

GAS ANALYSIS



	GMH 5690	GMH 5695	GMH 3692 + Sensor	GMH 3695 + Sensor	ResOx	GOX 100	GOX 100T	GCO 100	HD21-ABE-17
APPLICATION:									
Measurement of atmospheric oxygen	•	•	•	•	•	•	•		
O ₂ -concentration (oxygen)	•		•	•	•	•	•		
Atmospheric pressure / Pressure connection	•/-	•/•	•/-	•/•	•/•	-/-	-/-	-/-	•/-
Relative humidity									•
Temperature	•	•	•	•	•				•
O ₂ -partial pressure	•	•	•	•	•				
CO-concentration (carbon monoxide)								•	•
Protective gases	•	•	•	•	•				
Diving *	•		•				•	•	
Exhaust gas monitoring								•	•
EQUIPMENT:									
Measuring ranges concentration	0 ... 100 % O ₂	0 ... 100 % O ₂	0 ... 100 % O ₂	0 ... 100 % O ₂	0 ... 100 % O ₂	0 ... 100 %	0 ... 100 %	0 ... 1000 ppm CO 0 ... 60 % COHb	0 ... 500 ppm CO 0 ... 5000 ppm CO ₂
O ₂ -partial pressure	0 ... 1100 hPa	0 ... 1100 hPa	0 ... 1100 hPa	0 ... 1100 hPa	0 ... 1100 hPa				
Temperature	-5 ... +50 °C	-5 ... +50 °C	-5 ... +50 °C	-5 ... +50 °C	-5 ... +50 °C				-20 ... +60 °C
Ambient pressure	10 ... 1200 hPa	300 ... 5000 hPa	10 ... 1200 hPa	300 ... 5000 hPa	300 ... 5000 hPa				750 ... 1100 hPa 0 ... 100 % RH
Sensor	external sensor, order separately		external sensor, order separately		complete set		in external sensor housing	Internal sensor	Internal sensors
Sensor connection	7-pole bajonett		6-pole mini-DIN socket		7-pole bajonett		0.7 m cable with jack plug	-	-
General functions					Set with gas pump		MOD display		
Min/Max, Hold, Auto-Off	•		•		•	•	•	Max, Hold, Auto-Off	•
Background illumination	•				•				•
Alarm / Interface	•	•	•	•	•			•	•
Logger		•		•	•				•
DEVICE INFORMATION:									
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* not suited for „under water“-applications (rebreather, etc.)

HANDHELD INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION, LEVEL

WATERPROOF HANDHELD MEASURING DEVICE

**GMH 5690**

Art. no. 607466

Handheld instrument for gaseous oxygen without sensor

GMH 5695

Art. no. 607468

Handheld instrument for gaseous oxygen with datalogger without sensor

Application:

Protective gas measurements for

- Welding and soldering
- Food production/packaging technology (MAP, see also the Resox 5695-H/-L)
- For storage of foods, semiconductor components, etc.
- Immersion gas testing: Checking of oxygen concentration in nitrox, trimix or similar gas compositions

Note: Not suitable for use in 'underwater applications' (rebreather, etc.)

Specifications:	GMH 5690	GMH 5695
Measuring channels:	O ₂ , T, air pressure (integrated)	O ₂ , T, air pressure (integrated, with external connection)
Measuring ranges		
O₂ concentration:	0.0 ... 100.0 % O ₂ Vol. or 0.00 ... 100.00 % O ₂ Vol. (resolution can be selected in menu)	
O₂ partial pressure:	0 ... 1100 hPa O ₂ / 0 ... 825 mmHg O ₂ , 0.0 ... 1100.0 hPa O ₂ / 0.0 ... 825.0 mmHg O ₂ (resolution can be selected in menu)	
Temperature:	-5.0 ... +50.0 °C	
Air pressure:	10 ... 1200 hPa abs	300 ... 5000 hPa abs *)
Accuracy: (device at nominal temperature = 25 °C)		
O₂ concentration:	±0.1 % ±1 digit	
Temperature:	±0.1 °C ±1 digit	
Air pressure:	±3 hPa or 0.1 % of m.w. (higher applies)	
Compatible sensors:	GG05 / GO05 with elements GOEL 370, 381 etc.	GGAS / GG05 / GO05 with elements GOEL 370, 381 etc.
Connections		
Sensor:	7-pin bayonet connection	7-pin bayonet connection Port for pressure connection *)
Output / ext. Power supply:	OUT jack: - 38400 baud interface - 5 V external supply	OUT jack: - 38400 baud interface - Analogue output 0 ... 1 V, adjustable - 5 V external supply
Display:	4 ½ digit, 7-segment, illuminated (white)	
Operating conditions:	-25 ... +50 °C; 0 ... 95 % RH (non-condensing, sensor min. -5 °C)	
Power supply:	2 x AAA battery, power consumption: 0.9 mA	
Battery life:	approx. 1000 h (without lighting)	

