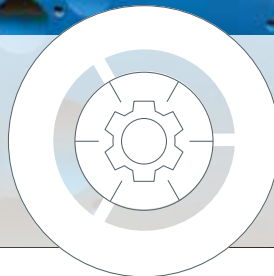




MOBILE MEASUREMENT
TECHNOLOGY



Portable instruments,
alarm and protection devices

Product catalog

TEMPERATURE



	GMH 3710	GMH 3750	GMH 2710-T/-E	GMH 2710-K/-G	GMH 2710-F/-I	G 1700	G 1710/20/30	HD 2178.2	GTH 200 air
APPLICATION:									
Reference/ precision measurements	•	•	•	•	•		•	•	
Quality control	•	•	•	•	•	•	•	•	
Differential measurement									
Surface measurement								•	
Core temperature measurement	•	•		•	•	•	-/•/•	•	
High temperature measurement	•	•						•	
Food HACCP	•	•	•	•	•	•	•	•	
Waterproof			•	•	•	•	•		
EQUIPMENT:									
Sensor element	Pt100	Pt100	Pt1000	Pt1000	Pt1000	Pt1000	Pt1000	1 x Pt100/1000 1 x thermo	Pt1000
max. measuring range [°C]	-200 .. + 850	-200 .. + 850	-200 .. + 200	-200 .. + 250	-70 .. + 250	-200 .. + 450	-70 .. + 250	-200 .. + 650 (Pt) -200 ... + 1300 (TE)	-25 .. + 70
min. resolution [°C]	0.01	0.01	0.1	0.1	0.1	0.1	0.1	0.1	0.1
Plug-in probes	•	•				•		•	
Measuring inputs	1	1	1	1	1	1	1	2	1
Min / Max, Hold, Auto-Off	•	•	•	•	•	•	•	•	•
Alarm (sounder) / data logger		•				•/-	•/-	-/•	



SOME BACKGROUND INFORMATION ON TEMPERATURE MEASUREMENT

Resistive: Pt100, Pt1000

The sensor element changes its ohmic resistance via the temperature. This is evaluated by the display device and converted into a temperature.

With Pt100 in particular, a distinction is made between 2-, 3- and 4-wire connection. With 3- and 4-wire connections, the serial cable resistance can be automatically compensated as a source of measurement error.

Features:

- o Highest precisions attainable
- o High replacement accuracy of the sensors especially for Pt100 and Pt1000
- o Standard measurement method for reference measurements

CONCLUSION:

Slightly sluggish as a thermocouple probe, but highly precise. With our particularly optimized designs, response within seconds is nevertheless possible – see our 1.5 mm needle probes.

Thermocouple: Type K, Type N, Type S...

When two different metal compositions (e.g. NiCr and NiAl) come in contact, a voltage is generated between the connection point (probe) and the display unit, nearly proportionally to the temperature difference. This "thermal voltage" is evaluated by the display unit and converted into a temperature.

Features:

- o Very small sensors can be implemented; thus, a very short response time possible – best suited for surface measurements
- o Temperatures up to 1750 °C can be measured (depending on the design of the sensor and the thermocouple used)

CONCLUSION:

very fast, very flexible and large measuring range

GMH 3201	GMH 3211	GMH 3221	GMH 3231	GMH 3251	HD 32-8-16	G 1200
					•	
•	•	•	•	•	•	•
			•	•	•	
•	•	•	•	•	•	•
•	•	•	•	•		•
•	•	•	•	•	•	•
•	•	•	•	•		•

EQUIPMENT:

J, K, N, S, T, E, B			J, K, N, S, T, E, B		J, K, N, S, T, E, B	J, K, N, S, T, E, B, R	
-220 .. + 1372	-220 .. + 1750	-220 .. + 1372	-220 .. + 1750	-220..1750	-220..1800	-65.. +1200	
0.1	0.1	0.1	0.1	0.1	0.1	0,05	0.1
•	•	•	•	•	•	•	•
1	1	2	2	2	2	16	1
•	•	•	•	•	•	•	•
				•	•		

PT100 – HIGH PRECISION THERMOMETER



AUTO OFF

AUTORANGE

ISO

HOLD

MIN MAX

0/5-CORR



HIGHLIGHTS:

- Reference device for all calibration tasks
- highest accuracy
- Resolution (0.01 °C)
- including test report

ADDITIONAL FUNCTIONS WITH GMH 3750:

**GMH 3710**

Item No. 600332

Pt100 4-wire high-precision thermometer, device supplied without temperature sensor

GMH 3750

Item No. 600335

Pt100 4-wire high-precision thermometer with data logger, device supplied without temperature sensor

APPLICATIONS:

Reference control measurements in liquids, soft plastic media, air / gases

TECHNICAL SPECIFICATIONS:

Measuring ranges:	-199.99 .. + 199.99 °C or -200.0 .. + 850.0 °C -199.99 .. + 199.99 °F or -328.0 .. + 1562.0 °F
Resolution:	0.01 °C or 0.1 °C, 0.01 °F or 0.1 °F
Linearization:	Characteristic according to DIN EN 60751. With GMH 3750 additional user-specific characteristic
Accuracy: (± 1 digit) (at nominal temperature = 25 °C)	≤ 0.03 °C / 0.06 °F with a resolution of 0.01 ° ≤ 0.1 °C / 0.2 °F with a resolution of 0.1 °
Temperature drift:	≤ 0.002 °C / K
Sensor connection:	via 4-pole, shielded mini-DIN socket, Pt100, 4-wire, according to DIN EN 60751
Nominal temperature:	25 °C
Working temperature:	-25 .. + 50 °C
Relative humidity:	0 .. + 95 % RH (not condensing)
Storage temperature:	-25 .. + 70 °C
Display:	two 4½-digit LCD displays (12.4 mm or 7 mm high) and other pointers
Control elements:	6 membrane buttons
Output:	3-pole jack socket Ø 3.5 mm, either serial interface or analog output
Serial interface:	It can be connected directly to the RS232 or PC USB input via the galvanically isolated interface converter GRS 3100 or GRS 3105 or USB 3100 N (accessory).
Analog output:	0..1 V, freely scalable (resolution 13 bit, accuracy 0.05 % at nominal temperature)
Power supply:	9 V battery and additional power supply socket for external 10.5-12 V DC voltage supply
Power consumption:	approx. 1 mA, approx. 300 h
Housing:	Made of impact-resistant ABS, membrane keyboard, transparent panel, integrated pop-up clip
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	approx. 155 g
Scope of delivery:	Device, battery, test report, operating instructions

ADDITIONALLY FOR GMH 3750:

User-specific sensor characteristic:

50 support points (only GMH 3750)

Logger functions (only GMH 3750):

manual: 99 data records (retrieval of data via keyboard or interface)

cyclical: 16,384 data records (retrieval of data via interface)

adjustable cycle time: 1 s..1 h

The logger is started and stopped via the keyboard or interface. An easy-to-use software GSOFT 3050 (see accessories) is available for reading-out the logger data.

Min/Max alarm

ACCESSORIES OR SPARE PARTS:

MINIDIN 4S

Item No. 601111

Mini-DIN plug, 4-pole with locking for self-assembly

USB 3100 N

Item No. 601092

Interface converter GMH3xxx <=> PC, USB

GSOFT 3050

Item No. 601336

Windows software for GMH 3000 and GMH 5000 with logger

GNG 10/3000

Item No. 600273

Plug power supply for GMH 3XXX series

ST-R1

Item No. 601066

Protective bag, leather

GKK 1100

Item No. 601060

Case with knob foam for universal use

GMH Config

(on our homepage: Download -> Software)

Program description: Convenient software for editing the user characteristics of the GMH 3750. (e.g. for calibration laboratories, etc.)

Note: Please take into account that an interface converter (USB 3100 N) is required for the device interface operation.

SUITABLE PT100 MEASURING SENSOR (4-WIRE)

ACCURACIES PT100:

Sensor accuracy according to DIN EN 60751

DIN class B: (validity range: -50 ... + 500 °C)

± 0.3 °C at 0 °C

DIN class A: (validity range: -30 ... + 300 °C)

± 0.15 °C at 0 °C

DIN class AA = 1/3 DIN class B: (Validity range: 0 ... + 150 °C)

± 0.1 °C at 0 °C

1/10 DIN Kl. B: (validity range: 0 ... + 100 °C)

± 0.03 °C at 0 °C

SURCHARGES SPECIAL DESIGNS:

(DESIGN-RELATED VARIATIONS ARE AVAILABLE)

longer sensor tube: surcharge per additional 100 mm or part thereof**longer sensor cable (PVC):** surcharge per additional 1 m or part thereof**Coiled cable stretched approx. 1.2 m****other cable types on request****Sensor tube with teflon shrinkage**

(for temperature sensors up to 200 mm)

(for measurements in acids and sea water: max. measuring range = 250 °C)

Sensor handle waterproof encapsulated (only possible with PVC cable -20 ... + 105 °C)**higher sensor accuracy:** DIN class AA, for Pt100, tolerances: 0.1 °C at 0 °C**higher sensor accuracy:**

1/10 DIN class B, for Pt100 sensors, tolerances: 0.03 °C at 0 °C

Handling fee for custom-made products-50 °C
+400 °C**GTF 401**

Item No. 600377

Immersion sensor for liquids/gases

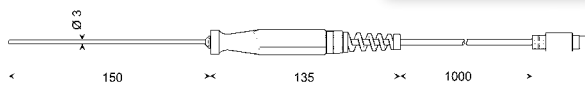
-50 ... + 400 °C, DIN class B

-50 °C
+400 °C**GTF 401 DIN class AA**

Item No. 600378

Immersion sensor for liquids/gases

-50 ... + 400 °C, DIN class AA (± 0.1 °C at 0 °C)



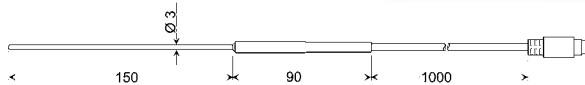
corrosion-resistant V4A pipe Ø 3 mm, plastic handle, anti-kink screw connection, approx. 1 m 4-pole PVC cable, 4-pole Mini DIN connector

Response time T₉₀: Water 0.4 m/s approx. 10 s, air 2 m/s approx. 40 s-50 °C
+400 °C**GTF 35**

Item No. 600391

Immersion sensor for liquids/gases

-50 ... + 400 °C, DIN class B



corrosion-resistant V4A pipe Ø 3 mm, shrink tubing, approx. 1 m 4-pole PVC cable, 4-pole Mini DIN connector

Response time T₉₀: Water 0.4 m/s approx. 10 s, air 2 m/s approx. 40 s-50 °C
+400 °C**GES 401**

Item No. 600384

Insertion sensor for soft plastic media

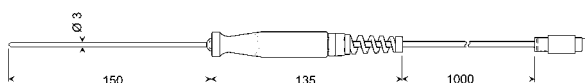
-50 ... + 400 °C, DIN class B

-50 °C
+400 °C**GES 401 DIN class AA**

Item No. 600385

Insertion sensor for soft plastic media

-50 ... + 400 °C, DIN class AA (± 0.1 °C at 0 °C)



V4A tube Ø 3 mm with needle-shaped penetration tip, plastic handle, anti-kink screw connection, approx. 1 m 4-pole PVC cable, 4-pole mini DIN connector

Response time T₉₀: Water 0.4 m/s approx. 10 s, air 2 m/s approx. 40 s-70 °C
+250 °C**GES 20-P4 DIN class A**

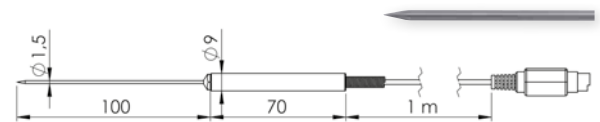
Item No. 414061

Core temperature/food probe, compact teflon handle -70...+250 °C, Pt100 class A

GES 20-P4 DIN class B

Item No. 413543

Core temperature/food probe, compact teflon handle -70...+250 °C, Pt100 class B



V4A tube with Ø 1.5 mm slim penetration tip, small teflon handle, stainless steel Anti-kink protection, 1 m teflon cable, 4-pole mini DIN connector

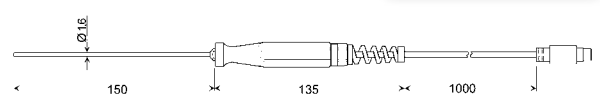
Response time T₉₀: Water 0.4 m/s < 1 s, air 2 m/s approx. 12 s**Advantages of the sheathed element Pt100:**

- high temperature resistance
- sheathed tube is bendable
- high shock resistance
- long lifetime

-50 °C
+400 °C**GTF 401 / 1.6**

Item No. 602066

Immersion sensor with sheathed element Pt100 -50 ... + 400 °C, DIN class B

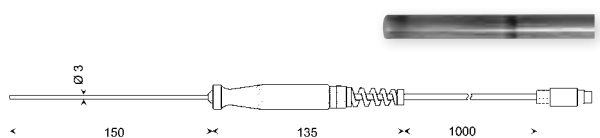


V4A sheathed element, bendable, Ø 1.6 mm, plastic handle, anti-kink screw connection, approx. 1 m 4-pole PVC cable, 4-pole mini DIN connector

Response time T₉₀: Water 0.4 m/s < 2 s, air 2 m/s approx. 25 s-50 °C
+400 °C**GTF 401 1/10 DIN**

Item No. 600379

Immersion sensor with sheathed element Pt100 -50 ... + 400 °C, recommended: 0 ... + 100 °C, 1/10 DIN class B (± 0.03 °C at 0 °C)



V4A sheathed element, bendable, Ø 3 mm, plastic handle, anti-kink screw connection, approx. 1 m 4-pole PVC cable, 4-pole mini DIN connector

Response time T₉₀: Water 0.4 m/s < 5 s, air 2 m/s approx. 60 s**IMPORTANT NOTE:**

ACCURACY DIN CLASS AA (1/3 DIN) ONLY IN THE RANGE 0 ... + 150 °C. ACCURACY 1/10 DIN ONLY IN THE RANGE 0 ... + 100 °C. IF THE TEMPERATURE SENSOR IS USED IN HIGHER MEASURING RANGES, THE ACCURACY IN THE VALIDITY RANGE CAN NO LONGER BE GUARANTEED; IN EXTREME CASES THE SENSOR MAY EVEN PERMANENTLY LOSE THE ACCURACY CLASS!

SUITABLE PT100 MEASURING SENSORS (4-WIRE)

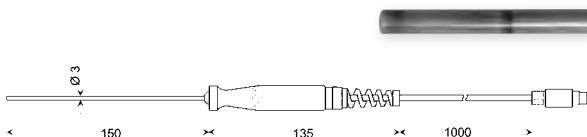
**GTF 601**

Item No. 600387

Immersion probe with sheathed element Pt100 -200 .. + 600 °C, DIN class B

**GTF 601 DIN class AA**

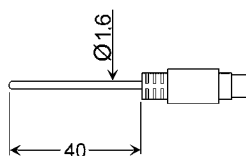
Item No. 600388

Immersion sensor with sheathed element Pt100
-200 .. + 600 °C, DIN class AA (± 0.1 °C at 0 °C)

V4A sheathed element, bendable, $\varnothing$ 3 mm, plastic handle, anti-kink screw connection, approx. 1 m 4-pole PVC cable, 4-pole mini DIN connector
Response time T_{90} : Water 0.4 m/s <5 s, air 2 m/s approx. 60 s

**GLF 401 Mini**

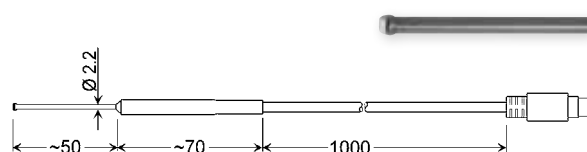
Item No. 600395

Ambient air sensor without cable,
-25 .. + 70 °C, DIN class A

V4A pipe $\varnothing$ 1.6 mm, FL = approx. 40 mm, 4-pole mini DIN connector
Response time T_{90} : Air 2 m/s approx. 25 s

**GOF 401 Mini**

Item No. 600396

Surface sensor, ceramic front side
-50 .. + 200 °C, DIN class B

Front side Pt100 ceramic plate 2 x 2.3 mm, V4A tube $\varnothing$ 2.2 mm,
 approx. 1 m 4-pole PVC cable, 4-pole mini DIN connector
Response time T_{90} : approx. 15 s

CALIBRATED MEASURING SYSTEMS PT 100

**GENERAL:**

The total measurement errors result, among other things, from the sum of the measurement errors of the device and the probe. In order to keep this as low as possible, we offer you the following calibrated and optimized measuring systems. Due to their excellent system accuracy, these are excellently suited for quality assurance within the scope of ISO9000ff, as reference devices in production, service, and maintenance, etc. The system is optimized by creating a characteristic curve that is determined separately for each temperature sensor and stored in the device (GMH 3750) or by sensor calibration with the aid of zero point and slope (GMH 3710). Due to the low measuring current, there is no self-heating of the sensor; furthermore, the measurement is thermo-voltage compensated.

GMH 3750 / SET1

Item No. 602690

Set including device, GTF401 AA, ISO calibration certificate -20 ... 70 °C and case GKK3500

TECHNICAL SPECIFICATIONS:

Optimized measuring range:	-20 .. + 70 °C
Temperature sensor:	GTF 401 DIN class AA, Pt100, 4-wire
System accuracy:	better than 0.07 °C (in the opt. measuring range)
Calibration points:	-20 °C / 0 °C / +70 °C

GMH 3750 / SET2

Item No. 602691

Set including device, GTF401 AA, ISO calibration certificate 0 ... 250 °C and case GKK3500

TECHNICAL SPECIFICATIONS:

Optimized measuring range:	0 .. + 250 °C
Temperature sensor:	GTF 401 DIN class AA, Pt100, 4-wire
System accuracy:	better than 0.3 °C (in opt. measuring range)
Calibration points:	0 °C / 100 °C / 250 °C

GMH 3710 / SET1

Item No. 602687

Set including device, GTF401 AA, ISO calibration certificate -20 ... 70 °C and case GKK3500

TECHNICAL SPECIFICATIONS:

Optimized measuring range:	-20 .. + 70 °C
Temperature sensor:	GTF 401 DIN class AA, Pt100, 4-wire
System accuracy:	better 0.1 °C (in opt. measuring range)
Calibration points:	-20 °C / 0 °C / +70 °C

GMH 3710 / DKD1

Item No. 602689

Set including device, GTF401 AA, DKD calibration certificate -20 ... 70 °C and case GKK3500

TECHNICAL SPECIFICATIONS:

Optimized measuring range:	-20 .. + 70 °C
Temperature sensor:	GTF 401 DIN class AA, Pt100, 4-wire
System accuracy:	better 0.1 °C (in opt. measuring range)
Calibration points:	-20 °C / 0 °C / +70 °C

SCOPE OF DELIVERY:

Measuring instrument GMH 3750 or GMH 3710, temperature sensor GTF 401 DIN class AA, plastic case GKK 3500 and calibration certificate with 3 calibration points

IMPORTANT NOTE:
 ACCURACY DIN CLASS AA (1/3 DIN) ONLY IN THE RANGE 0 .. + 150 °C. ACCURACY 1/10 DIN ONLY IN THE RANGE 0 .. + 100 °C. IF THE TEMPERATURE SENSOR IS USED IN HIGHER MEASURING RANGES, THE ACCURACY IN THE VALIDITY RANGE CAN NO LONGER BE GUARANTEED; IN EXTREME CASES THE SENSOR MAY EVEN PERMANENTLY LOSE THE ACCURACY CLASS!

PRECISE PT1000 UNIVERSAL THERMOMETER



SEE ALSO: G 1710, G 1720, G 1730 WITH
PERMANENTLY ATTACHED SENSOR

HIGHLIGHTS:

- Modern and functional housing
- 3 line display / overhead display at the push of a button
- Backlit
- Alarm function
- Waterproof (IP65 / IP67)
- Robust, long battery life



connection

G 1700

Item No. 609826

Waterproof alarm thermometer for BNC interchangeable sensors, device loose, without temperature sensor

G1700-GKK1000

Item No. 479238

Waterproof alarm thermometer for BNC interchangeable sensors, device in case GKK 1000, without temperature sensor

G1700-WPT3

Item No. 479237

Waterproof alarm thermometer for BNC interchangeable sensors, device in case GKK 1000, immersion sensor GF1T-T3-AA-BNC, ISO calibration certificate WPT3 -20/0/70 °C

GENERAL:

When developing the new G 1000 series, the focus was consciously on the essential functions of the measurement technology. Measurement with a focus on precision, speed, and reliability, packed into a compact housing, delivers an outstanding price/performance ratio, Made in Germany.

The new portable instruments also have an impressive ergonomic design, are dust- and water-proof to IP 65/67, and feature a backlit display.

The compact thermometer is equipped with a practical BNC connection for interchangeable sensors. The device redefines our entry-level measurement technology – including a test report.

APPLICATIONS:

Precise measurements in liquids and air, for measuring core temperatures (with insertion probe); laboratories, quality assurance, service, food, ...

TECHNICAL SPECIFICATIONS:

Measuring range:	-200.0 .. + 450.0 °C (-328.0 .. + 842.0 °F) with plug-in sensor (observe the sensors approved range of application!)
Accuracy (device): (at nominal temperature = 25 °C)	-20 .. + 100 °C: $\pm 0.1 \text{ K} \pm 1 \text{ digit}$ otherwise 0.1 % of reading $\pm 2 \text{ digits}$
Working conditions:	-20 .. + 50 °C; 0..95 % RH (not condensing)
Display:	3-line with battery level indicator, backlit, protected by break-resistant pane, overhead display at the push of a button
Power supply:	2 x AA batteries, > 5000 h running time
Sensor:	Pt1000 2-wire with BNC connection can be used
Protection class:	IP65 / IP67 (only with sensors marked as waterproof when plugged in)
Housing:	break-proof ABS housing
Dimensions:	108 x 54 x 28 mm (H x W x D) without sensor connection
Weight:	130 g (without probe)
Scope of delivery:	Device, test report, 2 x batteries, operating instructions

ACCESSORIES OR SPARE PARTS:

GF 1T-T3-B-BNC

Item No. 609549

compact Pt1000 handheld sensor with silicone handle, immersion sensor $\varnothing 3 \text{ mm}$ Pt1000 class B, with BNC plug

GF 1T-E3-B-BNC

Item No. 609639

compact Pt1000 handheld sensor with silicone handle, insertion sensor $\varnothing 3 \text{ mm}$ Pt1000 Kl. B, with BNC plug,

GF 1T-E1.5-B-BNC

Item No. 609645

compact Pt1000 handheld sensor with silicone handle, insertion sensor $\varnothing 1.5 \text{ mm}$ extra thin, Pt1000 class B, with BNC plug,

GKK 1000

Item No. 611603

Case for G1000 series / temperature with cut-outs for 1 device of the G 1xxx series 235 x 185 x 48 mm (W x H x D)

ST-G1000

Item No. 611373

G 1000 protective bag made of Nappa leather, a universal cutout for sensors, belt clip

GB AA

Item No: 610049

Replacement battery mignon (AA) 1.5 V (2 pieces are required)



SUITABLE PT1000 SENSORS (2-WIRE)

ACCURACIES PT1000:

Sensor accuracy according to DIN EN 60751

DIN class B: (validity range: -50 .. + 500 °C)

± 0.3 °C at 0 °C

DIN class A: (validity range: -30 .. + 300 °C)

± 0.15 °C at 0 °C

DIN class AA = 1/3 DIN class B: (Validity range: 0 .. + 150 °C)

± 0.1 °C at 0 °C

SURCHARGES FOR SPECIAL DESIGNS:

(DESIGN-RELATED VARIATIONS ARE AVAILABLE)

longer sensor tube:

surcharge per additional 100 mm or part thereof

longer sensor cable (PVC):

surcharge per additional 1 m or part thereof

Spiral cable, approx. 1.5 m stretched PUR**other sensor cable material on request.****Sensor tube with teflon shrinkage**

(for temperature sensors up to 200 mm)

(for measurements in acids and sea water, max. measuring range = 250 °C)

Sensor handle waterproof encapsulated

(only possible with PVC cable -20 .. + 105 °C)

higher sensor accuracy:

DIN class AA, for Pt1000, tolerances: 0.1 °C at 0 °C

higher sensor accuracy:

1/10 DIN class B, for Pt100 sensors, tolerances: 0.03 °C at 0 °C

Handling fee for custom-made products**Handling fee for custom-made GF1T/GF2T/GF3T**

All sensor designs are also available as Pt100 2- / 3- or 4-wire on request.

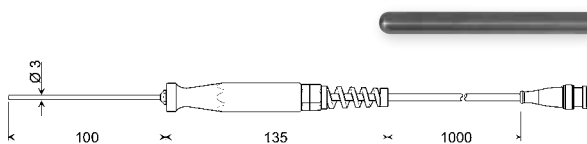
We manufacture sensors according to your requirements and ideas at short notice and at a reasonable price. Please inquire.

-70 °C
+250 °C**GTF 175-BNC**

Item No. 607165

Immersion sensor for liquids/gases

-70 .. + 250 °C, Pt1000 class B



Corrosion-resistant V4A tube Ø 3 mm, plastic handle, anti-kink screw connection, 1 m highly flexible silicone cable, BNC plug

Response time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

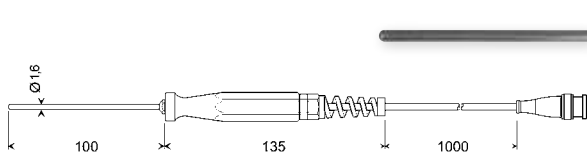
Advantages of the sheathed element Pt1000:

- high temperature resistance
- sheathed tube is bendable
- high shock resistance
- long lifetime

-70 °C
+250 °C**GTF 175/1.6-BNC**

Item No. 611323

Immersion probe with sheathed element Pt100 -200 .. + 600 °C, DIN class B



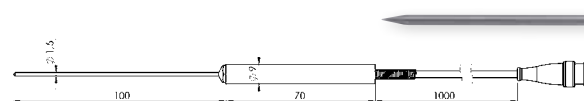
V4A sheathed tube, bendable, Ø 1.6 mm, plastic handle, anti-kink screw connection, 1 m highly flexible silicone cable, BNC plug

Response time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 25 s-200 °C
+250 °C**GES 20-TB-BNC**

Item No. 607377

Core temperature / food probe, compact teflon handle

-200 .. + 250 °C, Pt1000 class B



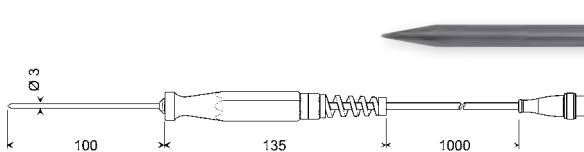
V4A tube with Ø 1.5 mm slim insertion tip, small teflon handle, stainless steel kink protection, 1 m teflon cable, BNC plug

Response time T_{90} : Water 0.4 m/s < 1 s, air 2 m/s approx. 12 s-70 °C
+250 °C**GES 175-BNC**

Item No. 611324

Insertion probe for soft plastic media

-70 .. + 250 °C, Pt1000 class B



V4A tube Ø 3 mm with needle-shaped insertion tip, plastic handle, anti-kink screw connection, 1 m highly flexible silicone cable, BNC plug

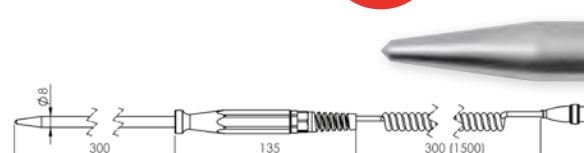
Response time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s-50 °C
+250 °C**GES200-T-300-D8-L1.5PU**

Item No. 479239

Robust insertion probe

-50 .. + 250 °C, Pt1000 class B

NEW!



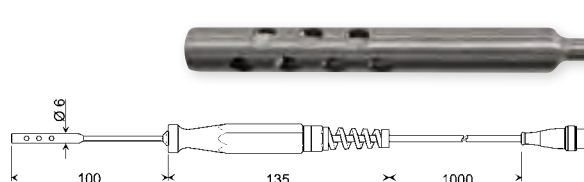
Stainless steel tube Ø 8 mm with insertion tip, plastic handle, anti-kink screw connection, spiral cable (approx. 1.5 m stretched), BNC plug, for use in soils, bulk goods, asphalt, etc.

Response time T_{90} : Water 0.4 m/s approx. 4 s-70 °C
+250 °C**GLF 175-BNC**

Item No. 607162

Air / gas sensors for clean media

-70 .. + 250 °C, Pt1000 class B



(use GTF175 for contaminated media), punched V4A protection tube, rapid response Pt1000 miniature sensor freely arranged behind it, thus high response speed, plastic handle, anti-kink fitting, 1 m highly flexible silicone cable, BNC plug

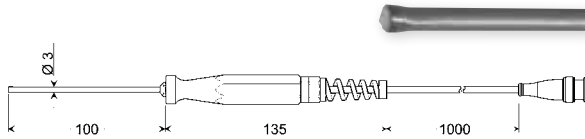
Response time T_{90} : Air 2 m/s approx. 15 s

SUITABLE PT1000 SENSOR (2-WIRE)

$\frac{-70\text{ }^{\circ}\text{C}}{+250\text{ }^{\circ}\text{C}}$

GOF 175-BNC

Item No. 607163
Surface probe for solid surfaces
-70 .. + 250 °C, Pt1000 class B



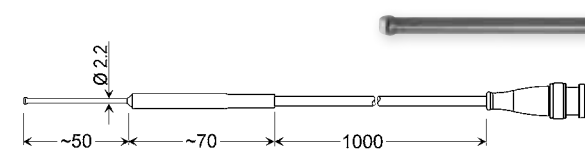
Front-side Pt1000 ceramic plate 2 x 2.3 mm, V4A sensor tube at the front 3 x 3 mm square, plastic handle, anti-kink screw connection, 1 m highly flexible silicone cable, BNC plug

Response time T_{90} : approx. 15 s

$\frac{-70\text{ }^{\circ}\text{C}}{+120\text{ }^{\circ}\text{C}}$

GOF 175 Mini-BNC

Item No. 610399
Surface probe for solid surfaces
-70 .. + 120 °C, Pt1000 class B



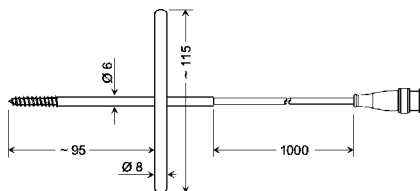
Pt1000 ceramic plate on the face, 2 x 2.3 mm, V4A tube $\varnothing$ 2.2 mm, 1 m highly flexible silicone cable, BNC plug

Response time T_{90} : approx. 15 s

$\frac{-70\text{ }^{\circ}\text{C}}{+250\text{ }^{\circ}\text{C}}$

GGF 175-BNC

Item No. 610397
Probe for deep-frozen products
-70 .. + 250 °C, Pt1000 class B



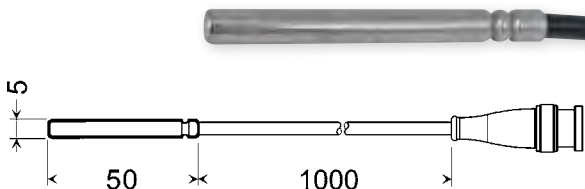
For screwing into frozen food, etc. without pre-drilling, V4A pipe $\varnothing$ 6 mm with screw tip, 1 m highly flexible silicone cable, BNC plug

Response time T_{90} : approx. 15 s

$\frac{-50\text{ }^{\circ}\text{C}}{+200\text{ }^{\circ}\text{C}}$

GTF 2000-BNC

Item No. 607164
Air- / tube mounting probe
-50 .. + 200 °C, Pt1000 class B



V4A sensor sleeve $\varnothing$ 5 mm, 1 m highly flexible silicone cable, BNC plug, every additional meter or part thereof surcharge: € 3.20

Response time T_{90} : Water 0.4 m/s < 10 s, air 2 m/s approx. 60 s

VARIANT:**GTF 2000-BNC-WD**

Item No. 476007
Watertight design, sensor design as above, but cable made of PVC and sensor tube shrink-wrapped in a watertight manner. Max. 105 °C!

**HIGHLIGHTS:**

- Lightweight, handy handle with optimized ergonomics and flexible cable
- Water-resistant: can be completely submerged
- Temporary temperature resistance up to 250 °C

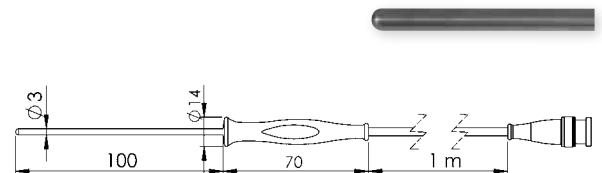
$\frac{-70\text{ }^{\circ}\text{C}}{+250\text{ }^{\circ}\text{C}}$

GF 1T-T3-B-BNC

Item No. 609549
compact Pt1000 handheld sensor with silicone handle
-70 .. + 250 °C, Pt1000 class B

GF 1T-T3-AA-BNC

Item No. 609550
compact Pt1000 handheld sensor with silicone handle
-70 .. + 250 °C, Pt1000 class B



Immersion tip $\varnothing$ 3 mm made of V4A tube, black silicone handle -50 .. + 250 °C, 1 m silicone cable -50 .. + 230 °C permanent / +250 °C 2 h, probe tip and silicone handle IP67, BNC connector

Response time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

VARIANTS:**GF 1T-T3-B-LE**

Item No. 609547
Pt1000 handheld sensor, Pt1000 class B, with loose ends

GF 1T-T3-AA-LE

Item No. 609548
Precision Pt1000 handheld sensor, Pt1000 Kl. AA, with loose ends

$\frac{-200\text{ }^{\circ}\text{C}}{+250\text{ }^{\circ}\text{C}}$

GF 1T-T3-B-BNC-MB4

Item No. 611763
Pt1000 handheld sensor for low temperatures, -200 .. + 250 °C, Pt1000 class B

SUITABLE PT1000 SENSOR (2-WIRE)

-70 °C
+250 °C

GF 1T-E3-B-BNC

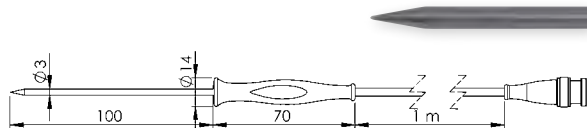
Item No. 609639

Insertion sensor, Ø 3 mm, -70 .. + 250 °C, Pt1000 class B

GF 1T-E3-AA-BNC

Item No. 609640

Insertion sensor, Ø 3 mm, -70 .. + 250 °C, Pt1000 class AA



Insertion probe Ø 3 mm made of V4A tube, black silicone handle -50 .. + 250 °C, 1 m silicone cable -50 .. + 230 °C permanent / +250 °C 2 h, probe tip and silicone handle IP67, BNC plug

Response time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

VARIANTS:**GF 1T-E3-B-LE**

Item No. 609637

Pt1000 insertion probe, Pt1000 class B with loose ends

GF 1T-E3-AA-LE

Item No. 609638

Precision Pt1000 insertion probe Pt1000 class AA with loose ends

-70 °C
+250 °C

GF 1T-E1.5-B-BNC

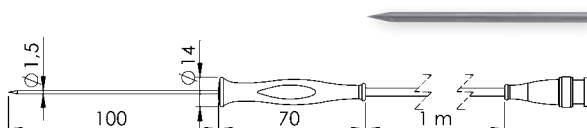
Item No. 609645

extra thin insertion probe, Ø 1.5 mm, -70 .. + 250 °C, Pt1000 class B

GF 1T-E1.5-A-BNC

Item No. 609646

extra thin insertion probe, Ø 1.5 mm, -70 .. + 250 °C, Pt1000 class A



Insertion probe Ø 1.5 mm made of V4A tube, black silicone handle -50 .. + 250 °C, 1 m silicone cable -50 .. + 230 °C permanent / +250 °C 2 h, probe tip and silicone handle IP67, BNC plug

Response time T_{90} : Water 0.4 m/s < 1 s, air 2 m/s approx. 12 s

VARIANTS:**GF 1T-E1.5-B-LE**

Item No. 609643

extra thin Pt1000 insertion probe, Pt1000 class B, with loose ends

GF 1T-E1.5-A-LE

Item No. 609644

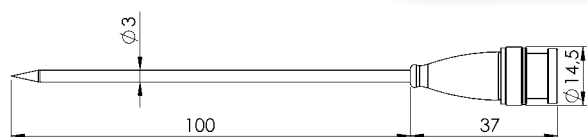
extra thin Pt1000 insertion probe, Pt1000 class A, with loose ends

-70 °C
+250 °C

GF 2T-E3-B-BNC

Item No. 609926

Pt1000 insertion probe, BNC plug, without cable -70 .. + 250 °C, Pt1000 class B



Insertion probe Ø 3 mm made of V4A tube, IP67 when plugged in, BNC plug with EPDM grommet up to +75 °C

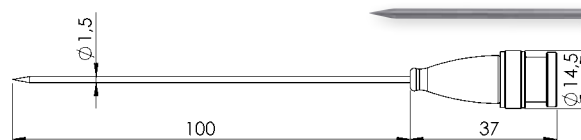
Response time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

-70 °C
+250 °C

GF 2T-E1.5-A-BNC

Item No. 609824

Pt1000 insertion probe, BNC plug, without cable, -70 .. + 250 °C, Pt1000 class A



Insertion probe Ø 1.5 mm made of V4A tube, IP67 when plugged in, BNC plug with EPDM grommet up to +75 °C

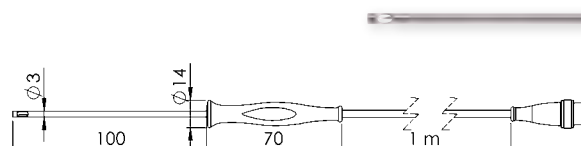
Response time T_{90} : Water 0.4 m/s < 1 s, air 2 m/s approx. 12 s

-70 °C
+250 °C

GF 1T-L3-B-BNC

Item No. 611297

Pt1000 air probe for clean media, -70 .. + 250 °C, Pt1000 class B



(use GF 1T-T3 for dirty media), perforated V4A tube Ø 3 mm, quick-acting Pt1000 freely arranged, black silicone handle up to +250 °C, 1 m silicone cable up to +230 °C continuously / +250 °C 2 h, BNC connector

Response time T_{90} : Air 2 m/s approx. 15 s

VARIANTS:**GF 1T-L3-B-LE**

Item No. 611298

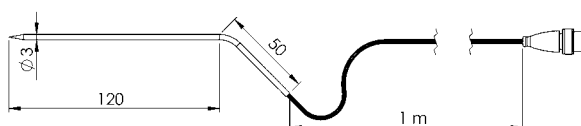
Pt1000 air probe, Pt1000 class B, with loose ends

-70 °C
+400 °C

GF 3T-E3-BNC

Item No. 611301

Grill probe up to max 400 °C, -70 .. + 400 °C, Pt1000 class B



insertion probe Ø 3 mm bent from V4A tube, 1 m glass-silk-insulated cable with stainless steel braiding up to +350 °C continuously / +400 °C 2 h, BNC plug

Response time T_{90} : Water 0.4 m/s approx. 10 s, air 2 m/s approx. 40 s

VARIANTS:**GF 3T-E3-B-LE**

Item No. 611302

Pt1000 grill probe, Pt1000 class B, with loose ends

PRECISION UNIVERSAL THERMOMETER



ROBUST AND GOOD VALUE



HIGHLIGHTS:

- Modern and functional housing
- 3 line display / overhead display at the push of a button
- Backlit
- Alarm function
- Waterproof (IP65 / IP67)
- Robust, long battery life
- High-quality sensors: complete with Pt1000 hand probe (up to 250 °C including handle and cable!)

SEE ALSO: G 1700 WITH BNC PLUG FOR INTERCHANGEABLE SENSORS



SUCCESSOR TO GTH 175 PRODUCTS

G 1710

Item No. 609828

Waterproof alarm thermometer with insertion sensor, Ø 3 mm

G 1720

Item No. 609829

Waterproof alarm thermometer with insertion sensor, Ø 3 mm

G 1730

Item No. 609832

Waterproof alarm thermometer with insertion sensor, Ø 1.5 mm

GENERAL:

When developing the new G 1000 series, the focus was consciously on the essential functions of the measurement technology. The pure measurement with a focus on precision, speed, and reliability, packaged in a compact housing, enables the outstanding price/performance ratio, Made in Germany.

The new portable instruments also have an impressive ergonomic design, are dust- and water-proof to IP 65/67, and feature a backlit display.

The compact thermometer enables the highest level of precision at an affordable price thanks to its permanently attached probe. The device redefines our entry-level measurement technology – including a test report. The appropriate sensors can be used up to 250 °C (including handle and cable) and are characterized by their compact design and small tube diameters. Installed inside: high-quality Pt1000 sensors.

