BARTEC BENKE

- Micro-GC technology
- Modular concept
- Compact design
- Low cost of ownership
- Short cycle time

Gas Analyzer

Modular Gas Analyzer MGA-nano

Modular Gas Analyzer **MGA-nano**

Application

The Modular Gas Analyzer MGA-nano from BARTEC BENKE measures the concentrations, moisture content (H_2O), hydrocarbon dew point temperature (HCDT) and hydrogen sulfide content (H_2S) of process gases, natural gas and biogas. Whether the aim is to

- improve product quality
- control process units
- monitor trace contaminants
- measure the heating value

the individual setup of the different modules offers the possibility to create an applications specific analyzer.

BARTEC BENKE

YOUR competent partner for safe plants

The specialists from BARTEC BENKE have many years of experience in plant safety. They create solutions which you can rely on: economical, reliable and for the future.

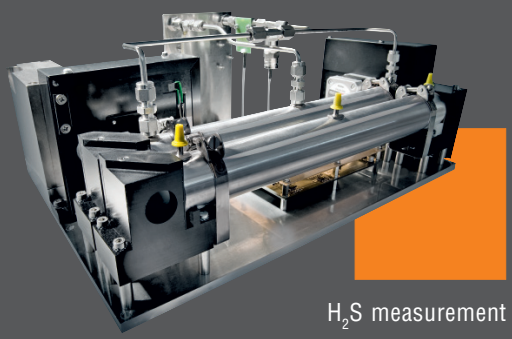
Special Features

- Compact design and small footprint allow quick installation close to process
- The use of micro system technology leads to low cost of ownership as well as to short cycle time
- Significantly lower consumption of sample and utilities in comparison to classical technologies
- Turnkey analyzer system replaces multiple service and maintenance support management
- Calorific Values calculated according to ISO 6976 or ASTM D3588.
- Easy to use via Human Machine Interface (HMI)
- Standalone package enables cost effective solution

Options

- System integration in weather proofed, air-conditioned cabinet for off-site installation
- Temperature-controlled gas bottle cabinet
- Sample Conditioning System for special applications
- Available communication interfaces:
  - Modbus/RTU, Modbus/TCP
  - Remote access via modem, ISDN, LAN, VPN

Modules



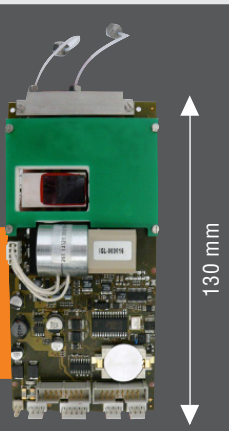
H_2S measurement

Note: Illustrations of this brochure show a MGA-nano with options.

BARTEC BENKE

Create your individual gas analyzer
and choose up to 5 modules!

- **Micro-GC**
- **H_2O measurement**
- **HCDT measurement**
- **H_2S measurement**
- **O_2 measurement**



Micro-GC

O_2 measurement

■ H_2O sensor ■ HCDT sensor

H_2O/HCDT measurement

Oil and Gas Refineries **Petrochemistry** Chemistry

Modular Gas Analyzer MGA-nano

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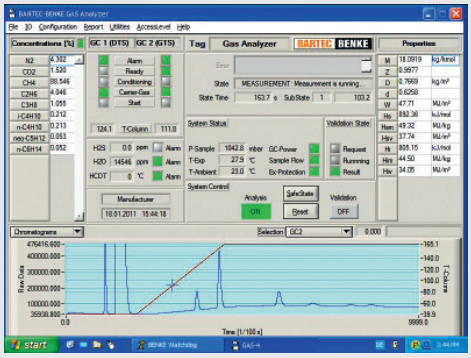
User-friendly

Monitoring and output of analysis of all module measurements on the HMI!