HIGHLIGHTS

- High display resolution (0.01 % O₂ concentration)
- Waterproof and durable (protective silicone case)
- Large double display with background lighting
- Multi-point calibration for precision measurements
- Environmental pressure compensation with integrated barometer
- Alarm function

ADDITIONAL HIGHLIGHTS GMH 5695

- Data logger
- Analogue output
- Pressure connection

ADDITIONAL FUNCTIONS GMH 5695:SUITABLE SENSORS
SEE PAGE 77

THE DEVICE IS ONLY INTENDED FOR CONTROL.
IT IS NOT A REPLACEMENT FOR A MONITORING
DEVICE SUBJECT TO AUTHORISATION!

Protection rating:	IP65 / IP67
Housing:	Impact-resistant ABS, with stand/hanging bracket
Dimensions:	160 x 86 x 37 mm (H x W x D) including protective silicone case
Weight:	approx. 250 g, including battery and protective case
Scope of supply:	Handheld measuring device incl. batteries (2 x AAA), protective silicone case, manual, quick guide

*) Optimal air pressure compensation with GGA 570 /GGA 581

Additional functions:

- Backlighting:** Adjustable light duration (off, 5 s ... 2 min.)
- Calibration:** 1 point air, 2 point or 3 point (air and zero point and 100 % O₂)
- GLP:** Calibration interval
- GMH 5695 only:** Calibration history
- Data logger (GMH 5695 only):** Cyclical: 10,000, Single: 1000
Single value logger with measuring point input
- Alarm:** 2 alarm channels (O₂ and temperature) with separate alarm thresholds
Alarm notification horn/visual/interface

Accessories and spare parts:

- Matching sensors see page 77/78
- GKK 3600**
Art. no. 601062
Case with punched lining for universal application (394 x 294 x 106 mm)
- USB 5100**
Art. no. 601095
Interface converter GMH 5xxx <=>PC
- GSOFT 3050**
Art. no. 601336
Windows software for GMH 3000 and GMH 5000 with logger

AIR OXYGEN MEASURING DEVICE



WIDE RANGE OF APPLICATION

HIGHLIGHTS:

- Alarm detector with integrated horn
- Automatic compensation of ambient air via integrated barometer

ADDITIONAL FUNCTIONS GMH 3695:

- pressure connection

SUITABLE SENSORS SEE
PAGE 77

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GMH 3692

Art. no. 605919

Handheld instrument for gaseous oxygen w/o sensor

GMH 3695

Art. no. 605921

Handheld instrument for gaseous oxygen with datalogger w/o sensor

Application:

Bio chemistry:

Oxygen monitoring in breeding chambers for cell cultures. Monitoring of fermenting process of fruits in fermentation plants etc.

Medicine:

Monitoring of oxygen concentration in respirators; checking of breathing, monitoring of oxygen concentration in incubators, oxygen tents etc.

Food technology:Monitoring of residual oxygen in packages (e.g. coffee, tea, etc.).
Monitoring of oxygen content during production processes.**Air conditioning and ventilation technology:**

Oxygen measurements, air quality monitoring, measuring of oxygen concentration in enclosed air conditioning systems, etc.

Sport:

Checking of oxygen content in compressed air bottles (diving, etc.).

Note: not suited for „under water“-applications (rebreather, etc.)

Specifications:

Measuring ranges

O₂ concentration: 0.0 ... 100.0 % O₂ (gaseous)
0 ... 1100 hPa O₂**Temperature:** -5.0 ... +50.0 °C**Air pressure:** **GMH 3692:** 10 ... 1200 hPa; **GMH 3695:** 300 ... 5000 hPa

Accuracy: (device) (at nominal temperature = 25 °C)

O₂ concentration: ±0.1 % ±1 digit**Temperature:** ±0.1 °C ±1 digit**Air pressure:** ±3 hPa or 0.1 % v. m.w. (whichever is higher)

Oxygen sensor:

for suitable sensors p.r.t. page 76
Observe permissible operating pressure of oxygen sensor
e.g. GOEL 370/381: 500 ... 2000 hPa abs.