APPLICATIONS:

Precise measurements in liquids and air, for measuring core temperatures (with insertion sensor); Operating temperature sensor handle and cable up to 250 °C (continuous operating temperature 230 °C); Laboratories, quality assurance, service, food, ...

TECHNICAL SPECIFICATIONS:

Measuring range:	-70.0 .. + 250.0 °C (-94.0 .. + 482.0 °F)
Accuracy: (at nominal temperature = 25 °C)	-20 .. + 100 °C: $\pm 0.1 K \pm 1$ digit -70 .. + 250 °C: $\pm 0.2 \% f. MW \pm 2$ digits
Working conditions:	-20 .. + 50 °C; 0.95 % RH (not condensing)
Display:	3-line with battery level indicator, backlit, protected by break-resistant glass, overhead display at the push of a button
Power supply:	2 x AA batteries, > 5000 h battery life
Probe	
G 1710:	Immersion probe Ø 3 mm, Pt1000 2-wire permanently connected, V4A, cable 1 m
G 1720:	Robust insertion probe Ø 3 mm, Pt1000 2-wire fixed connected, V4A, cable 1 m
G 1730:	Extra thin insertion probe Ø 1.5 mm, Pt1000 2-wire permanently connected, V4A, cable 1 m
Response time T_{90} :	Ø 3 mm: water 0.4 m/s < 2 s; Ø 1.5 mm: water 0.4 m/s < 1 s

G 1710-GKK1000

Item No. 479240

Device in case GKK 1000

G1720-GKK1000

Item No. 479241

Device in case GKK 1000

G1730-GKK1000

Item No. 479242

Device in case GKK 1000

Protection class:	IP65 / IP67
Housing:	break-proof ABS housing
Dimensions:	108 x 54 x 28 mm (H x W x D) without sensor connection
Weight:	130 g (without probe)
Scope of delivery:	Device with integrated sensor, test report, 2 x batteries, operating instructions

OPTIONS:

WPT2A	including WPT2A, factory calibration, test points: 0 °C / 70 °C + GKK 1000
WPT2B	including WPT2B, factory calibration test points: 0 °C / 37 °C + GKK 1000
WPT3	including WPT3, factory calibration, test points: -20 °C, 0 °C, 70 °C + GKK 1000

ACCESSORIES OR SPARE PARTS:

GKK 1000	Item No. 611603 Case for G1000 series / temperature with cut-outs for 1 device of the G 1xxx series 235 x 185 x 48 mm (W x H x D)
ST-G1000	Item No. 611373 Protective bag, leather, G 1000 protective bag made of Nappa leather, a universal cutout for sensors, belt clip
GB AA	Item No. 610049 Replacement battery Mignon (AA) 1.5 V (2 pieces are required)

HAY THERMOMETER



- HIGHLIGHTS:
- 4 meter fiberglass probe
 - Backlit
 - Alarm function

HayTemp 1700

Item No. 611377
Hay temperature measuring instrument

GENERAL:	
Since stored hay or straw, etc., tends to overheat (causing depreciation) or even self-ignite due to biological processes, especially at higher material moisture, regular temperature control in the feed bunk is important. The HayTemp 1700 optimally supports both farmers and fire departments.	
APPLICATION:	
For measurements in hay and straw at a depth of up to 4 m.	
TECHNICAL SPECIFICATIONS:	
Device:	G 1700
Measuring range:	-20..+120 °C
Probe connection:	BNC, Pt1000, 2-wire
Measuring rod:	Fiberglass probe, approx. 4 m long, Ø approx. 10 mm, 1 measuring point in the probe tip
Cutting tip:	screwable double-edged tip with integrated temperature sensor
Weight:	Measuring rod with cutting tip approx. 600 g.
Scope of delivery:	Display device, fiberglass tube, Pt 1000 probe tip, BNC cable (1.5 m), battery, operating instructions

ACCESSORIES OR SPARE PARTS:

G 1700
Item No. 609826
Waterproof alarm thermometer for BNC interchangeable sensors

Fiberglass tube
Item No. 604407
4 m, without probe and without tip

Probe tip
Item No. 606889
with integrated temperature sensor

Cable BNC / BNC
Item No. 602855
Connection cable with a length of 1.5 m



ST-G1000
Item No. 611373
Protective bag, leather, G 1000 protective bag made of Nappa leather, a universal cutout for sensors, belt clip

Measuring devices for hay and straw humidity see BaleCheck

SOIL THERMOMETER



- HIGHLIGHTS:
- robust stainless steel probe
 - ergonomic T-handle probe designed for comfortable use

SoilTemp 1700

Item No. 611374
Robust soil & compost thermometer

GENERAL:	
The universal display device, combined with an extremely robust and at the same time ergonomic T-handle probe made of stainless steel, enables many measurements in floors and bulk goods.	
APPLICATION:	
Feedstock control, measurements in soils, landfills, silage, compost and much more.	
TECHNICAL SPECIFICATIONS:	
Device:	G 1700
Probe connection:	BNC, Pt1000, 2-wire
Measuring range:	-50.0 .. + 250.0 °C
Measuring lance:	Stainless steel, 1000 mm x Ø 10 mm, 1 m; connection cable with BNC plug, 350 g, feeler handle construction enables fatigue-free work.
Scope of delivery:	Display device, GTF 40 T-1000, battery, operating instructions

ACCESSORIES OR SPARE PARTS:

G 1700
Item No. 609826
Waterproof alarm thermometer for BNC interchangeable sensors

GTF 40 T-620
Item No. 606803
Stainless steel T-handle insertion probe, FL 620 mm, with 1 m cable and BNC connector

GTF 40 T-1000
Item No. 606791
Stainless steel T-handle penetration probe, FL 1000 mm, with 1 m cable and BNC connector

GTF 40 T-1500
Item No. 606792
Stainless steel T-handle insertion probe, FL 1500 mm, with 1 m cable and BNC connector

ST-G1000
Item No. 611373
Protective bag, leather, G 1000 protective bag made of Nappa leather, a universal recess for sensors, belt clip

ONE-HAND SOIL/COMPOST THERMOMETER

**G 1791**

Item No. 482472

One-hand soil/compost thermometer

GENERAL:

The sophisticated probe tip offers a best possible compromise between speed and robustness. For reliability in tough measurement applications, the connector between the indicator and the probe is welded from solid stainless steel. Precision, speed and reliability, packaged in a compact and robust housing, make the device a reliable partner for professional users, made in Germany.

APPLICATION:

The G 1791 is a convenient insertion thermometer for soft soils, compost, agricultural windrows and bulk materials.

TECHNICAL SPECIFICATIONS:

Measurement input:	Pt1000
Measuring range:	-70.0 .. +250.0 °C (-94.0 .. +482.0 °F)
Accuracy:	-20 .. +100 °C: $\pm 0.1 \text{ K} \pm 1 \text{ digit}$, otherwise: $\pm 0.2 \%$ of reading MW. $\pm 2 \text{ digits}$
Response time:	t90 water (0.4 m/s) approx. 4 s
Measuring frequency:	2 measurements/s
Sensor:	Diameter: $\varnothing 8 \text{ mm}$ Probe length: 920 mm mounting: probe firmly screwed to the bottom of device, T-handle-like
Standard function:	Min/Max/Hold, auto power off function
Additional functions:	Zero point and slope correction Min/Max alarm: display message, flashing, buzzer
Ambient conditions display:	-20 to 50 °C; 0 to 85 % RH (not condensing)
Display	3 lines with battery status display, backlit, unbreakable pane,
Operation	4 long-life pushbuttons
Power supply:	2 * AA batteries (incl.)
Battery life:	>2500 h (without backlight, with backlight >1000 h), 4-stage battery status display, automatic switch-off, adjustable
Housing:	Break-resistant ABS bolted battery compartment
Protection class:	IP54
Dimensions:	108 * 54 * 950 mm (L * W * H)
Weight:	275 g including battery
Scope of delivery:	Portable instrument with permanently connected sensor, test report, optional: ISO calibration report, 2xAA batteries, operating instructions

HIGHLIGHTS:

- robust stainless steel insertion probe
- ergonomic layout of the display unit
- fast measurement thanks to the optimized measuring tip
- high resolution and accuracy
- customizable alarm function
- calibratable/traceable
- long battery life

INDOOR AIR THERMOMETER



QUICK MEASUREMENT OF ROOM TEMPERATURE

CONVENIENT ONE-HAND OPERATION

GTH 200 air

Item No. 600251

Precision air thermometer

GENERAL:

The exposed, yet protected temperature sensor enables fast and precise measurements with an accuracy of less than $\pm 0.2 \text{ °C}$ (at 20 °C) in air. The range of functions of the device has been reduced to the essentials, which enables convenient and practical one-hand operation.

APPLICATION:

The room thermometer GTH 200 air is an essential tool for fast and precise temperature measurements in

- Calibration rooms
- Production/server rooms
- Living spaces
- Laboratory, etc.

TECHNICAL SPECIFICATIONS:

Measuring range:	-25.0 .. +70.0 °C
Resolution:	0.1 °C
Accuracy:	($\pm 1 \text{ digit}$) (at nominal temperature) $\pm 0.5 \%$ of reading $\pm 0.1 \text{ °C}$
Measuring probe:	Pt 1000, DIN class AA
Response time T_{90} :	approx. 5 s
Display:	4½-digit, 11 mm high LCD display
Nominal temperature:	25 °C
Working temperature:	-20 .. +70 °C
relative humidity:	0.95 % RH (not condensing)
Storage temperature:	-25 .. +70 °C
Power supply:	9 V battery
Power consumption:	max. 0.1 mA
Battery life:	approx. 6000 operating hours with alkaline battery
Housing:	impact-resistant ABS housing
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D), additionally protruding sensor head on the front side, 35 mm long, 14 mm $\varnothing$, total length 141 mm.
Weight:	approx. 135 g including battery
Scope of delivery:	Device, battery, operating instructions

WATERPROOF HACCP THERMOMETER WITH PT 1000 SENSOR



HIGHLIGHTS:

- Easy handling
- Battery life > 6000 hours
- The device and sensor are waterproof and very robust
- Including test protocol

GMH 2710-T

Item No. 602034
Temperature measuring instrument including universal probe

GMH 2710-E

Item No. 602036
Temperature measuring instrument including insertion probe, Ø 3 mm

GMH 2710-K

Item No. 602038
Temperature measuring instrument incl. teflon insertion probe, Ø 3 mm

GMH 2710-G

Item No. 602040
Temperature measuring instrument incl. mini teflon insertion probe, Ø 1.5 mm

GMH 2710-F

Item No. 604035
One-hand temperature measuring instrument with integrated immersion probe, Ø 3 mm, bendable

GMH 2710-I

Item No. 604611
One-hand temperature measuring instrument with integrated insertion probe, Ø 3 mm, bendable

GENERAL:

Precise measurements for laboratory, quality assurance and monitoring of production processes

APPLICATION:

Food (HACCP), medicine / pharmaceuticals, chemistry, aquaristics, fish farming, aquaculture, and much more.

GMH 2710-F/-I:

Ideal for measurements in hard-to-reach places, e.g. at

- Storage temperature control (especially food)
- Temperature control in food measurement (HACCP)
- Incoming goods inspection
- Temperature measurements as part of legionella testing.

These can cause problems with conventional thermometers directly at the tapping points.

TECHNICAL SPECIFICATIONS:

Measuring ranges:

GMH 2710-T/-E	-199.9 .. + 200.0 °C
GMH 2710-K/-G	-199.9 .. + 250.0 °C
GMH 2710-F/-I	-70 .. + 250 °C

Resolution: 0.1 °C

Accuracy:

at -20.0 .. + 100.0 °C	± 0.1 °C ± 1 digit
at -70.0 .. + 200.0 °C	± 0.1 % of meas. MW. ± 2 digits, sensor calibrated to the device

Sensor:	Pt1000, 2-wire, potential-free, water- and steam-proof, permanently connected to the device
GMH 2710-T	Plastic handle 135 mm long 1 m PVC cable (max. 100 °C), Ø 3 mm/length: 100 mm
GMH 2710-E	Plastic handle 135 mm long, but also with a slim insertion tip for all soft plastic media. 1 m PVC cable (max. 100 °C), Ø 3 mm/length: 100 mm
GMH 2710-K	Version with large teflon handle and 1 m teflon cable, with slim insertion tip, handle and cable are resistant to air temperatures of up to 250 °C. Stainless steel kink protection, Ø 3 mm/length: 100 mm
GMH 2710-G	Version with small teflon handle and 1 m teflon cable, with slim insertion tip, handle and cable for permanent use at high temperatures up to 250 °C, stainless steel kink protection, Ø 1.5 mm/length: 100 mm.
GMH 2710-F	V4A sheathed element, bendable, Ø 3 mm, length 150 mm
GMH 2710-I	V4A sheathed element with needle-shaped insertion tip, bendable, Ø 3 mm, length 150 mm
Response time T ₉₀ :	Ø 3 mm: water 0.4 m/s <2 s; Ø 1.5 mm: water 0.4 m/s <1 s
Display:	two 4-digit LCD (12.4 mm or 7 mm)
Nominal temperature:	+25 °C
Working temperature:	-25 .. + 50 °C
Storage temperature:	-30 .. + 70 °C
Power supply:	2 x AAA batteries
Battery life:	> 6000 hours
Protection class:	IP65 / IP67
Housing:	made of impact-resistant ABS
Dimensions:	154 x 81 x 31 mm (H x W x D)
Weight:	215 g (including battery and probe)
Scope of delivery:	Device including sensor, battery, test protocol, operating instructions

ACCESSORIES OR SPARE PARTS:

K 50 BL

Item No. 601352
Silicone protection cover blue

K 50 RE

Item No. 607456
Silicone protection cover red



PRECISION QUICK-RESPONSE THERMOMETER FOR THERMOCOUPLES



AUTO OFF

HOLD

ISO

MIN MAX

0-CORR



VERY QUICK RESPONSE TIME!



Connection GMH 3201

GMH 3201

Item No. 474930

Precision second thermometer type K

GMH 3211

Item No. 611381

Precision quick-response thermometer, universal

HIGHLIGHTS:

- Serial interface (except GMH 3221)
- Correction factor for surface measuring can be switched on / off (switchable) (except GMH 3221)

GMH 3221, GMH 3231 AND GMH 3251:

- 2 plug-in probes can be connected and read simultaneously
- Differential temperature measurement

ADDITIONAL FUNCTIONS

GMH 3221/3231:



GMH 3251:



Connection GMH 3221



Connection GMH 3231/51

GMH 3221

Item No. 611384

Precision quick-response thermometer, 2 channel type K

GMH 3231

Item No. 611382

Precision quick-response thermometer, 2 channel universal

GMH 3251

Item No. 611383

Precision quick-response thermometer, 2 channel, logger

TECHNICAL SPECIFICATIONS:	GMH 3201	GMH 3211	GMH 3221	GMH 3231	GMH 3251
Thermocouples:		K, J, T, N, S, E, B		K, J, T, N, S, E, B	K, J, T, N, S, E, B
Measurement channels:	1 thermocouple input (type K compensation material)		2 thermocouple inputs (type K compensation material)		
Measuring ranges					
Type K:	-220.0 .. + 1372.0 °C	-220.0 .. + 1372.0 °C	-220.0 .. + 1372.0 °C	-220.0 .. + 1372.0 °C	-220.0 .. + 1372.0 °C
Type J:	-	-200.0 .. + 1100.0 °C	-	-200.0 .. + 1100.0 °C	-200.0 .. + 1100.0 °C
Type T:	-	-200.0 .. + 400.0 °C	-	-200.0 .. + 400.0 °C	-200.0 .. + 400.0 °C
Type N:	-	-200.0 .. + 1300.0 °C	-	-200.0 .. + 1300.0 °C	-200.0 .. + 1300.0 °C
Type S:	-	-50.0 .. + 1768.0 °C	-	-50.0 .. + 1768.0 °C	-50.0 .. + 1768.0 °C
Type E:	-	-60.0 .. + 850.0 °C	-	-60.0 .. + 850.0 °C	-60.0 .. + 850.0 °C
Type B:	-	+300 .. + 1750 °C	-	+300 .. + 1750 °C	+300 .. + 1750 °C
Accuracy: (at nominal temperature)	± (0.5 °C + 0.2 % of mv.)	± (0.5 °C + 0.2 % of mv.) (J, K, N, T, E) ± (0.8 °C + 0.4 % of mv.) (S, B)	± (0.5 °C + 0.2 % of mv.)	± (0.5 °C + 0.2 % of mv.) (J, K, N, T, E) ± (0.8 °C + 0.4 % of mv.) (S, B)	
Analog output:	No	No	No	No	0..1 V
Alarm:	No	No	No	No	CH1, CH2, CH1 + 2, DIF
Data logger:	No	No	No	No	manually: 1,000 data records automatically: 10,000 data records
Sensor connections (mini flat plug):	1	1	2	2	2
Serial interface:	-	3-pole jack socket Ø 3.5 mm	-	3-pole jack socket Ø 3.5 mm	3-pole jack socket Ø 3.5 mm
Differential measurement:			If 2 sensors are connected, the temperature difference sensor 1 – sensor 2 can be displayed.		
Correction value for surface measurement:	-	adjustable	-	adjustable	adjustable
Power supply:	9 V battery	9 V battery, mains socket	9 V battery	9 V battery, mains socket	9 V battery, mains socket
Battery life:	approx. 500 h	approx. 500 h	approx. 300 h	approx. 300 h	approx. 300 h

G 1200 THERMOCOUPLE QUICK RESPONSE THERMOMETER



NEW!



HIGHLIGHTS:

- fast: 3 measurements per second
- modern and functional housing – in pocket size
- ideal for penetration and surface measurements
- 3-line display / overhead display at the push of a button
- backlit
- high resolution and accuracy
- first-class thermocouple compensation
- calibratable / traceable
- robust, long battery life
- made in Germany



connection



SUCCESSOR TO
GTH 1150 AND
GTH 1170 PRODUCTS

G1200

Item No. 482458

Device only, without temperature probe

G1200-GTF300

Item No. 482586

with wire probe GTF 300

G1200-E1.5-SET

Item No. 482726

with insertion probe, Ø 1,5 mm, in case GKK 1000

G1200-T3-WPT3

Item No. 482727

with immersion sensor, Ø 3 mm, in case GKK 1000, ISO calibration certificate WPT3 -20/0/70 °C

GENERAL:

In the development of the new G 1200 series, the focus was intentionally on the essential functions of the measurement technology – the sophisticated thermocouple reference point is the center of attention – for the best final accuracy – here, despite the favorable overall price in a peer class comparison, no savings were made! Precision, speed, and reliability, all packaged in a compact and waterproof housing (exception: probe connection), makes the device a reliable partner for professional users and demanding hobbyists. Made in Germany. Thanks to the first-class thermocouple compensation ("virtual ice point") with high-quality reference temperature measurement and a sophisticated design, they achieve unrivaled measuring reliability in this class.

APPLICATIONS:

For quick measurements in the kitchen, laboratory, industry, trade, research and teaching and many more. Fast and precise: with our wide range of interchangeable probes, they can be adapted to any application. Our high-quality thermocouple probes all correspond to the best thermocouple class 1. For the highest precision requirements: please note sister device family G 17xx Pt1000 thermometer.

TECHNICAL SPECIFICATIONS:

Measuring range:	-65 ... 1200 °C / -85 ... 2192 °F
Resolution:	up to 999.9: 0.1 °C / 0.1 °F, above 1 °C / 1 °F
Accuracy (nominal temperature):	Device: ± 0.1 % of reading ± 1 °C / reference junction: ± 0.3 °C
Comparison point:	± 0.3 K
Measuring cycle:	Approx. 3 measurements per second
Connection:	DIN mini thermocouple socket
Standard function:	Min / Max / Hold, auto power off function
Additional functions:	Zero point and slope correction
Environmental conditions:	-20 to 50 °C; 0 to 85 % RH (not condensing)
Display:	3 lines with battery status display, backlit, unbreakable pane, overhead display at the push of a button
Service:	4 long-life pushbuttons

Power supply:	2 * AA batteries (incl.)
Battery life:	>2500 h (without backlight, with backlight >1000 h), 4-stage battery status display, automatic switch-off, adjustable
Housing:	Break-proof ABS, bolted battery compartment
Protection class:	IP40
Dimensions:	108 x 54 x 28 mm (L x W x H)
Weight:	125 g including battery
Scope of delivery:	Portable instrument without sensor, test report, 2xAA batteries, operating instructions

ACCESSORIES OR SPARE PARTS:**GB-AA-2**

Item No. 479249

Replacement batteries 2 x AA

ST-G1000

Item No. 611373

Protective pocket with belt clip

GCLIP1000

Item No. 475820

Metal belt clip self-adhesive

G1000_BASE

Item No. 481885

G 1000 table stand and wall bracket

GKK1000

Item No. 611603

Case

SUITABLE PROBES :**GTE 130 OK**

Item No. 601483

Insertion sensor without cable, Ø 1,5 mm

GF 1TK-T3

Item No. 609695

Compact immersion probe with silicone handle, Ø 3 mm

GF 1TK-E3

Item No. 609697

Compact insertion probe with silicone handle, Ø 3 mm

GF 1TK-E1.5

Item No. 609699

Compact insertion probe with silicone handle, Ø 1.5 mm

GF 1TK-L3

Item No. 611299

Compact air probe with silicone handle, Ø 3 mm

GTF 300

Item No. 600072

Wire probe for measurements in fractions of a second

GTF 40K-620

Item No. 610829

T-handle insertion probe for bulk material, soil, compost

TYPE K MEASURING PROBE (NICR-NI) WITH MINI FLAT PLUG

ACCURACIES THERMOCOUPLES:

Sensor accuracy according to DIN EN 60584-1: 2014-07

Class 1 for type K: $\pm 1.5^\circ\text{C}$ in the range $-40 \dots +375^\circ\text{C}$ **Class 1 for type N:** $\pm 1.5^\circ\text{C}$ in the range $-40 \dots +375^\circ\text{C}$ **Class 1 for type S:** $\pm 1^\circ\text{C}$ in the range $0 \dots 1100^\circ\text{C}$

SURCHARGES FOR SPECIAL DESIGNS:

(DESIGN-RELATED VARIATIONS ARE AVAILABLE)

Longer sensor tube

Surcharge for each additional 100 mm or part thereof

Longer sensor cable (silicone)

Surcharge for each additional 1 m started

Spiral cable, approx. 1.5 m stretched PUR

other sensor cable material on request. sensor tube with teflon shrinkage

(for temperature sensors up to 200 mm)

(for measurements in acids and sea water. max.measuring range = 250°C)

Sensor handle waterproof encapsulated

(only possible with PVC cable $-20 \dots +105^\circ\text{C}$)

Higher sensor accuracy:

DIN class AA, for Pt1000, tolerances: 0.1°C at 0°C

Higher sensor accuracy:

1/10 DIN class B, for Pt100 sensors, tolerances: 0.03°C at 0°C

Handling fee for custom-made products

Handling fee for custom-made GF1TK/GF2TK/GF3TK

We reserve the right to charge a minimum order surcharge for custom-made products.

 $\begin{matrix} -65^\circ\text{C} \\ +550^\circ\text{C} \end{matrix}$

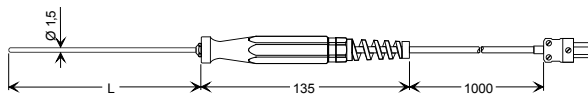
GTF 400

Item No. 600502

Immersion sensor for liquids/gases

 $-65 \dots +550^\circ\text{C}$

VERY FAST

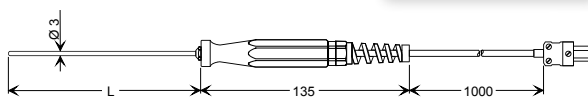


inexpensive, fast, resilient (rigid)

Corrosion-resistant V4A pipe $\varnothing 1.5$ mm, L = 130 mm, plastic handle, anti-kink screw connection, 1 m silicone cable, mini flat plugResponse time T_{90} : Water 0.4 m/s < 1 s
 $\begin{matrix} -65^\circ\text{C} \\ +1000^\circ\text{C} \end{matrix}$

GTF 900

Item No. 600505

Immersion sensor for liquids/gases up to 1000°C $-65 \dots +1000^\circ\text{C}$ 

inexpensive, resilient (rigid)

Corrosion-resistant V4A pipe $\varnothing 3$ mm, L = 130 mm, plastic handle, anti-kink screw connection, 1 m silicone cable, mini flat plugResponse time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s
 $\begin{matrix} -200^\circ\text{C} \\ +1150^\circ\text{C} \end{matrix}$

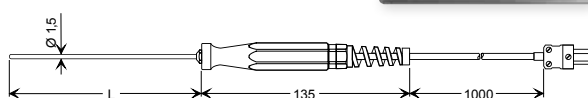
GTF 1200

Item No. 600507

Immersion sensor with sheathed thermocouple for highest temperatures

 $-200 \dots +1150^\circ\text{C}$

BENDABLE

Inconel 600 sheathed tube $\varnothing 1.5$ mm, bendable, L = 150 mm, plastic handle, anti-kink screw connection, 1 m silicone cable, mini flat plugResponse time T_{90} : Water 0.4 m/s approx. 3 s
 $\begin{matrix} -200^\circ\text{C} \\ +1150^\circ\text{C} \end{matrix}$

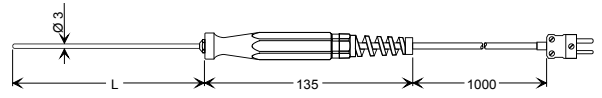
GTF 1200/300

Item No. 600510

Immersion sensor with sheathed thermocouple for highest temperatures

 $-200 \dots +1150^\circ\text{C}$

BENDABLE, POTENTIAL-FREE

Inconel 600 sheathed tube $\varnothing 3$ mm, bendable, L = 300 mm, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plugResponse time T_{90} : Water 0.4 m/s approx. 5 s
 $\begin{matrix} -200^\circ\text{C} \\ +1000^\circ\text{C} \end{matrix}$

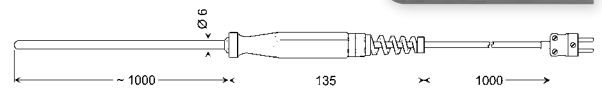
GTF 1000 AL

Item No. 600512

Immersion sensor with sheathed thermocouple for aluminum melt, etc.

 $-200 \dots +1000^\circ\text{C}$

VERY ROBUST



for aluminum melt, non-ferrous metals, etc.

GTF1000AL is suitable for short measurements in molten aluminum.

The wall thickness is reduced with each measurement (= wear)

V4A tube $\varnothing 6 \times 1.4$ mm, L = 1000 mm rigid, additional internal sheathed thermocouple, plastic handle, anti-kink screw connection, 1 m silicone cable, mini flat plugResponse time T_{90} : Water 0.4 m/s approx. 30 s
 $\begin{matrix} -65^\circ\text{C} \\ +900^\circ\text{C} \end{matrix}$

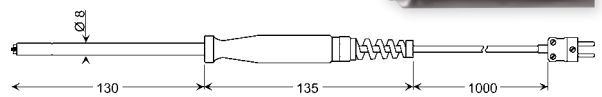
GOF 130

Item No. 600490

Surface probe with type K spiral spring

 $-65 \dots +900^\circ\text{C}$

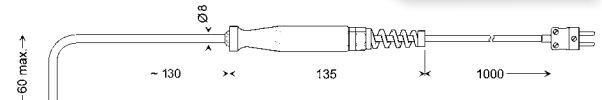
VERY FAST

for solid surfaces of any kind; 2 laser-welded, resilient spiral springs made of NiCr-Ni, V4A tube $\varnothing 8$ mm, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plugResponse time T_{90} : approx. 5 s
 $\begin{matrix} -65^\circ\text{C} \\ +900^\circ\text{C} \end{matrix}$

GOF 900 HO

Item No. 600500

Surface probe with type K spiral spring, curved

 $-65 \dots +900^\circ\text{C}$ 

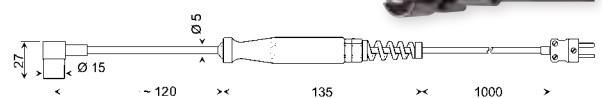
for solid surfaces of any kind; 2 laser-welded, resilient spiral springs made of NiCr-Ni, V4A tube bent, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plug

Response time T_{90} : approx. 5 s
 $\begin{matrix} -65^\circ\text{C} \\ +400^\circ\text{C} \end{matrix}$

GOF 200 HO

Item No. 600492

Surface probe with thermocouple spring strip, fast, angled

 $-65 \dots +400^\circ\text{C}$ 

for the fastest measurements at a limited height angled design, thermocouple spring strip, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plug

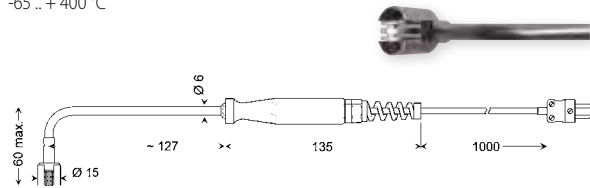
Response time T_{90} : approx. 2 s

TYPE K MEASURING PROBE (NICR-NI) WITH MINI FLAT PLUG

-65 °C
+400 °C

GOF 400 HO

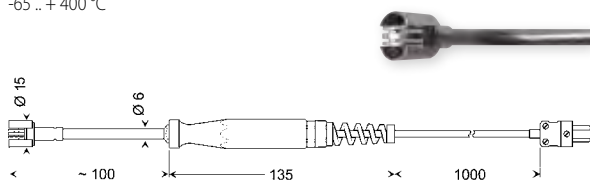
Item No. 600494

Surface probe with thermocouple spring strip, fast, angled
-65 .. + 400 °Cfor fastest measurements
angled design, thermocouple spring strip, plastic handle,
anti-buckling glanding, 1 m silicone cable, mini flat plugResponse time T_{90} : approx. 2 s

-65 °C
+400 °C

GOF 400 VE

Item No. 600496

Surface probe with thermocouple spring strip, fast
-65 .. + 400 °Cfor fastest measurements, thermocouple spring strip, plastic handle,
anti-buckling glanding, 1 m silicone cable, mini flat plugResponse time T_{90} : approx. 2 s**MH 400VE**

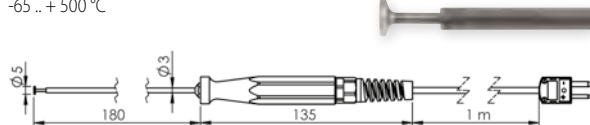
Item No. 607502

Magnet holder for GOF 400,
heat-resistant up to max. 100 °C

-65 °C
+500 °C

GOF 501

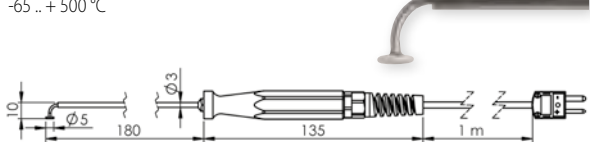
Item No. 475077

Surface probe with silver measuring surface
-65 .. + 500 °CFor straight and solid surfaces of any kind, solid silver plate, plastic handle,
anti-buckling glanding, 1 m silicone cable, mini flat plugResponse time T_{90} : approx. 3 s

-65 °C
+500 °C

GOF 501 HO

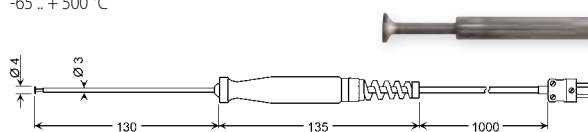
Item No. 475072

Surface probe with silver measuring surface, angled
-65 .. + 500 °CFor straight and solid surfaces of any kind, angled design, solid silver plate,
plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plugResponse time T_{90} : approx. 3 s

-65 °C
+500 °C

GOF 130 CU

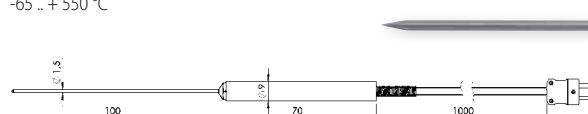
Item No. 600486

Surface probe with resilient copper plate
-65 .. + 500 °Cfor straight and solid surfaces of any kind
Spring-loaded Cu plate, plastic handle, anti-buckling glanding,
1 m silicone cable, mini flat plugResponse time T_{90} : approx. 5 s

-65 °C
+550 °C

GES 20-K

Item No. 602591

Core temperature/food probe, compact teflon handle
-65 .. + 550 °Cfor canteen kitchens, bakeries, butcher's shops, etc.
V4A tube with Ø 1.5 mm slim penetration tip, small teflon handle,
stainless steel kink protection, 1 m teflon cable, mini flat plug

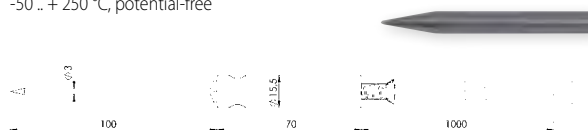
Temperature resistance: teflon handle and teflon cable 250 °C

Response time T_{90} : Water 0.4 m/s < 1 s, air 2 m/s approx. 12 s

-50 °C
+250 °C

GES 21-K

Item No. 600074

Core temperature/food probe
-50 .. + 250 °C, potential-free

for canteen kitchens, bakeries, butcher's shops, etc.

V4A tube Ø 3 mm with needle-shaped penetration tip, large white Teflon handle,
stainless steel kink protection, 1 m Teflon cable, mini flat plug

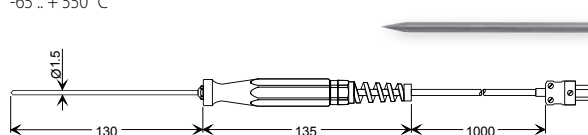
Temperature resistance: teflon handle and teflon cable 250 °C

Response time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

-65 °C
+550 °C

GES 130

Item No. 600514

Insertion sensor for soft plastic media
-65 .. + 550 °CV4A tube with Ø 1.5 mm slim penetration tip, plastic handle, anti-kink screw
connection, 1 m silicone cable, mini flat plugResponse time T_{90} : Water 0.4 m/s approx. 1 s, air 2 m/s approx. 1.5 s

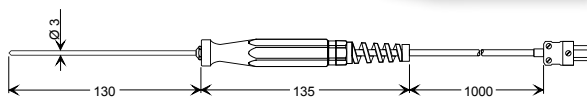
TYPE K MEASURING PROBE (NICR-NI) WITH MINI FLAT PLUG

$\frac{-65^{\circ}\text{C}}{+550^{\circ}\text{C}}$

GES 500

Item No. 600516

Insertion probe for soft plastic media
-65 .. + 550 °C



V4A tube Ø 3 mm with needle-shaped penetration tip, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plug

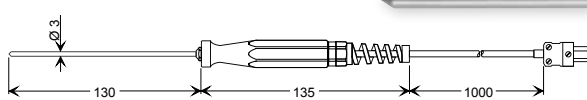
Response time T_{90} : Water 0.4 m/s < 2 s

$\frac{-65^{\circ}\text{C}}{+1000^{\circ}\text{C}}$

GES 900

Item No. 600518

Insertion probe for soft plastic media
-65 .. + 1000 °C



Spring-loaded V4A tube with Ø 3 mm penetration tip, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plug

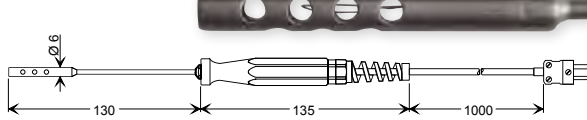
Response time T_{90} : Water 0.4 m/s approx. 5 s

$\frac{-65^{\circ}\text{C}}{+600^{\circ}\text{C}}$

GTL 130

Item No. 602304

Air/gas probe
-65 .. + 600 °C



for room temperature, smoke gases, etc.; Perforated V4A protective tube with thermocouple wires welded behind it, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plug

Response time T_{90} : Air 2 m/s approx. 15 s

$\frac{-50^{\circ}\text{C}}{+250^{\circ}\text{C}}$

GTF 40 K-620

Item No. 610829

Stainless steel T-handle insertion probe
-50..+250 °C, type K, class 1, FL 620 mm

GTF 40 K-1000

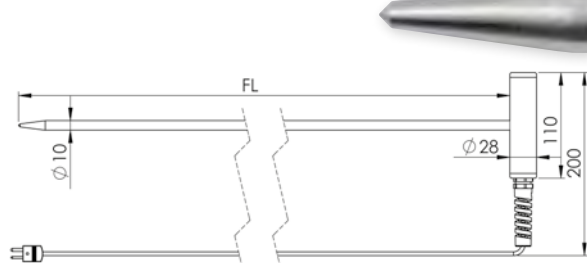
Item No. 475184

Stainless steel T-handle insertion probe
-50..+250 °C, type K, class 1, FL 1000 mm

GTF 40 K-1500

Item No. 475185

Stainless steel T-handle insertion probe
-50..+250 °C, type K, class 1, FL 1500 mm



Stainless steel tube Ø10 mm with insertion tip, robust and ergonomic T-handle made of stainless steel, anti-buckling glanding, 1 m silicone cable, mini flat plug

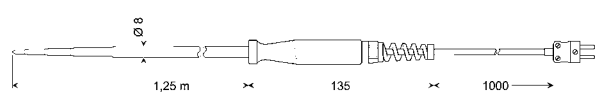
Response time T_{90} : Water 0.4 m/s approx. 6 s

$\frac{-65^{\circ}\text{C}}{+200^{\circ}\text{C}}$

GKF 125

Item No. 600520

Compost sensor/grain sensor
-65 .. + 200 °C



fast in seconds and yet stable

V4A pipe Ø 8 mm at the front stepped down to Ø 3 mm, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plug

Response time T_{90} : Water 0.4 m/s approx. 6 s

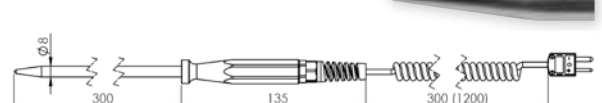
VERY ROBUST

$\frac{-50^{\circ}\text{C}}{+250^{\circ}\text{C}}$

GES200-K

Item No. 478767

Robust insertion probe,
for application in soils, bulk material, asphalt, etc.
-50 ... +250 °C, type K, class 1



Stainless steel pipe Ø 8 mm with penetration tip, plastic handle, anti-buckling glanding, spiral cable (approx. 1.2 m stretched), mini flat plug

Response time T_{90} : Water 0.4 m/s approx. 4 s

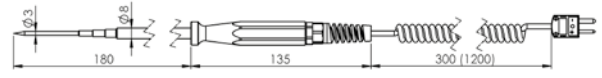
NEW!

$\frac{-65^{\circ}\text{C}}{+550^{\circ}\text{C}}$

GAF 200

Item No. 600522

Asphalt probe or insertion probe
-65 .. + 550 °C



for liquids, soft plastic media, etc.; V4A pipe Ø 8 mm at the front stepped down to Ø 3 mm, plastic handle, anti-buckling glanding, spiral cable (approx. 1.2 m stretched), mini flat plug

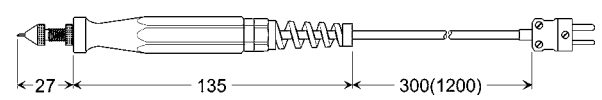
Response time T_{90} : Water 0.4 m/s approx. 6 s

$\frac{-50^{\circ}\text{C}}{+200^{\circ}\text{C}}$

GRF 200

Item No. 604663

Tire sensor
-50 .. + 200 °C



Insertion sensor within seconds with depth stop (needle adjustable from 0.14 mm depth). Suitable for tire temperature and other soft plastic media. Plastic handle, anti-buckling glanding, spiral cable (approx. 1.2 m stretched), mini flat plug

Response time T_{90} : approx. 5 s

$\frac{-65^{\circ}\text{C}}{+150^{\circ}\text{C}}$

GTZ 300

Item No. 603287

Clamp probe, type K
-65 .. + 150 °C



for pipe surface temperature measurements
for pipes up to approx. Ø 25 mm, 1 m silicone cable, mini flat plug

Response time T_{90} : approx. 3 s

TYPE K MEASURING PROBE (NICR-NI) WITH MINI FLAT PLUG

$\frac{-65\text{ }^{\circ}\text{C}}{+300\text{ }^{\circ}\text{C}}$

GTF 300

Item No. 600072

Wire probe for measurements within seconds
Twisted/welded measuring tip**GTF 300 -UV**

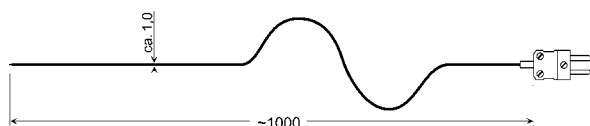
Item No. 600081

Wire probe for measurements within seconds
Measuring tip welded untwisted**GTF 300 -SP**

Item No. 605973

Wire probe for measurements within seconds
Measuring tip with welding bead

-65 .. + 300 °C, permanent insulation up to max. +250 °C

for air, gases, liquids, smallest surfaces
Teflon-insulated twisted $\varnothing$ 0.2 mm thermocouple wires,
welded measuring tip, very flexible, mini flat plug**Response time T_{90} :** Water 0.4 m/s approx. 0.3 s

$\frac{-65\text{ }^{\circ}\text{C}}{+400\text{ }^{\circ}\text{C}}$

GTF 300 GS

Item No. 602554

Wire probe, glass-silk insulated with mini flat plug
for measurements within seconds
twisted measuring tip**GTF 300 GS -UV**

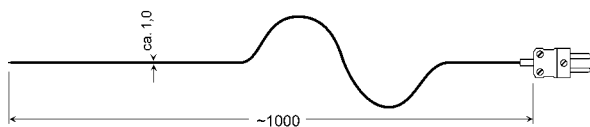
Item No. 607893

Wire probe, glass-silk insulated with mini flat plug
for measurements within seconds
Measuring tip welded untwisted**GTF 300 GS -SP**

Item No. 606208

Wire probe, glass-silk insulated with mini flat plug
for measurements within seconds
Measuring tip with welding bead

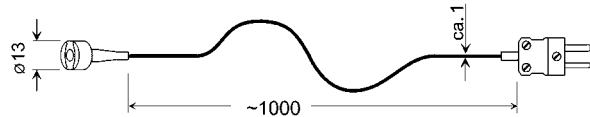
-65 .. + 400 °C

for air, gases, smallest surfaces (not for liquids)
Glass silk insulated $\varnothing$ 0.2 mm thermocouple wires, mini flat plug**Response time T_{90} :** Water 0.4 m/s approx. 0.3 s surcharge for any length per m

$\frac{-65\text{ }^{\circ}\text{C}}{+250\text{ }^{\circ}\text{C}}$

GMF 250

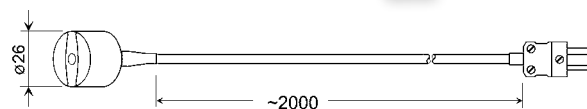
Item No. 600071

Surface magnetic probe
-65 .. + 250 °Cself-adhesive on magnetic materials, spring-loaded copper plate $\varnothing$ 5 mm,
1 m teflon-insulated twisted cable, mini flat plug**Response time T_{90} :** approx. 5 s

$\frac{-65\text{ }^{\circ}\text{C}}{+200\text{ }^{\circ}\text{C}}$

GMF 200

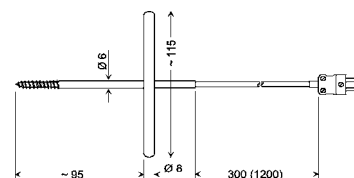
Item No. 601377

Surface magnetic probe
-65 .. + 200 °Cself-adhesive on magnetic materials (higher magnetic holding force),
spring-loaded copper plate $\varnothing$ 5 mm, stable 2 m long silicone cable, mini flat plug**Response time T_{90} :** approx. 5 s

$\frac{-65\text{ }^{\circ}\text{C}}{+200\text{ }^{\circ}\text{C}}$

GGF 200

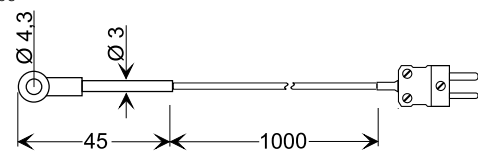
Item No. 603418

Screw-in frozen food probe, type K
-65 .. + 200 °Cfor screw insertion into frozen food, etc., without previous pre-drilling,
V4A tube $\varnothing$ 6 mm with screw tip, spiral cable (approx. 1.2 m stretched),
mini flat plug**Response time T_{90} :** approx. 15 s

$\frac{-50\text{ }^{\circ}\text{C}}{+250\text{ }^{\circ}\text{C}}$

GKF 250

Item No. 600141

Cable lug probe
-50 .. + 250 °CFor tightening with a suitable screw (standard M4), 1 m teflon cable,
mini flat plug**Response time T_{90} :** approx. 10 s

$\frac{-50\text{ }^{\circ}\text{C}}{+500\text{ }^{\circ}\text{C}}$

GLS 500

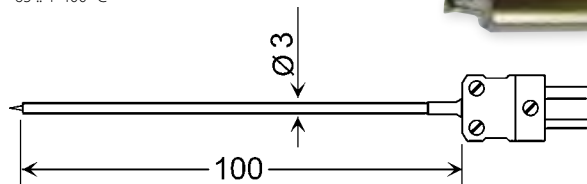
Item No. 602962

Soldering tip probe
-50 .. + 500 °C (briefly)for direct connection to the measuring instrument
2 laser-welded spring coil springs made of NiCr-Ni,
ceramic tube approx. 6 mm $\varnothing$, mini flat plug**Response time T_{90} :** approx. 2 s

$\frac{-65\text{ }^{\circ}\text{C}}{+400\text{ }^{\circ}\text{C}}$

GTO 130 OK

Item No. 600134

Air/gas probe without cable
-65 .. + 400 °CInterchangeable probe without cable, also suitable for surfaces to
a limited extentType K-wires $\varnothing$ 0.5 mm, front welded and ground flat, V4A tube $\varnothing$ 3 mm,
mini flat plug rigidly connected**Response time T_{90} :** approx. 2 s

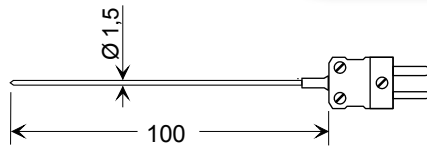
TYPE K MEASURING PROBE (NICR-NI) WITH MINI FLAT PLUG

-65 °C
+400 °C

GTE 130 OK

Item No. 601483

Insertion probe, without cable
-65 .. + 400 °C



Interchangeable probe without cable, for soft plastic media
Spring-loaded V4A tube with Ø 1.5 mm slim insertion tip,
mini flat plug rigidly connected

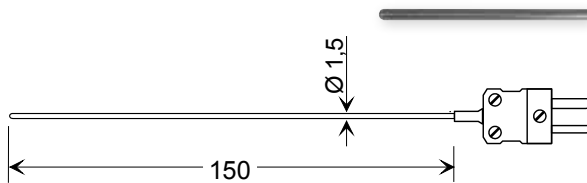
Response time T_{90} : Water 0.4 m/s < 1 s

-200 °C
+1150 °C

GTT-15-150

Item No. 607552

Sheathed thermocouple type K (NiCr-Ni), Immersion probe
-200 .. + 1150 °C



for air, gases, liquids

Sheathed thermocouple with Inconel 600 sheathed tube Ø 1.5 mm, bendable,
mini flat plug rigidly connected

Response time T_{90} : Water 0.4 m/s approx. 3 s

+50 °C
+1550 °C

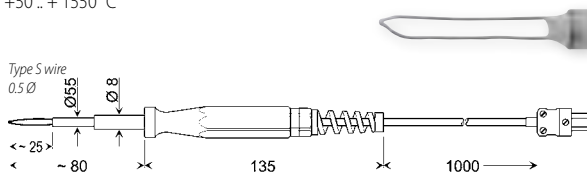
GBF 1550

Item No. 603037

Bunsen burner probe type S
+50 .. + 1550 °C

FOR HIGH
TEMPERATURES

Request daily rate



The tip of the probe may be held directly in the flame. V4A pipe Ø 8 mm,
with stepped ceramic pipe Ø 5.5 mm, plastic handle, silicone cable, mini flat plug

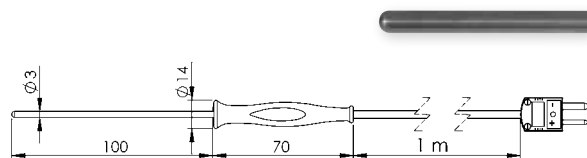
Response time T_{90} : approx. 2 s

-65 °C
+550 °C

GF 1TK-T3

Item No. 609695

compact type K hand probe with silicone handle, Ø 3 mm immersion probe
-65 .. + 550 °C, type K, class 1



Immersion tip Ø 3 mm made of V4A tube, black silicone handle -50 .. + 250 °C,
1 m silicone cable -50 .. + 200 °C, sensor tip and silicone handle IP67,
mini flat plug

Response time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

VARIANT:**GF 1TK-T3-LE**

Item No. 609696

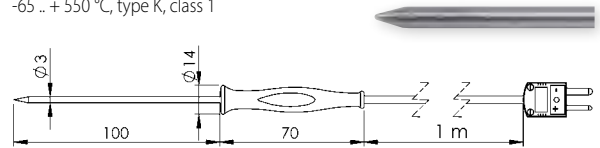
compact type K hand probe with silicone handle with loose ends

-65 °C
+550 °C

GF 1TK-E3

Item No. 609697

compact type K hand probe with silicone handle,
Ø 3 mm penetration probe
-65 .. + 550 °C, type K, class 1



Insertion tip Ø 3 mm made of V4A tube, black silicone handle -50 .. + 250 °C,
1 m silicone cable -50 .. + 200 °C, probe tip and silicone handle IP67,
mini flat plug

Response time T_{90} : Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

VARIANT:**GF 1TK-E3-LE**

Item No. 609698

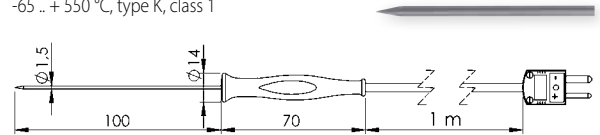
compact type K hand probe with silicone handle with loose ends

-65 °C
+550 °C

GF 1TK-E1.5

Item No. 609699

compact type K hand probe with silicone handle,
Ø 1.5 mm extra thin penetration probe
-65 .. + 550 °C, type K, class 1



Insertion tip Ø 1.5 mm made of V4A tube, black silicone handle -50 .. + 250 °C,
1 m silicone cable -50 .. + 200 °C, probe tip and silicone handle IP67, mini flat plug

Response time T_{90} : Water 0.4 m/s < 1 s, air 2 m/s approx. 15 s

VARIANT:**GF 1TK-E1.5-LE**

Item No. 609700

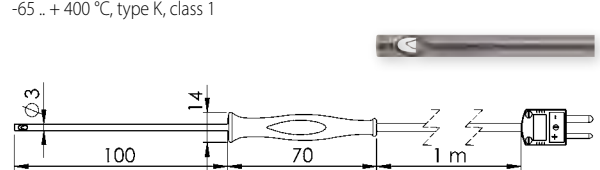
compact type K hand probe with silicone handle with loose ends

-65 °C
+400 °C

GF 1TK-L3

Item No. 611299

compact type K hand probe with silicone handle,
Ø 3 mm air sensor for clean media
-65 .. + 400 °C, type K, class 1



(use GF 1TK-T3 for dirty media), perforated V4A tube Ø 3 mm, measuring element
freely arranged, black silicone handle -50 .. + 250 °C,
1 m silicone cable -50 .. + 200 °C, mini flat plug

Response time T_{90} : Air 2 m/s approx. 15 s

VARIANT:**GF 1TK-L3-LE**

Item No. 611300

compact type K hand probe with silicone handle with loose ends

HUMIDITY / FLOW



GMH 3331 + TFS 0100 E

GMH 3351 + TFS 0100 E

GFTH 95

GFTH 200

GFTB 200

APPLICATION:Air conditioning /
indoor air monitoring

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•

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Meteorology

•

Indoor climate

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•

•

•

•

Air pressure measurement

•

Calculation of:

Dew point Td

•

•

•

•

Wet bulb temperature TSR

•

•

Moisture content x /
absolute moisture d

•

Dew point distance / enthalpy

•

•

EQUIPMENT:

Plug-in probes

•

•

• (Temperature)

Min / Max, Hold, Auto-Off

•

•

•

•

Serial interface

•

•

•

Alarm

•

•

Data logger

•

HUMIDITY / TEMPERATURE AND FLOW METER



NEW!



HIGHLIGHTS:

- Calculation of the dew point, the dew point distance and the enthalpy
- Additional temperature input (type K)

ADDITIONAL FUNCTIONS GMH 3351:

**GMH 3331**

Item No. 477975

Air humidity/temperature and flow meter, device only, without probe

GMH 3351

Item No. 477977

Air humidity/temperature and flow meter with data logger, device only, without probe

GENERAL:

The GMH 33xx devices are universal precision hygro/thermometers with additional thermocouple input. The probes are interchangeable without recalibration because they hold their calibration data in an integrated memory (TFS...). The thermocouple input T2 is optimized to quickly record surface temperatures, e.g. to directly display the dew point distance.

APPLICATION:

- Heating/ventilation air conditioning (HVAC)
- Indoor air, meteorology, laboratory, research and education
- Energy assessment/optimization of buildings
- Research into the causes of structural damage

TECHNICAL SPECIFICATIONS:**Measuring ranges:**

Relative humidity:	0.0..100.0 % RH
Room temperature:	-40.0 .. + 120.0 °C (corresponding to TFS sensor)
Surface temperature:	-80.0 .. + 250.0 °C
Flow velocity:	Sensor on request

Resolution: 0.1 % RH, 0.1 °C / 0.1 °F, 0.01 m/s

Accuracy (device) (± 1 digit) (at nominal temperature = 25 °C)

Relative humidity:	±0.1 %
Room temperature (Pt1000):	± 0.2 °C
Surface temperature (type K):	± 0.5 % oM ± 0.5 °C

Sensors: Air humidity / temperature or flow sensor (on request) can be exchanged without adjustment.

Sensor connection: 6-pole shielded mini-DIN socket

Type K connection: for miniature flat connectors

Display: two 4½-digit LCDs (12.4 mm or 7 mm high) and additional indicators

Working temperature: -25 .. + 50 °C

Relative humidity: 0..95 % RH, not condensing

Storage temperature: -25 .. + 70 °C

Control elements: 6 membrane buttons

Interface: serial interface, via galvanically isolated interface converter GRS 3100 or GRS 3105 or USB 3100 N (accessory) directly to the RS232 or USB interface of a PC.

Power supply: 9 V battery and additional power supply socket for external 10.5..12 V DC voltage supply (suitable power supply: GNG10/3000)

Battery life: approx. 120 h (with TFS0100)

Dew point calculation: based on humidity and temperature

Dew point distance calculation: with surface measurement

Calculation of enthalpy: Thermal content H of the air

Adjustment function for humidity measurement

Type K temperature measurement: Any type K standard sensor (NiCr-Ni) can be connected. Recommendation: GOF 400 VE. Correction value for compensation of heat transfer losses can be activated.

Flow measurements: Two different averaging methods are integrated:
Continuous averaging Continuous display of the mean value.
Averaging at the push of a button (Average Hold) After the start of the measurement, the current instantaneous value is displayed, the average value is displayed when the averaging time has elapsed, the device switches to HOLD.
Adjustable averaging time 1..30 sLogger function (GMH 3351): **manual:** 1000 data records (retrieval of the data via keyboard or interface)
cyclical: 5,300 data records (data retrieval via interface) a adjustable cycle time: 1 s..1 h (max. 64 recording series)
The logger is started and stopped via the keyboard or the interface. A convenient software GSOFT 3050 (accessory) is available for reading-out the logger data.

Analog output (GMH 3351): 0..1 V

Alarm (GMH 3351): Input signal and alarm limits freely selectable. Alerting horn / visual / interface

Housing: Made of impact-resistant ABS, membrane keyboard, transparent panel, integrated pop-up clip

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

Weight: approx. 160 g (including battery)

Scope of delivery: Device, battery, operating instructions

HUMIDITY / TEMPERATURE AND FLOW METER

ACCESSORIES OR SPARE PARTS:

GNG 10/3000

Item No. 600273

Power supply for GMH 3XXX series

USB 3100 N

Item No. 601092

Interface converter GMH3xxx <=> PC, USB

GSOFT 3050

Item No. 601336

Windows software for GMH 3000 and GMH 5000 with logger for setting, read-out data and printing the saved logger data from devices of the GMH3xxx series with logger function

ST-RN

Item No. 601074

Device protective bag with cut-outs for sensor connections

GKK 3500

Item No. 601052

Device case soft cutout e.g. 2 x GMH 3000 or 5000

GKK 3600

Item No. 601062

Case with knob foam for universal use

GFN 11

Item No. 475197

Humidity reference cell including adapter for TFS/GHTU, 11 % RH

GFN 33

Item No. 475198

Humidity reference cell including adapter for TFS/GHTU, 33 % RH

GFN 75

Item No. 475199

Humidity reference cell including adapter for TFS/GHTU, 75 % RH

NEW!

COMPLETE PACKAGES

**GMH 3331-TFS-WPF4**

Item No. 478087

Air humidity / temperature and flow meter set including device, TFS 0100E, ISO calibration certificate ~ 20 / ~ 40 / ~ 60 / ~ 80 % r.h., case GKK 3500

GMH 3351-TFS-WPF4

Item No. 478088

Air humidity / temperature and flow meter with data logger set including device, TFS 0100E, ISO calibration certificate ~ 20 / ~ 40 / ~ 60 / ~ 80 % r.h., case GKK 3500

**GMH 3331-TFS-GOF**

Item No. 478089

Air humidity / temperature and flow meter Set including device, TFS 0100E, GOF 400 VE, case GKK 3500

GMH 3351-TFS-GOF

Item No. 478090

Air humidity / temperature and flow meter with data logger, set TFS 0100E, GOF 400 VE, case GKK 3500

HUMIDITY / TEMPERATURE MEASURING SENSORS

**TFS 0100 E**

Item No. 601488

Air humidity/temperature sensor for GMH 33xx, interchangeable, without loss of accuracy 0.0..100.0 % RH

GENERAL:

Hand probe for universal use
Protective cap with integrated stainless steel gauze filter for good mechanical protection and still optimal air flow for quick measurements in ambient air

TECHNICAL SPECIFICATIONS:**Measuring ranges**

Humidity:	0.0..100.0 % RH (rec. Application range: 10..90 % RH)
Temperature:	-40.0 .. + 120.0 °C (note the working temperature of the electronics)

Accuracy (at nominal temperature = 25 °C)

Humidity:	± 2.5 % RH (in the range 10..90 % RH)
Temperature:	± 0.5 °C

Sensors

Humidity:	capacitive polymer humidity sensor
Temperature:	Pt1000, DIN class AA

Electronics: Circuit board with measured value processing and data memory for sensor data (calibration, etc.) is integrated in the handle.

Working temperature: Handle and electronics: -25 .. + 60 °C Sensor head and probe tube: -40 .. + 100 °C (briefly up to 120 °C)

Relative humidity: 0 .. + 100 % RH

Dimensions: Probe tube: Ø 14 x 119 mm, plastic handle: Ø 19 x 135 mm, approx. 1.2 m PVC connection cable with 6-pole mini-DIN plug

Weight: approx. 90 g

Scope of delivery: Sensor, operating instructions

VARIANT:**TFS 0100 E-POR**

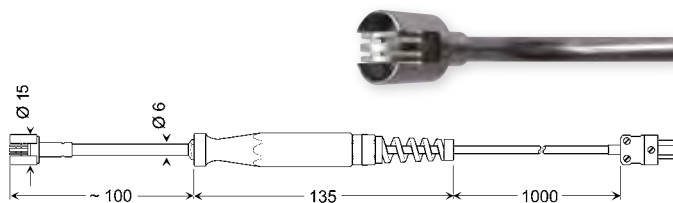
Item No. 603438

Air humidity/temperature sensor for GMH 33xx With plastic pore filter for use in dusty environments and also in powder paints and granulates



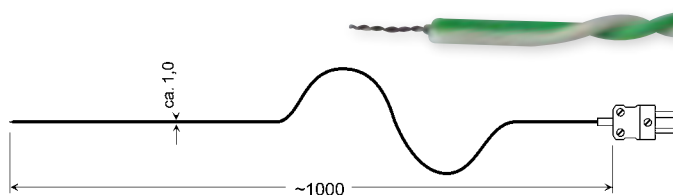
TFS 0100 E-POR with plastic pore filter

SURFACE TEMPERATURE MEASURING SENSORS

**GOF 400VE**

Item No. 600496

Surface probe with thermocouple spring, antibuckling glanding, fast, fast response surface probe for walls, floors, etc.

**GTF 300**

Item No. 600072

Wire probe, Type K (NiCr-Ni), within seconds, for universal applications (including surface measurement)

CLIMATE METER – PRECISION HYGRO-/THERMO-/BAROMETER



ISO

AUTO OFF

HOLD

MIN MAX

0/5-CORR



HIGHLIGHTS:

- Alarm function with integrated buzzer
- PC interface
- Additional display of other measured variables such as dew point temperature and absolute humidity
- precisely records all environmental conditions in laboratories

GFTB 200

Item No. 600161

Hygro-/thermo-/barometer

GENERAL:

With the GFTB 200, measurements of air pressure, humidity, and temperature are possible within a matter of seconds. Thanks to the use of high-precision sensors, the device achieves significantly better accuracies than comparable devices. The dew point temperature monitoring with the GFTB 200 also provides effective protection against possible moisture damages caused by condensation in buildings and thus also against mold infestation. The integrated alarm function also reminds the user acoustically of sensible ventilation, which enables optimal and efficient use of the heating energy. With the additional measured variables such as wet bulb temperature, absolute humidity of the air, the air condition can be represented precisely and clearly.

APPLICATION:

Mobile weather station, indoor rooms, swimming pools, office and production rooms, laboratories, warehouses, museums, galleries, churches, refrigeration and air conditioning technology, construction, building physics and damage assessment, etc.

TECHNICAL SPECIFICATIONS:**Measuring ranges**

Temperature:	-25.0 °C .. + 70.0 °C
Humidity:	0.0..100.0 % RH (recommended range: 11..90 % RH)
Air pressure:	10.0..1100.0 mbar

calculated sizes

Dew point temperature Td:	-40.0 .. + 70.0 °C
Wet bulb temp. Twb:	-27.0 .. + 70.0 °C
Mixing ratio x:	0.0..280.0 g/kg
Absolute humidity:	0.0..200.0 g/m³
Resolution:	0.1 % RH; 0.1 °C and 0.1 °F, respectively; 0.1 mbar

Accuracy (± 1 digit) (at nominal temperature = 25 °C)

Temperature:	± 0.5 % of reading ± 0.1 °C (Pt1000 DIN class AA)
Humidity:	± 2.5 % RH (in the range 11..90 %)
Air pressure:	± 1.5 mbar (750..1100 mbar)

Probe

Temperature:	Pt1000
Humidity:	capacitive polymer humidity sensor
Air pressure:	piezoresistive sensor hybrid

Response time T₉₀:

Display:	4½-digit, approx. 11 mm high LCD display with additional displays
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Control elements:

3 membrane keys for ON/OFF, min/max value hold

Nominal temperature:

25 °C

Working conditions

Electronics: -25 .. + 70 °C; 0.80 % RH (not condensing)

Sensors: -25 .. + 70 °C; 0..100 % RH

Power supply:	9 V battery
Battery life:	approx. 400 days with 1 measurement/60 s (SLOW mode) approx. 180 days with 1 measurement/s (FAST mode)
Interface:	serial interface, can be connected directly to the USB interface of a PC via galvanically isolated interface converter USB 3100 N (accessory).
Configurable display:	Either display of all measured variables alternately (2 or 4 second cycle) or manual switchover. Unnecessary readings can be hidden by the user.
Offset and Scale:	digital zero point/slope adjustment for all sensors
Trend display:	Air pressure falling/rising (with barometer)
Sea level correction:	The barometer display can be converted to sea level (the current altitude above sea level is entered).
Housing:	Housing made of impact-resistant ABS
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D), additionally protruding sensor head on the front side, 35 mm long, 14 mm Ø, total length 141 mm.
Weight:	approx. 130 g including battery
Scope of delivery:	Device, battery, test report, operating instructions

VARIANT:**GFTB 200-KIT**

Item No. 600890

Hygro-/thermo-/barometer with USB interface kit

• USB interface converter USB 3100 N

• Multi-channel software EBS 20M for recording all units

ACCESSORIES OR SPARE PARTS:**GKK 252**

Item No. 601056

Case with knob foam for universal use, 235 x 185 x 48 mm (W x H x D)

ISO-WPF4

Item No. 602543

ISO calibration certificate humidity, for ISO9000ff

ISO-WPD5

Item No. 602514

ISO calibration certificate pressure, for ISO9000ff

GFN 11

Item No. 475197

Humidity reference cell including adapter for TFS/GHTU, 11 % RH

GFN 33

Item No. 475198

Humidity reference cell including adapter for TFS/GHTU, 33 % RH

GFN 75

Item No. 475199

Humidity reference cell including adapter for TFS/GHTU, 75 % RH

HUMIDITY/TEMPERATURE/DEW POINT METER



HIGHLIGHTS:

- Possibility to connect an external Pt1000 temperature sensor
- Humidity/temperature and dew point measurement with one device

GFTH 200

Item No. 600249
Hygro-/thermometer

GENERAL:

Due to the low power consumption and the integrated min / max value memory, the GFTH 200 is also suitable for long-term monitoring of temperature, humidity and dew point.

TECHNICAL SPECIFICATIONS:**Measuring ranges**

Temperature:	-25.0 .. + 70.0 °C; -13.0 .. + 158.0 °F
% RH:	0.0..100.0 % RH (recommended range: 11..90 % RH)
Td: (dew point)	-40.0 .. + 70.0 °C or -40.0 .. + 158.0 °F
Resolution:	0.1 % RH, 0.1 °C or 0.1 °F

Accuracy (± 1 digit) (at nominal temperature = 25 °C)

Temperature (internal):	± 0.5 % of reading ± 0.1 °C
Temperature (external):	0.1 °C (device) + accuracy of the probe
Moisture:	± 2.5 % RH (in the range 11..90 %)

Probe

Temperature:	Pt 1000
Humidity:	capacitive polymer humiditysensor

Response time T₉₀:

10 s

External sensor socket: For connecting an external Pt1000 sensor with a 3.5 mm jack plug, suitable sensors: page 22-25

Display: 3½-digit, 13 mm high LCD display

Control elements: 3 membrane keys for ON / OFF, min / max value query, hold. Side slide switch for selecting the measured variable.

Nominal temperature: 25 °C

Working conditions

Electronics:	-25 .. + 70 °C; 0.80 % RH (not condensing)
Sensors:	-25 .. + 70 °C; 0..100 % RH

Power supply: 9 V battery

Battery life: > 2 years with 1 measurement/60 s approx. 120 days with 1 measurement/s (FAST mode)

Housing: Housing made of impact-resistant ABS

Dimensions: approx. 106 x 67 x 30 mm (H x W x D), additionally protruding sensor head on the front, 35 mm long, 14 mm Ø, total length 141 mm

Weight: approx. 135 g including battery

Scope of delivery: Device, battery, operating instructions

ACCESSORIES OR SPARE PARTS:**GOF 175 Mini**

Item No. 600436
Surface probe for solid surfaces

additional temperature sensors

upon request

GKK 252

Item No. 601056

Case with knob foam for universal use, 235 x 185 x 48 mm (W x H x D)

ISO-WPF4

Item No. 602543

ISO calibration certificate, Factory calibration air humidity, test points humidity: 20.40.60.80 % RH \ n test point temp.: Approx. 23 °C

GFN 11

Item No. 475197

Humidityreference cell including adapter for TFS / GHTU, 11 % RH

GFN 33

Item No. 475198

Humidity reference cell including adapter for TFS / GHTU, 33 % RH

GFN 75

Item No. 475199

Humidity reference cell including adapter for TFS / GHTU, 75 % RH

NEW!

COMPLETE PACKAGE**GFTH 200-WPF4**

Item No. 602678

Complete package with ISO-WPF4 (~ 20 % / ~ 40 % / ~ 60 % / ~ 80 % RH increasing and decreasing) and case GKK 252

HUMIDITY / TEMPERATURE METER

**GFTH 95**

Item No. 600245
Hygro-/thermometer

APPLICATION:

Air humidity and temperature measurements within seconds in IT areas, museums, galleries, churches, offices, production rooms, warehouses, swimming pools, homes, greenhouses, for refrigeration and air conditioning, for building sites / technology, ideal for surveyors or claims appraisers.

TECHNICAL SPECIFICATIONS:**Measuring range**

°C: -20.0 .. +70.0 °C
% RH: 10..95 % RH (recommended range: 30..80 %)

Resolution: 0.1 °C or 0.1 % RH

Accuracy: (± 1 digit) (at nominal temperature = 25 °C)

Temperature: ± 0.5 % of reading ± 0.1 °C
Humidity: ± 3 % RH (in the range 30..80 %)

Probe

Temperature: Pt 1000
Humidity: capacitive polymer humidity sensor

Response time T₉₀: 15 s

Display: 3½-digit, 13 mm high LCD

Control elements: Slide switch for selecting the measurand

Nominal temperature: 25 °C

Working conditions

Electronics: -20 .. +70 °C; 0..80 % RH (not condensing)
Sensors: -20 .. +70 °C; 0..100 % RH

Power supply: 9 V battery

Battery life: approx. 3000 h

Housing: Housing made of impact-resistant ABS

Dimensions: approx. 106 x 67 x 30 mm (H x W x D), with an additional sensor head protruding on the front, 35 mm long, 14 mm Ø, total length 141 mm.

Weight: approx. 135 g including battery

Scope of delivery: Device, battery, operating instructions

ACCESSORIES OR SPARE PARTS:**GB 9 V**

Item No. 601115
Replacement battery 9 V, type IEC 6F22

GKK 252

Item No. 601056
Case with knob foam for universal use, 235 x 185 x 48 mm (W x H x D)

ISO-WPF4

Item No. 602543
ISO calibration certificate for ISO9000ff

GFN 11

Item No. 475197
Humidity reference cell including adapter for TFS / GHTU, 11 % RH

GFN 33

Item No. 475198
Humidity reference cell including adapter for TFS / GHTU, 33 % RH

GFN 75

Item No. 475199
Humidity reference cell including adapter for TFS / GHTU, 75 % RH



	       							
APPLICATION:	GMK 210	GMK 100	GMI 15	GMH 3810	GMH 3831 + suitable electrode	GMH 3851+ suitable electrode	BaleCheck 150	BaleCheck 200
Carpenter, joiner, DIY		•	•	•	•			
Boot & caravan (wood & GRP)	•							
Certified glued laminated timber construction / glued laminated timber production					•	•		
Firewood: piece goods / log				•	•	•		
Wood chips					•	•		
Plaster, screed, concrete, brick, stucco, lime mortar		•	•	•	•	•		
Building damage appraisal / water damage restoration		•	•	•	•	•		
Hay / straw bales / grain (barley, wheat)					•	•	•	•
Capacitive material moisture measurement	•	•	•					
Resistive material moisture measurement				•	•	•	•	•
Temperature measurement		internal / manual		internal / manual		sensor / manual	internal / manual	sensor / manual
EQUIPMENT:								
Sensor / probe	integrated	integrated	integrated	integrated	external	external	external GSF 40	external GSF 40TF
Material characteristics	14	18			494		494	494
User characteristics						4		
General functions	Hold, Auto-Off	Hold, Auto-Off		Hold, Auto-Off, Sort	Hold, Auto-Off, Sort	Hold, Auto-Off, Sort	Hold, Auto-Off, Sort	Hold, Auto-Off, Sort
Serial interface / analog output					• / 0..1 V	• / 0..1 V	• / 0..1 V	• / 0..1 V
Data logger						•		



MATERIAL MOISTURE DETERMINATION WITH PORTABLE INSTRUMENTS

METHOD

- **Resistance measurement method**
(GMR 110, GMH 3810, GMH 3831, GMH 3851)
The electrical resistance of the material is in many cases a measure of the material moisture. The devices measure the (sometimes extremely high) resistance values and convert them into humidity values with the help of integrated characteristic curves. The temperature has to be compensated especially when measuring wood – all GREISINGER devices have an integrated temperature compensation. For connection, nails are usually used, which are hammered into the material to be measured.
- **Capacitive measuring method**
(GMK 210, GMK 100, GMI 15)
The dielectric properties of a measuring object can often be used as a measure of the material moisture. Water has a dielectric constant that is many times higher than that of dry wood or building materials. This makes it possible to make quick and easy statements about the humidity content of the measured material on the basis of the total dielectric constant of the measured object. The measurement is taken by placing the measuring instrument on top. Prerequisite for this: flat surfaces, no metallic components.
- **Relative humidity**
(eg with GMH 3331 + TFS 0100 E)
In addition, the material moisture can be measured indirectly via the relative humidity: In a closed room within a material, a moisture is established that is dependent on the material moisture. With a so-called sorption isotherm or a corresponding table, the material moisture can be calculated from the air humidity.
- **Darr test**
The Darr test is the material moisture reference measurement with the highest accuracy. Here, moisture material is weighed, then dried at elevated temperature until no more weight loss can be determined. The material moisture is then determined from the wet and dry weight.

UNITS

- **Material moisture u (also "atro"):**
Based on the dry mass of material humidity $u [\%] = (\text{mass wet} - \text{mass dry}) / \text{mass dry} * 100$ Is mainly used by joiners, carpenters and the like.
- **Water content w:**
Material humidity related to total wet mass Water content $w [\%] = (\text{mass wet} - \text{mass dry}) / \text{mass wet} * 100$ Is mainly used for the evaluation of gasolines.
- **"Digit" (GMI 15)**
The display value is relative, ie without a physical unit. This allows good comparative statements to be made regarding the humidity content of the same materials. Smaller values mean lower and higher values mean greater humidity.

For further information on this subject, please refer to the operating instructions or at our homepage www.greisinger.de.

WOOD AND BUILDING MOISTURE INDICATOR



HIGHLIGHTS:

- non-destructive measurement
- Simple and fast moisture evaluation

GMI 15

Item No. 600059

Wood and building moisture indicator

GENERAL:

Device for the quick determination of moisture in buildings, on construction sites, etc. With the help of the GMI 15, the moisture of wood can be detected up to a depth of approx. 3 cm or of concrete or screed up to a depth of approx. 4 cm. It even detects moisture behind ceramic tiles or various wall and floor coverings.

The measurement is carried out simply by placing the device on the surface to be measured – no need to pierce the object to be measured! The display is via "Digit" and is relative, i.e. the values can be compared well with known moistures.

APPLICATIONS:

Moisture evaluation for, e.g., real estate agents, property managers, homeowners, architects, surveyors, contractors, etc.

Note:

The GMI 15 is an indicator for a quick overview – however, it does not replace a measuring instrument such as the GMH 3810, GMH 3831, GMH 3851 or GMK 100

TECHNICAL SPECIFICATIONS:

Display:	3½-digit, 13 mm high LCD		
Display areas			
Concrete / screed:	0.5 = dry 6.9 = Damp, normal degree of moisture 10 .. = wet		
Wood / glass fiber reinforced polyester:	0.3	~ 0.12 %	: Dry
	3.6	~ 12..20 %	: Air dry
	6.11	~ 20..30 %	: Wind dry
	11..	~ 30 % ...	: Wet
Power supply:	9 V battery		
Battery life:	approx. 60 h		
Working temperature:	0.50 °C (material not frozen)		
Storage temperature:	-20 .. + 70 °C		
Relative Moisture:	0.80 % r. F. (not condensing)		
Housing:	Housing made of impact-resistant ABS		
Dimensions:	approx. 106 x 67 x 30 mm (H x W x D)		
Weight:	approx. 150 g (ready for use)		
Scope of delivery:	Device, battery, operating instructions		

MATERIAL MOISTURE METER



HIGHLIGHTS:

- Moisture display in percent
- Acoustic/visual moisture assessment
- 18 characteristics for wood/building materials
- 2 selectable measuring depths
- for wood and building moisture

GMK 100

Item No. 600105

Wood and building moisture meter

GENERAL:

The GMK 100 is a capacitive material moisture meter with direct moisture display in percent and is therefore ideal for home and craft. Depending on the application, either the material moisture u (related to the dry mass) or the water content w (related to the total wet mass) can be displayed.

The measurement is made using a measuring plate on the back of the device. The measuring depth can be changed with a switch on the side. With the help of measurements at different measuring depths, a statement can be made as to whether, for example, the material is already drying or whether it is a matter of surface moisture.

APPLICATIONS:

Moisture measurement and evaluation of wood, concrete, screed, plaster, etc.

TECHNICAL SPECIFICATIONS:

Display: 2 displays: characteristic curve and measured value, in % material moisture or in % water content, background lighting

Moisture evaluation:

Visually: Evaluation of the moisture in 6 levels from WET to DRY

Acoustically: Beep

Measuring depths: 10 mm and 25 mm

Characteristic curves: 18 material characteristics for wood (with extensive wood species allocation table) and common building materials; Additional reference characteristic (rEF) for high-resolution relative measurements.

Working temperature: $-5 \dots +50 \text{ }^{\circ}\text{C}$ (material not frozen)

Storage temperature: $-25 \dots +70 \text{ }^{\circ}\text{C}$

Power supply: 9 V battery

Battery life: max. 2000 h without lighting

Electricity lighting: approx. 2.5 mA (auto-off)

Housing: Made of impact-resistant ABS, membrane keyboard, transparent panel

Dimensions: approx. 106 x 67 x 30 mm (H x W x D)

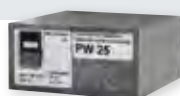
Weight: approx. 145 g (ready for use)

Scope of delivery: Device, battery, test report, operating instructions

ACCESSORIES OR SPARE PARTS:**PW 25**

Item No. 601368

Testing probe to control the device



MATERIAL MOISTURE METER



HIGHLIGHTS:

- Moisture display in percent
- Acoustic/visual moisture assessment
- 14 characteristic curves for wood/GRP
- 2 selectable measuring depths, for caravan & boat
- Search mode for quickly finding moisture pockets, etc.

GMK 210

Item No. 600107

Material moisture meter for caravans and boats

GENERAL:

The GMK 210 is a capacitive material moisture meter with a direct moisture display in percent and is therefore ideal for caravans and mobile homes, boats, etc. Depending on the application, either the material moisture u (based on the dry matter) or the water content w (based on the wet Total mass) are displayed.

The measurement is made using a measuring plate on the back of the device. The measuring depth can be changed with a switch on the side. With the help of measurements at different measuring depths, a statement can be made as to whether, for example, the material is already drying or whether it is a matter of surface moisture.

APPLICATIONS:

Moisture measurement and evaluation of wood and GRP (glass fiber reinforced plastic)

TECHNICAL SPECIFICATIONS:

Display: 2 displays: characteristic curve and measured value, in % material moisture or in % water content, background lighting

Moisture evaluation:

Visually: Evaluation of the moisture in 6 levels from WET to DRY

Acoustically: Beep

Measuring depths: 10 mm and 25 mm

Characteristic curves: 14 material characteristics for wood (with extensive wood species allocation table) and GRP (glass fiber reinforced plastic) insulating materials, e.g. styrofoam; Additional reference characteristic (rEF) for high-resolution relative measurements.

Working temperature: $-5 \dots +50 \text{ }^{\circ}\text{C}$ (material not frozen)

Storage temperature: $-25 \dots +70 \text{ }^{\circ}\text{C}$

Power supply: 9 V battery

Battery life: max. 2000 h without lighting

Electricity lighting: approx. 2.5 mA (auto-off)

Housing: Made of impact-resistant ABS, membrane keyboard, transparent panel

Dimensions: approx. 106 x 67 x 30 mm (H x W x D)

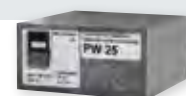
Weight: approx. 145 g (ready for use)

Scope of delivery: Device, battery, test report, operating instructions

ACCESSORIES OR SPARE PARTS:**PW 25**

Item No. 601368

Check cube



PRECISION MATERIAL MOISTURE METER FOR WOOD, BUILDING MATERIALS, STRAW, HAY, PAPER, TEXTILES AND MUCH MORE.



466 WOOD TYPE CHARACTERISTICS
28 BUILDING MATERIAL
CHARACTERISTICS

HIGHLIGHTS:

- serial interface or analog output 0..1 V, freely scalable
- 4 freely programmable user characteristics (GMH 3851)
- including test report

ADDITIONAL FUNCTIONS GMH 3851:



MEETS THE REQUIREMENTS OF EN 14080: 2013 EN 16351:2015
SUITABLE FOR CERTIFIED GLUAM TIMBER CONSTRUCTION AND PRO-
DUCTION OF CROSS LAMINATED TIMBER (MPA TESTED AND LISTED)

GMH 3831

Item No. 609289

Resistive material moisture and temperature meter, without accessories

GMH 3851

Item No. 602009

Resistive material moisture and temperature meter, without accessories,
with data logger and programmable user characteristics

GENERAL:

The GMH 3831 and GMH 3851 offer significant advantages in handling, ease of use, range of functions, and accuracy. The absolute material moisture of 494 materials is displayed directly and can be automatically converted to the water content. The cumbersome use of conversion tables is a thing of the past. In addition to the displayed moisture value, you also receive a moisture evaluation (wet / moist / dry), which informs you about the condition of the measured material.

APPLICATIONS:

Precision measurements of sawn timber, chipboard, veneer, sawdust, wood wool, flax, straw, hay, concrete, bricks, screed, plaster, lime mortar, cement mortar, paper, cardboard, textiles, wood chips, professional firewood moisture measurement, etc.