Basic Module

GC permanent gases + lower hydrocarbons

Measuring principle	Packed column gas chromatography +TCD, MEMS technology
Components	H_2, N_2, CO_2, CH_4, C_2H_2, C_2H_4, C_2H_6, H_2S, C_3H_8
Measuring range	0.01 to 100 Vol%
Detection limit	100 ppm
Accuracy	+/-0.1% to +/- 0.25 % RSD T = const.
Cycle time	3 min
Ambient conditions	+5 °C to +40 °C
Sample quality	Vapor (non condensing), H_2S < 2000 ppm
Sample consumption	0.12 Nl/h
Carrier gas	Helium 5.0 (Argon 5.0)
Carrier consumption	0.5 ml/min

Signal Outputs and Inputs

Analog outputs	selectable, up to 16 ports (all concentrations/properties)
Digital outputs	sum alarm, valid, on/off, ready, options
Digital inputs	start/stop measurement, validate

Electrical Data of Signal Outputs and Inputs

Analog outputs	2 x 4 to 20 mA; max. 800 Ω out; active isolated on request
Analog inputs	1 x 4 to 20 mA; 200 Ω
Digital outputs	DC 24 V; max. 0.5 A
Digital inputs	high DC 15 to 28 V low DC 0 to 4 V
Auxiliary power supply output	DC 24 V, max. 0.8 A

Control unit

Central control unit	Industrial PC
Operating system	Windows XP®
Control software	PACS

User interfaces

Display	TFT display with touch function 600 x 800 pixel
Keyboard	virtual keyboard, controlled via TFT display

Optional communication interfaces such as Modbus/RTU, Modbus/TCP and remote access available.

Module 1 GC higher hydrocarbons + CV calorific value

Measuring principle	Capillary column Gas chromatography +TCD, MEMS Technology
Components	C_3H_8, i-C_4H_{10}, n-C_4H_{10}, i-C_5H_{12}, n-C_5H_{12}, C_6H_{14}, C_7H_{16}, C_8H_{18}, C_9H_{20}
Measuring range	0.005 to 100 Vol%
Detection limit	50 ppm
Accuracy	+/-0.6% to +/-1.1% RSD T = const.
Cycle time	3 min
Ambient conditions	+5 °C to +40 °C
Sample quality	Vapor (non condensing), H_2S < 2 000 ppm
Sample consumption	0.12 Nl/h
Carrier gas	Helium 5.0
Carrier consumption	0.1 ml/min

Module 2 H_2O Moisture

Measuring principle	Moisture specific wave length shift based on refraction index changes
Measuring range	1 to 25 000 ppm, -80 °C to +20 °C DT
Detection limit	1 ppm, -80 °C DT
Accuracy	+/-1 °C
Ambient conditions	+5 °C to +50 °C

Module 3 HCDT Hydrocarbon dew point temperature

Measuring principle	Chilled mirror
Measuring range	-25 °C to +20 °C
Detection limit	-25 °C
Accuracy	+/-1 °C
Cycle time	4 min at HCDT 0 °C
Ambient conditions	+5 °C to +50 °C

Module 4 H_2S Hydrogen sulfide

Measuring principle	UV-Resonance Absorption Spectrometry
Measuring ranges	0 to 25 ppm, 0 to 250 ppm
Detection limits	0.5 ppm, 2 ppm
Accuracy	+/-2 % RSD T = const.
T90	10 s at 30 ml/min sample
Ambient conditions	+5 °C to +45 °C

Module 5 O_2 Oxygen

Measuring principle	Electrochemical
Measuring ranges	0 to 100 ppm/0 to 10 000 ppm/ 0 to 25 Vol %
Detection limits	1 ppm/1 ppm/0.1 Vol %
Accuracy	+/-2 % RSD T = const., +/-5% RSD
T90	< 10 s
Ambient conditions	+0 °C to +50 °C

Important notice MGA-nano is subject to continuous product improvement, specifications are preliminary and may be subject to change without notice.

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