Sensor connection:

6-pin screened Mini-DIN-socket.
GMH 3695: additional pressure ports

Display:

two 4 digit LCDs (12.4 mm or 7 mm high), as well as additional arrows.

Pushbuttons:

6 membrane keys for ON/OFF-switch, selection of meas. range, min- and max- value memory, hold-function, calibration etc.

Working temperature:

0 ... +50 °C

Relative humidity:

0 ... +95 % RH (non-condensing)

Storage temperature:

-20 ... +70 °C

Interface:

serial interface, direct connection to RS232 or USB interface of a PC via electrically isolated interface converter GRS 3100 or GRS 3105 resp. USB 3100 N (p.r.t. accessories).

Power supply:

9 V battery as well as additional d.c. connector for external 10.5 ... 12 V direct voltage supply. (suitable power supply: GNG10/3000)

Battery life:

approx. 300 h

Housing:

Impact-resistant ABS plastic housing, membrane keyboard, transparent panel, integrated pop-up clip

Dimensions:

142 x 71 x 26 mm (H x W x D)

Weight:

approx. 160 g (incl. battery)

Scope of supply:

Device, battery, calibration protocol, manual

Additional functions:

Temperature compensation:

automatic via temperature sensor, integrated in probe housing

Air pressure compensation:The O₂ concentration will be compensated according to the absolute atmospheric pressure set.**Calibration:****1-point calibration:**

extremely simple quick calibration in atmospheric air (press button to compensate unit to 20.9 %).

2-/3-point calibration:

first point at atmospheric air (20.9 %), second and third point 0 or 100 %.

Calibration interval:

The device asks for a recalibration after a selectable time period (1 ... 365 days or inactive).

GMH 3695: additional calibration history**Analog output (GMH 3695 only):**

0 ... 1 V, freely scalable

Pressure nozzles (GMH 3695 only):

for pressure compensation

Data logger (GMH 3695 only):cyclic: 8000 data sets, adjustable cycle time: 1 s ... 60 min
manual: 1000 data sets, with measuring point input

Accessories and spare parts:

Suitable sensors

p.r.t. next page

GKK 3000

Art. no. 601048

Device case soft lining for 1x GMH 3000 (275 x 229 x 83 mm)

USB 3100 N

Art. no. 601092

Interface Converter GMH3xxx <=>PC, USB, electrical isolated

GRS 3105

Art. no. 601099

5-point interface converter GMH3xxx <=>PC, RS232

GSOFT 3050

Art. no. 601336

Windows software for GMH 3000 and GMH 5000 with logger

ST-R1

Art. no. 601066

Protection bag, leather

ATMOSPHERIC OXYGEN SENSORES FOR GMH 569X AND GMH 369X

CLOSED SENSOR TYPE GGO



CLOSED

**GGO 581**

Art. no. 610029

Atmospheric oxygen sensores, closed sensor type, incl. GOEL 381, precise even at 20.2 % and 35 %, suitable for GMH 569x

GGO 570

Art. no. 607480

Atmospheric oxygen sensores, closed sensor type, incl. GOEL 370 recommended for high CO₂ concentrations of up to 35 % O₂, immersion gas, longlife, suitable for GMH 569x

GGO 381

Art. no. 610030

Atmospheric oxygen sensores, closed sensor type, incl. GOEL 381, precise even at 20.2 % and 35 %, suitable for GMH 369x

GGO 370

Art. no. 601224

Atmospheric oxygen sensores, closed sensor type, incl. GOEL 370 recommended for high CO₂ concentrations of up to 35 % O₂, immersion gas, longlife, suitable for GMH 369x

General:

- suitable for under and over pressure
- for using in gas-tight systems

Application:

Suitable for measuring in normal atmosphere and in systems without or with slight under or over pressure. The sensor type features a screw thread and can be built in gas-tight in almost every system directly resp. with tube-adapter.

longer cable length 4 m and 10 m on demand

OPEN SENSOR TYPE GOO



OPEN

**GOO 581**

Art. no. 610033

Atmospheric oxygen sensor, open sensor type, incl. GOEL 381, precise even at 20.2 % and 35 %, suitable for GMH 569x

GOO 570

Art. no. 607482

Atmospheric oxygen sensor, open sensor type, incl. GOEL 370 recommended for high CO₂ concentrations of up to 35 % O₂, immersion gas, longlife, suitable for GMH 569x

GOO 381

Art. no. 610034

Atmospheric oxygen sensor, open sensor type, incl. GOEL 381, precise even at 20.2 % and 35 %, suitable for GMH 369x

GOO 370

Art. no. 601228

Atmospheric oxygen sensor, open sensor type, incl. GOEL 370 recommended for high CO₂ concentrations of up to 35 % O₂, immersion gas, longlife, suitable for GMH 369x

General:

- suitable for air- or gas-stream
- quick temperature compensation

Application:

Because of the special sensor construction the measuring gas streams optimally around the sensor and escapes through holes in the housing into the air. No pressure build-up at slight streaming of the probe, that falsify the result of measurement. Particularly suitable for measuring of gas out of gas-bottle etc. Even measuring indoor-gas concentration is possible.

longer cable length 4 m and 10 m on demand

Note: not suited for „under water“-applications (rebreather, etc.)

