



MRU – Competence in gas analysis. For over 35 years.

Programme overview

MRU biogas analysers.



**For biogas, landfill gas, biomethane,
mine gas and biomass.**





The biogas analysers from MRU

The right device for every application.

Whether biogas, landfill gas, coal mine gas, biomethane or offgas: these gases are harmful for the environment. Their composition should be therefore regularly analyzed and controlled. Analysis of these gases will result in an optimal operation in many diversified biogas applications.

MRU's ready-to-measure biogas analysers are a unique industrial solution for use in ...

- Biogas plants
- Combined heat and power plants
- Municipal or industrial waste water treatment plants
- Coal seam (coal mine gas)
- Food and animal waste treatment plants
- Biomethane plants (natural gas grid feed-in)
- Landfills



OPTIMA7 Biogas

04

- Flexible handheld unit for control measurements
- Measurement of biogas pressure, flow velocity and temperature



NOVAplus Biogas

05

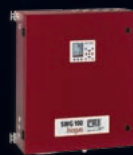
- For simultaneous measurement of O₂, CH₄, CO₂ and H₂S



SWG 100 BIOcompact

06

- Stationary, discontinuous biogas analysis
- Designed for use in rough industrial environments at CHPs



SWG 100 Biogas

08

- Stationary, continuous biogas analysis
- Up to 10 measuring points switching with only one analyser



SWG 100 BIO-Ex

10

- For Ex zone 2
- Gas sampling from low-pressure to high-pressure gas intake

| Measured values | Measuring principle | Measuring range | Accuracy | Resolution |
|--|---------------------|--|--|--------------|
| Oxygen O ₂ | electrochemical | 0 ... 25 Vol. % | ± 0.2 Vol. % absolutely | 0,01 % |
| Carbon dioxide CO ₂ | NDIR | 0 ... 100 Vol. % | ± 0.3 % or 3 % m. r. (reading) ** | 0,01 % |
| Methane CH ₄ | NDIR | 0 ... 100 Vol. % | ± 0.3 % or 3 % m. r. (reading) ** | 0,1 % |
| Hydrogen sulphide H ₂ S | electrochemical | 0 ... 2,000/4,000* ppm | ± 10 ppm or 10 % m. r. (reading) ** | 1 ppm |
| Hydrogen sulphide H ₂ S _{high} | dilution method | 0 ... 10,000/50,000 ppm | ± 50 ppm or 5 % m. r. (reading) ** | 1 ppm |
| Hydrogen sulphide H ₂ S _{low} | electrochemical | 0 ... 200/1,000* ppm | ± 5 ppm or 10 % m. r. (reading) ** | 1 ppm |
| Hydrogen H ₂ | electrochemical | 0 ... 1,000/2,000* ppm | ± 10 ppm or 10 % m. r. (reading) ** | 1 ppm |
| Carbon monoxide CO | electrochemical | 0 ... 10,000/20,000* ppm | ± 10 ppm or 5 % m. r. (reading) ** | 1 ppm |
| Nitric oxide NO | electrochemical | 0 ... 1,000/5,000* ppm | ± 5 ppm or 5 % m. r. (reading) ** | 1 ppm |
| Nitrogen dioxide NO ₂ | electrochemical | 0 ... 200/1,000* ppm | ± 5 ppm or 5 % m. r. (reading) ** | 1 ppm |
| Exhaust gas temperature T.Gas | NiCrNi | 0 ... 650 °C (stainless steel probe tube) 0 ... 1,000 °C (Inconel probe tube) | ± 2 °C or 1 % m. r. (reading) ** ± 2 °C or 1 % m. r. (reading) ** | 1 °C 1 °C |
| Gas pressure | Piezoresistive | -300 ... +300 hPa | ± 0.02 hPa | 0,01 hPa |
| Calculations | | mg/Nm ³ , NO _x as mg/m ³ , real NO _x measurement NO _x = NO ₂ + NO incl. O ₂ reference adjustable by user | | |

* for short-term measurements only
** whichever is larger

OPTIMA7 Biogas

Flexible handheld unit for control measurements



With OPTIMA7 Biogas, we also offer you the option of measuring biogas pressure, flow velocity and temperature.

With the appropriate sensor combination, OPTIMA7 Biogas can also measure engine exhaust gases from CHP units.

