connection to gas flow setup

SYSTEM COMPONENTS

Component	Specification
3-Way Valves	• Actuated at zero pressure • One valve per measurement channel
Non-Return Valves	• Prevent back-flow for each gas channel
Gas Hose	• 6x4mm diameter • Connects system components for stable gas flow
Multi-Channel Manifold	• Handles up to 15 measuring channels • Includes dedicated flushing channel for each measurement cycle
Gas Sensors	• Commercial CO_2 and CH_4 NDIR sensors • N_2O, CO also available
Gas Bags (Optional)	• For collecting gas from passive outlet lines • Enables storage for further analysis

SENSOR TECHNOLOGY & MECHANISM

The Chimera Gas Monitor uses Near Distance Infrared (NDIR) sensors to detect and measure the concentration of CH_4 and CO_2 ($+N_2O$,CO) . These sensors are housed in a specially designed small chamber that minimises flow requirements while achieving accurate readings.The gas flow from up to 15 input channels is routed through the measuring manifold, where it is sequentially directed to the CH_4 and CO2 sensors. Each gas sample is analysed, with results logged and timestamped.

The process flow is

1. Gas enters from input channels
2. System directs current sample to sensors
3. System provides time for sensor saturation and results are logged
4. Non-analysed gas from other channels is diverted to storage bags or atmosphere
5. Once a gas channel has finished being measured the gas line is flushed, resetting the sensor.
6. Process repeats for next channel

Technical notes:

- *CH_4 sensor is more sensitive and responds faster than the CO_2 sensor*
- *For optimal performance, fitting each gas line with a moisture filter is recommended*

APPLICATION

The system includes standalone software, which allows wireless connectivity for real-time monitoring and data management. It provides full control over channel activation, reading intervals, and sequence management. Data is stored locally on an SD card and CSV files are generated for ease of access and integration into further analysis tools.

The Chimera Gas Monitor is designed to be highly versatile, suitable for applications including:

- Wide range of research reactors
- Small-scale anaerobic digestion (AD) plants
- Systems operating with low-pressure gas flows

The Chimera 15-channel Gas Composition Monitor includes:

- Complete monitoring system
- System software
- Hose
- 15x Gas Bags
- Hose connections
- 1 Year Warranty

For more information or to request a demonstration, please contact us at contact@anaero.co.uk or visit our website.