CLOSED SENSOR TYPE WITH PRESSURE CONNECTION GGA

FOR DEVICES WITH PRESSURE CONNECTION

**GGA 581**

Art. no. 610031

Atmospheric oxygen sensor with pressure connection, incl. GOEL 381, precise even at 20.2 % and 35 %, suitable for GMH 569x

GGA 570

Art. no. 607486

Atmospheric oxygen sensor with pressure connection, incl. GOEL 370 recommended for high CO₂ concentrations of up to 35 % O₂, immersion gas, longlife, suitable for GMH 569x

GGA 381

Art. no. 610032

Atmospheric oxygen sensor with pressure connection, incl. GOEL 381, precise even at 20.2 % and 35 %, suitable for GMH 369x

GGA 370

Art. no. 607484

Atmospheric oxygen sensor with pressure connection, incl. GOEL 370 recommended for high CO₂ concentrations of up to 35 % O₂, immersion gas, longlife, suitable for GMH 369x

General:

For devices with external pressure port (GMH 5695 / 3695) is this housing optimal. Especially for systems with high or low pressure or with existing back pressure by flow.

Application:

It can be screwed airtight (Attention: Observe permissible operating pressure!). The device-pressure port is connected to the sensor pressure port. The device measures and compensates for the actual pressure at the sensor.

longer cable length 4 m and 10 m on demand

Specifications:	GGA/GGO/GOO 570/370	GGA/GGO/GOO 581/381
Sensor element:	GOEL 370	GOEL 381
	Oxygen-partial pressure probe, mounted in external sensor housing replaceable (temperature sensor mounted in housing)	
Specific features:	Long service life For protective gases with a high O ₂ concentration and oxygen content <35 vol. % O ₂	for the lowest O ₂ concentrations; For protective gases, in general, precise and very small measurements and above 35 vol. % O ₂
Measuring range		
Partial oxygen pressure:	0 ... 1100 hPa O ₂	0 ... 1100 hPa O ₂
Oxygen concentration:	0.0 ... 100.0 % O ₂	0.0 ... 100.0 % O ₂
Response time: T₉₀	<10 s	<10 s
Accuracy (at 25 °C, 1013 hPa)		<1.5 % O ₂
<2 % O ₂	±0.2 % O ₂	±0.1 % O ₂
<25 % O ₂	±0.5 % O ₂	±0.5 % O ₂
>25 % O ₂	±0.5 % O ₂	no information
Operating conditions:	0 ... 45 °C 0 ... 95 % RH (non-condensing)	0 ... 45 °C 0 ... 95 % RH (non-condensing)
Ambient pressure:	0.6 ... 1.75 bar abs.	
Over-/under-pressure:	max. 0.25 bar (pressure difference sensor membrane to ambient - sensor screwed-in)	
Storage temperature:	-15 ... +60 °C	
Operation life:	on air: >4 years (warranty for sensor element: 12 months)	on air: >2 years (warranty for sensor element: 12 months)
Connection:	GGA/GGO/GOO 3...: approx. 1.2 m cable with Mini-DIN-plug. GGA/GGO/GOO 5...: approx. 1 m cable with 7-pole bayonet connector	
Dimensions of housing:	GGA.../GGO...: approx. Ø 36 mm x 95 mm (150 mm incl. anti-buckl. glanding), GOO...: approx. Ø 40 mm x 105 mm (160 mm incl. anti-buckl. glanding) Housing with M16 x 1-screw thread (sensor can be connected to line tubes by means of an additional adapter)	
Weight:	approx. 135 g (GGO...) or approx. 145 g (GOO.../GGA...)	
Scope of supply:	GGA.../GGO...: sensor, flow diverter, T-piece GOO...: sensor, flow diverter	

ACCESSORIES

GOEL 370

Art. no. 601490

Spares sensor element (acidic electrolyte)



General:

Integrated into GGO 370, GGA 370, GGO 370 (for GMH 3690/91/92/95) or GGO 570, GGA 570, GGO 570 (for GMH 5690/95); Universal sensor element with special precautions particularly for diving gas and protective gases from 0.2 ... 35 % O₂, even for applications with elevated CO₂ concentration.