We offer you these special advantages:

- Biogas measurement: CH₄, CO₂, O₂, H₂S
- Exhaust gas measurement: O₂, CO₂, CO, NO, NO₂
- Ambient measurement: CH₄ (LEL), H₂S
- Different measuring units can be set by the user
- Intuitive menu navigation with function keys
- Glass-fibre reinforced housing with holding magnets
- Large data memory with interface to app and PC software
- Powerful lithium-ion battery for min. 15 h continuous operation

Detector probe for gas leak detection
Connectable to devices - AUX socket



General technical data

| | |
|-------------------------------|---|
| Operating temperature | +5 ... +45 °C, max. 95 % RF, non-condensing |
| Storage temperature | -20 ... +50 °C |
| Data storage | 16.000 measurements |
| Interface | Mini-USB, SD, IRDA, Bluetooth™ (data transfer to smartphone, tablet or PC) |
| Internal Power supply | Li-ion battery |
| External Power supply | Plug-in power supply 100 ... 240 Vac / 50 ... 60 Hz / 5V DC, 1,2 A |
| Protection class | IP30 |
| Weight | approx. 750 g |
| Dimensions (W x H x D) | 113 x 244 x 54 mm |

NOVAplus Biogas

For simultaneous measurement of O₂, CH₄, CO₂ and H₂S in biogas



Small, lightweight remote control with large, brilliant TFT colour display

The NOVAplus biogas portable unit has a wireless remote control, gas cooler with condensate monitoring and automatic condensate drainage, with built-in high-speed printer.



- Precise measurement technology
- Robust metal housing in aluminium frame case
- Charging base with inductive charging function for the remote control
- Built-in high-speed printer
- Automatic measuring programme incl. data logging on SD card
- Standard interfaces for printout and data transmission integrated
- Internal solenoid valve for automatic zeroing
- Flow monitoring and alarm function
- Peltier gas cooler with automatic condensate disposal, monitoring and alarm
- Case and housing forced-ventilated
- Universal plug-in power supply and powerful Li-ion battery

General technical data

| | |
|-------------------------------|--|
| Operating temperature | +5 ... +45 °C, max. 95 % RH, non-condensing |
| Storage temperature | -20 ... +50 °C |
| Data storage | 16.000 measurements |
| Interface | Mini-USB, SD, Bluetooth™ (data transfer to smartphone, tablet or PC) |
| Internal Power supply | Li-ion battery |
| External Power supply | Plug-in power supply 100 ... 240 Vac / 50 ... 60 Hz |
| Protection class | IP30 |
| Ambient conditions | Not for aggressive, corrosive or dusty environments, non-hazardous zones |
| Weight | approx. 7,4 kg |
| Dimensions (W x H x D) | 470 x 314 x 235 mm |

SWG 100 BIOcompact

Stationary, discontinuous biogas analysis



The biogas analyser is designed for rough use in industrial environments at CHPs. The analyser can be installed outdoors or indoors. It can measure dry, pressurised or unpressurised biogas and can analyse two gas sampling points.

Measurement of O₂, CH₄, CO₂ and H₂S.

- Gas sampling from low pressure suction to high pressure gas
- Gas conditioning for fast, reliable measurement results
- No dilution of the measuring gas and no compressed air required
- Discontinuous measurement, up to 24 measurements per 24 hours adjustable by the user
- Up to 2-way measuring point switching in only one analyser
- IP 54 enclosure for use in harsh, industrial environments
- Ready-to-measure delivery condition, low installation and maintenance effort
- Cost-efficient, stationary biogas analyser
- Reliable measurement results, incl. customer-replaceable, pre-calibrated sensors
- Standard system safety guaranteed by housing ventilation and gas flow limitation



General technical data

| | |
|-----------------------------------|--|
| System security components | Stainless steel flow limiter, gas shut-off solenoid valve |
| Gas conditioning | Stainless steel connections with 1/8" female thread, Condensate trap with automatic condensate pump, Teflon particle filter, internal Viton tubing, maximum condensate content in biogas 14ml/min, Gas inlet pressure: – 100 mbar to + 200 mbar (hPa), Sample gas output: atmospheric pressure |
| Options | input/output modules: 4x analogue outputs 4–20 mA, galvanically isolated, max. load 500 R, 2 alarm relays, potential-free contacts 24 Vdc / 5 A, DIN-rail RS485 / ProfiBus converter, Flame arrester, flammable gas detector (% LEL) fixed inside housing |
| Operation/interfaces | Illuminated 3.5" TFT colour display, illuminated keypad, password-protected operation, RS485 digital interface (Modbus RTU), data memory and data logger on SD card |
| Power supply | Universal 90 ... 240 Vac / 47... 63 Hz / 42 W (242 W with cabinet heating) |
| Protection class | IP54 |
| Operating conditions | + 5 ... + 45 °C or –10 ... + 45 °C with cabinet heating |
| Mounting location | Indoor or outdoor (rain and sun protection required on site) |
| Weight | approx. 14 kg |
| Dimensions (W x H x D) | 400 x 500 x 300 mm, suitable for wall mounting |

SWG 100 Biogas

Stationary, continuous biogas analysis



**Versatile and specific applications:
Biogas, ethanol, biomethane, CHP engines, landfills,
waste treatment, coal mine gas**

For simultaneous measurement of O₂, CH₄, CO₂, H₂S and H₂ in biogas, biomethane and offgas.