User:

Architects, appraisers, housing construction companies, painters, carpenters, parquet layers, tilers, wood processing companies, technical wood drying, construction companies, water damage restoration, textile industry, etc.

TECHNICAL SPECIFICATIONS:

Measuring principle

Moisture:	Resistive material moisture measurement according to DIN EN 13183-2: 2002
Temperature:	external: thermocouple, type K (NiCr-Ni) internal: NTC

Characteristic curves: 494 material characteristics

Measuring range

Moisture:	0.0..100.0 % u (material moisture) 0.0..50.0 % w (water content) (depending on the respective material characteristic)
Temperature:	-40.0 .. + 200.0 °C (-40.0 .. + 392.0 °F)

Moisture evaluation: in 9 levels (wet ... dry)

Resolution: 0.1 % or 0.1 °C (0.1 °F)

Device accuracy: (at nominal temperature)

Wood:	± 0.2 % material moisture (deviation from the respective characteristic in the range 6..30 %)
Construction:	± 0.2 % material moisture (deviation from the respective characteristic)
Temperature:	(external) ± 0.5 % of full scale MW ± 0.3 °C

Temperature compensation: automatically or manually

Sensor connection

Moisture:	BNC
Temperature:	Thermal stress-free NiCr-Ni socket
Perm. Working temperature:	-5 .. + 50 °C (material not frozen)

Display:	two 4-digit LCDs (12.4 mm or 7 mm high) and additional indication arrows
Output:	3-pole jack socket Ø 3.5 mm, either serial interface or analog output
Serial interface:	Can be connected directly to the RS232 or USB interface of a PC via the galvanically isolated interface converter GRS 3100, GRS 3105 or USB 3100 N (accessory).
Analog output:	0..1 V, freely scalable
Average:	from 3 measurements for professional and convenient fire-wood moisture measurement
Power supply:	9 V battery, additional power supply socket for external 10.5..12 V DC voltage supply (suitable power supply: GNG10/3000).
Battery life:	approx. 120 h
Housing:	Made of impact-resistant ABS, membrane keyboard, transparent panel, integrated pop-up clip
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	155 g
Scope of delivery:	Device, battery, test report, operating instructions

FURTHER FUNCTIONS WITH GMH 3851:

User characteristics: 4, freely programmable

Support points per characteristic: 20th

With the free GMHKonfig software, the support points can be conveniently entered into the device using a computer. (Accessories required for this: interface converter)

Sort limiting of the material selection up to 8 favorites

Data logger:

This device is essential for recording or documenting material behavior as part of QM systems or similar. Using the integrated data memory, up to 10,000 measured values can be recorded and processed. In addition, the customer can save 4 individually determined characteristic curves (e.g. by means of a kiln test or CM method) directly in the device. The previous use of conversion tables is therefore no longer necessary.

Logger functions:

- manual: 99 data records (retrieval of data via keyboard or interface)
 - cyclical: 10,000 data records (data retrieval via interface) adjustable cycle time: 30 s..1 h
- The logger is started and stopped via the keyboard or the interface. An easy-to-use software GSOFT 3050 (see accessories) is available for reading-out the logger data.

ACCESSORIES OR SPARE PARTS:

GSOFT 3050

Item No. 601336

Windows software for GMH 3000 and GMH 5000 with logger

GRS 3100

Item No. 601097

Interface converter GMH3xxx <=> PC, RS232

USB 3100 N

Item No. 601092

Interface converter GMH3xxx <=> PC, USB

see next page for further special accessories.

OPTIONAL ACCESSORIES

1

**GMK 38***Item No. 601261*

Measuring cable, BNC to 2x banana plugs

2

**GHE 91 ****Item No. 601263*

Reciprocating Piston Electrode

3

**GSE 91****Item No. 601266*

Impact electrode, for driving in Ø 2.5 mm steel poles

4

**GEG 91***Item No. 601268*

Handle, suitable for GSE91

5

**GSG 91****Item No. 601270*

Impact electrode with handle, for driving in Ø 2.5 mm steel poles or for GMS 300/91

6

**GST 91***Item No. 601273*

Steel pins 9 steel poles (3 each, 12, 16 and 23 mm long) in plastic box, Ø 2.5 mm

**GST 91/40***Item No. 601275*

Steel pins 10 steel poles, 40 mm long, Ø 2.5 mm, in a plastic box

7

**GST 45i***Item No. 601277*

Steel pins 2 pieces of teflon-insulated steel poles, 45 mm long, Ø 2.5 mm

GST 60i*Item No. 601279*

Steel pins, ditto, 60 mm long

8

**GOK 91***Item No. 601287*

Surface measuring caps (pair, for screwing onto GSG 91 / GSE 91)

9

**GMS 300/91***Item No. 601289*

Measuring rods (pair, for screwing onto GSG 91 / GSE 91), for wood chips, wood wool, paper, cardboard, etc.

10

**GST 15B ****Item No. 601281*

2 steel pins with hole, 15 mm long, Ø 3.8 mm (for direct connection of the GMK 38 measuring cable)

GST 25B *

Item No. 601283

Steel poles, ditto, Ø 3.8 x 25 mm

GST 40B *

Item No. 601285

Steel pins, ditto, Ø 3.8 x 40 mm

11

**GBSK 91 ****Item No. 601293*

Wire brush probe for material moisture measurement

12

**GBSL 91 ****Item No. 601294*

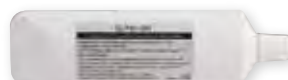
Wire brush probe for material moisture measurement

13

**GEF 38 ****Item No. 601296*

Flat electrode for material moisture measurement, for screed, paper, etc.

14

**GLP 91***Item No. 601299*

Conductive paste for material moisture measurement, for surface measurement and depth measurement in walls, screed etc. with brush probes

15

**GSF 50 (110 cm)***Item No. 601305***GSF 50K (43 cm)***Item No. 601308*

Material moisture insertion probe, (without temperature sensor) for measurements at measuring depths of up to 40 cm or 107 cm, incl. 1 m connection cable.

Suitable for: wood chips, wood wool, wood shavings, straw, hay, grain, sawdust, etc.

16

**GSF 50TF (110 cm)***Item No. 601312***GSF 50TFK (43 cm)***Item No. 601313*

Material moisture insertion probe, with temperature sensor for measurement at measuring depths of up to 40 cm or 107 cm, incl. 1 m connection cable

Suitable for: wood chips, wood wool, wood shavings, straw, hay, grain, sawdust, etc.

17

**GSF 40 (67 cm)***Item No. 601316*

Material moisture insertion probe, (without temperature sensor) for measurement in pressed bales at a depth of 60 cm, incl. 1 m connection cable.

Suitable for: pressed hay and straw bales, grain

* Measuring cable GMK 38 required for GHE 91, GSE 91, GSG 91, GST 15B/25B/40B, GBSK 91, GBSL 91, GEF 38, GSP 91, GMZ 38

RESISTIVE MATERIAL MOISTURE METER



- HIGHLIGHTS:
- 494 material characteristics
 - including calibration protocol

WOOD, PLASTER, BUILDING MOISTURE MEASUREMENT

GMH 3810

Item No. 600350
Resistive material moisture meter with integrated probes

GENERAL:

Thanks to the integrated, interchangeable measuring probes, a large number of measurements can be carried out without additional accessories. For measuring hard materials, we recommend the components listed under accessories.

TECHNICAL SPECIFICATIONS:

Measuring principle	
Moisture:	Resistive material moisture measurement according to DIN EN 13183-2: 2002
Internal temperature:	NTC
Characteristic curves:	494 material characteristics
Measuring range	
Moisture:	0.0..100.0 % material moisture 0.0..50.0 % water content (depending on the respective material characteristic)
Temperature:	-25.0 .. + 50.0 °C (-13.0 .. + 122.0 °F)
Moisture evaluation:	in 9 levels (wet ... dry)
Resolution:	0.1 % or 0.1 °C (0.1 °F)
Device accuracy (at nominal temperature = 25 °C)	
Wood:	± 0.2 % material moisture (deviation from the respective characteristic in the range 6..30 %)
Building material:	± 0.2 % material moisture (deviation from the respective characteristic)
Temperature compensation:	automatically or manually
Measuring probe:	2 pin holders M6 x 0.75 with 19 mm measuring pins (12 mm usable length)
Permissible working temperature:	-5 .. + 50 °C (material not frozen)
Storage temperature:	-25 .. + 70 °C
Relative moisture:	0..95 % RH (not condensing)
Display:	two 4-digit LCD
Sort:	The choice of materials is limited to up to 8 favorites
Power supply:	9 V battery
Battery life:	approx. 120 h
Housing	Made of impact-resistant ABS, membrane keyboard, transparent panel, integrated pop-up clip
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	175 g
Scope of delivery:	Device, battery, test report, operating instructions

ACCESSORIES OR SPARE PARTS:

GST 3810
Item No. 601392
Replacement measuring needles for GMH 3810/GMR 110

GMK 3810
Item No. 603070
Measuring cable, 2 x banana plugs and 2 x connection sockets, 1 m. Enables the connection of accessories (except GSF38 ..., GTF38 and GES38) to a GMH 3810 or GMR 110.

HAY AND STRAW MOISTURE METER



HIGHLIGHTS:

- robust 60 cm V4A measuring probe
- Characteristic curves for hay, straw, grain

BaleCheck 150

Item No. 481390

Hay and straw moisture meter, probe length: 620 mm

GENERAL:

The BaleCheck 150 is a professional measuring instrument for determining moisture in pressed hay and straw bales. Especially in agriculture, livestock farming or horse keeping can thus be the storability and quality of hay, straw as well determine the grain estate. The slim and robust measuring probe should be used to measure at different depths. With a maximum moisture display <16.0 % u the material can be stored or further used without concern.

In contrast to the sister device BaleCheck 200, the device temperature is used for compensation and not measured with an external sensor.

APPLICATIONS:

- Fire prevention
- Agriculture
- Hay and straw processing / storage / trading
- Livestock farming, horse keeping

TECHNICAL SPECIFICATIONS:

Measuring ranges:	0.0..100.0 % u (material moisture) -40.0...+ 200.0 °C (temperature sensor not included) or device temperature -25...+ 50 °C
Resolution:	0.1 %
Characteristic curves:	Hay, straw, barley, wheat, (in addition, 490 other wood and building material characteristics)
Moisture evaluation:	9-step bar display (wet ... dry)
Temperature compensation:	automatically (device temperature) or manually
Display:	two 4-digit LCD displays (12.4 mm and 7 mm)
Working conditions:	-25 .. + 50 °C (device), 0 .. + 100 °C (lance), 0.95 % RH (non-condensing)
Measuring lance:	Stainless steel, 600 mm x Ø 10 mm, 1 m connection cable with BNC plug
Features:	Interface, analog output (0.1 V), power supply connection (10.5..12 V DC)
Function "Sort":	The choice of materials is limited to up to 8 favorites
Power supply:	9 V battery
Battery life:	approx. 120 h
Housing:	impact-resistant ABS
Dimensions:	142 x 71 x 26 mm (H x W x D)
Scope of delivery:	Device, measuring probe GSF 40, protective bag, battery, test report, operating instructions

VARIANTS:

BaleCheck 150-1000

Item No. 482747

Hay and straw moisture meter with a probe length of 1000 mm

HAY AND STRAW MOISTURE METER
INCLUDING TEMPERATURE MEASUREMENT

HIGHLIGHTS:

- integrated fast temperature measurement
- robust 60 cm V4A measuring probe
- Characteristic curves for hay, straw, grain

BaleCheck 200

Item No. 600354

Hay and straw moisture meter with integrated temperature measurement, probe length: 620 mm

GENERAL:

The BaleCheck 200 is a professional measuring instrument for determining the moisture and temperature in pressed hay and straw bales. Especially in agriculture, livestock farming, or horse keeping, the storability and quality of hay, straw and grain can be determined very well. The slim and robust measuring probe should be used to measure at different depths. If the maximum moisture displayed is <16.0 % u, the material can be stored or reused without hesitation. The additional temperature measurement is used for both automatic temperature compensation and fire prevention (proof of due diligence).

APPLICATIONS:

- Fire prevention
- Agriculture
- Hay and straw processing / storage / trading
- Livestock farming, horse keeping

TECHNICAL SPECIFICATIONS:

Measuring ranges:	0.0..100.0 % u (material moisture) 0.0..50.0 % w (water content) -40.0 .. + 200.0 °C (device)
Resolution:	0.1 %, 0.1 °C
Characteristic curves:	Hay, straw, barley, wheat, (in addition 490 further wood and building material characteristics)
Moisture evaluation:	9-step bar display (wet ... dry)
Temperature compensation:	automatically or manually
Display:	two 4-digit LCD displays (12.4 mm and 7 mm)
Working conditions:	-25 .. + 50 °C (device), 0 .. + 100 °C (lance), 0.95 % RH (non-condensing)
Measuring lance:	Stainless steel, 600 mm x Ø 10 mm, 1 m connection cable with BNC / type K plug, temperature 0 .. + 100 °C
Features:	Interface, analog output (0.1 V), power supply connection (10.5..12 V DC)
Function "Sort":	The choice of materials is limited to up to 8 favorites
Power supply:	9 V battery
Battery life:	approx. 120 h
Housing:	impact-resistant ABS
Dimensions:	142 x 71 x 26 mm (H x W x D)
Scope of delivery:	Device, measuring probe GSF 40 TF with temperature sensor, protective bag, battery, test report, operating instructions

VARIANTS:

BaleCheck 200 – 1000

Item No. 607147

Hay and straw moisture meter with probe length 1000 mm

BaleCheck 200 – 1500

Item No. 607146

Hay and straw moisture meter with sensor length 1500 mm

WATER ANALYSIS



	GMH 5430	GMH 5450	GMH 3431	GMH 3451	G 1409	G 1410	G 1420
APPLICATION:							
Waters, aquaristics, fish farming (freshwater)	•	•	•	•	•	•	•
Sea water	•	•	•	•		•	
Drinking water, process monitoring, soil measurement	•	•	•	•		•	
Hydroponics, indoor farming, hydroponics	•	•	•	•	•	•	
Cleaning processes	•	•	•	•		•	•
Ultrapure water	•	•					•
Food production and monitoring	•	•	•	•		•	
Quality assurance	•	•	•	•		•	•
Waterproof	•	•				•	•
Interchangeable electrodes	•	•					
EQUIPMENT:							
Measuring range	•	•	•	•	•	•	•
Conductivity / temperature	•	•	•	•	•	•	•
spec. Resistance	•	•	•	•	•	•	•
TDS	•	•	•	•	•	•	•
Salinity	•	•	•	•	•	•	•
EC / CF					•		
Sensor connection	7-pole bayonet	7-pole bayonet	firmly	firmly	firmly	firmly	firmly
Electrode	2- or 4-pole	2- or 4-pole	2-pole graphite	4-pole graphite	4-pole titanium	2-pole graphite	2-pole stainless steel
General functions: Min / Max, Hold, Auto-Off lighting	•	•	•	•	•	•	•
Calibration memory	•	•		•	•	•	•
Interface	•	•	•	•			
Alarm / data logger		•		•			



													
	GMH 5530	GMH 5550	GMH 3511	GMH 3531	GMH 3551	G 1500	G 1501	GMH 5630	GMH 5650	GMH 3611	GMH 3651	G 1610	G 7500
APPLICATION:													
Waters, aquaristics, fish farming (fresh and marine water)	•	•	•	•	•	•	•	•	•	•	•	•	•
Drinking water, process monitoring, soil measurement	•	•	•	•	•	•	•	•	•	•	•	•	•
Food production and monitoring	•	•	•	•	•	•	•						•
Precision measurement	•	•	•	•	•	•	•	•	•				•
Laboratory (GLP)	•	•		•	•				•		•		•
Quality assurance	•	•	•	•	•	•	•		•		•		•
Waterproof	•	•				•	•	•	•			•	•
including air pressure measurement								•	•	•	•		•
EQUIPMENT:													
Measuring ranges pH, mV mg/l, % O ₂ temperature	• /rH •		• •	• /rH •		pH •	• •	• /ppm, hPa •		• /ppm, hPa •		•	• /ppm, hPa
Sensor connections	BNC socket		BNC socket			BNC socket	BNC socket 2 x banana	7-pole bayonet		6-pole Mini DIN socket		Electrode firmly connect- ed	BNC-socket 2 x banana, 7-pole Baj.
Temperature	2 x banana		2 x banana			-							
Temperature compensation	automatic and manual (Pt1000, NTC 10k)		automatic and manual (Pt1000)			manually	automatic	automatic		automatic		automatic	automatic
General functions: Min / Max, Hold, Auto-Off adjustable calibration intervals	• •		•			•	•	• •		• •		•	• •
Interface	•	•	•	•	•			•	•	•	•		USB 2.0
Analog output		•	•	•	•			•	•		•		
Calibration history		•			•						•		•
Alarm / data logger		•			•		•	•	•		•		•

WATERPROOF HANDHELD METER FOR MEASURING CONDUCTIVITY



WATERPROOF – DEVICE
AND PLUG CONNECTIONS



HIGHLIGHTS:

- Conductivity, resistance, salinity, TDS
- Large double backlit display
- Automatic cell correction with reference solutions
- Incl. test protocol

ADDITIONAL FUNCTIONS GMH 5450:



GMH 5430

Item No. 600035

Waterproof handheld conductivity meter,
device only (without sensor)

GMH 5450

Item No. 600037

Waterproof handheld conductivity meter with logger,
device only (without sensor)

APPLICATION:

Mobile use for

- Industry and craft
- Measurements in waters and aquaristics, fish farming
- Drinking water, process monitoring, soil measurement
- Food production and monitoring
- Quality assurance

Additional applications in laboratories:

- Medicine, pharmacy, chemistry

TECHNICAL SPECIFICATIONS:

Measuring ranges

Number of measuring ranges:	5
smallest measuring range:	0.000..5.000 $\mu\text{S}/\text{cm}$ * or 0.0..500.0 $\mu\text{S}/\text{cm}$ **
largest measuring range:	0..5000 $\mu\text{S}/\text{cm}$ * or 0..1000 mS/cm **
Spec. Resistance:	0.005..500.0 $\text{k}\Omega\text{cm}$ * cm (depending on cell constants)
TDS:	0..5000 mg/l (depending on cell constants)
Salinity:	0.0..70.0 (g salt / kg water)
Temperature:	-5.0 .. + 100.0 °C, Pt1000 or NTC 10 k
Supported cell constants:	4,000..15,000 / cm - 0,4000..1,5000 / cm - 0,04000..0,15000 / cm - 0,004000..0,015000 / cm

Accuracy (at nominal temperature 25 °C)

Conductivity:	± 0.5 % of reading ± 0.1 % FS (depending on the electrode)
Temperature:	± 0.2 K

connections

Conductivity, temperature:	1 x 7-pole bayonet connection for connecting different measuring cells, supported temperature sensors Pt1000 or NTC 10 k
Interface/ext. care:	4-pole bayonet connection for serial interface and supply (with accessories: USB adapter USB 5100)
Analog output: (only GMH 5450)	0..1 V, freely scalable, connection via 4-pole bayonet socket, resolution 13 bit, accuracy 0.05 % at nominal temperature
Data logger: (only GMH 5450)	Cyclic: 10,000 data records, cycle selectable: 1 s..60 min Single: 1000 data records (with measuring point input, 40 adjustable measuring point texts or measuring point numbers)
Display:	4 ½ digits 7-segment, illuminated (white)
Working conditions:	Device: -25 .. + 50 °C, 0..95 % r. F. (not condensing)
Storage temperature:	-25 .. + 70 °C
Backlit:	Light duration adjustable (off, 5 s..2 min)

Power supply:	2 x AAA batteries, power consumption: 6.25 mA
Battery life:	approx. 160 h (without lighting)
Protection class:	IP65 / IP67
Housing:	impact-resistant ABS, with stand-up / hanging bracket
Dimensions:	160 x 86 x 37 mm (H x W x D) including silicone protective cover
Weight:	approx. 250 g including battery and protective cover
Scope of delivery:	Device, K 50 BL, battery, test report, operating instructions

Depending on the cell constant of the LF electrode used

* Cell constant 0.01 / cm ** cell constant 0.1..1.2 / cm (standard)

ADDITIONAL FUNCTIONS:

Cell correction Cell constant manually or automatically using reference solutions.

Automatic temperature compensation The conductivity depends strongly on temperature, so that it only applies to the corresponding temperature. The device therefore offers the option of compensating the conductivity to a reference temperature (adjustable to 20 °C or 25 °C). Supported Compensation Types:

nLF:	non-linear function of natural water according to DIN EN27888 (ISO 7888) (reference temperature 25 °C)
Lin:	adjustable linear compensation
off:	no compensation

Salinity determination

Salinity is the sum of the concentration of all dissolved salts in sea water. The information is given in g / kg (corresponds to PSU = Practical Salinity Unit).

TDS determination (total dissolved solids)

The total dissolved solids describes the mass concentration of the dissolved substances in a liquid. The information is given in mg / l.

GLP (Good Laboratory Practice)

adjustable calibration intervals GMH 5450: Calibration memory for the last 16 calibrations

ACCESSORIES AND SPARE PARTS:

GKL 10 ... Conductivity control solutions

EBS 20M

Item No. 601158

Measurement data acquisition software for EASYBus & GMH

GSOFT 3050

Item No. 601336

Windows software for GMH 3000 and GMH 5000 with logger

USB 5100

Item No. 601095

Interface converter GMH 5xxx <=> PC, Galvanic isolation

GNG 5/5000

Item No. 602287

Plug in power supply for GMH 5XXX series

GKK 5001

Item No. 611606

Case for GMH 5000 / G7500 series water analysis / universal, 395 x 295 x 106 mm (W x H x D)

CONDUCTIVITY MEASURING CELLS

FOR PURE AND
ULTRAPURE WATER**LF 200 RW**

Item No. 602841

Conductivity measuring cell, 7-pole, waterproof bayonet connection, for GMH 5400 series

APPLICATION:

Pure and ultrapure water

TECHNICAL SPECIFICATIONS:Measuring range: 0..200 $\mu\text{S}/\text{cm}$

Temperature range: -5 .. + 100 °C

Cell constant *: approx. 0.1

Temperature measurement: NTC 10 k

Shaft: Stainless steel, $\varnothing$ 12 mm x 75 mm

Electrode: 2-pole stainless steel / PEEK

Cable length: 1 m

Scope of delivery: Measuring cell, operating instructions

FOR ALCOHOL, GASOLINE, DIESEL

**LF 210**

Item No. 602969

Conductivity measuring cell, 7-pole, waterproof bayonet connection, for GMH 5400 series

APPLICATION:

Alcohol, gasoline, diesel

TECHNICAL SPECIFICATIONS:Measuring range: 0..1000 $\mu\text{S}/\text{cm}$

Temperature range: -5 .. + 100 °C

Cell constant *: approx. 1

Temperature measurement: NTC 10 k

Shaft: Glass, $\varnothing$ 12 mm x 120 mm

Electrode: 2-pole glass / platinum

Cable length: 1 m

Scope of delivery: Measuring cell, operating instructions

FOR UNIVERSAL USE

**LF 400**

Item No. 602968

Conductivity measuring cell, 7-pole, waterproof bayonet connection, for GMH 5400 / G 7500 series

APPLICATION:

Universal use, economy class

TECHNICAL SPECIFICATIONS:

Measuring range: 0..200 mS/cm

Temperature range: 0..100 °C

Cell constant *: approx. 0.55

Temperature measurement: NTC 10 k

Shaft: Epoxy, $\varnothing$ 12 mm x 120 mm

Electrode: 4-pole graphite

Cable length: 2 m

Scope of delivery: Measuring cell, operating instructions

HIGH ACCURACY
ROBUST AND PRECISE**LF 425**

Item No. 602840

Conductivity measuring cell, 7-pole, waterproof bayonet connection, for GMH 5400 / G 7500 series

APPLICATION:

High accuracy, robust and precise for the highest demands, high end class

TECHNICAL SPECIFICATIONS:

Measuring range: 0..1000 mS/cm

Temperature range: -10 .. + 80 °C
(90 °C – maximum 5 min.)

Cell constant *: approx. 0.42

Temperature measurement: Pt 1000

Shaft: PVC-C, $\varnothing$ 16 mm x 145 mm

Electrode: 4-pole graphite

Cable length: 1 m

Scope of delivery: Measuring cell, operating instructions

HD-22-3 with sensor

**ACCESSORIES OR SPARE PARTS:****HD-22-3**

Item No. 700040

Freely positionable laboratory sensor holding arm for sensors $\varnothing$ 12 mm**GKL 100**

Item No. 601396

Conductivity control solution (100 ml bottle with 1413 $\mu\text{S}/\text{cm}$, according to DIN EN 27888)**GKL 101**

Item No. 601398

Conductivity control solution control solution 84 $\mu\text{S}/\text{cm}$, 250 ml bottle**GKL 102**

Item No. 601400

Conductivity control solution Control solution 50 mS/cm, 100 ml bottle

GWZ-01

Item No. 603499

Flow-through chamber for sensors with $\varnothing$ 12 mm, tube connection $\varnothing$ 6 mm

* Note: The exact cell constant (shown in the calibration protocol and marking on the electrode) must be entered on the device and the device is then ready for use.

CONDUCTIVITY MEASURING SET



GMH 5450-SET

PORTABLE INSTRUMENTS INCLUDING MEASURING CELLS



e.g. GMH 5450

LF 425

LF 400

GMH 5430-SET

Item No. 611611
Waterproof handheld conductivity meter, measuring set

GMH 5450-SET

Item No. 611246
Waterproof handheld conductivity meter with logger, measuring set

GENERAL:

With our ready-to-use conductivity measuring set you not only have everything you need for your work in a practical case – with the set you save 10 % compared to the individual components.

APPLICATIONS:

No matter what industry you are in, our comprehensive SET-GMH 5450 will never let you down and, thanks to the practical case, is always tidy

TECHNICAL SPECIFICATIONS:

Measuring ranges device

Number of measuring ranges:	5
smallest measuring range:	0.000..5.000 $\mu\text{S}/\text{cm}$ or 0.0..500.0 $\mu\text{S}/\text{cm}$
largest measuring range:	0..5000 $\mu\text{S}/\text{cm}$ or 0..1000 mS/cm
Spec. Resistance:	0.005..500.0 $\text{k}\Omega\text{cm}$ (depending on cell constants)
TDS:	0..5000 mg/l (depending on cell constants)
Salinity:	0.0..70.0 (g salt / kg water)
Temperature:	-5.0 .. + 100.0 $^{\circ}\text{C}$, Pt1000 or NTC 10 k

Electrode LF 425

Measuring range:	0..1000 mS/cm
Temperature range:	-10 .. + 80 $^{\circ}\text{C}$ (90 $^{\circ}\text{C}$ – maximum 5 min.)
Cell constant:	approx. 0.42
Temperature measurement:	Pt 1000
Shaft:	PVC-C, $\varnothing$ 16 mm x 145 mm
Electrode:	4-pole graphite

Application:	High accuracy, robust and precise for the highest demands, high end class
Cable length:	1 m
Dimensions:	450 x 360 x 123 mm (case)
Weight:	approx. 1800 g
Scope of delivery:	Device with silicone protective cover, measuring cell LF 425, case GKK 5001, battery, test report, operating instructions SET-GMH 5450 only: software, interface converter

ACCESSORIES AND SPARE PARTS:

GMH 5430

Item No. 600035
Waterproof handheld conductivity meter, device only (without sensor)

GMH 5450

Item No. 600037
Waterproof handheld conductivity meter with logger, device only (without sensor)

LF 425

Item No. 602840
Conductivity measuring cell, 7-pole, waterproof bayonet connection, for GMH 5400 / G 7500 series

GSOFT 3050

Item No. 601336
Windows software for GMH 3000 and GMH 5000 with logger

USB 5100

Item No. 601095
Interface converter GMH 5xxx <=> PC, galvanic isolation

GKK 3700

Item No. 601064
Case with knob foam for universal use 450 x 360 x 123 mm (W x H x D)

GKK 5001

Item No. 611606
Case for GMH 5000 / G7500 series water analysis / universal, 395 x 295 x 106 mm (W x H x D)

GMH 5430-400

Item No. 602752
Conductivity meter including measuring cell, precisely adjusted

GMH 5450-400

Item No. 602754
Conductivity meter including measuring cell, precisely adjusted, with data logger

GMH 5430-425

Item No. 602753
Conductivity meter including measuring cell, precisely adjusted

GMH 5450-425

Item No. 602755
Conductivity meter including measuring cell, precisely adjusted, with data logger

GENERAL:

This set is already pre-adjusted and can be used immediately. No case included.

ACCESSORIES OR SPARE PARTS:

GKK 5001

Item No. 611606
Case for GMH 5000 / G7500 series water analysis / universal, 395 x 295 x 106 mm (W x H x D)

CONDUCTIVITY METER



2-pole measuring cell
GMH 3431



4-pole Measuring cell
GMH 3451

HIGHLIGHTS:

- Display of resistance, salinity or TDS (total dissolved solids)
- Complies with the requirements of the Drinking Water Ordinance (TrinkwV 2001) and DIN EN 27888

ADDITIONAL FUNCTIONS OF GMH 3451:

**GMH 3431**

Item No. 601917

Conductivity meter with 2-pole measuring cell

GMH 3451

Item No. 601919

Conductivity meter with 4-pole measuring cell and data logger

GENERAL:

Inexpensive set with 2-pole measuring cell for drinking water etc., 4-pole carefree package also for permanent measurements with high conductivity levels (e.g. sea water)

TECHNICAL SPECIFICATIONS:**Measuring ranges**

Conductivity:	0.0..200.0 µS/cm 0..2000 µS/cm 0.00..20.00 mS/cm 0.0..200.0 mS/cm 0..400 mS/cm (only GMH 3451) manually adjustable or AutoRange
Temperature:	-5.0 .. +100.0 °C
Spec. Resistance:	0.005..100.0 kOhm * cm
Salinity:	0.0..70.0 g/kg water
TDS:	0..1999 mg/l

Accuracy (± 1 digit) (at nominal temperature = 25 °C)

Conductivity:	± 0.5 % of meas. Mean ± 0.3 % FS or ± 2 µS/cm
Temperature:	± 0.2 % of meas. MW ± 0.3 K

Cell correction: adjustable 0.800..1.200 cm⁻¹ manually or automatically via selectable reference solutions

Temperature compensation: automatically or can be switched off with the help of the temperature sensor integrated in the electrode

Compensation type: nLF: Nonlinear function of natural waters according to DIN EN27888 (ISO 7888) (Reference temperature adjustable: 20 °C or 25 °C)
Lin: Linear compensation of 0.3..3.0 %/K (Reference temperature adjustable: 20 °C or 25 °C)
off: No compensation.

Display: 2 four-digit LCD display (12.4 mm or 7 mm high) for conductivity (resistance, salinity, TDS) and temperature, or for min., Max. Value, hold function, etc., and additional indication arrows.

Measuring cell: Conductivity measuring cell with temperature sensor integrated in the shaft. Electrode material: graphite. Shaft material: PPE, PS (GMH 3431), epoxy (GMH 3451). The graphite measuring cells are also ideally suited for use in wastewater and can be cleaned without any problems. GMH 3431: 2-pole, GMH 3451: 4-pole

Warranty on measuring cell 12 months

Working environment: Device: -25 .. + 50 °C, 0.95 % r. F. Measuring cell: -5 .. + 80 °C (permanent) to +100 °C (short-term)

Relative humidity: 0 .. + 95 % RH (not condensing)

Interface:	Serial interface, can be connected directly to the RS232 or USB interface of the PC via galvanically isolated interface converter GRS 3100 or GRS 3105 or USB 3100 N (accessory)
Control elements:	A total of 6 membrane buttons for on/off switch, measuring range selection, min/max value memory, hold function, etc.
Power supply:	9 V battery and additional power supply socket (1.9 mm internal diameter) for external 10.5..12 V DC voltage supply (suitable power supply unit: GNG10/3000)
Battery life:	approx. 150 h
Housing:	Made of impact-resistant ABS, membrane keyboard, transparent panel, integrated pop-up clip
Dimensions:	Device: 142 x 71 x 26 mm (H x W x D), measuring cell dimensions (shaft): approx. 120 mm long, Ø approx. 12 mm, measuring cell firmly connected to the device via approx. 1 m cable.
Weight:	approx. 230 g (including battery and measuring cell)
Scope of delivery:	Device including measuring cell, battery, test report, operating manual

ADDITIONAL FUNCTIONS:**Salinity determination:**

Salinity is the sum of the concentration of all dissolved salts in the water. The information is given in g/kg.

TDS determination (total dissolved solids):

The total dissolved solids describes the mass concentration of the dissolved substances in a liquid. The information is given in mg/l.

ADDITIONAL FUNCTIONS WITH GMH 3451:

Analog output: 0..1 V, freely scalable, connection via 3-pole jack socket Ø 3.5 mm, resolution 13 bit, accuracy 0.05 % at nominal temperature

4-pole measuring cell: Better long-term stability when used in high conductivities (> 20 mS/cm) and in rough use, stable measured values even in polluted media (e.g. sewage, salt water)

Data logger: Cyclic: 10,000 data records, single value: 1,000 data records (with measuring point input, 40 adjustable measuring point texts or measuring point numbers)

VARIANTS:**GMH 3431-LTG**

Item No. 608399

GMH 3451-LTG

Item No. 610028

for organic substances (alcohol, gasoline, diesel) up to max. 1000 µS/cm with glass shaft, **measuring cell:** 2-pole glass/platinum, 1.35 m PUR cable, permanently connected to the device

ACCESSORIES OR SPARE PARTS:**GKL 100**

Item No. 601396

Conductivity control solution (Control solution 1413 µS/cm, 100 ml bottle, according to DIN EN 27888)

GKK 3001

Item No. 611605

Case for GMH 3000 series water analysis/ universal with recesses for 1 device of the GMH 3xxx series and accessories for water analysis, 395 x 295 x 106 mm (W x H x D)



OPTIMIZED EC-METER FOR HYDROCULTURE, INDOOR FARMING, HYDROPONICS



NEW!



LF 209

HIGHLIGHTS:

- Carefree precise measurements up to 5000 $\mu\text{S}/\text{cm}$
- Display also in EC (= mS/cm) CF or TDS (= mg/l)
- Excellent price-performance ratio
- Long-term stable and fast titanium measuring cell
- 3-line illuminated display / overhead display at the push of a button
- Waterproof (IP67)
- Robust, long battery life
- Made in Germany

G1409

Item No. 480846

waterproof compact EC meter / conductivity device up to 5000 $\mu\text{S}/\text{cm}$, 2-pole titanium measuring cell

G1409-1002

Item No. 480847

waterproof compact EC meter / conductivity device up to 5000 $\mu\text{S}/\text{cm}$, 2-pole titanium measuring cell in case GKK 1002

GENERAL:

When developing the new G1409, the focus was consciously on the essential functions of the measurement technology – the focus is on a sensor tailored to the application!

Precision, speed and reliability, packaged in a compact and water-protected housing, make the device a reliable partner for service and trade and sustainably support the "green thumb" when used in plant farming and agriculture, Made in Germany.

APPLICATION:

The measuring devices can be used with the high-precision sensor up to 5000 $\mu\text{S}/\text{cm}$ and are therefore cost-optimized professional devices for use in the following areas:

- Aquaculture, hydro culture / hydroponics, plant farming
- Water treatment (e.g. osmosis systems)
- Boiler feed water / heating construction.

The long-term stable titanium measuring cell can be calibrated with GKL 100 calibration solution, the integrated temperature sensor compensates temperature changes very quickly and precisely.

The G 1409 – a reliable professional device for daily use as an alternative / upgrade to entry-level measuring sticks!

TECHNICAL SPECIFICATIONS:

Measurement:	Conductivity, EC, TDS, temperature
Conductivity:	0 ... 5000 $\mu\text{S}/\text{cm}$
EC:	0 ... 5,000 EC (corresponds to mS/cm)
CF:	50.00 CF (corresponds to 10 x EC)
TDS:	0 ... 2000 mg/l (ppm) TDS factor adjustable, e.g. B. usual 0.500 or 0.700
Temperature:	-5.0 ... + 80.0 °C
Accuracy:	
Conductivity up to 2000 $\mu\text{S}/\text{cm}$:	Type. $\pm 1\%$ of meas. MW $\pm 0.5\%$ FS
Temperature:	$\pm 0.3\text{ °C}$
Temperature compensation:	Off: deactivated nLF: non-linear, according to EN 27888
Sensor:	Permanently connected measuring cell, 2-pole, $\varnothing 12\text{ mm}$ (titanium) with fast integrated temperature sensor
Cable length:	1,2 m
Display:	3-line with battery status display, backlight, protected by a break-proof pane, overhead display at the push of a button
Service:	4 long-life pushbuttons
Additional functions:	automatic temperature compensation
Surroundings:	Display device -20 ... + 50 °C
Sensor:	-5 ... + 80 °C
Care:	2x AA battery
Battery life:	> 1000 h
Protection class:	IP 65/67
Housing:	Break-proof ABS
Dimensions:	108 x 54 x 28 mm (H x W x D) without sensor
Weight:	approx. 200 g
Scope of delivery:	Portable instrument with permanently connected sensor, test report, 2x AA batteries, operating instructions

ACCESSORIES**ST-G1000**

Item No. 611373

Device protection bag with 1 cutout round hole and belt clip

GCLIP1000

Item No. 475820

Metal belt clip self-adhesive

GKL 100

Item No. 601396

Calibration solution in 1413 $\mu\text{S}/\text{cm}$ in a wide neck bottle

CASE**GKK 1001**

Item No. 611604

Cut-out for device and excess space for accessories (395x295x106 mm)

GKK 1002

Item No. 411907

With cut-outs for a device with sensor G1400/G1500/G1600 series. Additional recess for temperature sensor GF1T (235 x 185 x 48 mm)

GKK 1003

(Article no. 411917)

With cutouts for 2 devices with sensor G1400/G1500/G1600 series. Additional cutout for temperature sensor GF1T and 2 PHL buffers or GKL calibration solution and accessories (450 x 360 x 106 mm)

PRECISE CONDUCTIVITY METER



ROBUST AND
GOOD VALUE



HIGHLIGHTS:

- Modern and functional housing
- Excellent price-performance ratio
- 3-line display/overhead display at the push of a button
- Backlit
- Waterproof (IP67)
- Robust, long battery life
- including high-quality measuring cells for a wide range of applications
- quick determination of measured values



SUCCESSOR TO GLF 100
...PRODUCT SERIES

G 1410

Item No. 610006

Universal conductivity meter up to max 100 mS/cm, including graphite measuring cell

G 1410-1002

Item No. 474039

Universal conductivity meter
Device, measuring cell LF 202, 2-pole graphite, permanently connected, in case GKK1002

G 1420

Item No. 610007

high-resolution ultrapure water conductivity meter up to max 100 µS/cm, including stainless steel measuring cell

G 1420-1002

Item No. 474040

high-resolution ultrapure water conductivity meter
Device, measuring cell LF 200 RW, 2-pole stainless steel/PEEK, firmly connected, in case GKK 1002

GENERAL:

When developing the new G 1000 series, the focus was consciously on the essential functions of the measurement technology. Pure measurement with a focus on precision, speed and reliability, packaged in a compact housing, enables the outstanding price/performance ratio, Made in Germany.

The new handheld meters also feature an ergonomic design, IP 65/67 dust and water protection, and an illuminated display. The compact conductivity meter, the G 1410, has a precise and long-lasting wide-range measuring cell for universal use from DI water to seawater. As the G 1420, it has a specialized measuring cell for high-resolution pure/ultrapure water applications.