Note: not suited for „under water“-applications (rebreather, etc.)

GOEL 381

Art. no. 610035

Spares sensor element (alkaline electrolyte)



General:

Integrated into GGO 381, GGA 381, GGO 381 (for GMH 3690/91/92/95) or GGO 581, GGA 581, GGO 581 (for GMH 5690/95); Fast sensor element especially for diving gas and protective gases from 0.0 ... 100 % O₂. For application without permanently higher CO₂ concentration

Note: not suited for „under water“-applications (rebreather, etc.)

Accessories and spare parts:

GZ-11

Art. no. 603144

Flow rate adapter to measure the oxygen concentration with 6/4 mm tube



ESA 369

Art. no. 603058

Spare tube-adapter M16x1, for tubes with a inner-diameter of 15 mm



ZOT 369

Art. no. 603094

T-piece to plug on ESA 369 / ESA 100



SUPPLEMENT FOR GAS ANALYSIS AND AIR QUALITY MEASURING DEVICES

GS 150

Art. no. 610005

Gas sampling pump for gas sampling



HIGHLIGHTS:

- Easy to use
- Durable membrane pump
- Quiet
- Low quantity of conveyed gas
- Mobile operation with battery
- Battery charge indicator

Application:

E.g. in combination with residual oxygen measuring devices for protective gas applications, etc.

Specifications:

Functional principle:	Motorised membrane pump with input/output ports, battery-operated
Max. negative pressure:	approx. -360 mbar
Delivery rate:	open: approx. 280 ml / min, with GDZ 29: approx. 150 ml / min
Connection:	Universal pressure port for 6/4 mm hoses (inside Ø 4 mm)
Range of application:	10 ... 50 °C
Applicable gases:	Non-corrosive, dust-free gases, a condensate trap is recommended for gases with high humidity
Operation:	On / Off slide switch
Environmental conditions:	10 ... 50 °C, 0 ... 95 % RH
Battery / service life:	9V block battery, approx. 10 h
Battery charge indicator:	2 Leds: full / low
Scope of supply:	Device, battery, manuals

Accessories and spare parts:

GDZ-29

Art. no. 601599

Filter-Membrane incl. Luer-Locks (GDZ-32 und GDZ-33), prevents contamination with even the finest particles or liquids

COMPACT AIR OXYGEN MEASURING DEVICE



FOR DIVING APPLICATIONS

GOX 100

Art. no. 600142

Compact air oxygen meas. device for universal applications

General:

- 1-button calibration
- Automatic power-off
- Min-/max- value memory
- Incl. sensor GOEL 370

Note: not suited for „under water“-applications (rebreather, etc.)

GOX 100T

Art. no. 600157

Compact air oxygen meas. device for diving applications

General:

- 1-button calibration
- MOD-Display (Maximum Operating Depth)
- HOLD function
- Incl. sensor GOEL 370

Note: not suited for „under water“-applications (rebreather, etc.)

Specifications:

Measuring range:	0.0 ... 100.0 % O ₂
Accuracy typ.:	±0.1 % O ₂ ±1 digit, calibrated device (range from 15 ... 40 % O ₂)
MOD (GOX 100T):	0 ... 100 m / 0 ... 199 ft
Sensor connection:	0.55 m jack-connector cable
Sensor:	Electrochemical oxygen-partial pressure probe, mounted in external sensor housing, M16x1 connection thread.
Warranty:	12 month
Working pressure:	0.5 ... 2.0 bar abs.
Over-/under-pressure:	max. 0.25 bar (pressure difference)
Working temperature:	0 ... 45 °C (sensor), -20 ... +50 °C (device)
Relative humidity:	0 ... 95 % RH
Power supply:	9 V battery
Power consumption:	approx. 120 µA (over 2500 h)
Display:	3½-digit, 13 mm high LCD-display
Housing:	ABS enclosure
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D)
Weight:	approx. 185 g
Scope of supply:	Device incl. sensor, tube-adaper, t-piece, battery, manual

Varianten:

GOX 100-LACK

Art. no. 602047

Compact air oxygen meas. device with encapsulated PC board (for applications where condensation is possible)

GOX 100-T-LACK

Art. no. 604660

Compact air oxygen meas. device with encapsulated PC board (for applications where condensation is possible)