- Gas feed pump and internal flow monitoring, with indication in the display and system alarm
- Solenoid valve for automatic zero point
- Direct continuous/discontinuous measurement, with pressure and temperature compensation and event data logging
- Special dilution system, only for measuring H₂S_{high} up to 50000 ppm, using the standard H₂S sensor
- 4-channel modules for analogue outputs/inputs 4–20 mA, with 2 x alarm relays (option)
- Cabinet heating (option)
- RS485 digital data transfer (Modbus RTU)
- Converter module from RS485 to ProfiBus (option)
- Up to 10-way measuring point switching with only one analyser (option)
- Rough industrial design for wall mounting, IP54 aluminium cabinet with anti-corrosive, red structural laquer.
- System safety using continuously monitored cabinet ventilation, gas flow limitation
- Electric gas cooler (Peltier) with automatic condensate pump



General technical data


| | |
|-----------------------------------|--|
| System security components | Monitored enclosure ventilation, stainless steel flow limiter, Gas shut-off solenoid valve, LEL (CH ₄) monitoring integrated in the housing (option) |
| Gas conditioning | Stainless steel fittings with 1/8" female thread, electric gas cooler, Teflon particle filter, maximum condensate content in biogas 14ml/min, monitored and controlled gas sampling 40 ... 60 l/h, Gas inlet pressure: – 100 mbar to + 200 mbar (hPa), Sample gas output: atmospheric pressure |
| Operation/interfaces | 3.5" TFT colour display, illuminated keyboard, password-protected operation, 4x analogue outputs 4 ... 20 mA, galvanically isolated, max. load 500R, 2 alarm relays, potential-free contacts 24 Vdc / 5 A, RS485 digital interface (Modbus RTU), DIN rail RS485 / ProfiBus converter (option) |
| Power supply | Universal 90 ... 240 Vac / 47... 63 Hz / 90 W (390 W with cabinet heating) |
| Protection class | IP54 |
| Operating conditions | + 5 ... + 45 °C or – 10 ... + 45 °C with 300 W cabinet heating |
| Mounting location | Indoor or outdoor (rain and sun protection required on site), safe area |
| Housing | Continuously monitored cabinet ventilation with alarm, frost protection heater 300 W (option) |
| Weight | approx. 25 kg |
| Dimensions (W x H x D) | 600 x 700 x 210 mm, suitable for wall mounting |

SWG 100 BIO-Ex

For Ex zone 2




For simultaneous measurement of O₂, CH₄, CO₂, H₂S and H₂ in biogas, landfill gas, biomethane, offgas.

- Industrial design for rough everyday use incl. IP 65 housing
-  ATEX certification according to II 3G Ex nA nC IIC T3 Gc
- No dilution of the sample gas and no compressed air required
- Direct, continuous/discontinuous measurement with pressure and temperature compensation
- Special dilution system, only for measuring H₂S_{high} up to 50000 ppm, using the standard H₂S sensor
- Event data logging on SD-card
- Up to 4-way measuring point switching in only one analyser
- Ready-to-measure delivery condition, low installation effort
- Effective gas conditioning for fast, reliable measurement results with Peltier gas cooler and condensate pump
- Gas extraction from low pressure suction to high pressure gas



General technical data

| | |
|-----------------------------------|--|
| System security components | Monitored enclosure ventilation with the internal CO ₂ /CH ₄ NDIR bench, stainless steel flow limiter, gas shut-off solenoid valve, LEL (CH ₄) monitoring integrated in the housing (option), flame arrestor |
| Gas conditioning | Stainless steel fittings with 1/8" female thread, electric gas cooler, Teflon particle filter, maximum condensate content in biogas 14ml/min, monitored and controlled gas sampling 40 ... 60 l/h, Gas inlet pressure: - 100 mbar to + 200 mbar (hPa), Sample gas outlet: Atmospheric pressure |
| Operation/interfaces | 3.5" TFT colour display, illuminated keyboard, password-protected operation, 4x analogue outputs 4 ... 20 mA, galvanically isolated, max. load 500R, 2 alarm relays, potential-free contacts 24 Vdc / 5 A, RS485 digital interface (Modbus RTU), DIN rail RS485 / ProfiBus converter |
| Power supply | Universal 90 ... 240 Vac / 47... 63 Hz / 90 W (390 W with cabinet heating) |
| Protection class | IP65 |
| Operating conditions | + 5 ... + 45 °C or -10 ... + 45 °C with 300 W cabinet heating |
| Mounting location | Indoor or outdoor (rain and sun protection required on site), hazardous area zone 2 |
| Classification |  II 3G Ex nA nC IIC T3 Gc |
| Weight | approx. 45 kg |
| Dimensions (W x H x D) | 600 x 700 x 210 mm, suitable for wall mounting |

MRU – Competence in gas analysis. For over 35 years.



**MRU · Messgeraete für Rauchgase
und Umweltschutz GmbH**

Fuchshalde 8 + 12
74172 Neckarsulm-Obereisesheim
Phone +49 7132 99620 · Fax +49 7132 996220
info@mru.de · www.mru.eu

MRU representative: