COMBIMASS®

Technical Data

COMBIMASS® GA-m

BINDER
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PORTABLE GAS ANALYZER COMBIMASS® GA-m

For decades now, Binder has been supplying leading plant manufacturers with innovative systems for industrial gas flow measurement. In the last few years, the demand for reliable, precise and cost-effective measuring systems for biogas, sewage gas and landfill gas has increased significantly. Since the composition of these gases changes over time, the linking of flow measurement and gas analysis brings great advantages:

- Providing the most precise quantity measurement, even in changing conditions
- Cost advantages by avoiding redundant components
- Attractive additional functions by linking the data from both systems.

The new series of extremely robust, low maintenance and efficient portable measuring instruments COMBIMASS® GA-m series represents a milestone in the development of mobile gas analysers. All common requirements are optimally fulfilled in the analysis of fermentation gas, sewer gas and dump gas from landfills.

Due to it's easy to service structure, and with modules plug-in, the systems can be extended at and upgraded to the latest version at any time. The powerful internal gas pump also makes measurements in gases with negative pressure possible. The gas cells can be supplied with different measuring ranges.

The data can be stored, measuring sampling point-referred and can be read out to the PC. The internal data logger is very efficient. Servicing contracts with supply of spare devices ensure availability throughout the whole year.

For reliable and cost-effective operation, modern gas engines in biogas, sewage gas and landfill gas plants need a minimum gas quality. Such quality is usually monitored and recorded as required by the engine manufacturer and the plant's insurance. The monitoring of engine's efficiency provides early warning of potential damages and helps to minimize it. Optimized performance control can be done by taking current gas consumption and gas generation into account.

Binder offers the perfect solution for these tasks: a precise portable thermals dispersion mass flow meter combined with the portable biogas analyzer. Deviations of measured values due to changing gas composition, humidity, pressure and temperature are compensated automatically. Data will be shown on the display, can be stored and transferred to the PC.

SMART FEATURES

- up to 7 gas analysis channels in a portable instrument
- optical infra-red analyser with temperature compensation
- powerful internal sampling pump
- user replaceable sample micro-filter
- up to 4 electro-chemical sensors plug-in expandable, integrated cross-sensitivity compensation
- storage of data (with reference to the sampling point), read out data via USB or Bluetooth
- option: 3-way-valve to split the gas way to H_2S HIGH and H_2S LOW
- option: portable biogas mass flow meter (measures Nm^3/h directly) and gas temperature sensor supplied as one insertion sensor (incl. flow correction based on actual gas composition)
- option: integrated static pressure measurement

APPLICATIONS VERSATILITY

- Gases that contain methane from anaerobic digestion plants (agricultural, manure etc., liquid as well as solid fermentation), mechanical biological waste treatment plants
- Sewage gas from digester at wastewater treatment plants
- Landfill gas

TECHNICAL DATA BIOGAS ANALYZER GA-m

Size of the instrument	190 mm x 180 mm x 58 mm
Weight	Up to 1.7 kg
Material enclosure	aluminium
Display	4.3 » TFT (touch resistive industrial, 50,000 operational hours)
Connections	GAS-IN, GAS-OUT, water-proof USB port, Modbus plug to connect an external thermal mass flow meter
Ambient temperature	-10 to + 45°C
Gas quality	+5 to + 40°C, 10-95% rel. Humidity (non condens.)
Protection class	Up to IP66
Capacity gas pump	400 ml/min
Infrared CH_4 analysis [1)]	0 - 100%
Infrared CO_2 analysis [1)]	0 - 100%
Infrared CO analysis [1)]	0 - 100%
Electrochemical O_2 analysis [1)]	0 - 25%
Electrochemical H_2S analysis [1)]	0 - 50 ppm … 10,000 ppm
Electrochemical H_2 analysis [1)]	0 – 1,000 ppm … 40,000 ppm
Electrochemical CO analysis [1)]	0 - 200 ppm … 2,000 ppm
Electrochemical NH_3 analysis [1)]	0 - 100 ppm … 2,000 ppm
Typical measuring time	10 – 90 seconds, depends on the sensor
Recalibration	with testgas 1-2x per year even by the operator (depends on frequency of use and required accuracy)
Gas flow at standard conditions (compensated by pressure and temperature)	0.25 - 25.0 Nm/s 0 - 12,000 Nm^3/hr, depends on pipe size (max. DN400)
Operation range of the temperature probe	-10 to 100°C

[1)] Customized operation ranges can be supplied

TECHNICAL DATA

Operation range static pressure measurement	200 to 1,250 mbar
Operation time of the battery	8 hours typical / loading cycle
Loading time battery	3 to 4 hours
Data logging	data storage with reference to the sampling point, names can be defined easily, 25 sampling point ID´s, 600 set of data min.
Communication / data transfer	data can be read out via USB or Bluetooth (option only) with a software, convert to an EXCEL-sheet

TYPICAL ACCURACIES GA-m

Gas	**Operation Range**	**Typical Accuracy** [1)]	**Typical T_{90}-Time/ Typical Measuring Time**
Methane (CH_4)	0 to 100 Vol.- %	0 - 70%: +/- 0.5 Vol.-% 70 - 100%: +/- 1.5 Vol.-%	50 s 120 s
Carbon dioxide (CO_2)	0 to 100 Vol.-%	0 - 60%: +/- 0.5 Vol.-% 60 - 100%: +/- 1.5 Vol.-%	40 s 120 s
Oxygen (O_2)	0 to 25 Vol.-%	0 - 25%: +/-1.0 Vol.-%	40 s 120 s
H_2S	0 to 50 ppm 0 to 200 ppm 0 to 500 ppm 0 to 2,000 ppm 0 to 5,000 ppm 0 to 10,000 ppm	0 – 50 ppm: +/- 1.5% FS 0 – 200 ppm ... 5.000 ppm: +/- 2.0% FS 10.000 ppm: +/- 3.0% FS	60 s 120 s
H_2	0 to 1,000 ppm 0 to 4,000 ppm 0 to 10,000 ppm 0 to 40,000 ppm	+/-2.5 % FS	30 s 90 s
NH_3	0 to 100 ppm 0 to 500 ppm 0 to 1,000 ppm	+/- 10.0% FS	90 s 180 s
CO	0 to 200 ppm 0 to 2,000 ppm	+/- 2.0% FS	30 s 90 s

[1)] at delivery respectively after recalibration

Further options and probes for GA-m series

Property	Operation Range	Typical Accuracy	Resolution
Temperature	-10 to +100°C	0.5°C	0.1 °C
Gas Flow	0 to 12,000[1)] Nm³/hr	2 % of actual reading	0.1 Nm³/hr
Gas Velocity	0.25 to 25 Nm/s	2 % of actual reading	0.01 Nm/s
Pressure	200 to 1,250 mbar	2 % of full scale	1 mbar

[1)] Depending on the nominal width of the pipe (max. 400 mm)

Standard Accessories: battery charger, carry case, sample pipe, manual, calibration certificate

Options: car-charger, temperature probe, portable flow meter, pressure measurement, device stand, device folding clamp

IMPRESSUM

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