APPLICATION:

Fresh and sea water aquariums, reverse osmosis and similar filters, cleaning processes, cooling/lubricating processes, plant cultivation and agriculture; Laboratories, quality assurance, service

Service:	4 durable, easy-to-use buttons
Additional functions:	automatic measuring range switching, automatic temperature compensation
Working conditions:	Device: -20 .. + 50 °C, 0..95 % RH (non-condensing) Measuring cell: -5 .. + 80 °C (briefly 100 °C)
Power supply:	2 x AA batteries, > 1000 h battery life
Protection class:	IP65 / IP67
Housing:	break-proof ABS housing
Dimensions:	108 x 54 x 28 mm (H x W x D) without sensor connection
Weight:	approx. 200 g (G 1410) approx. 230 g (G 1420)
Scope of delivery:	Device with measuring cell, test report, 2 x batteries, operating instructions

ACCESSORIES OR SPARE PARTS:

GKL 100

Item No. 601396

Conductivity control solution
Control solution 1413 µS/cm, 100 ml bottle, according to DIN EN 27888

GKL 101

Item No. 601398

Conductivity control solution 84 µS/cm, 250 ml bottle

GKL 102

Item No. 601400

Conductivity control solution 50 mS/cm, 100 ml bottle

HD-22-3

Item No. 700040

Freely positionable laboratory sensor holding arm for sensors Ø12mm

GWZ-01

Item No. 603499

Flow-through chamber for sensors with Ø 12 mm, tube connection Ø 6 mm

ST-G1000

Item No. 611373

Protective bag, leather

GB AA

Item No: 610049

Replacement battery Mignon (AA) 1.5 V (2 pieces are required)

GKK 1002

Item No. 411907

Case for G1000 series water analysis small

TECHNICAL SPECIFICATIONS:	G 1410	G 1420
	Wide range measuring instrument including graphite measuring cell	Ultrapure water version including stainless steel measuring cell
Measurement:	Conductivity, salinity, TDS	Conductivity, specific resistance
Measuring ranges:	each with automatic measuring range switching	
Conductivity:	0..2000 µS/cm 0.00..20.00 mS/cm 0.0..100.0 mS/cm	0.000..2.000 µS/cm 0.00..20.00 µS/cm 0.0..100.0 µS/cm
Specific resistance:	--	0.0100..0.2000 MOhm * cm 0.010..2.000 MOhm * cm 0.01..20.00 MOhm * cm
TDS:	0..2000 mg/l	--
Salinity (PSU):	0.0..50.0 g/kg	--
Temperature:	-5.0 .. + 105.0 °C	-5.0 .. + 105.0 °C
accuracy		
Conductivity:	± 0.5 % of meas. MW. ± 0.5 % FS	Type: ± 1 % of meas. MW. ± 0.5 % FS
Temperature:	± 0.3 °C	± 0.3 °C
Temperature compensation:	off: deactivated nLF: non-linear, according to EN 27888	off: deactivated nLF: non-linear, according to EN 27888 LIN: linear with adjustable coefficient NaCl: For weak NaCl solutions according to EN 60746-3
Reference temperatures:	20 and 25 °C	20 and 25 °C
Sensors / measuring inputs:	permanently connected 2-pole measuring cell with integrated temperature sensor	
Measuring cell:	2-pole measuring cell, Ø 12 mm (graphite), cable 1.2 m (others at extra cost)	2-pole measuring cell, Ø 12 mm (stainless steel 1.4404, 1.4435), cable 1.2 m (others at extra cost)
Display:	3-line with battery level indicator, backlit, protected by break-resistant glass, overhead display at the push of a button	

PH/ORP/TEMPERATURE MEASURING DEVICES



ISO

AUTO OFF

HOLD

MIN MAX



HIGHLIGHTS:

- In the case of redox, automatic conversion to the hydrogen system is possible
- Temperature compensation
- Automatic buffer recognition
- Rating of electrode's quality
- New: analog output for all variants

ADDITIONAL FUNCTIONS OF GMH 3551:

**GMH 3511**

Item No. 604953

pH/ORP/temperature meter

Device only (without pH electrode)

GMH 3531

Item No. 602076

pH/ORP/temperature meter

Device only (without pH electrode)

GMH 3551

Item No. 602817

pH/ORP/temperature meter with logger

Device only (without pH electrode)

TECHNICAL SPECIFICATIONS:

Measuring ranges

Temperature:	-5.0 .. + 150.0 °C or 23.0 .. + 302.0 °F
pH:	0.00..14.00 pH
Redox (ORP):	-1999 .. + 2000 mV based on the hydrogen system: -1792 .. + 2207 mV _H (DIN 38404)
rH:	0.0..70.0 rH (not GMH 3511)

Accuracy (device) ± 1 digit at nominal temperature = 25 °C

Temperature:	± 0.2 °C (at -5 .. + 100 °C)
pH:	± 0.01 pH
Redox (ORP):	± 0.1 % FS (mV or mV _H)
rH:	± 0.1 rH (not GMH 3511)

Sensor connections

Temperature:	2 x 4 mm banana for Pt 1000, 2-wire
pH, redox:	BNC socket

Display: 2 four-digit LCD displays (12.4 mm or 7 mm high)

Working temperature: 0 .. + 50 °C

Storage temperature: -20 .. + 70 °C

Interface: serial interface, can be connected directly to a PC via galvanically isolated interface converter GRS 3100 or GRS 3105 or USB 3100 N (accessory).

Power supply: 9 V battery, power supply socket for external 10.5..12 V DC voltage supply (suitable power supply: GNG 10/3000)

Battery life: approx. 300 h

Housing: Made of impact-resistant ABS, membrane keyboard, transparent panel, integrated pop-up clip

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

Weight: approx. 170 g

Scope of delivery: Device, battery, test report, operating instructions

FUNCTIONS:

Automatic temperature compensation:

If the temperature sensor is plugged in and the "pH" operating mode is active, there is automatic temperature compensation (ATC) in the range of 0..150 °C. The temperature can be entered manually without a temperature sensor.

pH calibration:

There is an automatic buffer recognition, temperature compensation and a sensor evaluation depending on the calibration (from 10..100 %).

GMH 3511: 2-point calibration with Greisinger buffer capsules (GPH 4, 7, 10)

GMH 3531, GMH 3551: Either 1-, 2- or 3-point calibration with characteristic curve kink for Greisinger standard buffers, buffers according to DIN19266 (A, C, D, F, G) or manual buffer entry.

Calibration interval (not GMH 3511):

after a selectable period (1 .. 365 days or inactive) a recalibration is requested.

GMH 3551: additional calibration history

Redox measurement (ORP): 2 options are available:

"mV": Standard redox or mV measurement

"mV_H": Starting from the standard redox electrode used (eg GE 105 with the Ag / AgCl system and 3 mol KCl), a temperature-compensated conversion to the hydrogen system is carried out in accordance with DIN38404 Part 6, Table 1.

rH measurement (not GMH 3511): The rH value is calculated using a redox measurement and manual entry of the pH value. The pH value can also be taken from a previous pH measurement.

Analog output: 0..1 V, permanently set 0.1 V ± 0.14 pH or -2000 .. + 2000 mV, connection via 3-pole jack socket Ø 3.5 mm, resolution 13 bit,

Accuracy 0.05 % at nominal temperature

GMH 3551: Analog output freely scalable

Data logger (only GMH 3551):

Cyclic: 10,000 data records, single value: 1,000 data records (with measuring point input, 40 adjustable measuring point texts or measuring point numbers)

ACCESSORIES OR SPARE PARTS:

GMH 55 ES

Item No. 603066

pH add-on set for GMH 35xx and GMH 55xx
pH electrode GE 100 BNC, temperature probe GF1T-T3-B-BS, case GKK3500, calibration set GAK1400

GF 1T-T3-B-BS

Item No. 611088

compact Pt1000 hand probe with silicone handle, Pt1000 class B, with 2 banana plugs

GE 100-BNC

Item No. 600704

Universal pH electrode, BNC connector

GE 117-BNC

Item No. 600730

pH electrode with Pt1000, pressure-resistant

GNG 10/3000

Item No. 600273

Plug in power supply for GMH 3XXX series

GKK 3001

Item No. 611605

Case for GMH 3000 series water analysis / universal 395 x 295 x 106 mm (W x H x D)

USB 3100 N

Item No. 601092

Interface converter GMH3xxx <=> PC, USB, galvanic isolation

EBS 20M

Item No. 601158

Measurement data acquisition software for EASYBus & GMH

GMH3511 SETS



GMH 3511-SET

CONVENIENT MEASUREMENT

GMH 3511-SET

Item No. 605021

pH/ORP/temperature meter

Device complete with pH electrode GE 114, GF1T-T3-B-BS, 5x GPH4, 5x GPH7, 2x GPF100

GMH 3511-G125

Item No. 475740

pH/ORP/temperature meter

Device complete with pH electrode GE 125 (PT1000)

GENERAL:

For convenient measurement of pH and temperature. Even easier operation thanks to a menu in the GMH 3511 reduced to 5 points. Minimal measuring effort thanks to maintenance-free gel electrodes and automatic temperature compensation.

TECHNICAL SPECIFICATIONS:

see GHM 3511

ACCESSORIES OR SPARE PARTS:**GE 114-BNC**

Item No. 604701

pH electrode

GE 125-BNC

Item No. 600731

waterproof pH electrode with Pt1000, BNC connector

GF 1T-T3-B-BS

Item No. 611088

compact Pt1000 hand probe with silicone handle, Pt1000 class B, with 2 banana plugs

GPH 4.0/5

Item No. 602614

pH buffer capsules (5 pieces), pH 4.0

GPH 7.0/5

Item No. 602616

pH buffer capsules (5 pieces), pH 7.0

GPH 10.0/5

Item No. 602618

pH buffer capsules (5 pieces), pH 10.0

GKK 3001

Item No. 611605

Case for GMH 3000 series water analysis/universal, 395 x 295 x 106 mm (W x H x D)

GMH3531 SETS



GMH 3531-SET125

FOR LABORATORY AND FIELD

GMH 3531-SET125

Item No. 474240

pH/ORP/temperature meter

Device complete with GE 125, 5 x GPH4, 5 x GPH7, 2 x GPF100, GKK 3001

GMH 3531-SET100

Item No. 604591

pH/ORP/temperature meter

Device complete with GE 100, GF1T-T3-B-BS, 5 x GPH4, 5 x GPH7, 2 x GPF100, GKK 3001

GENERAL:

Functional range for high demands in laboratory and field. Minimal measuring effort thanks to automatic temperature compensation.

TECHNICAL SPECIFICATIONS:

see GHM 3531

ACCESSORIES OR SPARE PARTS:**GE 100-BNC**

Item No. 600704

Universal pH electrode, BNC connector

GE 125-BNC

Item No. 600731

waterproof pH electrode with Pt1000, BNC connector

GF 1T-T3-B-BS

Item No. 611088

compact Pt1000 hand probe with silicone handle, Pt1000 class B, with 2 banana plugs

GPH 4.0/5

Item No. 602614

pH buffer capsules (5 pieces), pH 4.0

GPH 7.0/5

Item No. 602616

pH buffer capsules (5 pieces), pH 7.0

GPH 10.0/5

Item No. 602618

pH buffer capsules (5 pieces), pH 10.0

GKK 3001

Item No. 611605

Case for GMH 3000 series water analysis/universal, 395 x 295 x 106 mm (W x H x D)

GMH3551 SETS



GMH 3551-SET100

WITH DATA LOGGER

GMH 3551-SET125

Item No. 474903

pH/ORP/temperature meter with logger

Device complete with GE 125, 5 x GPH4, 5 x GPH7, 2 x GPF100, GKK 3001

GMH 3551-SET100

Item No. 475742

pH/ORP/temperature meter with logger

Device complete with GE 100, GF1T-T3-B-BS, 5 x GPH4, 5 x GPH7, 2 x GPF100, GKK 3001

GENERAL:

Well equipped sets with integrated data logger

TECHNICAL SPECIFICATIONS:

see GHM 3551

ACCESSORIES OR SPARE PARTS:**GE 100-BNC**

Item No. 600704

Universal pH electrode, BNC connector

GE 125-BNC

Item No. 600731

waterproof pH electrode with Pt1000, BNC connector

GF 1T-T3-B-BS

Item No. 611088

compact Pt1000 hand probe with silicone handle, Pt1000 class B, with 2 banana plugs

GPH 4.0/5

Item No. 602614

pH buffer capsules (5 pieces), pH 4.0

GPH 7.0/5

Item No. 602616

pH buffer capsules (5 pieces), pH 7.0

GPH 10.0/5

Item No. 602618

pH buffer capsules (5 pieces), pH 10.0

GKK 3001

Item No. 611605

Case for GMH 3000 series water analysis/universal, 395 x 295 x 106 mm (W x H x D)

WATERPROOF METER FOR MEASURING PH/REDOX



WATER-PROOF DEVICE AND
PLUG CONNECTIONS



HIGHLIGHTS:

- GLP functions (good laboratory practice)
- large backlit double display
- high resolution (0.001 pH/0.1 mV)
- including test report

ADDITIONAL FUNCTIONS OF GMH 5550:



GMH 5530

Item No. 600041

Waterproof pH/ORP/temperature meter,
device only (without electrode)

GMH 5550

Item No. 600043

Waterproof pH/ORP/temperature meter with logger,
device only (without electrode)

APPLICATION:

- Measurements in water and aquaristics, fish farming
- Drinking water, process monitoring, soil measurements
- Food production and monitoring
- Laboratory: medicine, pharmacy, chemistry
- Quality assurance

TECHNICAL SPECIFICATIONS:

Measuring ranges

pH:	-2,000..16,000 pH (resolution selectable)
Redox / mV:	-2000.0..2000.0 mV (resolution can be selected) (based on hydrogen system DIN38404: -1792 .. + 2207 mV _H)
Temperature:	-5.0 .. + 150.0 °C; 23.0..302.0 °F
rH:	0.0..70.0 rH

accuracy

pH:	± 0.005 pH
Redox / mV:	± 0.05 % FS (mV or mV _H)
Temperature:	± 0.2 °C (in the range from -5.0 to 100.0 °C)
rH:	± 0.1 rH

connections

pH, redox:	BNC socket, suitable for standard BNC plugs and waterproof BNC plugs, plus banana socket (4 mm) for separate reference electrode, input resistance: 10 ¹² ohms
Temperature:	2 banana sockets (4 mm) for temperature sensors (Pt1000 or NTC 10K)
Interface / supply:	4-pole bayonet connection for serial interface and supply (with USB 5100 accessory)

working conditions

-25 .. + 50 °C; 0.95 % RH (not condensing)

Display: two 4 ½ digit 7-segment displays (15 mm and 12 mm)

PH CALIBRATION

Automatically:	1-, 2- or 3-point calibration, GREISINGER standard buffer or buffer according to DIN19266 (A, C, D, F, G)
Manually:	1-, 2- or 3-point calibration
Power supply:	2 x AAA batteries, power consumption: <1.0 mA
Battery life:	1000 hours
Housing:	impact-resistant ABS, with stand-up/hanging bracket
Protection class:	IP65 / IP67
Dimensions:	160 x 86 x 37 mm (H x W x D) including protective cover
Weight:	250 g including battery and protective cover
Scope of delivery:	Device, battery, test report, operating instructions

ADDITIONAL FUNCTIONS:

Status display for pH electrode and battery:

Bar graph

Background lighting:

duration adjustable (off, 5 s..2 min.)

Automatic temperature compensation:

If the temperature sensor is plugged in and the "pH" operating mode is active, there is automatic temperature compensation (ATC) in the range 0.150 °C. Manual entry is possible without a temperature sensor.

pH calibration:

either 1-, 2- or 3-point calibration with characteristic curves for GREISINGER standard buffers (GPH or PHL) and buffers according to DIN19266 or with manual buffer entry. With automatic buffer recognition, the temperature dependency of the buffers is automatically compensated.

Permissible electrode data: Asymmetry: ± 55 mV / slope: 45..62 mV / pH Determination of the condition of the pH electrode during calibration.

Redox measurement (ORP): 2 options:

"mV" Standard redox or mV measurement
"mV_H" Conversion to hydrogen system according to DIN38404 part 6

rH measurement:

The rH value is calculated using an ORP measurement and manual entry of the pH value.

Calibration interval:

after a selectable period (1..365 days or inactive) a recalibration is requested.

Calibration memory (only GMH 5550):

last 16 calibrations

Analog output (GMH 5550 only):

0..1 V, freely scalable, connection via 4-pole bayonet socket,

resolution 13 bit, accuracy 0.05 % at nominal temperature

Data logger (GMH 5550 only):

with measuring point input, recording interval: 1 s..1 h, recording duration: 16 days at an interval of 1 h, measured value storage: cyclical: 10,000 data records, individual: 1,000 data records

ACCESSORIES OR SPARE PARTS:

EBS 20M

Item No. 601158

Measurement data acquisition software for EASYBus & GMH

GSOFT 3050

Item No. 601336

Windows software for GMH 3000 and GMH 5000 with logger

USB 5100

Item No. 601095

Interface converter GMH 5xxx <=> PC, Galvanic isolation

GNG 5/5000

Item No. 602287

Plug in power supply for GMH 5XXX series

GKK 5001

Item No. 611606

Case for GMH 5000 / G7500 series water analysis / universal, 395 x 295 x 106 mm (W x H x D)

DEVICE INCLUDING ELECTRODE



GMH 5530-G125

Item No. 475746

Waterproof pH/ORP/temperature meter, device complete with pH electrode GE 125 (PT1000)

GMH 5550-G125

Item No. 475747

Waterproof pH/ORP/temperature meter with logger, device complete with pH electrode GE 125 (PT1000)

PH MEASURING SET

**GMH 5530-SET**

Item No. 611614

Waterproof pH/ORP/temperature meter

Device, GE125-L02, PHL 4, PHL 7, PHL 10, KCL3M, GRL100, GKK 2021

GMH 5550-SET

Item No. 611254

Waterproof pH/ORP/temperature meter with logger:

Device, GE125-L02, PHL 4, PHL 7, PHL 10, KCL3M, GRL100, software, USB 5100, GKK 2021

GENERAL:

With our ready-to-use pHmeasuring set "SET" you not only have everything you need for your work in a practical case – with the set you save 23 % compared to the individual components

APPLICATIONS:

No matter what industry you are in, our comprehensive SET-GMH 5550 never lets you down and is always tidy thanks to the practical case

TECHNICAL SPECIFICATIONS:**Measuring ranges**

pH:	-2,000..16,000 pH (resolution selectable)
Redox / mV:	-2000.0..2000.0 mV (resolution can be selected) (based on hydrogen system DIN38404: -1792 .. + 2207 mV _H)
Temperature:	-5.0 .. + 150.0 °C; 23.0..302.0 °F
rH:	0.0..70.0 rH

Dimensions: 450 x 360 x 140 mm (case)**Weight:** approx. 5700 g

Scope of delivery: Device with silicone protective cover, pH electrode, 3 x buffer solution, KCl electrolyte, pepsin cleaning solution, case, battery, test report, operating instructions
SET-GMH 5550 only: software, interface converter

ACCESSORIES OR SPARE PARTS:**GMH 5550**

Item No. 600043

Waterproof pH/ORP/temperature meter with logger, without electrode

GSOFT 3050

Item No. 601336

Windows software for portable instruments with logger function

USB 5100

Item No. 601095

Interface converter GMH 5xxx <=> PC, Galvanic isolation

GKK 2021

Item No. 414760

Device case 2 levels, for 1x GMH 5500/7500 and 3 PHL solutions,
 450 x 360 x 140 mm (W x H x D)

PH / ORP ACCESSORIES

Supplementary set GMH 55 ES

**ACCESSORIES OR SPARE PARTS:****GMH 55 ES**

Item No. 603066

pH add-on set for GMH 35xx and GMH 55xx
 out pH electrode GE 100 BNC, temperature probe
 GF1T-T3-B-BS, case GKK3500,
 calibration set GAK1400

GE 125-BNC

Item No. 600731

waterproof pH electrode with Pt 1000, temperature probe with waterproof BNC plug and banana plug

**GF 1T-T3-B-BS**

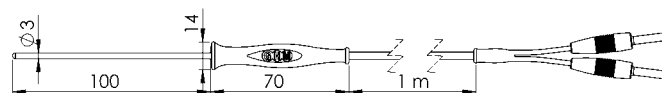
Item No. 611088

compact Pt1000 hand probe with silicone handle

-70 .. + 250 °C, Pt1000 class B

Immersion tip Ø 3 mm made of V4A tube, black silicone handle up to +250 °C, 1 m, silicone cable up to +230 °C continuously / +250 °C 2 h, 2 x Ø 4 mm banana plugs

Response time T₉₀: Water 0.4 m/s < 2 s, air 2 m/s approx. 40 s

**GE 100-BNC**

Item No. 600704

Universal pH electrode, BNC connector

**GR 105-BNC**

Item No. 607798

Redox electrode, BNC connector

**PHL 4**

Item No. 601369

Ready-to-use pH buffer solution (pH 4.01 / 25 °C), 250 ml

PHL 7

Item No. 601371

Ready-to-use pH buffer solution (pH 7.00 / 25 °C), 250 ml

PHL 10

Item No. 601373

Ready-to-use pH buffer solution (pH 10.01 / 25 °C), 250 ml

KCL 3 M

Item No. 602477

3 mol KCL electrolyte for refilling or storing (fill into the protective cap) electrodes
 with 3 mol KCl electrolyte, 100 ml spray bottle

CaCl

Item No. 603254

Electrolyte for soil pH measurement, 1000 ml

GRL 100

Item No. 601422

HCL/Pepsin cleaning solution, 100 ml

GRP 100

Item No. 601424

Redox test solution 220 mV, 100 ml

GAK 1400

Item No. 603523

pH work and calibration set

Scope of delivery:

5 buffer capsules each GPH 4.0, GPH 7.0 and
 GPH 10.0, 3xGPF100, 1x KCL3M, 1x GRL 100
 If no buffer solutions are available, the GAK 1400
 is a recommended standard equipment.



PRECISE PH-METER



HIGHLIGHTS:

- Modern and functional housing
- 3-line display / overhead display at the push of a button
- Backlit
- Waterproof (IP65 / IP67)
- Robust, long battery life
- BNC connection for interchangeable electrodes



Connection G 1500

ROBUST AND GOOD VALUE

G 1500

Item No. 609850

Waterproof pH-Meter including pH electrode GE 114 WD

G 1500-SET

Item No. 474035

Waterproof pH-Meter, device complete with pH electrode GE 114 WD, GAK 1400 and case GKK 1001

GENERAL:

When developing the new G 1000 series, the focus was consciously on the essential functions of the measurement technology. Measurement with a focus on precision, speed, and reliability, packed into a compact housing, delivers an outstanding price/performance ratio. Made in Germany. The new portable instruments also have an impressive ergonomic design, are dust- and water-proof to IP 65/67, and feature a backlit display. The compact pH-Meter is the alternative to pH sticks on the one hand and to complex mid-range devices on the other.

APPLICATION:

Aquarium and aquaculture, plant farming and agriculture, laboratories, quality assurance, service, food, ...

TECHNICAL SPECIFICATIONS:

Measuring range:	0.00..14.00 pH
Resolution:	0.01 pH
Accuracy (device):	± 0.02 pH ± 1 digit (at nominal temperature 25 °C)
Display:	3-line with battery level indicator, backlit, protected by break-resistant glass, overhead display at the push of a button
Sensors / measuring inputs:	pH electrode can be connected via BNC, standard GE 114 WD Temperature compensation adjustable on the device Application range electrode: 0..60 °C
Working temperature:	Display device -20 .. + 50 °C
Power supply:	2 x AA batteries, approx. 3000 h battery life
Housing:	break-proof ABS housing
Dimensions:	108 x 54 x 28 mm (H x W x D) without sensor connection
Weight:	approx. 130 g (without electrode)
Scope of delivery:	Device, electrode, test report, 2 x batteries, operating instructions G 1500-SET only: GAK 1400, case GKK 1001

ACCESSORIES OR SPARE PARTS:

G 1500-GL

Item No. 609851

Device only (without pH electrode)

GE 114-BNC-WD

Item No. 610460

pH electrode, waterproof BNC connector, IP 67

GE 114-BNC

Item No. 604701

pH electrode

GE 100-BNC

Item No. 600704

Universal pH electrode

GKK 1002

Item No. 411907

Case for G1000 series water analysis small

GKK 1003

Item No. 411917

Case for 2x G1000 series water analysis and 2x PHLx 450 x 360 x 106 mm (W x H x D)

GKK 1100

Item No. 601060

Case with knob foam for universal use 340 x 275 x 83 mm (W x H x D), suitable for storing accessories

GKK 1001

Item No. 611604

Case for G1000 series water analysis universal 395 x 295 x 106 mm (W x H x D)

PHL 4

Item No. 601369

Ready-to-use pH buffer solution (pH 4.01 / 25 °C), 250 ml

PHL 7

Item No. 601371

Ready-to-use pH buffer solution (pH 7.00 / 25 °C), 250 ml

PHL 10

Item No. 601373

Ready-to-use pH buffer solution (pH 10.01 / 25 °C), 250 ml

GAK 1400

Item No. 603523

pH work and calibration set: 5 buffer capsules each GPH 4.0, GPH 7.0 and GPH 10.0, 3xGPF100, 1x KCL3M, 1x GRL 100.

ST-G1000

Item No. 611373

Protective bag, leather, G 1000 protective bag made of Nappa leather, a universal cutout for sensors, belt clip

GB AA

Item No: 610049

Replacement battery Mignon (AA) 1.5 V (2 pieces are required)

WATER ANALYSIS SET

NEW!



GMH1000-WA-SET

Item No. 475362

Water analysis set: pH and conductivity compact G 1410 with 2-pole graphite measuring cell, firmly connected
Conductivity meter: G 1410 with 2-pole graphite measuring cell, firmly connected

pH-Meter: G 1500 complete with pH electrode GE 114-WD

Scope of delivery: Case GKK 1003, including PHL 4 and PHL 7, KCL3M, GPF 100

PRECISE PH-METER



TEMPERATURE INPUT FOR
CONVENIENT TEMPERATURE
COMPENSATION



GE 114-WD

GE 125

HIGHLIGHTS:

- Modern and functional housing
- 3-line display / overhead display at the push of a button
- Backlit
- Waterproof (IP65 / IP67)
- Robust, long battery life
- BNC connection for interchangeable electrodes
- with redox (ORP) and temperature measurement
- Alarm function



Connection G 1501

G 1501

Item No: 611725

Waterproof pH/redox meter with Pt1000 input and alarm including pH electrode GE 114-WD

G 1501-G125

Item No: 414689

Waterproof pH/redox meter with Pt1000 input and alarm, device complete with pH electrode GE 125 (PT1000)

GENERAL:

When developing the new G 1000 series, the focus was consciously on the essential functions of the measurement technology. Measurement with a focus on precision, speed, and reliability, packed into a compact housing, delivers an outstanding price/performance ratio. Made in Germany. The new portable instruments also have an impressive ergonomic design, are dust- and water-proof to IP 65/67, and feature a backlit display.

The compact pH-Meter is the alternative to pH sticks on the one hand and to complex mid-range devices on the other. The G 1501 enables redox (ORP) measurement (with temperature-compensated conversion from the Ag / AgCl reference system to the hydrogen system in accordance with DIN 38404 Part 6, Table 1) and automatic temperature compensation when a Pt 1000 temperature sensor is connected for the measured variables pH and mV_H. An optical and visual alarm signal (min / max) is also included.

APPLICATION:

Aquarium and aquaculture, plant farming and agriculture, laboratories, quality assurance, service, food, ...

TECHNICAL SPECIFICATIONS:

Measuring range:	0.00..14.00 pH
Resolution:	0.01 pH
Accuracy (device):	± 0.02 pH ± 1 digit (at nominal temperature 25 °C)
Temperature:	
Measurement input:	2 x 4 mm banana for Pt 1000, 2-wire
Measuring range:	-5.0 .. + 105.0 °C or 23.0..221.0 °F
Accuracy:	±0.2 °C ±1 digit at (nominal temperature 25 °C)
Redox (OPR)	

Measurement input: BNC socket (redox or pH measurement adjustable via menu)

Measuring range: -1500..1500 mV or -1293..1707 mV_H

Accuracy: ±0.1 % FS ±1 digit at (nominal temperature 25 °C)

Display: 3-line with battery level indicator, backlit, protected by break-resistant glass, overhead display at the push of a button

Sensors/measuring inputs: pH electrode can be connected via BNC, standard GE 114 WD

Temperature compensation adjustable on the device
Application range electrode: 0..60 °C

Working temperature: Display device -20 .. + 50 °C

Power supply: 2 x AA batteries, approx. 3000 h battery life

Housing: break-proof ABS housing

Dimensions: 108 x 54 x 28 mm (H x W x D) without sensor connection

Weight: approx. 130 g (without electrode)

Scope of delivery: Device, electrode, test report, 2 x batteries, operating instructions

ACCESSORIES FOR G 1501:**G 1501-GL**

Item No. 611483

Device without electrode

GF 1T-T3-B-BS

Item No. 611088

compact Pt1000 hand probe with silicone handle

GR 105-BNC

Item No. 607798

Redox electrode with BNC connection

GRP 100

Item No. 601424

Redox test solution 220 mV, 100 ml

See also: Accessories for electrodes

**G 1501-SET**

Item No: 611385

Waterproof pH/redox meter with Pt1000 input and alarm, Complete set for pH/temperature measurement device complete with pH electrode GE 114-WD + GF1T 3mm + GPH4.0/5 + GPH7.0/5 + 2x GPF100

G 1501-SET 114

Item No: 474037

Waterproof pH/redox meter with Pt1000 input and alarm, device complete with pH electrode GE 114 WD, T-sensor GF1T-T3-B-BS, GAK 1400 and case GKK 1001

G 1501-SET 125

Item No: 474038

Waterproof pH/redox meter with Pt1000 input and alarm, device complete with pH electrode GE 125, GAK 1400 and case GKK 1001

GENERAL:

Cost-effective set for temperature-compensated pH measurement

APPLICATION:

The measuring devices can be used in the areas of aquaristics, aqua and water monitoring, plant farming, agriculture, laboratories, quality assurance, Service and applied to food

ACCESSORIES OR SPARE PARTS:

See also: Accessories for electrodes

GF 1T-T3-B-BS

Item No. 611088

compact Pt1000 hand probe with silicone handle, Pt1000 class B, with 2 banana plugs

GAK 1400

Item No. 603523

pH work and calibration set: 5 buffer capsules each GPH 4.0, GPH 7.0 and GPH 10.0, 3xGPF100, 1x KCL3M, 1X GRL 100.

**GKK 1001**

Item No. 611604

Case for G1000 series water analysis universal 395 x 295 x 106 mm (W x H x D)

PH ELECTRODES

FOR DEVICES WITH CINCH CONNECTION THE ADAPTER GAD 1 BNC IS NEEDED!



GAD 1 BNC
Item No. 601382

STERILIZABLE



	GE 100	GE 101	GE 104	GE 108	GE 114	GE 117	GE 120	GE 125	GE 126	GE 151	GE 171	GE 173
Measuring range	0..14 pH 0..80 °C	2..11 pH 0..60 °C	0..14 pH 0..80 °C	0..14 pH 0..80 °C	0..14 pH 0..60 °C	0..14 pH 0..80 °C	0..14 pH 0..60 °C	0..14 pH 0..70 °C	0..14 pH 0..+80 °C	0..14 pH 0..80 °C	0..14 pH 0..140 °C	0..14 pH 0..80 °C
Conductivity	> 100 µS/cm	> 100 µS/cm	> 20 µS/cm	> 100 µS/cm	> 200 µS/cm	> 100 µS/cm	> 200 µS/cm	> 200 µS/cm	> 100 µS/cm	> 100 µS/cm	> 100 µS/cm	> 50 µS/cm
Temperature measurement	No	No	No	No	No	integr. Pt1000 4 mm banana	No	integr. Pt1000 4 mm banana	No	No	No	No
Waterproof	No	No	No	No	optional	No	No	Yes	No	No	No	No
Pressure resistant	No	No	No	6 bar	No	6 bar	No	1 bar	5,5 bar	No	10 bar	6 bar
Cable	1 m ¹⁾	1 m ¹⁾	1 m ¹⁾	2 m ¹⁾	1 m	2 m ²⁾	1 m	2 m	5 m	1 m ¹⁾	without	1 m ¹⁾
Electrolyte	3 mol/l KCl	3 mol/l KCl	3 mol/l KCl	Gel electrolyte	Gel electrolyte	Gel electrolyte	Gel electrolyte	Gel electrolyte	Gel electrolyte	3 mol/l KCl	Gel electrolyte	Gel electrolyte
Diaphragm	2 x ceramics	2 x ceramics	variable grinding	2 x ceramics	1 x Pellon	2 x ceramics	2 x ceramics	1 x ceramic	2 x ceramics	1 x ceramic	2 x ceramics	joint
Thread	without	without	without	PG 13.5	without	PG 13.5	without	without	1/2" NPT	without	PG 13.5	PG 13.5
Electrode shaft	Tyrl, Ø 12 mm x 120 mm	Glass, Ø 12 or 6 x 120 mm	Glass, Ø 12 mm x 120 mm	PSU, Ø 12 mm x 120 mm	Epoxy, Ø 12 mm x 120 mm	PSU, Ø 12 mm x 120 mm	PVC, Ø 22 mm x 110 mm	Epoxy, Ø 12 mm x 120 mm	ABS, Ø 26,4 mm x 147 mm	Glass, Ø 12 mm x 120 mm	Glass, Ø 12 mm x 120 mm	Glass, Ø 12 mm x 120 mm
Particularities	Universal electrode	Tip Ø 6 mm, small sample volume	for low-ion media	low maintenance	Low cost low maintenance	temperature compensated	Insertion electrode, blade Ø 13 mm x 60 mm	submersible, water-proof IP67 (also BNC connector)	extreme low maintenance	chemical-resistant glass shaft	for extreme conditions, sterilizable, autoclavable	for process chemistry, biochemistry, alkali-resistant

PRICE PER CONNECTION:

BNC												
Item No.	600704	600693	602063	600713	604701	600730	600698	600731	610987	600727	-	600735
S7 *)	-	-	-	-	-	-	-	-	-	-	-	-
Item No.	-	-	-	606089	-	-	-	-	-	-	606375	606572

*) Note: For the S7 connection, the GEAK-2S7-BNC or GEAK-5S7-BNC cable is required, for devices with a cinch connection the GAD 1 BNC adapter is also required.
Electrodes are consumables. Service life with careful handling: > 2 years / guarantee: 12 months

OPTIONS:

Longer cables for ¹⁾²⁾
(available cable lengths up to 5 m)

Special designs

(Electrode with thread, special lengths, special applications, etc.)

ACCESSORIES AND SPARE PARTS:

Cable BNCM / BNCF

Item No. 606158

Extension cable for electrodes with BNC connection, cable length: 3 m



BNC connector



S7 connection on the electrode shaft

DIAPHRAGM:

The membrane establishes the electrical connection between the reference system and the sample. At the same time, it should prevent the medium to be measured from contaminating the reference electrolyte.

Ceramic membrane

Porous ceramic rods are inserted to allow low outflow rates.

Application: general applications in clean to slightly dirty media

Joint / movable cut

The roughened surface between the cut glass of the electrode and the glass sleeve enables an electrolyte flow of several ml/h.

Application: low-ion and heavily soiled samples

Pellon membrane

A Pellon tissue is inserted. The permeable membrane enables fast response times and stable measured values.

Application: in clean to slightly soiled media



Ceramic rod



Glass sleeve



Pellon strips

REFERENCE ELECTROLYTE:

The reference electrolyte enables a constant voltage in the reference system and establishes the electrical connection between the membrane and the reference electrode.

Liquid electrolyte

3 mol/l KCl is mainly used here. Liquid electrolytes usually enable a faster response time and can be replaced if they are dirty.

Gel electrolyte

This is where the electrolyte is solidified in order to reach low-maintenance electrodes that allow a short-term measurement regardless of the position. No noticeable leakage of electrolyte can be observed under normal measuring conditions.

ELECTRODES WITH S7 CONNECTION:

The electrodes offered are equipped with an S7 industrial screw plug head, which is also known as the S8 industrial screw plug head. In contrast to the S7 laboratory plug head, this is suitable for direct installation in fittings with PG 13.5 thread.

AREAS OF APPLICATION ELECTRODES

APPLICATION	GE100	GE101	GE104	GE108	GE114	GE117	GE120	GE125	GE126	GE151	GE171	GE173	GR105	GR175
Sewage									•			•		
Aquarium water	•		•	•	•	•			•	•			•	•
Soil testing		•												
Emulsions		•	•											
Field measurements				•	•	•		•					•	
Fish farming	•		•	•	•	•		•	•	•			•	•
Galvanic baths												•		•
Beverages								•		•		•	•	•
Low-ion media			•									•		
Cosmetics			•											
Food samples		•					•							
Sea water	•	•	•	•	•	•	•	•	•	•	•	•	•	•
Online measurement											•	•		•
Process chemistry										•	•	•		•
Swimming pool water	•			•	•	•		•	•			•	•	•
Suspensions		•	•											•
Drinking water	•		•	•	•	•		•	•			•	•	•
Water-based lacquers			•									•		

Note: The information provided is a general recommendation. It must be checked which electrodes are suitable for the respective area of application.

REDOX ELECTRODES

**GR 105-BNC**

Item No. 607798

Redox electrode with BNC connection

**GR 175-BNC**

Item No. 607801

Redox electrode, pressure-resistant, BNC connector

GR 175-S7

Item No. 607802

Redox electrode, pressure-resistant, S7 plug head, without connection cable^{*)}

TECHNICAL SPECIFICATIONS:	GR 105	GR 175
Measured variable:	Redox	
Measuring range:	± 2000 mV, 0.80 °C	
Conductivity:	> 100 µS/cm	
Temperature measurement:	No	
Waterproof:	No	
Pressure resistant:	No	6 bar
Cable:	1 m ¹⁾	without/ 1 m
Electrolyte:	3 mol/l KCL	Gel electrolyte
Diaphragm:	2 x ceramics	1 x ceramic
Metal electrode:	Platinum dome Ø 5 mm	
Thread:	without	PG 13.5
Electrode shaft:	Tyrl, Ø 12 mm x 120 mm	Glass, Ø 12 mm x 120 mm
Min. immersion depth:	15 mm	
Scope of delivery:	Redox electrode, operating instructions	

OPTIONS:

Longer cables for ¹⁾²⁾
(available cable lengths up to 5 m)

EQUIPMENT:**GRP 100**

Item No. 601424

Redox test solution 220 mV, 100 ml



^{*)} Note: For the S7 connection, the GEAK-2S7-BNC or GEAK-5S7-BNC cable is required, for devices with a cinch connection the GAD 1 BNC adapter is also required. Electrodes are consumables. Lifespan with careful handling: >2 years / Warranty: 12 months

WATERPROOF DISSOLVED O₂ PORTABLE INSTRUMENTS

HIGHLIGHTS

- Waterproof and robust (silicone protective cover)
- Large double backlit display
- New oxygen sensor GWO 5610
- Environmental pressure compensation with integrated barometer

ADDITIONAL HIGHLIGHTS GMH 5650

- Data logger and alarm function
- Analog output, pressure connection

ADDITIONAL FUNCTIONS GMH 5650:

**GMH 5630**

Item No. 606880

Portable instrument for dissolved oxygen,
Device only, without sensor

GMH 5650

Item No. 606882

Portable instrument for dissolved oxygen with
data logger, device only, without sensor

APPLICATION:

Oxygen monitoring in aquaculture and aquaristics. Investigations on well water, wastewater and in sewage treatment plants, also suitable for harsh environments. Delivery can be ready for use (filled) or dry. Electrodes delivered dry have a long shelf life and are ready for use within approx. 1 hour after filling.

TECHNICAL SPECIFICATIONS:	GMH 5630	GMH 5650
Measurement channels:	O ₂ , T, air pressure (integrated)	O ₂ , T, air pressure (integrated) / measuring depth *1)
Measuring ranges		
O ₂ concentration:	0.00..70.00 mg/l (ppm) (resolution can be selected)	
O ₂ saturation:	0.0..600.0 % O ₂ (resolution selectable)	
O ₂ partial pressure:	0..1200 hPa O ₂ (0.0..427.5 mmHg)	
Temperature:	0.0..50.0 °C	
Air pressure:	10..1200 hPa abs	300..5000 hPa abs
Measuring depth:	-	0.40.0 m water column *1)
Accuracy		
Oxygen:	± 1.5 % of meas. MW ± 0.2 mg/l (0.25 mg/l) or ± 2.5 % of meas. MW ± 0.3 mg/l (25.70 mg/l)	
Temperature:	0.0..50.0 °C	
Air pressure:	10..1200 hPa abs	300..5000 hPa abs
Sensor:	GWO 5610, active membrane type with platinum cathode, Ø 12 mm, standard cable length 2 m, connection 7-pole bayonet	
Response time:	90 % in 10 s	
Lifespan:	approx. 3 years, dependent on use and maintenance	
Display:	4 ½ digits 7-segment, illuminated (white)	

Working temperature: Device: -25 .. + 50 °C Sensor: 0..40 °C

Sensor operating pressure: max. 3 bar overpressure corresponds to max. 30 m water depth

Inflow: min. 20 cm/s

Power supply: 2 x AAA batteries, power consumption: 0.9 mA

Battery life: approx. 1000 h (without lighting)

Protection class: IP65 / IP67

Housing: impact-resistant ABS, with stand-up/hanging bracket

Dimensions: 160 x 86 x 37 mm (H x W x D) including silicone protective cover

Weight: approx. 250 g including battery and protective cover

Scope of delivery: Device including batteries (2xAAA), silicone protective cover, test report, operating instructions, brief instructions

ADDITIONAL FUNCTIONS:

Salinity correction: 0.0..70.0

Pabs / altitude correction: automatic with integrated sensor

Measuring depth (only GMH 5650): hydrostatic depth measurement *1)

Output / external supply: OUT socket: interface 38400 baud, external supply 5 V
additional GMH 5650: analog output 0..1 V, adjustable

Calibration: 1 point air, simple adjustment in air at the push of a button

additional GMH 5650: 1 point water, 2 point or 3 point (air + zero point and 100 % O₂)

GLP: additional calibration interval

GMH 5650: Calibration history

Data logger (only GMH 5650): Cyclic: 10,000, single: 1000, single value logger with measuring point input

Alarm (only GMH 5650): 2 alarm channels (O₂ and temperature) with separate alarm limits. Alerting sounder/visual/interface

*1) A simple hydrostatic depth measurement can be made with special accessories. Together with the logger function, very convenient oxygen profiles in waters can be recorded.

GMH 5630-L02

Item No. 607470

Portable instrument for dissolved oxygen,
incl. device, sensor 2 m: GWO5610-L02,
replacement GWOK 02, KOH 100

GMH 5650-L02

Item No. 607474

Portable instrument for dissolved oxygen with data logger,
incl. Device, sensor 2 m: GWO5610-L02, replacement GWOK 02, KOH 100

VARIANTS:**GMH 5630-L04**

Item No. 606881

Portable instrument for dissolved oxygen, device, sensor
4 m: GWO5610-L04, replacement GWOK 02, KOH 100

GMH 5630-L10

Item No. 607471

Portable instrument for dissolved oxygen, device, sensor
10 m: GWO5610-L02, replacement GWOK 02, KOH 100

GMH 5630-L30

Item No. 607472

Portable instrument for dissolved oxygen, device, sensor 30
m: GWO5610-L02, replacement GWOK 02, KOH 100

GMH 5650-L04

Item No. 606883

Portable instrument for dissolved oxygen with data logger,
device, sensor 4 m: GWO5610-L04, replacement GWOK 02,
KOH 100

GMH 5650-L10

Item No. 607478

Portable instrument for dissolved oxygen with data logger,
device, sensor 10 m: GWO5610-L02, replacement GWOK 02, KOH 100

GMH 5650-L30

Item No. 607479

Portable instrument for dissolved oxygen with data logger
with sensor with 30 m cable length

ACCESSORIES OR SPARE PARTS:**GKK 5001**

Item No. 611606

Case for GMH 5000 / G7500 series water analysis / universal,
395 x 295 x 106 mm (W x H x D)

DISSOLVED O₂ SENSOR

HIGHLIGHTS:

- Significantly lower flow than with the predecessor necessary
- Dry delivery for long shelf life possible
- Still compact 12 mm in diameter!

GWO 5610-L02

Item No. 607386

Spare sensor for dissolved oxygen, GMH 56 & GMH 75, sensor with 2 m cable

GENERAL:

Standard, for laboratory use, electrode is supplied filled, dry delivery on request

ACCESSORIES OR SPARE PARTS:**GWO 5610-L04**

Item No. 607764

Spare sensor for dissolved oxygen, GMH 56 & GMH 75, Sensor with 4 m cable (field use)

GWO 5610-L10

Item No. 607765

Spare sensor for dissolved oxygen, GMH 56 & GMH 75, Sensor with 10 m cable (field use)

GWO 5610-L30

Item No. 607766

Spare sensor for dissolved oxygen, GMH 56 & GMH 75, Sensor with 30 m cable (field use)

GSKA 3600

Item No. 601414

Protective cap for depth measurement for sensors Ø 12 mm

**GSKA 3610**

Item No. 607267

Protective cap for depth measurement for sensors Ø 12 mm

GWOK 02

Item No. 608012

Spare membrane head for GWO 5610

GAS 5610

Item No. 608032

Working set, consisting of 3 GWOK 02, 1 KOH100, 1 pipette

KOH 100

Item No. 603356

KOH spare electrolyte, 100 ml

**GCAL 3610**

Item No. 611371

Calibration bottle for gel. Oxygen sensors with Ø 12 mm

GKK 5001

Item No. 611606

Case for GMH 5000 / G7500 series water analysis / universal, 395 x 295 x 106 mm (W x H x D)

MEASUREMENT SET FOR DISSOLVED OXYGEN

**GMH 5630-SET**

Item No. 611613

Measuring set:

Device, GWO5610-L02, GWOK 02, KOH 100, GSKA 3610, GKK 5001

GMH 5650-SET

Item No. 611255

Measuring set: Device, GWO5610-L02, GWOK 02, KOH 100, GSKA 3610, software, USB 5100, GKK 5001

GENERAL:

With our ready-to-use measurement set for dissolved oxygen, you not only have everything you need for your work in a practical case – with the set you save 13 % compared to the individual components

APPLICATIONS:

No matter what industry you are in, our comprehensive set will never let you down and, thanks to the practical case, is always tidy

TECHNICAL SPECIFICATIONS:

Measurement channels:	O ₂ , T, air pressure (integrated) / measuring depth
Measuring ranges:	
O ₂ concentration:	0.00..70.00 mg/l (ppm) (resolution can be selected)
O ₂ saturation:	0.0..600.0 % O ₂ (resolution selectable)
O ₂ partial pressure:	0..1200 hPa O ₂ (0.0..427.5 mmHg)
Temperature:	0..50.0 °C
Air pressure:	300..5000 hPa abs
Measuring depth:	0..40.0 m water column
Dimensions:	450 x 360 x 123 mm (case)
Weight:	approx. 1900 g
Scope of delivery:	Device with silicone protective cover, sensor, protective cap, 2 pipettes, spare membrane head, spare electrolyte, case, battery, test report, operating instructions GMH 5650-SET only: software, interface converter

ACCESSORIES OR SPARE PARTS:**GMH 5630**

Item No. 606880

Portable instrument for dissolved oxygen without accessories

GMH 5650

Item No. 606882

Portable instrument for dissolved oxygen with data logger without accessories

GWO 5610-L02

Item No. 607386

Spare sensor for dissolved oxygen, GMH 56 & GMH 75 with 2 m cable

GSKA 3610

Item No. 607267

Protective cap for depth measurement for sensors Ø 12 mm

GSOFT 3050

Item No. 601336

Windows software for GMH 3000 and GMH 5000 with logger

USB 5100

Item No. 601095

Interface converter GMH 5xxx <=> PC, Galvanic isolation

GWOK 02

Item No. 608012

Spare membrane head for GWO 5610

KOH 100

Item No. 603356

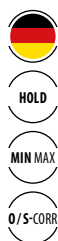
KOH replacement electrolyte 100 ml

GKK 5001

Item No. 611606

Case for GMH 5000 / G7500 series water analysis / universal, 395 x 295 x 106 mm (W x H x D)

PRECISE SOLVED OXYGEN MEASURING DEVICES (DO)



ROBUST AND GOOD VALUE



HIGHLIGHTS:

- Modern and functional housing
- 3-line display / overhead display at the push of a button
- Backlit
- Waterproof (IP65 / IP67)
- Robust, long battery life
- Including galvanic oxygen sensor
- Easy air calibration at the push of a button

SUCCESSOR
OF GOX 20GSKA 3600
mounted on
the sensor**G 1610**

Item No. 610003

Waterproof dissolved oxygen meter (DO) with sensor, Cable 2 m

G 1610-4

Item No. 408380

Waterproof dissolved oxygen meter (DO) with sensor, Cable 4 m

GENERAL:

When developing the new G 1000 series, the focus was consciously on the essential functions of the measurement technology. Pure measurement with a focus on precision, speed and reliability, packaged in a compact housing, enables the outstanding price/performance ratio, Made in Germany.

The new portable instruments also have an impressive ergonomic design, are dust- and water-proof to IP 65/67, and feature a backlit display.

The oximeter with the maintenance-friendly galvanic sensor is an entry-level device suitable for everyday use, both concentration in mg/l (ppm) and saturation in percent can be read off directly without using tables.

The adjustment takes place at the push of a button in ambient air. For field use in bodies of water, the use of a GSKA protective cap is recommended to protect the membrane.

APPLICATION:

Fresh and sea water aquariums, aquaculture/fish farming, monitoring of wells and bodies of water

TECHNICAL SPECIFICATIONS:

Measuring range / resolution: 0.0..20.0 mg/l (or ppm) O₂ concentration 0..200 % O₂ saturation

accuracy

Oxygen: ± 1.5 % of meas. Mean ± 0.2 mg/l or ± 1.5 % of meas. MW ± 2 % O₂ saturation

Temperature: ± 0.3 °C

Sensors / measuring inputs: Galvanic sensor (active membrane type), electrolyte KOH Cable 2 m or 4 m, permanently connected to the device, with integrated temperature sensor

Response time T₉₅: 10 s at nominal temperature

Operating pressure sensor: max. 3 bar (~ 30 m water depth)

Area of application sensor: 0..40 °C

Compensation

Temperature: automatically via integrated temperature measurement

Air pressure: Compensation possible via manual input (usually not required)

Salinity: by manual entry

Display: 3-line with battery level indicator, backlit, protected by break-resistant glass, overhead display at the push of a button

Service: 4 durable, easy-to-use buttons

Additional functions: Stability detection, automatic adjustment to ambient air

Environment display device: -20 .. + 50 °C, 0..95 % RH

Power supply: 2 x AA batteries, > 3000 h battery life

Protection class: IP65 / IP67

Housing: break-proof ABS housing

Dimensions: 108 x 54 x 28 mm (H x W x D) without sensor

Weight: approx. 240 g (device including sensor)

Scope of delivery: Device, sensor, replacement membrane cap GWOK02 and replacement electrolyte KOH 100, 2 x batteries, operating instructions

ACCESSORIES OR SPARE PARTS:**GWOK 02**

Item No. 608012

Spare membrane head for GWO 5610

KOH 100

Item No. 603356

KOH spare electrolyte, 100 ml

GSKA 3600

Item No. 601414

Protective cap for depth measurement for sensors Ø 12 mm

GSKA 3610

Item No. 607267

Protective cap for depth measurement for sensors Ø 12 mm

GCAL 3610

Item No. 611371

Calibration bottle for gel. Oxygen sensors with Ø 12 mm

ST-G1000

Item No. 611373

G 1000 protective bag made of Nappa leather, a universal cutout for sensors, belt clip

GB AA

Item No: 610049

Replacement battery Mignon (AA) 1.5 V (2 pieces are required)

GKK 1002

Item No. 411907

Case for G1000 series water analysis small

GKK 1003

Item No. 411917

Case for 2x G1000 series water analysis and 2x PHLx 450 x 360 x 106 mm (W x H x D)

**G 1610-1002**

Item No. 474287

Waterproof dissolved oxygen meter (DO) with sensor Device with permanently connected sensor 2 m: GWO5610-L02 and case GKK 1002

OXYGEN METER FOR DISSOLVED OXYGEN IN LIQUIDS



AUTO OFF

HOLD

MIN MAX

MEASURED VARIABLES:
O₂ CONCENTRATION, O₂ SATURATION AND
O₂ PARTIAL PRESSURE (ONLY GMH3651)



HIGHLIGHTS:

- Automatic air pressure compensation
- Salinity correction
- Simple calibration

ADDITIONAL FUNCTIONS GMH 3651:



GMH 3611

Item No. 605922

Portable instrument for dissolved oxygen incl. device, sensor
4 m: GWO3600-L04, replacement GWOK 01, KOH 100

GMH 3651

Item No. 605924

Portable instrument for dissolved oxygen with data logger
incl. Device, sensor 4 m: GWO3600-L04, replacement GWOK
01, KOH 100

TECHNICAL SPECIFICATIONS:

Measuring ranges: (device)

O ₂ concentration:	0.00..70.00 mg/l (ppm) (resolution can be selected)
O ₂ saturation:	0.0..600.0 % O ₂ (resolution selectable)
O ₂ partial pressure:	3651: 0..1200 hPa O ₂ (0.0..427.5 mmHg)
Temperature:	0.0..50.0 °C
Pressure:	3611: 10..1200 hPa abs. 3651: 300..5000 hPa abs. or 0..1000.0 m water column * (with pressure connection)

Accuracy: (at nominal temperature = 25 °C)

Oxygen:	± 1.5 % of meas. MW ± 0.2 mg/l (0.25 mg/l) or ± 2.5 % of meas. MW ± 0.3 mg/l (25.70 mg/l)
Temperature:	± 0.1 °C ± 1 digit
Pressure:	± 0.5 % FS ± 1 digit ± 3 hPa or 0.1 % of meas. MW. ± 2 hPa (750..1100 hPa)

Sensor connection: 6-pole shielded mini-DIN socket

Sensor: Active membrane type.
Electrode Ø at the front:
approx. 12 mm, total length:
approx. 220 mm including kink
protection, neck ring: Ø approx.
20 mm, 4 m long connection cable
with mini-DIN plug.

Response time: 95 % in 10 s, depending on the temperature

Lifespan: approx. 3 years, care-dependent

Working temperature: 0 .. +40 °C

Operating pressure: max. 3 bar operating pressure
GWO 3600 sensor max. 3000 hPa
rel. or 4000 hPa abs. Please note!

Approach velocity: min. 30 cm/s

Display: 2 x 4-digit LCD (12.4/7 mm high)

Interface:

Serial interface, can be connect-
ed directly to the RS232 or USB
interface of a PC via a galvanically
isolated interface converter

Power supply:

9 V battery and additional power
supply socket for external
10.5..12 V DC voltage supply (suita-
ble power supply: GNG10/3000)

Battery life:

approx. 500 h

Housing

Made of impact-resistant ABS,
membrane keyboard, transparent
panel, integrated pop-up/
hanger bracket

Dimensions:

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

Weight:

approx. 300 g
(cpl. with battery / probe)

Scope of delivery:

Device including electrode,
GWOK01 and KOH replacement
electrolyte, battery, test report,
operating instructions

ADDITIONAL FUNCTIONS:

Temperature compensation:
automatically via the temperature sensor integrated
in the electrode.

Air pressure compensation:
Automatically via integrated pressure sensor,
display of the current air pressure.

Salinity correction:
automatic, the salinity value can be set
from 0.0..70.0 using the buttons.

Calibration:
1-point calibration: Simple adjustment in air
at the push of a button with the GMH 3651,
additional 2 and 3-point calibration

Calibration interval:
after a selectable period (1 – 365 days or inactive)
a recalibration is requested.
GMH 3651: additional calibration history

Analog output (GMH 3651 only):
0..1 V, freely scalable

Alarm (GMH 3651 only):
2 alarm channels (O₂ and temperature) with separate alarm
limits, sounder / visual / interface alarm

Data logger (GMH 3651 only):
Cyclic: 10,000 data records, single value: 1,000 data records
(with measuring point input, 40 adjustable measuring point
texts or measuring point numbers)

VARIANTS:

GMH 3611-L10

Item No. 606233

Portable instruments for dissolved oxygen, device, sensor
10 m: GWO3600-L10, replacement GWOK 01, KOH 100

GMH 3611-L30

Item No. 415157

Portable instruments for dissolved oxygen, device, sensor
30 m: GWO3600-L30, replacement GWOK 01, KOH 100

GMH 3651-L10

Item No. 606105

Portable instruments for dissolved oxygen with data logger,
device, sensor 10m: GWO3600-L10, replacement GWOK 01,
KOH 100

GMH 3651-L30

Item No. 606106

Portable instruments for dissolved oxygen with data logger,
device, sensor 30m: GWO3600-L30, replacement GWOK 01,
KOH 100

ACCESSORIES OR SPARE PARTS:

see the next page

* A hydrostatic depth measurement can be made with special
accessories (on request / pressure connection). Together with the
logger function, very Convenient oxygen profiles in waters can
be recorded.

ACCESSORIES

ACCESSORIES OR SPARE PARTS:

GMH 3611-GL

Item No. 606310

Portable instrument for dissolved oxygen, device only, without sensor

GMH 3651-GL

Item No. 606312

Portable instrument for dissolved oxygen with data logger Device only, without electrode

GWO 3600-L04

Item No. 603895

Replacement sensor for dissolved oxygen, GMH 36/OXY 36
Sensor with 4 m cable**GWO 3600-L10**

Item No. 603258

Replacement sensor for dissolved oxygen, GMH 36/OXY 36
Sensor with 10 m cable**GWO 3600-L30**

Item No. 603259

Replacement sensor for dissolved oxygen, GMH 36/OXY 36
Sensor with 30 m cable**GWOK 01**

Item No. 601411

Replacement membrane head for GWO 3600

GAS 3600

Item No. 603497

Work set (3 replacement membrane heads and 100 ml KOH electrolyte)

GSKA 3600

Item No. 601414

Protective cap for depth measurement
for sensors Ø 12 mm**GSKA 3610**

Item No. 607267

Protective cap for depth measurement for sensors Ø 12 mm

KOH 100

Item No. 603356

KOH spare electrolyte, 100 ml

GCAL 3610

Item No. 611371

Calibration bottle for gel. Oxygen sensors with Ø 12 mm

GKK 3001

Item No. 611605

Case for GMH 3000 series water analysis / universal
with cutouts for 1 instrument of the GMH 3xxx series and
accessories for water analysis 395 x 295 x 106 mm (W x H x D)GCAL 3610 on
the sensor

OXYGEN METER SETS

**GMH 3611-SET04**

Item No. 474202

Portable instrument for dissolved oxygen, sensor 4 m: GWO3600-L04, replacement GWOK 01, KOH 100, protection GSKA3610, case GKK3001

GMH 3651-SET04

Item No. 474203

Portable instrument for dissolved oxygen with data logger
Device, sensor 4 m: GWO3600-L04, replacement GWOK 01, KOH 100, protection GSKA3610, case GKK3001

TECHNICAL SPECIFICATIONS:

Measuring ranges: (device)

O₂ concentration:	0.00..70.00 mg/l (ppm) (resolution can be selected)
O₂ saturation:	0.0..600.0 % O ₂ (resolution selectable)
O₂ partial pressure:	3651: 0..1200 hPa O ₂ (0.0..427.5 mmHg)
Temperature:	0..50.0 °C
Pressure:	3611: 10..1200 hPa abs. 3651: 300..5000 hPa abs. or 0..100.0 m water column * (with pressure connection)

Accuracy: (at nominal temperature = 25 °C)

Oxygen:	± 1.5 % of meas. MW ± 0.2 mg/l (0.25 mg/l) or ± 2.5 % of meas. MW ± 0.3 mg/l (25..70 mg/l)
Temperature:	± 0.1 °C ± 1 digit
Pressure:	± 0.5 % FS ± 1 digit ± 3 hPa or 0.1 % of meas. MW ± 2 hPa (750..1100 hPa)

For further technical data see GMH 3611 and GMH 3651

MULTISENSOR WATER ANALYSIS PORTABLE INSTRUMENT

**G 7500**

Item No. 414318

MultiSensor water analysis portable instrument

G 7500-PH/O₂

Item No. 414787

MultiSensor water analysis portable instrument set for pH and oxygen device including Micro USB/USB-A 1.8 m communication and charging cable in case GKK 2021

pH electrode GE 125-L02, PHL 4, PHL 7, PHL 10, KCL3M, GRL 100

O₂ sensor GWO 5610-L02, replacement GWOK02, GSKA 3610, KOH, 2 pipettes, vinyl gloves**G 7500-PH/CON**

Item No. 414788

MultiSensor water analysis portable instrument set for pH and conductivity device including Micro USB/USB-A 1.8 m communication and charging cable in case GKK 2021

pH sensor GE 125-L02, PHL 4, PHL 7, PHL 10, KCL3M, GRL 100

Conductivity measuring cell LF 425-L02

G 7500-PH/CON/O₂

Item No. 414789

MultiSensor water analysis portable instrument set for pH, conductivity and oxygen device including Micro USB/USB-A 1.8 m communication and charging cable in case GKK 2021

pH electrode GE 125-L02, PHL 4, PHL 7, PHL 10, KCL3M, GRL 100

Conductivity sensor LF 425-L02 O₂ sensor GWO 5610-L02, replacement GWOK02, GSKA 3610, KOH, 2 pipettes, vinyl gloves**GENERAL:**

The G 7500 is a convenient multi-channel water analyzer for the simultaneous measurement of two measured variables and the associated one temperature.

All the essentials can be combined electrochemical measurements:

- pH/ORP + conductivity/salinity
- pH/Redox + dissolved Oxygen

The illuminated graphic display shows all parameters in plain text German or English, other languages can be integrated (Charges on request). Large display or measured value diagrams can also be displayed. The use of our proven standard connectors ensures that you can use our standard sensors – consciously without surcharge through complex technology in the sensors. Thus, the device is impressive due to the performance and the affordable system price (see also our sets). The modern device platform uses the usual USB cable for charging the internal batteries (interchangeable) and to access the data logger without any additional software or adapters are necessary. The logger is comfortably accessed like a USB 2.0 data stick.

HIGHLIGHTS:

- o simultaneous measurement of pH/oxygen or pH/conductivity and the associated temperatures
- o built-in galvanic isolation allows simultaneous measuring – with inexpensive standard sensors
- o the display enables convenient reading of several values at the same time, as well as the course of the measured values in diagram form
- o The data logger can be accessed directly via USB – with standard smart-phone cable or software
- o simple and convenient battery charging via USB port

APPLICATIONS:

You have applications such as water monitoring, neutralization processes or agricultural surveys neatly under control.

- Water monitoring
- Fresh water treatment
- Sewage treatment plants
- Fish farming and aquaculture
- Vertical/urban farming
- Conventional agriculture

TECHNICAL SPECIFICATIONS:**Input no. 1 pH/redox**

Connection: BNC waterproof

Measuring range: -2.00..+16.00 pH (± 0.25 % FS @ 25 °C)
othe -1500 .. + 1500 mV redox voltage (± 0.25 % FS @ 25 °C)

Temperature: -10.0.. +150.0 °C (Pt1000)
± 0.25 % FS connection via 4 mm banana, alternatively via O₂/LF sensor

Temperature compensation: Automatically via connected sensor

Input no. 2

Connection: 7-pole bayonet socket

Temperature: -10.0.. +110.0 °C (NTC or Pt1000) Measuring range (Pt 1000)
-10.0..+110.0 °C Measuring range (NTC 10k)
-10.0..+110.0 °C (integrated in O₂/LF sensor)

Conductivity

Measuring range: 0 µS/cm..500 mS/cm (± 0.5 % FS @ 25 °C)
Salinity/PSU: 0.0..70.0 g/kg
Cell constant: 0.3..1.6000 l/cm

Temperature compensation: Off, linear (0.300..3.000 %/K), NLF (according to DIN EN 27888), Reference temperature: 20 °C or 25 °C (adjustable)

Dissolved oxygen

Measuring range: Oxygen saturation: 0.0:..500.0 % sat
Oxygen concentration: 0.0..50.0 mg/l
Oxygen partial pressure: 0 ..1013 mbar O₂
(Accuracy depending on the sensor and Calibration, with flow> 20 cm/s, plus ± 1.5 % FS @ 25 °C, 100 % sat. O₂)

Temperature compensation: Automatically via connected sensor

Pressure compensation: Manual, automatic via int. sensor: 500..1100 hPa ± 4 hPa

Salinity compensation: Manual PSU 0..70 g/kg

Additional functions: Text-based user interface (DE/EN), charging via USB socket
(3 x AAA rechargeable batteries integrated, interchangeable)

GAS ANALYSIS



GMH 5690

GMH 5695



GMH 3692 + sensor

GMH 3695 + sensor



ResOx

APPLICATION:

Measurement of atmospheric oxygen % vol. O₂

•

•

•

•

•

Ambient pressure / pressure connection

•/-

•/•

•/-

•/•

•/•

Relative humidity

Temperature

•

•

•

•

•

CO concentration

CO₂ concentration (carbon dioxide)

Diving application / MOD *

Exhaust gas path monitoring

Ambient air monitoring

EQUIPMENT:

Measuring ranges

O₂ concentration0..100 % O₂0..100 % O₂0..100 % O₂0..100 % O₂0..100 % O₂CO₂ concentration

0..1100 hPa

0..1100 hPa

0..1100 hPa

0..1100 hPa

0..1100 hPa

CO concentration

Temperature

-5..+50 °C

-5..+50 °C

-5..+50 °C

-5..+50 °C

-5..+50 °C

Ambient pressure

10..1200 hPa

300..5000 hPa

10..1200 hPa

300..5000 hPa

300..5000 hPa

Humidity

Sensor

external, order separately

external, order separately

external

General functions

Min / max

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Hold, auto-off

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Backlit

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Alarm / interface

•/•

•/•

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•/•

•/•

Logger

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•

•

* not suitable for use in "underwater applications" (rebreather, etc.)



G 1690



G 1690 T



G 1910



GCO 100



HD21-ABE-17

APPLICATION:Measurement of atmospheric oxygen % vol. O₂

•

•

Ambient pressure / pressure connection

•/-

Relative humidity

•

Temperature

•

•

CO concentration

•

•

CO₂ concentration (carbon dioxide)

•

Diving application / MOD *

•/-

•/•

Exhaust gas path monitoring

•

•

Ambient air monitoring

•

•

•

EQUIPMENT:

Measuring ranges

O₂ concentration0..100 % O₂0..100 % O₂CO₂ concentration-02: 0..2000 (max 10000)
ppm CO₂ / -20: 0..2 % CO₂0..5000 ppm CO₂

CO concentration

0..1000 ppm CO 0..60 %
COHb

0..500 ppm CO

Temperature

-20 .. + 60 °C

Ambient pressure

750..1100 hPa

Humidity

0..100 % RH

Sensor

external

external

internally

internally

internally

General functions

Min / max

•

•

•

•

Hold, auto-off

•

•

•

•

•

Backlit

•

•

•

•

Alarm / interface

•/-

•/-

•/•

Logger

•

* not suitable for use in "underwater applications" (rebreather, etc.)

WATERPROOF ATMOSPHERIC OXYGEN METER



GMH 5690

Item No. 607466

Portable instrument for gaseous oxygen, device only, without sensor

GMH 5695

Item No. 607468

Portable instrument for gaseous oxygen with data logger, device only, without sensor

APPLICATION:

- Inert gas measurements at
 - Welding and soldering
 - Food technology/packaging technology (MAP, see also the ResOx 5695 set)
 - For storage of food, semiconductor components, etc.
 - Immersion gas test: checking the oxygen concentration in nitrox, trimix or similar gas mixtures

Note: not suitable for use in "underwater applications" (rebreather etc.)

TECHNICAL SPECIFICATIONS:	GMH 5690	GMH 5695
Measurement channels:	O ₂ , T, air pressure (integrated)	O ₂ , T, air pressure (integrated, with external connection)
Measuring ranges		
O ₂ concentration:	0.0..100.0 % O ₂ vol. Or 0.00..100.00 % O ₂ Vol. (resolution can be selected via menu)	
O ₂ 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 via menu)	
Temperature:	-5.0 .. + 50.0 °C	
Air pressure:	10..1200 hPa abs	300..5000 hPa abs *)
Accuracy (device at nominal temperature = 25 °C)		
O ₂ concentration:	± 0.1 % ± 1 digit	
Temperature:	± 0.1 °C ± 1 digit	
Air pressure:	± 3 hPa or 0.1 % of meas. MW (higher applicable)	
Compatible sensors	GGO5 / GOO5 with elements GOEL 370, 381, etc.	GGA5 / GGO5 / GOO5 with elements GOEL 370, 381, etc.
Connections		
Sensor:	7-pole bayonet connection	7-pole bayonet connection nozzle for pressure connection *)
Output/ext. Care:	OUT jack: - Interface 38400 baud - external supply 5 V	OUT jack: - Interface 38400 baud - Analog output 0..1 V, adjustable - external supply 5 V
Display:	4 ½ digits 7-segment, illuminated (white)	
Working conditions:	-25 .. + 50 °C; 0..95 % RH (non-condensing, sensor min -5 °C)	

HIGHLIGHTS

- High display resolution (0.01 % O₂ concentration)
- Waterproof and robust (silicone protective cover)
- Large backlit double display
- Multi-point calibration for precision measurements
- Ambient pressure compensation with integrated barometer
- Alarm function

ADDITIONAL HIGHLIGHTS GMH 5695

- Data logger
- Analog output
- Pressure connection

ADDITIONAL FUNCTIONS GMH 5695:



THE DEVICE IS FOR CHECKING ONLY.
IT DOES NOT REPLACE A MONITORING DEVICE
THAT REQUIRES APPROVAL!

Power supply:	2 x AAA batteries, power consumption: 0.9 mA
Battery life:	approx. 1000 h (without lighting)
Protection class:	IP65 / IP67
Housing:	impact-resistant ABS, with stand-up / hanging bracket
Dimensions:	160 x 86 x 37 mm (H x W x D) including silicone protective cover
Weight:	approx. 250 g including battery and protective cover
Scope of delivery:	Portable instrument including batteries (2 x AAA), silicone protective cover, operating instructions, quick reference, test report

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

ADDITIONAL FUNCTIONS:

- Background lighting:** duration adjustable (off, 5 s..2 min.)
- Calibration:** 1 point air, 2 point or 3 point (air + zero point and 100 % O₂)
- GLP:** Calibration interval **only GMH 5695:** calibration history
- Data logger (only GMH 5695):** Cyclic: 10,000, single: 1000 single value logger with measuring point input
- Alarm:** 2 alarm channels (O₂ and temperature) with separate alarm limits. Alerting sounder / visual / interface

ACCESSORIES OR SPARE PARTS:

- GKK 3600**
Item No. 601062
Case with knob foam for universal use, 395 x 295 x 106 mm (W x H x D)
- USB 5100**
Item No. 601095
Interface converter GMH 5xxx <=> PC
- GSOFT 3050**
Item No. 601336
Windows software for GMH 3000 and GMH 5000 with logger

ATMOSPHERIC OXYGEN METER



WIDE RANGE
OF APPLICATIONS

HIGHLIGHTS:

- Alarm monitoring with integrated sounder
- Ambient pressure compensation with integrated barometer

ADDITIONAL FUNCTIONS OF GMH 3695:

- Pressure connection



THE DEVICE IS FOR CHECKING ONLY.
IT DOES NOT REPLACE A MONITORING DEVICE
THAT REQUIRES APPROVAL!

GMH 3692

Item No. 605919

Portable instrument for gaseous oxygen, device only, without sensor

GMH 3695

Item No. 605921

Portable instrument for gaseous oxygen with data logger, device only without sensor

APPLICATION:

Biochemistry:

Oxygen monitoring in incubators for growing cell cultures.
Monitoring the fermentation of fruits in fermentation plants, etc.

Medical technology:

Monitoring the oxygen concentration in ventilators; breathing air control;
oxygen concentration monitoring e.g. in oxygen tents, etc.

Food technology:

Checking the residual oxygen in packaging (e.g. coffee, tea, MAP, etc.).
Monitoring of the oxygen content in critical production processes and storage.

Air conditioning and ventilation technology:

Oxygen measurement; air quality monitoring; oxygen concentration measurement in closed ventilation systems, etc.

Sports:

Diving gas test: checking the oxygen concentration in nitrox, trimix or similar gas mixtures
Note: Not suitable for use in "underwater applications" (rebreather etc.)

TECHNICAL SPECIFICATIONS:

Measuring ranges

O ₂ -concentration:	0.0..100.0 % O ₂ (gaseous) 0..1100 hPa O ₂
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)

O ₂ -Koncentration:	± 0.1 % ± 1 digit
Temperature:	± 0.1 °C ± 1 digit
Air pressure:	± 3 hPa or 0.1 % of meas. MW (higher applicable)

Oxygen sensor: observe max. operating pressure of the oxygen sensor,
e.g. GOEL 370/381: 500..2000 hPa abs.

Sensor connection: 6-pole shielded mini-DIN socket.
at GMH 3695: additional nozzle for pressure connection

Display: two 4-digit LCD displays (12.4 mm or 7 mm high) and additional arrows.

Control elements: 6 membrane buttons for on/off switch, selection of the measuring range, min and max value memory, hold function, calibration, etc.

Working temperature: 0 .. + 50 °C

Relative humidity: 0 .. + 95 % RH (not condensing)

Storage temperature: -20 .. + 70 °C

Interface: serial interface, via galv. isolated interface converter GRS 3100 or GRS 3105 or USB 3100 N (accessory) can be connected directly to the RS232 or USB interface of a PC.

Power supply:

9 V battery and additional power supply socket for external 10.5..12 V DC voltage supply (suitable power supply: GNG10/3000)

Battery life:

approx. 300 h

Housing:

Made of impact-resistant ABS, membrane keyboard, transparent panel, integrated pop-up clip

Dimensions:

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

Weight:

approx. 160 g (cpl. with battery)

Scope of delivery:

Device, battery, test report, operating instructions

ADDITIONAL FUNCTIONS:

Temperature compensation:

automatically via the temperature sensor integrated in the sensor housing.

Air pressure compensation:

The O₂ concentration is automatically compensated with the integrated pressure sensor.

Calibration: 1-point calibration:

simplest adjustment in atmospheric air. (device is calibrated to 20.9 % by pressing the key).

2-/3-point calibration:

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

Calibration interval:

after a selectable period (1..365 days or inactive) a recalibration is requested.

GMH 3695: additional calibration history

Analog output (GMH 3695 only): 0..1 V, freely scalable

Pressure connection piece (only GMH 3695): for pressure compensation

Data logger (GMH 3695 only): cyclic: 8000 data records, cycle selectable: 1 s..60 min Single: 1000 data records, with measuring point input

ACCESSORIES OR SPARE PARTS:

GKK 3000

Item No. 601048

Device with soft cutouts for 1x GMH 3000, 275 x 229 x 83 mm (W x H x D)

USB 3100 N

Item No. 601092

Interface converter GMH3xxx <=> PC, USB, galvanic isolation

GRS 3105

Item No. 601099

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

GSOFT 3050

Item No. 601336

Windows software for GMH 3000 and GMH 5000 with logger

ST-R1

Item No. 601066

GMH 3000 protective bag made of Nappa leather, 1 connection, round

ATMOSPHERIC OXYGEN SENSORS FOR GMH 569X AND GMH 369X



CLOSED SENSOR DESIGN GGO



CLOSED

GGO 581*Item No. 610029*

Atmospheric oxygen sensor, closed design, incl. GOEL 381, protective gases in general, precise also with $O_2 \leq 0.2 \text{ vol. \% } O_2$ and $> 35 \text{ vol. \% } O_2$, suitable for GMH 569x

GGO 570*Item No. 607480*

Atmospheric oxygen sensor, closed version, incl. GOEL 370, for protective gases with high CO_2 concentration and $O_2 < 35 \text{ vol. \% } O_2$, long life, suitable for GMH 569x

GGO 381*Item No. 610030*

Atmospheric oxygen sensor, closed version, incl. GOEL 381, protective gases in general, precise also with $O_2 \leq 0.2 \text{ vol. \% } O_2$ and $> 35 \text{ vol. \% } O_2$, suitable for GMH 369x

GGO 370*Item No. 601224*

Atmospheric oxygen sensor, closed version, incl. GOEL 370, for protective gases with high CO_2 concentration and $O_2 < 35 \text{ vol. \% } O_2$, long life, suitable for GMH 369x

GENERAL:

- Suitable for positive and negative pressure
- Use in gas-tight systems

APPLICATION:

Suitable for measurements in the atmosphere as well as in systems without or low overpressure or underpressure. This type of sensor has a screw thread and can be installed gas-tight in almost all systems either directly or using a tube adapter.

longer cable lengths of 4 m and 10 m on request



OPEN SENSOR DESIGN GOO



OPEN

GOO 581*Item No. 610033*

Atmospheric oxygen sensor, open version, incl. GOEL 381, protective gases in general, precise also with $O_2 \leq 0.2 \text{ vol. \% } O_2$ and $> 35 \text{ vol. \% } O_2$, suitable for GMH 569x

GOO 570*Item No. 607482*

Atmospheric oxygen sensor, open version, incl. GOEL 370, for protective gases with high CO_2 concentration and $O_2 < 35 \text{ vol. \% } O_2$, long life, suitable for GMH 569x

GOO 381*Item No. 610034*

Atmospheric oxygen sensor, open version, incl. GOEL 381, protective gases in general, precise also with $O_2 \leq 0.2 \text{ vol. \% } O_2$ and $> 35 \text{ vol. \% } O_2$, suitable for GMH 369x

GOO 370*Item No. 601228*

Atmospheric oxygen sensor, open version, incl. GOEL 370, for protective gases with high CO_2 concentration and $O_2 < 35 \text{ vol. \% } O_2$, long life, suitable for GMH 369x

GENERAL:

- Suitable for air or gas flow
- Fast temperature compensation

APPLICATION:

Due to the special sensor construction, the sample gas "flows around" the sensor and can escape into the open through the holes in the housing. If there is a slight flow onto the sensor, no pressure can build up that would falsify the measurement result. Particularly suitable for measuring gases from pressurized cylinders, etc. and can also be used for room gas measurements without further ado.

longer cable lengths of 4 m and 10 m on request

CLOSED VERSION WITH PRESSURE CONNECTION GGA

FOR DEVICES WITH
PRESSURE CONNECTION**GGA 581***Item No. 610031*

Atmospheric oxygen sensor with pressure connection, incl. GOEL 381, protective gases in general, precise also with $O_2 \leq 0.2 \text{ vol. \% } O_2$ and $> 35 \text{ vol. \% } O_2$, suitable for GMH 5695

GGA 570*Item No. 607486*

Atmospheric oxygen sensor with pressure connection, incl. GOEL 370, for protective gases with high CO_2 concentration and $O_2 < 35 \text{ vol. \% } O_2$, long life, suitable for GMH 5695

GGA 381*Item No. 610032*

Atmospheric oxygen sensor with pressure connection, incl. GOEL 381, protective gases in general, precise also with $O_2 \leq 0.2 \text{ vol. \% } O_2$ and $> 35 \text{ vol. \% } O_2$, suitable for GMH 3695

GGA 370*Item No. 607484*

Atmospheric oxygen sensor with pressure connection, incl. GOEL 370, for protective gases with high CO_2 concentration and $O_2 < 35 \text{ vol. \% } O_2$, long life, suitable for GMH 3695

GENERAL:

This housing is ideal for devices with an external pressure connection (GMH 5695/3695). Especially in systems with overpressure or underpressure or with existing back pressure due to flow.

APPLICATION:

It can be mounted airtight (attention: observe the permissible operating pressure!). The device pressure connection is connected to the sensor pressure connection. The device measures and compensates for the actual pressure at the sensor.

Longer cable lengths of 4 m and 10 m on request

Note: not suitable for use in "underwater applications" (rebreather, etc.)

FOR PRECISE GAS MEASUREMENT IN PROTECTIVE GAS APPLICATIONS

**GOG 370***Item No. 482805*

Atmospheric oxygen sensor with gas suction connection, incl. GOEL 370, protective gases with high CO_2 concentration and $O_2 < 35 \text{ vol. \% } O_2$, long life, gas connection: Ø4 mm conical for attaching needles, suitable for GMH 369x

GOG 381*Art.No. 477532*

Atmospheric oxygen sensor with gas suction connection, incl. GOEL 381, protective gases in general, precise also with $O_2 \leq 0.2 \text{ vol. \% } O_2$ and $> 35 \text{ vol. \% } O_2$, gas connection: Ø4 mm conical for attaching needles, suitable for GMH 369x

GOG 570*Art.No. 475267*

Atmospheric oxygen sensor with gas suction connection, incl. GOEL 370, protective gases with high CO_2 concentration and $O_2 < 35 \text{ vol. \% } O_2$, long life, gas connection: Ø4 mm conical for attaching needles, suitable for GMH 569x

GOG 581*Art.No. 482806*

Atmospheric oxygen sensor with gas suction connection, incl. GOEL 381, protective gases in general, precise also with $O_2 \leq 0.2 \text{ vol. \% } O_2$ and $> 35 \text{ vol. \% } O_2$, Gas connection: Ø4 mm conical for attaching needles, suitable for GMH 569x

GENERAL:

- Gas can be sucked in via the pressure connection, which is optimally routed to the sensor, therefore minimal gas consumption and very quickly.
- Commercially available medical needles (Luer lock) can be attached at the entrance.

APPLICATION:

- For precise gas measurement in protective gas applications.
- For example, use the GS 150 gas pump for priming.

RESIDUAL OXYGEN MEASURING SYSTEM RESOX



IMPROVED SUCCESSOR TO
OUR POPULAR GOG SET

HIGHLIGHTS:

- With data logger and interface
- Pressure-compensated measurement - especially important for rigid packaging!
- Inexpensive complete measuring system in a practical case

ResOx 5695-H

Item No. 610040

Residual oxygen measuring system with data logger, with GOEL 370 for protective gases with high CO₂ concentration

ResOx 5695-L

Item No. 610041

Residual oxygen measuring system with data logger, with GOEL 381 for shielding gases in general, precise even with very small measured values

GENERAL:

New measuring system with new gas pump for more measuring comfort – now also usable in rigid packaging and packaging with small amounts of gas.

APPLICATION:

Quality control of MAP food packaging and comparable applications

FAST MEASUREMENT:

- Apply sealing sticker
- Insert the needle
- Switch on the pump
- Read minimum value – after approx. 20 s

TECHNICAL SPECIFICATIONS:

Measurement channels: O₂, T, air pressure

Measuring ranges

O₂: 0.0..100.0 % O₂ or display in hPa O₂/mmHg O₂

Temperature: 0.0..50.0 °C

Air pressure: 300..5000 hPa (sensor: 500..2000 hPa)

Additional functions: Min/Max function – for convenient measurement of the final value Pressure compensation in the gas path – negative pressure in the packaging/at the sensor is compensated

Usable sensors: GOEL 370, 381, etc.

Compatible on the device

Sensor: 7-pole bayonet pressure connection for tubes with an inner diameter of 4 mm

Output/ext. Care: OUT socket:
- Interface 38400 baud
- Analog output 0.1 V, adjustable
- ext. 5V supply

Calibration: Quick calibration in air at the push of a button or 2 point/3 point (air + 0 % and 100 %)

GLP: Calibration interval, calibration history

Data logger: Cyclic: 10000, single: 1000 single value logger with input of measuring points

Pump: Motor-driven membrane pump with inlet/outlet connection, battery-operated

Max. Negative pressure: approx. -360 mbar

Delivery rate:	with GDZ 29 filter: approx. 80 ml/min
Connection:	Pressure connection for tubes with an inner diameter of 4 mm
Other features:	Device and sensor waterproof (IP65, IP67), protective armor, background lighting
Scope of delivery:	Ready-to-use system: display GMH 5695 incl. battery, sensor housing with pressure connection incl. sensor, gas pump GS 150 incl. battery, instructions, tubes/T-piece, 2 GDZ 29 filters, 2 GOG-N puncture needles Ø 0.9 mm, 1 GOG-B: 45 pcs. sealing sticker, case GKK 3700

ACCESSORIES OR SPARE PARTS:**GOG-A**

Item No. 603043

Cell foam stickers (40 pieces)

GOG-B

Item No. 610013

Sealing sticker (45 pieces)

GOG-N

Item No. 603047

Insertion needle, Ø 0.9 mm (5 pieces)

GDZ-29

Item No. 601599

Filter membrane including Luer locks (GDZ-32 and GDZ-33)

GS 150

Item No. 610005

Gas pump

GOEL 370

Item No. 601490

Spare sensor element oxygen, universal use, diving gas, long life

GOEL 381

Item No. 610035

Spare sensor element oxygen

USB 5100

Item No. 601095

Interface converter GMH 5xxx <=> PC

GSOFT 3050

Item No. 601336

Windows software for GMH 3000 and GMH 5000 with logger

G 1690 O₂-ANALYSER / OXYGEN METER

HIGHLIGHTS:

- modern and functional in pocket size
- water-protected IP65 and IP67
- convenient air balancing at the push of a button
- 3-line display with lighting / overhead display at the push of a button
- durable and maintenance-free sensor
- Scuba diver variant "T": with MOD calculation for Nitrox
- robust, long battery life
- made in Germany

G1690-35

Art. No. 482286

O₂ analyzer, CO₂-resistant, recommended 0.2...35 %**G1690-MAX**

Art. No. 482459

O₂ analyzer, 0...100 %**G1690T-35**

Item No. 482716

O₂ analyzer, MOD function, recommended 0.2...35 %**G1690T-MAX-DIVE-CAN**

Art. No. 482448

O₂ analyzer, MOD function, 0...100 %, case GKK 252, diving tank adapter GZ 5826, sensor in box**GENERAL:**

The G 1690 intentionally focuses on the essential functions of measurement technology for the reliable measurement of oxygen concentration in gases. The sensors used, GOEL 370 and GOEL 381, are essential for reliability and longevity, and are especially suitable for wet environments. The devices also impress with their ergonomics, water protection and display lighting.

APPLICATION:

Thus, the G 1690 is an economical and precise submersible instrument, but at the same time a high-quality entry device for many other oxygen measurements – for example, inert gas measurements.

Note: the device is used for additional checking. It does not replace an approved measuring instrument or safe methods of creating gas mixtures

TECHNICAL SPECIFICATIONS:**Measuring ranges**

Oxygen concentration: G 1690-35 / G 1690T-35: 0.0 ... 100.0 % by volume O₂, recommended for 0.2 ... 35.0 % vol % O₂ (outside of reduced accuracy) Standard for diving gas in recreational diving, protective gases with increased CO₂ content and much more.

G 1690-MAX / G 1690T-MAX: 0.0 ... 100.0 % by volume O₂ (also for values ≤ 0.2 and over vol. % O₂) e.g. for shielding gases with the lowest O₂ proportion or high percentage oxygen mixtures with low O₂ proportion, resolution: 0.1 % by volume O₂

G 1690T-XXX: **Recreational diver variant**: MOD calculation for nitrox up to 36 % O₂ + 169 ft. MOD resolution 1 ft. 0 ... + 60 m MOD, resolution: 1 m

Sensor: Connections M16x1 thread, 3.5 mm jack plug socket max. pressure: ± 0.25 bar difference at sensor membrane 0.6 ... 1.75 bar absolute

Connections: M16x1 thread, 3.5 mm jack plug socket

Max. Pressure: ± 0.25 bar difference at sensor membrane 0.6 ... 1.75 bar absolute

Response time: 90 % in <10 sec., temperature dependent

Accuracy with calibrated device at nominal temperature: Variants G 1690_-35: GOEL 370 sensor
< 2 vol % O₂: +/- 0.2 %
< 35 vol % O₂: +/- 0.5 %, not specified above

Variants G 1690_-MAX: GOEL 381 sensor
< 2 vol % O₂: +/- 0.1 %
< 35 vol % O₂: +/- 0.5 %
< 100 % by volume O₂: +/- 1.5 %

Sensor cable:	0.95 m, jack plug, elastic sensor protection
Measuring rate:	approx. 1 measurement per second
Nominal temperature:	25 °C
Display:	3-line with battery status display, background lighting, protected by a break-proof pane, overhead display at the push of a button
Service:	4 durable, easy-to-use buttons
Working conditions:	0 ... + 45 °C; recommended 5...30 °C: in this range optimized temperature compensation 0 ... + 95 % RH (short-term condensation possible)
Storage temperature:	-20 ... + 50 °C
Power supply:	2x AA battery (incl.), > 3000 h battery life, 4-stage battery status display, discharge display "BAT LO" Automatic shutdown, adjustable
Housing:	Break-proof ABS with bolted battery compartment
Protection class:	IP65 / IP67, sensor IP54
Dimensions:	108 x 54 x 28 mm (H x W x D) without sensor
Weight:	approx. 240 g including sensor

STANDARD SPARE PARTS:**GOEL 370**

Art. No. 601490

Spare sensor

GOEL 381

Art. No. 610035

Spare sensor

GB-AA-2

Art. No. 479249

Replacement batteries 2 x AA

ESA 369

Art. No. 603058

Tube adapter / flow diverter

ZOT 369

Art. No. 603094

T-piece to attach to ESA 369

GENERAL GAS MEASUREMENTS:**GZ-11**

Art. No. 603144

Flow adapter for 6 mm

GS 150

Art. No. 610005

Gas pump for gas sampling

ACCESSORIES DIVING GAS:**GOEL 370**

Art. No. 601490

Spare sensor

GZ 5826

Art. No. 482473

Combination adapter for compressed air (G5 / 8) and nitrox DIN M26

COMPACT CO₂ MONITOR WITH INTEGRATED SENSOR AND ALARM**NEW!**

HIGHLIGHTS:

- Made in Germany
- Wide measuring range: up to 19,999 ppm / 2 % CO₂ (variant -20)
- Rechargeable via micro-USB socket: 24 hours battery life
- Quick measurement
- Loud 2-stage alarm acoustically and optically
- Illuminated display
- With metal belt clip and carrying strap
- With calibration connection



Sensor on the front



USB connection

G 1910-02

Item No. 476043

Compact CO₂ monitor with integrated sensor and alarm
 0 ... 2000 (max 10000) ppm CO₂ / 0.000 ... 0.200 (max 1.000) % CO₂

G 1910-20

Item No. 476044

Compact CO₂ monitor with integrated sensor and alarm
 0 ... 19999 ppm CO₂ / 0.000 ... 2.000 % CO₂

**G1910-02-AQ-B**

Item No. 482018

Compact CO₂ Monitor with integrated sensor and alarm
 0 ... 2000 (max 10000) ppm CO₂, "Ready to run" for
 air hygiene monitoring in continuous operation, incl. Table stand / wall bracket
 Alerting: ventilation warning 1000 ppm, alarm 2000 ppm

GENERAL:

The measurement is made with a high-quality optical NDIR measurement method on the air openings on the top of the device. Simultaneous display of the time-weighted average over 8 hours (TWA) or 15 minutes (STEL).

CO₂ – dangerous at concentrations > 3 %

The G 1910 is the ideal measuring and warning device for moderate but harmless concentrations – but does not replace personal protective equipment for use in potentially dangerous atmospheres.

APPLICATION:

Compact CO₂ monitor with alarm for many applications in the air quality monitoring, greenhouses, energy management and for research and teaching.

TECHNICAL SPECIFICATIONS:**G 1910-02**

Measuring range:	0..2000 ppm (extended to 10,000 ppm / 1,000 %)
Accuracy:	± 70 ppm CO ₂ ± 3 % of the measured value

G 1910-20

Measuring range:	0..19999 ppm; 0.000..2.000 % 0.000..2.000 % (expanded to 3,200 %)
Accuracy:	± 200 ppm CO ₂ ± 3 % of the measured value

Measuring cycle:

2 s

Display:

3-line segment LCD, additional symbols, backlit (white, light duration adjustable)

Additional functions:

Min/ max/ hold, TWA or STEL calculation,
 (mean values over 8 h or 15 min)
 2-stage alarm (optical & acoustic)

Reference:

Adjustment at 400 ppm cleaner dry air or test gas

Working conditions:

0..50 °C; 0.85 % RH

Storage temperature:

-20 ..+70 °C

Power supply:

2 x AA rechargeable NiMH batteries (included in supply),
 consumption ~ 50 mA
 Operation time > 24 h with NiMH batteries (without backlight),
 charging time ~ 8 h

Battery indicator:

4 level battery status indicator
 Charge warning: "BAT"

Charging port:

Micro-USB socket, including adapter cable on USB 2.0 Type A,
 for use with commercially available USB chargers.

Equipment:

Metal belt clip on the back and neck strap

Protection class:

IP30

Housing:

break-proof ABS housing

Dimensions:

108 x 54 x 28 mm (H x W x D)

Weight:

150 g including battery

Scope of delivery:

Device including sensor, 2 x AA batteries, USB charging cable,
 operating instructions, test report

ACCESSORIES OR SPARE PARTS:**GKK1002**

Item No. 411907

Case for G1000 series water analysis small, 235 x 185 x 48 mm (W x H x D)

GZ-19

Item No. 476699

Calibration set for G 1910 MiniFlo for 12 l gas bottles, Quickconnect adapter 4 mm,
 screw plug, gas screen

GZ-18

Item No. 476698

Gas bottle with 12 l test gas: 5000 ppm CO₂**GZ-12**

Item No. 479183

Gas cylinder with 12 l test gas: N₂ for CO and CO₂-Calibration at 0 ppm

Calibration on test gas

GZ-20

Item No. 479767

Gas connection for G 1910: quickconnect adapter 6 mm,
 replacement screw plug, gas screen

DANGER:

NEVER ENTER POTENTIALLY DANGEROUS AREAS WHERE CO₂ MAY EXCEED 3 % OR
 30000 PPM CO₂ WITHOUT ADDITIONAL PERSONAL SAFETY EQUIPMENT!

CARBON MONOXIDE (CO) METER



HIGHLIGHTS:

- 3 display units can be selected (ppm, mg/m³ and % CO Hb)
- Warning if the maximum workplace concentration (MAK/AGW) is exceeded
- Incl. interface
- Incl. test protocol

THE DEVICE IS FOR CHECKING ONLY.
IT DOES NOT REPLACE A MONITORING DEVICE
THAT REQUIRES APPROVAL!

GCO 100

Item No. 600062

Compact portable CO instrument with alarm

GENERAL:

Carbon monoxide (CO) is produced when carbon is burned. Depending on the effectiveness of the combustion (oxygen supply) and the combustion temperature, more or less CO gas is produced. The gas is flammable and highly toxic. It is invisible, tasteless and odorless.

Even the smallest concentrations are dangerous for humans!

Therefore, there are guidelines in Germany about the maximum workplace concentration (MAK/AGW) of CO gas: 30 ppm

APPLICATION:

- Monitoring of air quality (e.g. in the workplace)
- Control of heating systems, gas boilers, fireplaces
- Air monitoring during maintenance work (tunnels, exhaust gas routes, ...)
- Detection of CO in the breath of smokers (% CO Hb)
- Detection of CO poisoning, e.g. in the case of fire victims (fire departments, etc.)

TECHNICAL SPECIFICATIONS:

Measuring principle:	electrochemical CO measuring cell
Measuring range:	0..1000 ppm CO concentration
Display areas:	0..1000 ppm CO concentration 0..1250 mg/m ³ CO concentration 0..60.0 % CO Hb (estimate via breathing air)
Resolution:	1 ppm, 1 mg/m ³ or 0.1 % CO Hb
Sensor element:	Integrated in the device, frontal sensor opening with internal thread for screwing on accessories
Lifespan:	> 5 years when used properly in air; Recommended check: every 6 months (depending on the accuracy requirements)

Accuracy (in the range 0..500 ppm)

Linearity:	<± 5 % of the measured value ± 1 digit
Repeatability:	<± 5 % of the measured value ± 1 digit

Cross-sensitivities (excerpt)

	Conc. (ppm)	Exposure time (min.)	Display (ppm)
Sulfur dioxide	50	600	<1
Nitrogen dioxide	50	900	-1
Nitric oxide	50	5	8
Hydrogen	100	5	20
Carbon dioxide	5000	5	0

Display:	approx. 11 mm high, 4½-digit LCD display
Control elements:	3 membrane buttons
Nominal temperature:	25 °C
Working conditions:	-10 .. + 50 °C, 15..90 % RH (non-condensing)
Storage temperature:	-10 .. + 50 °C
Interface:	Serial interface, can be connected directly to the RS232 or USB interface of a PC via a galvanically isolated interface converter.
Power supply:	9V battery and power supply socket for external 10.5..12 VDC voltage. (suitable power supply unit: GNG 10/3000)
Battery life:	> 1000 h

Housing:	Made of impact-resistant ABS, membrane keyboard, transparent panel, integrated pop-up clip
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	approx. 155 g
Scope of delivery:	Device, battery, test report, operating instructions

ACCESSORIES OR SPARE PARTS:

ESA 100

Item No. 603013

Tube adapter / flow diverter, for screwing into the front plate of the GCO100

ZOT 369

Item No. 603094

T-piece for plugging onto ESA 369/ESA 100

GRV 100

Item No. 603093

Check valve for attaching to ZOT 369 T-piece

MSK 100

Item No. 603012

Mouthpiece for breathing air measurement

GAS 100

Item No. 603587

Supplementary set for breathing air control (consisting of ESA 100, ZOT 369, GRV 100 and 5 pieces MSK 100)

GZ-10

Item No. 603133

Test gas cap GCO (for controlled gas flow GCO 100)

GZ-02

Item No. 606710

Gas cylinder with 12 l test gas: 30 ppm CO

GZ-03

Item No. 606711

Gas cylinder with 12 l test gas: 30 ppm CO

GZ-12

Item No. 479183

Gas cylinder with 12 l test gas: N₂ for CO and CO₂-calibration at 0 ppm

GZ-04

Item No. 603570

Gas valve unit MiniFlo for 12 l gas bottles, 0.5 - 1.5 l/min

GB 9 V

Item No. 601115

Replacement battery 9 V, type IEC 6F22

GKK 3000

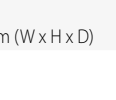
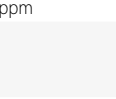
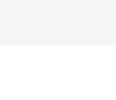
Item No. 601048

Device case with soft cutouts for 1x GMH 3000, 275 x 229 x 83 mm (W x H x D)

USB 3100 N

Item No. 601092

Interface converter GMH3xxx <=> PC, USB, galvanic isolation





	GMH 5130 GMH 5150 GMH 5155	GMH 3111 GMH 3151 GMH 3156	GMH 3161-12 GMH 3181-12	GMH 3161-002/-01/ -07 .../-13	GMH 3181-002/-01/ -07 .../-13	G 1107 G 1113	G 1111 G 1114 G 1111 VAC G 1110	GDU5B 1000
APPLICATION:								
Differential pressure measurement (over, under, relative pressure measurement)	• • •	• • •		• •	• •			•
Absolute pressure measurement	• • •	• • •	• •				• • • •	•
Vacuum measurement	• • •	• • •	• •				• • •	
Heating, ventilation, air conditioning	• • •	• • •		• •	• •	• •	• •	•
Measurement in liquids	• • •	• • •						•
Meteorology			• •					
Altitude measurement								
Inclinometer/variometer								
Waterproof application	• • •						• •	
Ex version		• • •	• •			without sensor		
EQUIPMENT:								
Sensor connections	1 1 2	1 1 2						
Min / Max, Zero	• • •	• • •	• •	• •	• •	• •	• • • •	
Alarm / data logger / analog output	• •	• •						

WATERPROOF PORTABLE INSTRUMENT FOR MEASURING PRESSURE WITH EXTERNAL INTERCHANGEABLE SENSORS



ISO

AUTO OFF

HOLD

MIN MAX

TARA

O/S-CORR



GMH 5130/50



GMH 5155

WATERPROOF – DEVICE
AND PLUG CONNECTIONS

HIGHLIGHTS:

- Peak value acquisition (1000 measurements/s)
- Large double backlit display
- Pressure sensors already calibrated and fully interchangeable
- Incl. test protocol

ADDITIONAL FUNCTIONS OF GMH 5150 AND 5155:



WITH THE GMH 5155 ADDITIONALLY:

- 2 GMSD/MSD sensors can be attached.
- Differential pressure measurement of two sensors

GMH 5130

Item No. 600027

Waterproof Portable instrument for measuring pressure with 1 sensor connection, without sensor

GMH 5150

Item No. 600031

Waterproof Portable instrument for measuring pressure with 1 sensor connection, analog output and data logger, without sensor

GMH 5155

Item No. 600033

Waterproof portable pressure instrument with 2 sensor connections, analog output and data logger, without sensor

GENERAL:

The portable instrument for interchangeable sensors supports you in demanding pressure measuring tasks. Extremely robust plug connections, the silicone protective cover, background lighting and the waterproof construction also allow use in harsh industrial and field conditions.

APPLICATION:

- Industry and trade, HVAC: heating, ventilation, air conditioning
- Leak tests/pressure tests
- Chimney draft measurement: negative pressure, tightness tests on buildings (e.g.: 4 pascal test)
- Measurements on gas and oil firing
- Automotive trade, hydraulic analysis (pressure surges)

TECHNICAL SPECIFICATIONS: GMH 5130

Sensor connections: 1

Usable sensors: GMSD/MSD sensors, available measuring ranges (resolution) from -1.999...2.500 mbar (0.001 mbar) to 0..1000 bar (1 bar)

max. display range: -19999 .. + 19999 digit

Display units: * depending on the measuring range selection (sensor-dependent): mbar, bar, Pa, kPa, MPa, mmHg, inHg, PSI, mH₂O

Measuring frequency: 4 measurements/s or 1000 measurements/s with peak value memory

Average filter: adjustable: 1..120 s

Accuracy: ± 0.1 % FS ± 1 digit

connections

Sensor: 1 x 7-pole bayonet connection

Output/ext. Care: 4-pole bayonet connection for serial interface, supply (with accessories: USB adapter USB 5100)

Display: 4½-digit 7-segment, illuminated (white)

Working conditions: -25 .. + 50 °C, 0..95 % r. F. (not condensing)

Storage temperature: -25 .. + 70 °C

Power supply: 2 x AAA batteries, battery life 500 h (without lighting, 4 measurements/s)

Housing: impact-resistant ABS, with stand-up/hanging bracket

Protection class: IP65 / IP67

Dimensions: 160 x 86 x 37 mm (H x W x D) including silicone protective cover (red)

Weight: approx. 250 g including battery and protective cover

Scope of delivery: Device, battery, test report, operating instructions

TECHNICAL SPECIFICATIONS: GMH 5150 AND GMH 5155

Sensor connections: 1, GMH 5155: 2

Usable sensors: GMSD/MSD sensors, available measuring ranges (resolution) from -1.999...2.500 mbar (0.001 mbar) to 0..1000 bar (1 bar)

max. display range: -19999 .. + 19999 digit

Display units: depending on the measuring range selection (sensor-dependent): mbar, bar, Pa, kPa, MPa, mmHg, inHg, PSI, mH₂O, user

Measuring frequency: 4 measurements/s or 1000 measurements/s with peak value memory

Average filter: adjustable: 1..120 s

Accuracy: ± 0.1 % FS ± 1 digit

connections

Sensor: 1 x 7-pole bayonet connection
only GMH 5155: 2 x 7-pole bayonet connection

Output/ext. Care: 4-pole bayonet connection for serial interface, supply (with accessories: USB adapter USB 5100)

Analog output: 0..1 V, freely scalable, connection via 4-pole bayonet socket, resolution 12 bit

Display: 4½-digit 7-segment, illuminated (white)

Working conditions: -25 .. + 50 °C, 0..95 % r. F. (not condensing)

Storage temperature: -25 .. + 70 °C

Power supply: 2 x AAA batteries, battery life 500 h (without lighting, 4 measurements/s)

Housing: impact-resistant ABS, with stand-up/hanging bracket

Protection class: IP65 / IP67

Dimensions: 160 x 86 x 37 mm (H x W x D) including silicone protective cover (red)

Weight: approx. 250 g including battery and protective cover

Scope of delivery: Device, battery, test report, operating instructions

ADDITIONAL FUNCTIONS:

Status display for battery: bar graph

Background lighting: duration adjustable (off, 5 s..2 min.)

Adjustment: Zero point/slope adjustable via menu

User-defined display unit:

(user, GMH 5150/55) conversion into any units using a linear factor

Leak test/tightness test (GMH 5150/55):

Display of the rate of pressure change (l/s, /min, /h) with alarm function

Air velocity/volume flow (GMH 5150/55): measurement with a pitot tube (accessory)

peak-detect (peak value memory):

Unfiltered pressure peaks ≥ 1 ms are recorded in the min/max value memory.

Data logger:

with measuring point input, recording interval: 1 s..1 h Recording duration: 416 days with an interval of 1 h, measured value memory: Cyclical: 10,000 data records (GMH 5150), 8,000 data records (GMH 5155), single: 1,000 data records (40 adjustable measuring point texts or measuring point numbers)

* = Note on setting the pressure units: different pressure units can only be selected if the entire measuring range of this unit can also be shown on the display and the sensor also supports this resolution.

ACCESSORIES

ACCESSORIES OR SPARE PARTS:

GMSD ...- K51

Pressure sensors

Application: non-aggressive gases for over/ under and differential pressure measurement or absolute pressure measurement

MSD ...

Stainless steel pressure sensors

Application: air, aggressive gases for over/ under and relative pressure measurement

MSD-K51

Item No. 603809

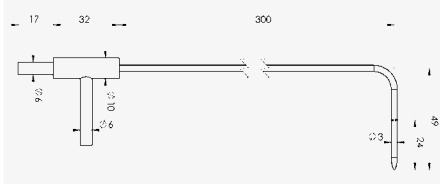
Connection cable for MSD sensor to GMH 51xx, 1 m

Prandtl pitot tube

Item No. 604150

stainless steel, for measuring the air speed/ volume flow, Ø = 3 mm, NL = 300 mm, max. +600 °C

GMSD 2,5 MR-K51 or GMSD 25 MR-K51 is required

**GDZ-01**

Item No. 601541

PVC tube 6/4 (6 mm outer Ø, 4 mm inner Ø, 5 bar at 23 °C)

**GDZ-31**

Item No. 606070

Silicone tube 8/5 (8 mm outer Ø, 5 mm inner Ø, 2 bar at 23 °C, max. 200 °C), very flexible

GDZ-30

Item No. 601601

Adapter G ½ inside to tube 6/4

EBS 20M

Item No. 601158

Measurement data acquisition software for EASYBus & GMH

GSOFT 3050

Item No. 601336

Windows software for GMH 3000 and GMH 5000 with logger for operating logger devices

USB 5100

Item No. 601095

Interface converter GMH 5xxx <=> PC

GNG 5/5000

Item No. 602287

Plug in power supply for GMH 5XXX series

GKK 3500

Item No. 601052

Device case with soft cutouts e.g. 2x GMH 3000 or 5000, 395 x 295 x 106 mm (W x H x D)



PORTABLE PRESSURE MEASURING DEVICES



HIGHLIGHTS:

- One device for any pressure measuring range (2.500 mbar..1000 bar)
- Pressure sensors already calibrated and fully interchangeable

**GMH 3111**

Item No. 600374

Portable pressure instrument with 1 sensor connection, without sensor

GMH 3111-EX

Item No. 600380

Portable pressure instrument with 1 sensor connection, without sensor, Ex

TECHNICAL SPECIFICATIONS:

max. display range:	-19999 .. + 19999 digit
Measuring range:	depending on the sensor used
Overload:	depending on the sensor used
Resolution:	depending on the sensor used
Accuracy: (device)	± 0.1 % FS ± 1 digit (at nominal temperature = 25 °C)
Pressure units: *	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH ₂ O, switchable by pressing a button.
Sensor connection:	1 sensor socket 6-pole shielded mini-DIN socket with locking for GMSD / MSD sensors. Automatic sensor recognition and corresponding measuring range setting.
Display:	2 x 4½-digit LCD
Output:	interface
serial interface:	Can be connected directly to the RS232 or USB interface of a PC via the galvanically isolated interface converter GRS 3100, GRS 3105, USB 3100 N
Power supply:	9 V battery, power supply socket for external 10.5..12 V DC voltage supply (suitable power supply unit: GNG10 / 3000)
Sensor adjustment:	digital offset and slope input
Measuring cycle:	4 measurements / s
Battery life:	approx. 120 h
Working conditions:	-25 .. + 50 °C, 0.95 % RH, with GMH 3111-EX: -10 .. + 50 °C, 0.95 % RH
Housing:	Made of impact-resistant ABS, membrane keyboard, transparent panel only with GMH 3111: Integrated stand-up/ hanging bracket
Dimensions:	142 x 71 x 26 mm (H x W x D)
Weight:	approx. 150 g, with GMH3111-EX: approx. 190 g (including bag)
Scope of delivery:	Device, battery, test report, operating instructions

NOTES ON EX VERSIONS:

Technical changes compared to the standard device (applies to all GMH31xx-EX)

Ex approval:  II 2 G Ex ib IIC T4 Gb

Certificate: EPS 09 ATEX 1 227 X

Standards:

The device fulfills the standards for electrical equipment for potentially explosive areas according to EN 60079-0: 2012, EN 60079-11: 2012

Sensor:

(GMH 3111-EX, GMH 3151-EX, GMH 3156-EX) All GMSD / MSD sensors with the "Ex version" option can be used.

Interface:

usable interface converters are USB 3100 N, GRS 3100 and GRS 3105

Note: Operation of the interface and the analog output is not permitted in the Ex area!

Working temperature: -10 .. + 50 °C

Power supply:

9 V battery, mains socket

Note: The use of the power supply socket is not permitted in the Ex area! Only power supply units of the type GNG10 / 3000 may be used!

Alarm function:

(GMH 3151-EX, GMH 3156-EX, GMH 3181-EX)

The device has no sounder, in the alarm setting only the setting "no.so" and "off" are available

Scope of delivery:

The device is delivered with a leather case.



* Note on setting the pressure units: (applies to all GMH 31xx). The selection of different pressure units is only possible if the entire measuring range of this unit can also be shown on the display and the sensor also supports this resolution.

PORTABLE PRESSURE MEASURING INSTRUMENT WITH DATA LOGGER



LOGGER FUNCTION



GMH 3151



GMH 3156

HIGHLIGHTS:

- 4½-digit display, sensors with higher resolution on request
- Peak value memory 1000 measurements/s
- Analog output 0.1 V
- Digitally adjustable
- Integrated alarm sounder

WITH THE GMH3156 ADDITIONALLY:

- 2 GMSD/MSD sensors can be attached.
- Differential pressure measurement of two sensors

GMH 3151

Item No. 600381

Portable pressure instrument with 1 sensor connection, logger, without sensor

GMH 3156

Item No. 600386

Portable pressure measuring instrument with 2 sensor connections, logger, without sensor

GMH 3151-EX

Item No. 600383

Portable pressure measuring instrument with 1 sensor connection, logger, without sensor, Ex (notes on Ex versions on the previous page)

GMH 3156-EX

Item No. 600394

Portable pressure measuring instrument with 2 sensor connections, logger, without sensor, Ex (notes on Ex versions on the previous page)

TECHNICAL SPECIFICATIONS:

max. display range:	-19999 .. +19999 digit
Measuring range:	depending on the sensor used
Overload:	depending on the sensor used
Resolution:	depending on the sensor used
Accuracy (device):	± 0.1 % FS ± 1 digit (at nominal temperature = 25 °C)
Pressure units *:	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH ₂ O, switchable by pressing a button
Sensor connection:	1, for GMH 3156/-EX: 2 6-pole shielded mini-DIN socket (s) with locking for GMSD/MSD sensors, automatic sensor recognition and corresponding measuring range setting.
Display:	2 x 4½-digit LCD
Output:	Interface or AAG
serial interface:	Can be connected directly to the RS232 or USB interface via a galvanically isolated interface converter, GRS 3100 or GRS 3105 or USB 3100 N.
Analog output:	0.1 V, freely scalable (resolution 12 bit)
Power supply:	9 V battery, power supply socket for external 10.5..12 V DC voltage supply (e.g. GNG10/3000)
Sensor adjustment:	digital offset and slope input
Measurement cycle: "slow"	4 measurements/s
"Fast"/"peak-detect"	≥1000 measurements/s
Peak value memory:	Unfiltered pressure peaks ≥1 ms are recorded in the min/max value memory.
Logger functions	
manual records:	99 records
cyclic data sets:	10000 GMH 3156/-EX: 4000 (max. 64 recording series)
adjustable cycle time:	1..3600 s
Averaging calculation:	x
Battery life:	approx. 180 h (4 measurements/s) approx. 40 h (1000 measurements/s)

Working conditions:

-25 .. +50 °C, 0.95 % RH (non-condensing),
with GMH 315x-EX: -10 .. +50 °C, 0.95 % RH (non-condensing)

Housing:

Made of impact-resistant ABS, membrane keyboard, transparent panel
only with GMH315x-EX:
integrated pop-up clip

Dimensions:

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

Weight:

approx. 150 g,
with GMH 315x-EX: approx. 190 g (including bag)

Scope of delivery:

Device, battery, test report, operating instructions

ADDITIONAL FUNCTIONS:

Averaging calculation:

The measured values are integrated over an adjustable time and the averaged display value is output.

SeaLevel correction:

When an absolute pressure sensor is plugged in, the barometric air pressure can also be displayed in relation to sea level "zero". (The air pressure is corrected by entering the altitude above "zero" in meters)

Logger functions:

- manual data records: 99 data records
- cyclic data sets: 10000 (GMH 3151)
4000 (GMH 3156)

(max. 64 recording series), adjustable cycle time: 1..3600 s; The logger is started and stopped via the keyboard or interface. An easy-to-use software GSOFT 3050 (see accessories) is available for reading-out the logger data.

* Note on setting the pressure units: (applies to all GMH 31xx). The selection of different pressure units is only possible if the entire measuring range of this unit can also be shown on the display and the sensor also supports this resolution.

ACCESSORIES

ACCESSORIES OR SPARE PARTS:

GMSD ...

Pressure sensors with plastic tube connections for Ø 6mm hoses

MSD ...

Stainless steel pressure sensors
Area of application:
Air, aggressive gases for over/under and relative pressure measurement

MSD-K31

Item No. 600657

Connection cable for MSD sensor to GMH 31xx, 1 m



PRESSURE SENSORS WITH PLASTIC TUBE CONNECTIONS FOR Ø 6MM TUBES



FOR AIR AND
NON-AGGRESSIVE GASES

GENERAL:

Use with **GMH 31xx**, GDUSB: Type GMSD ...- K31, **GMH 51xx**: Type: GMSD ...- K51

APPLICATION:

Air or non-aggressive gases *Plastic pressure sensors are not suitable for water / liquids.*

DIFFERENTIAL PRESSURE SENSORS GMSD ...

suitable both for real differential pressure measurement (both connections are connected) as well as for relative pressure measurement (over / under pressure measurement, one connection remains open to the ambient air)

	GMSD 2.5 MR ...	GMSD 25 MR ...	GMSD 70 MR ...	GMSD 350 MR ...	GMSD 2 BR ...	GMSD 10 BR ...
Measuring range:	-1.999 .. + 2.500 mbar	-19.99 .. + 25.00 mbar	-19.99.. +70.00 mbar	-199.9 .. + 350.0 mbar	-1000 .. + 2000 mbar	-1.00 .. + 10.00 bar
Overload:	max. 200 mbar	max. 300 mbar	max. 1 bar	max. 1 bar	max. 4 bar	max. 10.34 bar
Resolution:	0.001 mbar (0.1 Pa)	0.01 mbar (1 Pa)	0.01 mbar	0.1 mbar	1 mbar	10 mbar
Accuracy (typ.)						
Hysteresis/linearity:	± 0.2 % FS	± 0.2 % FS	± 0.2 % FS	± 0.2 % FS	± 0.2 % FS	± 0.2 % FS
Influence of temperature (from 0..50 °C):	± 1.0 % FS	± 0.5 % FS	± 0.4 % FS	± 0.4 % FS	± 0.4 % FS	± 0.4 % FS
OPTION						
Higher sensor accuracy:	-	-	-	± 0.1 % / ± 0.2 % FS	± 0.1 % / ± 0.2 % FS	± 0.1 % / ± 0.2 % FS
GMSD ...- K31						
Item No.	601039	601148	479293	601154	601170	601183
GMSD ...- K51						
Item No.	601038	601149	479294	601157	601171	601184

ABSOLUTE PRESSURE SENSORS GMSD ...

for absolute pressure measurement (one connection has no function)

	GMSD 1.3 BA ..	GMSD 2 BA ..	GMSD 7 BA ..
Measuring range:	0..1300 mbar abs.	0..2000 mbar abs.	0.00..7.00 bar abs.
Overload:	max. 4 bar abs.	max. 4 bar abs.	max. 10.34 bar abs.
Resolution:	1 mbar	1 mbar	10 mbar
Accuracy (typ.)			
Hysteresis/linearity:	± 0.2 % FS	± 0.2 % FS	± 0.2 % FS
Influence of temperature (from 0..50 °C):	± 0.4 % FS	± 0.4 % FS	± 0.4 % FS
OPTION			
Higher sensor accuracy:	± 0.1 % FS (hyst., Linearity); ± 0.2 % FS (temperature influence 0..50 °C)		
GMSD ...- K31			
Item No.	601192	601196	601200
GMSD ...- K51			
Item No.	601193	601197	601201

TECHNICAL SPECIFICATIONS:

Sensor:	piezoresistive pressure sensor
Pressure connection:	2 nylon connection spigots for tubes 6 x 1 mm (6 mm outer Ø and 4 mm inner Ø)
Electronics:	Circuit board with amplifier and data memory for sensor data (measuring range, calibration, etc.) is integrated in the sensor housing.
Working temperature:	0 .. + 50 °C
Relative humidity:	0.95 % RH (not condensing)
Storage temperature:	-25 .. + 70 °C
Housing:	ABS with hanging loop, dimensions without connection pole: 68 x 32.5 x 15 mm (L x W x D), with connection pole: 68 x 32.5 x 27.5 mm.
Weight:	approx. 75 g (...- K51: approx. 82 g)
Device connection	
GMSD ...- K31:	1.2 m PVC connection cable, shielded with molded 6-pole mini DIN connector and lock
GMSD ...- Ex:	
GMSD ...- K51:	1 m PVC connection cable, shielded with 7-pole bayonet connector
Scope of delivery:	Device, test report, operating instructions

OPTIONS:

Ex version



Higher sensor accuracy

through multi-point calibration
Additional linearization points are saved in the sensor EEPROM,
Not possible with GMSD 2.5MR and GMSD 25 MR!

ACCESSORIES:

ISO-WPD5

Item No. 602514

ISO calibration certificate: Factory calibration pressure, 5 points rising and falling, max 600 bar

STAINLESS STEEL PRESSURE SENSORS G½ INCH

FOR AIR, AGGRESSIVE GASES
AND LIQUIDSSUCCESSOR FOR
GMSD STAINLESS STEEL SENSORS**MSD ...**

interchangeable handheld pressure sensors, stainless steel G½B
Connection cable MSD-K31 or MSD-K51 must be ordered separately (accessories)

GENERAL:

for use with GMH31xx, GMH 51xx and GDUSB 1000, G1/2 inch gauge connection
(see accessories for suitable gasket GDZ-28)

APPLICATION:

Air, aggressive gases, aggressive liquids / water, etc.

ABSOLUTE PRESSURE	MEASURING RANGE	OVERLOAD LIMIT	RESOLUTION
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MSD 1 BAE	0..1000 mbar abs.	max. 5 bar abs.	1 mbar
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Item No. 600583

MSD 2.5 BAE	0..2500 mbar abs.	max. 10 bar abs.	1 mbar
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Item No. 600585

MSD 4 BAE	0..4000 mbar abs.	max. 17 bar abs.	1 mbar
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Item No. 600587

MSD 6 BAE	0..6000 mbar abs.	max. 35 bar abs.	1 mbar
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Item No. 600592

MSD 10 BAE	0..10.00 bar abs.	max. 35 bar abs.	10 mbar
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Item No. 600594

MSD 16 BAE	0..16.00 bar abs.	max. 80 bar abs.	10 mbar
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Item No. 600596

MSD 25 BAE	0..25.00 bar abs.	max. 50 bar abs.	10 mbar
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Item No. 600598

RELATIVE PRESSURE	MEASURING RANGE	OVERLOAD LIMIT	RESOLUTION
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MSD 100 MRE	0.0..100.0 mbar rel.	max. 1 bar rel.	0.1 mbar
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Item No. 600600

MSD 250 MRE	0.0..250.0 mbar rel.	max. 2 bar rel.	0.1 mbar
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Item No. 600604

MSD 400 MRE	0.0..400.0 mbar rel.	max. 2 bar rel.	0.1 mbar
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Item No. 600606

MSD -1 / 1.5 BRE	-1000 .. + 1500 mbar rel.	max. 10 bar rel.	1 mbar
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Item No. 600608

MSD -1/3 BRE	-1000 .. + 3000 mbar rel.	max. 17 bar rel.	1 mbar
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Item No. 600610

MSD 1 BRE	0..1000 mbar rel.	max. 5 bar rel.	1 mbar
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Item No. 600612

MSD 2.5 BRE	0..2500 mbar rel.	max. 10 bar rel.	1 mbar
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Item No. 600614

MSD 4 BRE	0..4000 mbar rel.	max. 17 bar rel.	1 mbar
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Item No. 600616

MSD 6 BRE	0..6000 mbar rel.	max. 35 bar rel.	1 mbar
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Item No. 600618

MSD 10 BRE	0.00..10.00 bar rel.	max. 35 bar rel.	10 mbar
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Item No. 600620

MSD 25 BRE	0.00..25.00 bar rel.	max. 50 bar rel.	10 mbar
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Item No. 600622

MSD 40 BRE	0.00..40.00 bar rel.	max. 80 bar rel.	10 mbar
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Item No. 600624

MSD 60 BRE	0.00..60.00 bar rel.	max. 120 bar rel.	10 mbar
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Item No. 600627

MSD 100 BRE	0.0..100.0 bar rel.	max. 200 bar rel.	0.1 bar
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Item No. 600629

MSD 160 BRE	0.0..160.0 bar rel.	max. 320 bar rel.	0.1 bar
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Item No. 600631

MSD 250 BRE	0.0..250.0 bar rel.	max. 500 bar rel.	0.1 bar
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Item No. 600639

MSD 400 BRE	0.0..400.0 bar rel.	max. 800 bar rel.	0.1 bar
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Item No. 600633

MSD 600 BRE	0.0..600.0 bar rel.	max. 1200 bar rel.	0.1 bar
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Item No. 600635

MSD 1000 BRE	0..1000 bar rel.	max. 1500 bar rel.	1 bar
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Item No. 600637

MSD 25 MRE**MSD -20/60 MRE**

not suitable for aggressive media, water, etc.,
not available as Ex-version and not available with option "higher sensor accuracy"

RELATIVE PRESSURE	MEASURING RANGE	OVERLOAD LIMIT	RESOLUTION
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MSD 25 MRE	0.00..25.00 mbar	max. 500 mbar	0.01 mbar
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Item No. 606904

MSD -20/60 MRE	-20.00 .. + 60.00 mbar	max. 500 mbar	0.01 mbar
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Item No. 606765

TECHNICAL SPECIFICATIONS:

Sensor: Pressure sensor made of stainless steel (parts in contact with media), suitable for aggressive media, water, etc. (does not apply to MSD 25 MRE and MSD -20/60 MRE)

Accuracy: (typ. values) ± 0.2 % FS (hysteresis and linearity) ± 0.02 % FS / K (TC for zero point or slope)

Electronics: Integrated amplifier and memory for sensor data (measuring range ...). Electronics sealed.

Reaction time: 1 ms

Medium temperature: -25 .. + 100 °C (compensated range: 0 .. + 80 °C); -25 .. + 80 °C for MSD 25 MRE and MSD -20/60 MRE

Working temperature: -20 .. + 80 °C

Storage temperature: -40 .. + 80 °C

Pressure connection: Connection thread G1 / 2B (others on request)

Cable connection: M16 built-in connector

Housing: made of stainless steel or Elgiloy (wetted parts)
Length: 88.5 mm, Ø 27 mm, approx. 220 g

Protection class: IP 67 (sensor)

Scope of delivery: Pressure sensor, test report, operating instructions;
Note: connection cable must be ordered separately.

OPTIONS:**Higher sensor accuracy**

through multi-point calibration. Additional linearization points are saved in the sensor (not available for MSD 25 MRE and MSD -20 / 60 MRE)
Hysteresis and linearity: +/- 0.1 % FSE)

EQUIPMENT:**ISO-WPDS**

Item No. 602514

ISO calibration certificate: Factory calibration pressure, 5 points rising and falling, max 600 bar

MSD-K31

Item No. 600657

Connection cable for MSD sensor on GMH 31xx and GDUSB 1000, 1.2 m PVC connection cable, shielded with molded 6-pole mini-DIN plug and M16 socket (IP 54)

MSD-K51

Item No. 603809

Connection cable for MSD sensor to GMH 51xx, 1 m PVC connection cable, shielded with 7-pole bayonet plug, cable and plug connector waterproof to IP 67 and M16 socket

MSD-K31-xx

Longer connection cable (like MSD-K31); please specify length 2..10 m

MSD-K51-xx

Longer connection cable (like MSD-K51); please specify length 2..10 m

GDZ-28

Item No. 601597

Pressure gauge profile seal for thread G ½

**EX VERSION:****MSD ..-EX**

Stainless steel pressure sensor (without connection cable) with explosion protection

MSD-K31-EX

Item No. 600871

Connection cable for MSD-EX sensor to GMH 31xx-EX

Connection to GMH 31xx, 1 m connection cable, shielded with molded 6-pole mini DIN plug and M16 socket

PORTABLE PRESSURE INSTRUMENT SERIES WITH INTEGRATED PRESSURE SENSORS



HIGHLIGHTS:

- Integrated pressure sensor
- Stable metal connection pieces
- Tare function / zero point adjustment
- Execution with EX protection possible

ADDITIONAL FUNCTIONS OF GMH 3181 - ...:



TECHNICAL DATA (TYPES):	GMH 3161 - ...	GMH 3181 - ...	GMH 3161 -- EX	GMH 3181 -- EX
Display:	2 x 4½-digit LCD	2 x 4½-digit LCD	2 x 4½-digit LCD	2 x 4½-digit LCD
Sensor:	Piezoresistive differential pressure sensor built into the measuring instrument. Suitable for air or non-aggressive gases. (Note: the sensor is not suitable for water!)			
Pressure connection:	2 universal pressure ports for 6 x 1 mm (4 mm inner tube diameter) or 8 x 1 mm (6 mm inner tube diameter) plastic tubes			
Output:	interface	Interface or AAG	Interface*	Interface or AAG *
Serial interface:	x	x	x	x
Analog output:	--	0..1 V, freely scalable (resolution 12 bit)	--	0..1 V, freely scalable (resolution 12 bit)
Power supply:	9 V battery, mains socket	9 V battery, mains socket	9 V battery, mains socket *	9 V battery, mains socket *
	Suitable 9 V battery, power supply socket for external 10.5..12 V DC voltage supply (e.g. GNG10/3000)			
Sensor adjustment:	digital offset and slope input	digital offset and slope input	digital offset and slope input	digital offset and slope input
Peak value memory:	--	≥1 ms	--	≥1 ms
Measuring cycle:	"Slow" 4 measurements/s	4 measurements/s	4 measurements/s	4 measurements/s
	"Fast" (with filtering) --	≥1000 measurements/s	--	≥1000 measurements/s
	"Peak-detect" -- (Peak value memory)	≥1000 measurements/s unfiltered pressure peaks ≥1 ms are recorded in the min/ max value memory.	--	≥1000 measurements/s unfiltered pressure peaks ≥1 ms are recorded in the min/ max value memory.
Averaging calculation:	--	x	--	x
Battery life:	approx. 500 h	approx. 500 h (slow mode) approx. 120 h (almost = 1000 Hz)	approx. 500 h	approx. 500 h (slow mode) approx. 120 h (almost = 1000 Hz)
Working conditions:	-25 .. + 50 °C, 0.95 % RH (not condensing)		-10 .. + 50 °C, 0.95 % RH (non-condensing)	
Housing:	142 x 71 x 26 mm (H x W x D) (without sensor connector, connector protruding approx. 16 mm on the front side), made of impact-resistant ABS, membrane keyboard, transparent panel, integrated pop-up clip			
Weight:	approx. 165 g	approx. 170 g	approx. 205 g (including bag)	approx. 210 g (including bag)
Scope of delivery:	device, battery, test report, operating instructions	device, battery, test report, operating instructions	device, battery, operating instructions	device, battery, operating instructions

* Observe the note on Ex versions

ADDITIONAL FUNCTIONS:

Serial interface: Can be connected directly to the RS232 or USB interface of a PC via galvanically isolated interface converter GRS 3100 or GRS 3105 or USB 3100 N (accessory).

for GMH 3181:

Low power logger mode: (only in the "slow" measuring cycle) A measurement is only carried out at the end of the set logger cycle time. This significantly extends the battery life. For long-term recordings (e.g. leak test).

Averaging: The measured values are integrated over an adjustable time and the averaged display value is output.

Control function: Using the GAM3000 switching module (optionally available), external devices can be controlled (switched on / off) or monitored for alarms (see accessories)

Logger functions:

- manual: 99 data records

- cyclical: 10000 data records (max. 64 recording series), adjustable cycle time: 1..3600 s

Note on the pressure unit setting (valid for all GMH 31xx):

The selection of different pressure units is only possible if the entire measuring range of this unit can also be shown on the display and the sensor also supports this resolution.

PRECISION MANOMETER / MANOMETER FOR OVER / UNDER AND DIFFERENTIAL PRESSURE



-500.0 .. + 500.0 PA (± 500.0 PA *2)

GMH 3161-002

Item No. 600469

Portable pressure instrument with integr. sensor

GMH 3181-002

Item No. 600470

Portable pressure instrument with integr. sensor and data logger

GMH 3161-002-EX

Item No. 606685

Portable pressure instrument with integr. sensor, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)



GMH 3181-002-EX

Item No. 609063

Portable pressure instrument with integr. sensor and data logger, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)



TECHNICAL SPECIFICATIONS:

Measuring range:	-500.0 .. + 500.0 Pa (-5,000 .. + 5,000 mbar)
Overload:	max. 250 hPa (mbar)
Resolution:	0.1 Pa (0.001 mbar)
additional pressure units:	kPa, PSI, mmHg, mH ₂ O
Accuracy: (typ. values)	
Hysteresis and linearity:	0.3 % FS
Temperature influence from 0 - 50 °C:	0.4 % FS
Option higher accuracy possible:	No
Pressure connections:	2



-100..+2500 PA (± 2500 PA *1)

GMH 3161-01

Item No. 600397

Portable pressure instrument with integr. sensor

GMH 3181-01

Item No. 600411

Portable pressure instrument with integr. sensor and data logger

GMH 3161-01-EX

Item No. 607458

Portable pressure instrument with integr. sensor, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)



GMH 3181-01-EX

Item No. 600796

Portable pressure instrument with integr. sensor and data logger, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)



-1.00..+70.00 MBAR (± 70.00 MBAR *1)

GMH 3161-07H

Item No. 600405

Portable pressure instrument with integr. sensor

GMH 3181-07H

Item No. 600417

Portable pressure instrument with integr. sensor and data logger

GMH 3161-07H-EX

Item No. 610042

Portable pressure instrument with integr. sensor, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)



GMH 3181-07H-EX

Item No. 604074

Portable pressure instrument with integr. sensor and data logger, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)



TECHNICAL SPECIFICATIONS:	... - 01	... - 07H
Measuring range:	-100 .. + 2500 Pa (-1.00 ... +25.00 mbar)	-1.00 .. + 70.00 mbar
Overload:	max. 100 mbar	max. 1000 mbar
Resolution:	1 Pa (0.01 mbar)	0.01 mbar
additional pressure units:	bar, kPa, PSI, mmHg, mH ₂ O	bar, Pa, kPa, PSI, mmHg, mH ₂ O
Accuracy (typ. values)		
Hysteresis and linearity:	± 0.3 % FS	± 0.1 % FS
Temperature influence from 0 - 50 °C:	± 0.4 % FS	± 0.4 % FS
Option higher accuracy possible:	No	already integrated
Pressure connections:	2	

*1 Measuring range can be obtained by reconnecting the pressure port
*2 without changing the pressure connection
*3 with option "higher sensor accuracy"

PRECISION MANOMETER / MANOMETER FOR OVER / UNDER AND DIFFERENTIAL PRESSURE

-10.0...+350.0 MBAR (± 350.0 MBAR * 1)**GMH 3161-07**

Item No. 600400

Portable pressure instrument with integr. sensor

GMH 3181-07

Item No. 600413

Portable pressure instrument with integr. sensor and data logger

GMH 3161-07-EX

Item No. 604435

Portable pressure instrument with integr. sensor, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)

GMH 3181-07-EX

Item No. 601386

Portable pressure instrument with integr. sensor and data logger, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)

-10.0...+420.0 MBAR (-7.5...+315.0 mmHg)

GMH 3161-07B

Item No. 600402

Portable pressure instrument with integr. sensor

GMH 3181-07B

Item No. 600415

Portable pressure instrument with integr. sensor and data logger

GMH 3161-07B-EX

Item No. 609064

Portable pressure instrument with integr. sensor, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)

GMH 3181-07B-EX

Item No. 604724

Portable pressure instrument with integr. sensor and data logger, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)

TECHNICAL SPECIFICATIONS:	... - 07	... - 07B
Measuring range:	-10.0... +350.0 mbar	-10.0 ... +420.0 mbar (-7.5 ... 315.0 mmHg)
Overload:	max. 1 bar	max. 1 bar
Resolution:	0.1 mbar	0.1 mbar (0.1 mmHg)
additional pressure units:	bar, kPa, MPa, PSI, mmHg, mH ₂ O	bar, kPa, MPa, PSI, mH ₂ O
Accuracy: (typ. values)		
Hysteresis and linearity:	± 0.2 % FS (± 0.1 % FS) ^{*3}	± 0.1 % FS
Temperature influence from 0 - 50 °C:	± 0.4 % FS	± 0.4 % FS
Option higher accuracy possible:	Yes	already integrated
Pressure connections:	2	

MANOMETER FOR POSITIVE / NEGATIVE AND DIFFERENTIAL PRESSURE

-100.. +2000 MBAR (± 2000 MBAR *1)**GMH 3161-13**

Item No. 600409

Portable pressure instrument with integr. sensor

GMH 3181-13

Item No. 600421

Portable pressure instrument with integr. sensor and data logger

GMH 3161-13-EX

Item No. 600647

Portable pressure instrument with integr. sensor, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)

GMH 3181-13-EX

Item No. 602263

Portable pressure instrument with integr. sensor and data logger, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)

TECHNICAL SPECIFICATIONS:

Measuring range: -100 ... + 2000 mbar (optional: -1000 ... + 2000 mbar)

Overload: max. 4 bar

Resolution: 1 mbar

additional pressure units: bar, kPa, MPa, PSI, mmHg, mH₂O

Accuracy: (typ. values)

Hysteresis and linearity: ± 0.2 % FS; (± 0.1 % FS)^{*3}Temperature influence from 0..50 °C: ± 0.4 % FS

Option higher accuracy possible: Yes

Pressure connections: 2

VARIANTS: MEASURING RANGE -1000...+2000 MBAR *2

GMH 3161-13-00-MB

Item No. 600527

Portable pressure instrument with integr. sensor,

GMH 3161-13-EX-MB

Item No. 607243

Portable pressure instrument with integr. sensor

GMH 3181-13-00-MB

Item No. 600529

Portable pressure instrument with integr. sensor and data logger

GMH 3181-13-MB-00-EX

Item No. 432507

Portable pressure instrument with integr. sensor and data logger

*1 Measuring range can be reached by repositioning the pressure connection

*2 without changing the pressure connection

*3 with option "higher sensor accuracy"

VACUUMMETER OR BAROMETER



HIGHLIGHTS:

- can be operated completely in a vacuum

FOR ABSOLUTE PRESSURE MEASUREMENT



0..1300 MBAR ABS.

GMH 3161-12

Item No. 600407

Portable pressure instrument with integr. sensor

GMH 3181-12

Item No. 600419

Portable pressure instrument with integr. sensor and data logger

GMH 3161-12-EX

Item No. 610043

Portable pressure instrument with integr. sensor, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)

**GMH 3181-12-EX**

Item No. 610044

Portable pressure instrument with integr. sensor and data logger, explosion protection (Ex II 2 G Ex ib IIC T4 Gb)



TECHNICAL SPECIFICATIONS:

Measuring range:	0..1300 mbar abs.
Overload:	max. 4 bar abs.
Resolution:	1 mbar
Pressure units:	mbar, bar, kPa, MPa, PSI, mmHg, mH ₂ O
Accuracy: (typ. values)	
Hysteresis and linearity:	± 0.2 % FS; (± 0.1 % FS)* ³
Temperature influence from 0..50 °C:	± 0.4 % FS
Option higher accuracy possible:	Yes
Pressure connections:	1

SPECIAL FUNCTION:

Sea level adjustment:

The barometric air pressure can also be displayed in relation to sea level "zero". (The air pressure is corrected by entering the altitude above "zero" in meters)

*3 with option "higher sensor accuracy"

COMPLETE PACKAGES

**GMH 3161-07-WPD5**

Item No. 602684

Complete package with ISO calibration certificate ISO-WPD5 (5 points each rising and falling) and case GKK 3000.

GMH 3161-12-WPD5

Item No. 602685

Complete package with ISO calibration certificate ISO-WPD5 (5 points each rising and falling) and case GKK 3000.

GMH 3161-13-WPD5

Item No. 602686

Complete package with ISO calibration certificate ISO-WPD5 (5 points each rising and falling) and case GKK 3000.

ACCESSORIES

OPTIONS:

Higher sensor accuracy

by multi-point calibration Note: not available for all device versions!

ACCESSORIES OR SPARE PARTS:

ISO-WPD5

Item No. 602514

ISO calibration certificate: Factory calibration pressure, 5 points rising and falling, max 600 bar

ISO-WPD10

Item No. 602565

ISO calibration certificate: Factory calibration pressure, 10 points rising and falling, max 600 bar

GNG 10/3000

Item No. 600273

Plug power supply for GMH 3XXX series

GRS 3100

Item No. 601097

Interface converter GMH3xxx <=> PC, RS232

USB 3100 N

Item No. 601092

Interface converter GMH3xxx <=> PC, USB

GDZ-01

Item No. 601541

PVC tube 6/4 (6 mm outer Ø, 4 mm inner Ø, 5 bar at 23 °C)

**GDZ-08**

Item No. 601555

Double socket for tube 6/4 on tube 6/4

**GDZ-18**

Item No. 601576

Tube clamp for tube 6/4

**GDZ-21**

Item No. 601582

T-piece for tubes 6/4

**GKK 3000**

Item No. 601048

Device case with soft cutout for 1x GMH 3000, 275 x 229 x 83 mm (W x H x D)

PRECISION MANOMETER

**NEW!**

NEW: INCREASED RESOLUTION OF 0.1 PASCAL AT HIGH ACCURACY FOR THE FINEST PRESSURE ADJUSTMENT WORK.

NEW: UNIVERSAL PORTS FOR THE USE OF A WIDE VARIETY OF PRESSURE CONNECTIONS: SCREW CONNECTION, QUICK-CONNECT, PUSH-PULL: EVERYTHING CAN BE CONNECTED DIRECTLY TO THE DEVICE! YOU HAVE THE CHOICE OF WHICH CONNECTION TYPE IS MOST PRACTICAL FOR YOU – THE DEVICE REMAINS THE SAME.

G 1107-UT

Item No. 478468

Precision manometer, for use in heating / ventilation / air conditioning (HVAC), 2x 1/8 inch port including connection for tubes 6x1 mm (4 mm inside) and 8x1 mm (6 mm inside)

G 1107-QC6

Item No. 479401

Precision manometer, 2x 1/8 inch port including quick connector for tube with outer Ø 6 mm

G 1107-ST6

Item No. 479402

Precision manometer, 2x 1/8 inch port including screw connector for tube with outer Ø 6 mm

G 1107-MCM

Item No. 479403

Precision manometer, 2x 1/8 inch port including mini quick-release connector, nominal width 2.7 mm

G 1107-UT-SET8

Item No. 478470

Precision manometer, for use in heating / ventilation / air conditioning (HVAC), 2x 1/8 inch port including connection for tubes 6x1 mm (4 mm inside) and 8x1 mm (6 mm inside) Measuring instrument incl. 1 m silicone tube 8 mm, case GKK 1002

G 1107-SQ6-SET

Item No. 479404

Precision manometer, 2x 1/8 inch port including quick connector for tube with outer Ø 6 mm measuring instrument incl. 1 m tube 6x1, case GKK 1002

G 1107-ST6-SET

Item No. 479405

Precision manometer, 2x 1/8 inch port including screw connector for tube with outer Ø 6 mm measuring instrument incl. 1 m tube 6x1, case GKK 1002

G 1107-MCM-SET

Item No. 479406

Precision manometer, 2x 1/8 inch port including mini quick-release connector measuring instrument incl. 1 m tube 6x1, case GKK 1002

GENERAL:

The development of the new G 1111 was intentionally focused on the essential measurement technology functions – a high-quality sensor is the heart of the measuring instrument – and despite the low overall price, no savings were made! This ensures that measurements are accurate and reliable: the excellent zero point stability and simultaneous position independence are "best in class".

Precision, speed and reliability, packed in a compact and waterproof housing makes the device a reliable partner for the craftsmanship. Made in Germany.
G1100 Series – The reference class for your pocket!

HIGHLIGHTS:

- State-of-the-art and functional housing – in pocket format
- Excellent price-performance ratio
- 3-line illuminated display / overhead display at the push of a button
- Robust, long battery life
- Fast, accurate and high resolution
- Zero point stable and independent of position
- Calibratable / traceable
- Made in Germany

Connection
...- UTConnection
...- QC6Connection
...- ST6Connection
...- MCM**APPLICATION:**

The measuring range up to 200 mbar / 20 kPa and the high resolution of up to 0.1 Pascal in optimized fine pressure mode covers the essential applications in the area of gas pressure (150 hPa) and burner settings in one device. The high accuracy simplifies u. a. the dynamic pressure setting and is also suitable for draft measurements. The measured value is independent of the position – not a matter of course in this area! Suitable for HVAC: gas and burner pressures (compression), chimney draft measurement, preparation of the 4 Pascal test, blower door, filter test (e.g. automotive DPF, gasoline cell filter), replacement for U-tube manometer ...

TECHNICAL SPECIFICATIONS:

Measuring range / resolution:	±200.0 Pa (fine measurement) ± 200.0 hPa Selectable units: (Pa, hPa, mmHg PSI)
Measuring frequency:	Slow: 2.5 measurements / s; Fast: 25 measurements / s
Overload:	Max. ± 1700 hPa
Accuracy (device):	± 0.1 % FSS typical (at nominal temperature 25 °C) ± 1 % FSS max.
USPs:	Best in class, high resolution, high accuracy in Pascal Universal port pressure connections
Sensors / measuring inputs:	2 universal ports
Protection class:	IP67 (pressure connections must be protected from contamination and Moisture protected)
Display:	3-line with battery status display, background lighting, protected by a break-resistant pane, overhead display at the push of a button
Additional functions in general:	Hold, min / max value
Selectable special functions:	Tare function High resolution measurement with 0.1 Pa (Fine) Average value mode for measuring strongly fluctuating pressures
Environment:	Display device -20...+50 °C
Battery / lifetime:	2 * AA battery, approx. 3000 h
Housing:	break-proof ABS housing
Dimensions:	108 x 54 x 28 mm (H x W x D) without pressure connection
Weight:	approx. 150 g including battery
Scope of delivery:	Device, batteries, operating instructions, test report

ACCESSORIES OR SPARE PARTS:**ISO-WPDS**

Item No. 602514

ISO calibration certificate: Factory calibration pressure, 5 points rising and falling, max 600 bar

ISO-WPD10

Item No. 602565

ISO calibration certificate: Factory calibration pressure, 10 points rising and falling, max 600 bar

MANOMETER

**NEW!**Connection
...- UTConnection
...- QC6Connection
...- ST6Connection
...- MCMSUCCESSOR TO
GDH 200-13 PRODUCTS**G 1113-UT**

Item No. 478471

Manometer, with measuring range up to 2 bar or 200 kPa and maximum resolution 1 Pa 2x 1/8 inch port including connection for tubes 6x1 mm (4 mm inside) and 8x1 mm (6 mm inside)

G 1113-QC6

Item No. 479425

Manometer, 2x 1/8 inch port including quick connector for tube with outer Ø 6 mm

G 1113-ST6

Item No. 479426

Manometer, 2x 1/8 inch port including screw connector for tube with outer Ø 6 mm

G 1113-MCM

Item No. 479427

Manometer, 2x 1/8 inch port including mini quick-release connector

G 1113-UT-SET

Item No. 478472

Manometer, with a measuring range of up to 2 bar or 20 kPa and a maximum resolution of 0.1 hPa 2x 1/8 inch port including connection for tubes 6x1 mm (4 mm inside) and 8x1 mm (6 mm inside) measuring instrument incl. 1 m tube 6x1, case GKK 1002

G 1113-QC6-SET

Item No. 479428

manometer, 2x 1/8 inch port including quick connector for tube with outer Ø 6 mm measuring instrument incl. 1 m tube 6x1, case GKK 1002

G 1113-ST6-SET

Item No. 479429

Manometer, 2x 1/8 inch port including screw connector for tube with outer Ø 6 mm measuring instrument incl. 1 m tube 6x1, case GKK 1002

G 1113-MCM-SET

Item No. 479430

Manometer, 2x 1/8 inch port including mini quick-release connector measuring instrument incl. 1 m tube 6x1, case GKK 1002

GENERAL:

The development of the new G 1113 was intentionally focused on the essential measurement technology functions – a high-quality sensor as the heart of the measurement device – and despite the low overall price, no savings were made! The high temperature stability of the sensor together with the universal pressure connection concept increase comfort and safety, especially with vacuum measurements. Precision, speed and reliability, packed in a compact and waterproof housing makes the device a reliable partner for the craftsmanship. Made in Germany. G1100 Series – The reference class for your pocket!

HIGHLIGHTS:

- State-of-the-art and functional housing – in pocket format
- Excellent price-performance ratio
- 3-line illuminated display/overhead display at the push of a button
- Robust, long battery life
- Fast, accurate and high resolution
- Zero point stable and independent of position
- Calibratable/traceable
- Made in Germany

APPLICATION:

The sister device of the extremely high-resolution G 1107 is the first choice when differential pressures > ± 200 hPa are to be measured. To ± 2000 hPa are accurate and Hochauf-Expectorant covered with maximum resolution 1 Pa in the optimized fine print mode. HVAC: gas burner & prints, filtertest (Eg automotive DPF, gasoline filter, exhaust filter) with maximum pressure of up to ± 2 bar or ± 2,000 hPa

TECHNICAL SPECIFICATIONS:

Measuring range/resolution:	± 2000 Pa (fine measurement) ± 2000 hPa Selectable units: (hPa, mmHg PSI, bar)
Measuring frequency:	Slow: 2.5 measurements/s Fast: 25 measurements/s
Overload:	Max. ± 3100 hPa
Accuracy (device):	± 0.1 % FSS typical (at nominal temperature 25 °C) ± 1 % FSS max.
USPs:	Best in class, high resolution, high accuracy in Pascal Universal port pressure connections
Sensors/measuring inputs:	2 universal ports
Protection class:	IP67 (pressure connections must be protected from contamination and Moisture protected)
Display:	3-line with battery status display, background lighting, protected by a break-resistant pane, overhead display at the push of a button
Additional functions in general:	Hold, min/max value
Selectable special functions:	Tare function High resolution measurement with 1 Pa Average value mode for measuring strongly fluctuating pressures
Environment:	Display device -20...+50 °C
Battery/lifetime:	2 x AA batteries, approx. 3000 h
Housing:	break-proof ABS housing
Dimensions:	108 x 54 x 28 mm (H x W x D) without pressure connection
Weight:	approx. 150 g including battery
Scope of delivery:	Device, batteries, operating instructions, test report

ACCESSORIES OR SPARE PARTS:**ISO-WPDS**

Item No. 602514

ISO calibration certificate: Factory calibration pressure, 5 points rising and falling, max 600 bar

ISO-WPD10

Item No. 602565

ISO calibration certificate: Factory calibration pressure, 10 points rising and falling, max 600 bar

VACUUMMETER/BAROMETER

**NEW!**

NEW: INCREASED VACUUM ACCURACY
OVER WIDE TEMPERATURE RANGE!

NEW: UNIVERSAL-PORT FOR THE USE OF A WIDE VARIETY OF
PRESSURE CONNECTIONS: SCREW CONNECTION, QUICK-CONNECT,
PUSH-PULL: EVERYTHING CAN BE CONNECTED DIRECTLY TO THE
DEVICE! YOU HAVE THE CHOICE OF WHICH CONNECTION TYPE IS
MOST PRACTICAL FOR YOU – THE DEVICE ITSELF IS THE SAME.

Fig.: The pressure port is interchangeable due to the 1/8 inch port!



Connection
...- UT



Connection
...- QC6



Connection
...- ST6



Connection
...- MCM



SUCCESSOR FOR **GTD 1100**
AND **GPB 3300** - PRODUCTS

G 1111-UT

Item No. 478474

Vacuummeter/barometer with pressure connection, 1/8 inch port including connection for tubes 6x1 mm (4 mm inside) and 8x1 mm (6 mm inside)

G 1111-QC6

Item No. 479433

Vacuummeter/barometer with pressure connection, 1/8 inch port incl. quick connector for tube with outer Ø 6 mm

G 1111-ST6

Item No. 479431

Vacuummeter/barometer with pressure connection, 1/8 inch port including screw connector for tube with outer Ø 6 mm

G 1111-UT-SET

Item No. 478475

Vacuummeter/barometer with pressure connection, 1/8 inch port including connection for tubes 6x1 mm (4 mm inside) and 8x1 mm (6 mm inside), measuring instrument incl. 1 m tube 6x1, case GKK 1002

G 1111-QC6-SET

Item No. 479434

Vacuummeter/barometer with pressure connection, 1/8 inch port incl. quick connector for tube with outer Ø 6 mm, measuring instrument incl. 1 m tube 6x1, case GKK 1002

G 1111-ST6-SET

Item No. 479435

Vacuummeter/barometer with pressure connection, 1/8 inch port including screw connector for tube with outer Ø 6 mm, measuring instrument incl. 1 m tube 6x1, case GKK 1002

G 1111-UT-VAC

Item No. 480644

Vacuummeter with universal port, completely evacuable, with pore filter and tube connection, interchangeable through G1/8 universal port, ideal for rough vacuum measurements e.g. B. in industrial packaging machines, increased accuracy in the vacuum range, key deactivation when a vacuum is applied

**GENERAL:**

The development of the new G 1111 was intentionally focused on the essential measurement technology functions – a high-quality sensor is the heart of the measuring instrument – and despite the low overall price, no savings were made! The high temperature stability of the sensor together with the universal pressure connection concept increase comfort and safety, especially with vacuum measurements. Precision, speed and reliability, packaged in a compact, water-proof enclosure makes the device a reliable partner of the craft, made in Germany. G1100 Series – the reference class for your pocket!

APPLICATION:

Packaging machine control, monitoring of vacuum potting processes, traceable reference for ambient conditions / meteorology, smartphone & GPS or flying altimeter

HIGHLIGHTS:

- State-of-the-art and functional housing – in pocket format
- Excellent price-performance ratio
- 3-line illuminated display / overhead display at the push of a button
- Waterproof (IP67)
- Robust, long battery life
- Optimized for vacuum measurements
- High resolution and accuracy
- Very fast!
- Calibratable / traceable
- Made in Germany

TECHNICAL SPECIFICATIONS:

Measuring range / resolution:	0.0..1700.0 hPa abs, units can be selected: (hPa, mmHg PSI)
Measuring frequency:	Slow: 2.5 measurements / s Fast: 25 measurements / s
Overload:	3000 hPa abs.
Accuracy (device):	typically <± 2 hPa @ vacuum, <± 2 hPa @ 1013 hPa, @T: +5...+30 °C 0.3 % FSS max. Option-VAC: @ 0 ... 20 hPa: ± 1 hPa (@ 10...30 °C)
USPs:	Best in class: Vacuum exactly even at low temperatures Universal port pressure connection Optional sensor protection against particles / Resins...
Sensors / measuring inputs:	1 universal port
Protection class:	IP67 complete
Display:	3-line with battery status display, background lighting, protected by a break-resistant pane, overhead display at the push of a button
Additional functions:	Sea level correction
Additional functions in general:	Hold, min / max value
Selectable special functions:	Tare function Average value mode for measuring strongly fluctuating pressures
Environment:	Display device -20...+50 °C
Battery / lifetime:	2 x AA batteries, approx. 3000 h
Housing:	break-resistant ABS housing
Dimensions:	108 x 54 x 28 mm (H x W x D) without pressure connection
Weight:	approx. 140 g including battery
Scope of delivery:	Device, batteries, operating instructions, test report

ACCESSORIES OR SPARE PARTS:**ISO-WPD5**

Item No. 602514

ISO calibration certificate: Factory calibration pressure, 5 points rising and falling, max 600 bar

ISO-WPD10

Item No. 602565

ISO calibration certificate: Factory calibration pressure, 10 points rising and falling, max 600 bar

GDZ-34

Item No. 479742

Plastic pore filter with screw-in thread G 1/8, for direct application in Vacuum packing machines

GDZ-35

Item No. 480328

Self-adhesive filter membrane Ø 7 mm, to protect the sensor from potting compound, etc., 10 pieces



VACUUMMETER/BAROMETER



NEW!



Fig.: The pressure port is interchangeable due to the 1/8 inch port!



Connection
...- UT



Connection
...- QC6



Connection
...- ST6



Connection
...- MCM

SUCCESSOR FOR
GDH 200-14 PRODUCTS

G1114-UT

Item No. 478477

Vacuummeter/barometer with pressure connection: G1/8 inch port including connection for tubes 6x1 mm (4 mm inside) and 8x1 mm (6 mm inside)

G1114-UT-SET

Item No. 478478

Vacuummeter/barometer with pressure connection: G1/8 inch port incl. connection for tubes 6x1 mm (4 mm inside) and 8x1 mm (6 mm inside) measuring instrument incl. 1 m tube 6x1 PVC, case GKK 1002

G1114-MCM

Item No. 480853

Vacuummeter/barometer with pressure connection: G1/8 inch port including mini quick-release connector, nominal width 2.7 mm

G1114-QC6

Item No. 480374

Vacuummeter/barometer with pressure connection: G1/8 inch port incl. quick connector for tube with outer Ø 6 mm

G1114-ST6

Item No. 480852

Vacuummeter/barometer with pressure connection: G1/8 inch port including screw connector for tube with outer Ø 6 mm

APPLICATION:

High-resolution barometer/manometer. Covers pneumatics with 1 mbar resolution up to 14 bar! Can be used as a relative pressure measuring instrument (perform "tare" without pressure) or as an absolute pressure measuring instrument (starts at ambient pressure, e.g. 970 mbar = 970 hPa).

TECHNICAL SPECIFICATIONS:

Measuring ranges / resolution	0..14000 hPa (mbar abs.)
Measurement frequency	Slow: 2.5 measurements/s Fast: 25 measurements/s MB x 2
Max. Overload	20000 hPa abs.
Accuracy typ	+/- 0.1 % FSS or +/- 0.1 % of reading (@ 25 °C)
Accuracy max. -20..50 °C	+/- 0.5 % v. MW +/- 0.1 % FSS
Display	3-line segment LCD, additional symbols, illuminated (white, light duration adjustable), overhead display at the push of a button
Standard functions	Min / Max / Hold, Auto-Power-Off-Function / If activated, the product switches off automatically

HIGHLIGHTS:

- Measurement resolution and accuracy guarantee reliable results
- Measuring range 0 .. 14000 hPa (mbar abs.)
- High accuracy in the vacuum range
- Very fast measurement for efficient use
- Modern and functional housing in pocket size
- 3-line display / overhead display at the push of a button
- Backlit
- Waterproof (IP67)
- Robust, long battery life
- Simple universal pressure connection with interchangeable connections
- Calibratable / traceable

Switchable special functions Sea level correction, ZERO / tare function, AVR: averaging over 2 s / 5 s / 10 s

Adjustment	Zero point and slope adjustment
Housing	Break-proof ABS housing, protection class IP67, dimensions L x W x H: 108 x 54 x 28 mm without pressure connection, weight: 140 g including battery
Working conditions	- 20 to +50 °C; 0 to 95 % RH
Storage temperature	-20 to +70 °C
Power supply	2 x AA batteries (included in delivery), power consumption: approx. 1 mA (slow measurement SLO), battery life approx. 3000 h, battery indicator 4-stage battery status display, note: when the charge status is low: "BAT LO"

ACCESSORIES OR SPARE PARTS:

ST-G1000

Item No. 611373

Protective case, leather, G 1000 Protective case made of Nappa leather, a universal recess for sensors, belt clip

GCLIP 1000

Item No. 475820

Metal belt clip, self-adhesive for G1000 series

GDZ-UT

Item No. 479260

Pressure socket for tube 6/4 or 8/6 with screw-in thread G 1/8, brass nickel-plated

GDZ-QC6

Item No. 479261

Quick connector for tube 6/4 with screw-in thread G 1/8, brass nickel-plated

GDZ-ST6

Item No. 479466

Tube screw connection for tube 6/4 with screw-in thread G 1/8, brass nickel-plated

GDZ-MCM

Item No. 479467

PRECISION BAROMETER / ALTIMETER



AUTO OFF



HOLD

ISO

MIN MAX



NEW!

G 1110

Item No. 480432

Precision Barometer / Altimeter

G 1110-WPD

Item No. 482360

Precision Barometer / Altimeter

incl. case GKK 1002, WPD5 calibration certificate

GENERAL:

The development of the new G 1100 series was intentionally focused on the essential measurement technology functions – a high-quality sensor is the heart of the measuring instrument – which despite the low overall price was not economized here! Precision, speed and reliability, packed in a compact and water-protected housing makes the device a reliable partner of the trade, made in Germany. G 1100 Series – the pocket-size benchmark class.

APPLICATION

For fast measurement in meteorology, aviation and motor sports, hiking, cycling and more. Fast, precise and high-resolution: resolution 0.1 hPa (mbar) and resolution of the pressure-derived altitude display 0.1 m! As a reference for countless devices with integrated barometer sensor. Barometer sensors are used in countless applications: for example, vehicles with combustion engines (air pressure as an important parameter for engine control), altimeters (calculation of altitude via barometric altitude formula), navigation systems, smartphones and, of course, in weather stations. But is the displayed absolute pressure correct? Due to the traceability of the devices via optional calibration certificates (ISO 17025, DAKS), the barometer serves as a perfect reference device for checking the actual accuracy of corresponding devices.

TECHNICAL SPECIFICATIONS:

Measuring ranges / resolution	Barometer:
	300,0 .. 1100,0 hPa (mbar) abs.
	4,350 .. 15,950 PSI abs.
	225,0 .. 825,0 mmHg (Torr) abs.
	Altimeter:
	-500,0 .. 9000,0 m
	-1640 .. 19999 ft
	Temperature:
	-20,0 .. 50,0 °C / -4,0 .. 122,0 °F

HIGHLIGHTS:

- Modern and functional housing – pocket size
- 3-line backlit display
- Waterproof (IP67)
- High resolution and accuracy for ambient pressure and altitude
- Configurable sea level correction
- Altimeter function with convenient altitude adjustment
- Tendency display, can be used as a variometer
- Calibration options / traceable
- Robust, long battery life

SUCCESSOR FOR GTD 1100
AND GPB 3300
PRODUCTS



Top side view with pressure equalization openings

Accuracy	Barometer: typ.: ± 1 hPa (bei T: 0 .. 30 °C) max.: $\pm 0,25$ % FSS corresponds to ± 2 hPa
	Altimeter: typ.: ± 1 m rel. (over short period of time at const. Ambient pressure @ 25 °C) Temperature: typ.: $\pm 0,5$ °C @ 25 °C
Measurement frequency	FAST: Approx. measurements per second SLO: Approx. 1 measurements per second
Overload	4000 hPa abs.
Pressure connection	No connection, integrated sensor Pressure compensation via membrane
Display	3-line segment LCD, backlit
Standard functions	Min/Max/Hold, Auto-Power-Off function Tendency display, time base selectable (1s, 60s, 1h, 3h) Only as altimeter: The covered altitude meters are calculated (AscentASC, Descent DESC, Resolution 1 m)
Additional functions	NULL: Tare function respectively Convenient altitude setting AVR: Averaging over 2 s / 5 s / 10 s Only as altimeter: Variometer display can be shown with ft/h, m/s, m/h.
Adjustment	Zero point and slope
Housing	Shatterproof ABS housing, protection class: IP67, Dimensions: 108x54x28 mm (LxWxH), Weight: 140 g battery
Working conditions	-20 to 50 °C; 0 to 95 % r.h. (short-term condensation possible)
Storage temperature	-20 bis 70 °C
Power supply	2 x AA batteries (included), Operation time approx. 6000 h (measurement mode SLO), 4-stage battery status indicator, low battery indication: "BAT LO".
Auto-Power-Off function	If activated, the device switches off automatically

ACCESSORIES OR SPARE PARTS

ST-G1000

Item No. 611373

Protective case, leather, G 1000 Protective case made of Nappa leather, a universal recess for sensors, belt clip

GCLIP 1000

Item No. 475820

Metal belt clip, self-adhesive for G1000 series

GDZ-UT

Item No. 479260

Pressure socket for tube 6/4 or 8/6 with screw-in thread G 1/8, brass nickel-plated

**GDZ-QC6**

Item No. 479261

Quick connector for tube 6/4 with screw-in thread G 1/8, brass nickel-plated

**GDZ-ST6**

Item No. 479466

Tube screw connection for tube 6/4 with screw-in thread G 1/8, brass nickel-plated

**GDZ-MCM**

Item No. 479467

Mini quick-release connector with screw-in thread G 1/8, brass nickel-plated, nominal width 2.7 mm

**GDZ-MCF**

Item No. 480221

Mini quick coupling with screw connection for tube 6/4, nominal width 2.7 mm, locks when unplugged

**GDZ-01**

Item No. 601541

PVC tube 6/4 (6 mm outer Ø, 4 mm inner Ø, 5 bar at 23 °C)

**GDZ-03**

Item No. 601545

PUR (polyurethane) 6/4 (6 mm outer Ø, 4 mm inner Ø, 9 bar at 23 °C)

**GDZ-31**

Item No. 606070

Silicone tube 8/5 (8 mm outer Ø, 5 mm inner Ø, 2 bar at 23 °C, max. 200 °C), very flexible

**GDZ-34**

Item No. 479742

Plastic pore filter with screw-in thread G 1/8, for direct application in Vacuum packing machines

**GDZ-35**

Item No. 480328

Self-adhesive filter membrane Ø 7 mm, to protect the sensor from potting compound, etc., 10 pieces





Fields of expertise

- Compact, robust and powerful portable instruments technology „Made in Germany“
- Extensive product range for a wide variety of measured values
- Application-oriented special measuring devices
- Private-label products for customer-specific individualisation
- On customer request, factory calibration in our in-house calibration laboratory
- Tailor-made sensor designs from our state-of-the-art in-house sensor manufacturing organisation
- Portable instruments and sensors with high system accuracy
- Quick measuring systems based on thermocouples and Pt100/Pt1000 elements
- Temperature sensors for hygienic applications
- Solutions for hazardous areas (ATEX)

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