GREISINGER
Member of GHM GROUP

**MOBILE MEASUREMENT
TECHNOLOGY**

Portable instruments,
alarm and protection devices

Product catalog

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION, LEVEL

Roland Bäuml, Head of the Strategic Business Area Portable Instruments of the Greisinger brand |
Jürgen Brass, Senior Product Manager for the Greisinger brand

GREISINGER. Specialist for portable instruments.

"With over 40 years of experience in the development and production of portable instruments, we offer our customers devices with the highest efficiency and accuracy as well as the best features, matched to the specific application."

For more information, please visit our website at
https://www.greisinger.de

GREISINGER

◯ Member of GHM GROUP

Dear customers

What was started by Otmar Greisinger in 1981 in a garage with a clear vision has developed into an innovative medium-sized company over the last 40 years. The Greisinger brand is now part of the GHM GROUP and, through certification according to ISO9001 and ISO / IEC 17025, establishes trust in our products' quality and performance. After the company had made a name for itself in various areas of measurement technology, the focus was increasingly on the development and production of portable instruments, including the necessary accessories for many areas of application. The Greisinger brand has become a synonym of portable instruments of premium quality, highest accuracy, and proven practicality.

Whether in the domain of agriculture, aquaculture, heating ventilation, and air conditioning, industry, gastronomy, or in handcraft businesses, portable instruments from Greisinger are used everywhere in the professional environment. The Greisinger brand is known for the best functionality paired with high everyday suitability and quality made in Germany.

With our worldwide dealer network, our customers also benefit from competent advice and speedy delivery right on site. To be even closer to our customers, we are expanding our trading partner network in new markets and regions.

- Production of high-quality measurement technology products in the medium price segment
- Customization or development of measurement technology products
- Design and delivery of OEM products
- Production made entirely in Germany
- Dakks and ISO calibration – also of third-party devices
- Customer care in the office and in the field
- Spare parts and repair service

QUALITY STANDARDS AND CERTIFICATION

Technically superior products at fair prices have made us a well-established player in the measuring instrument market. For more than 35 years we have been constantly moving upward. The utilization of state-of-the-art machinery and equipment, and efficient, high-performance production processes, ensure high product quality "Made in Germany" at competitive prices.

We produce and develop exclusively in Germany – this is the only way to guarantee the high-quality standard of our products. Our quality management is certified according to ISO 9001:2015 and for Ex products additionally according to DIN EN ISO/IEC 80079-34:2020-06.

Since July 1st, 2003, conformity to directive 94/9/EC ("ATEX directive") has been mandatory for Ex products in the member states of the EC. Our development, production and sales have been certified according to RL 94/9/EG since May 1st, 2003. Several products have already been tested and approved according to this standard.

BVS 13 ATEX ZQS/E234
Zertifiziertes QM-System
CE 0158 ⟨Ex⟩

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Technical support for professional area:
Temperature sensors
Industrial temperature sensor
Ex temperature sensor

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Measurement data, at hand.

The focus on compact designs takes up a lot of attention at Greisinger. After all, the specialist for portable instruments condenses innovative technology and metrological precision into products that have format.

As a strategic business area for temperature sensors and portable instruments, Greisinger concentrates the long-standing know-how of experienced specialists under one roof at its Regenstauf site. Here, current market trends are monitored and taken into account in the development of new technologies.

In doing so, our tradition-rich company is built on many years of experience spanning more than 35 years. Even our first products – then the first temperature sensors for monitoring hay stacks – met exactly the market requirements and laid the basis for our further success. Meanwhile, our product portfolio has expanded significantly: In addition to numerous transmitters and displays and the associated sensor technology, we primarily develop and produce high-quality portable instruments.

Originally developed for the toughest and harshest conditions of our industrial customers, end-users can also purchase our equipment through retail channels. Over 100,000 instruments sold and tens of thousands of satisfied customers every year are our motivation to build better and better measuring devices.

We constantly keep all machines and equipment in our production and quality control at the latest state of the art. As part of the GHM GROUP, we participate in ongoing improvement initiatives to further optimize our processes and procedures. This will enable us to continue to offer outstanding product quality "Made in Germany" at competitive prices.

Areas of expertise

○ Compact, robust and powerful portable instruments technology "Made in Germany"
○ Wide range of products for a wide variety of measurands.
○ Application-oriented special portable instruments
○ "Private label products" for customer-specific individualization
○ Factory calibration on customer request in the in-house calibration laboratory

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GENERAL INFORMATION

MOBILE MEASUREMENT TECHNOLOGY
With sensors and accessories

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OEM / CUSTOMER VERSIONS

We modify our devices. According to your requirements and specifications.

Custom developments

If we cannot cover devices from our standard range according to your special requirements, there is also the possibility of special developments.

Please note that customer versions are associated with small added costs, and/or pricing depends on the number of units.

Examples of printing on a housing

1.

Choose housing design

Choose a device series that suits your project.
Compact series: low cost, simple operation, classic design
1000 series: New high-quality portable instruments combined with water resistance and display lighting
3000 series: Bestseller, best value for money in a practical housing
5000 series: Highest quality and best measuring accuracy in a waterproof and impact-resistant housing with display lighting
Device case: accessory can also be custom labeled

5000 series   *3000 series*   *1000 series*   *Compact series*   *Device case*
with silicone
protective cover

OEM / CUSTOMER VERSIONS

2.

Select a colour

Select a color that matches your corporate identity, logo, and labeling.

Overview of standard colors:

Housing	black	yellow	red	blue	orange	light gray	basalt gray
1000 series	●	●	●	●	●	●	
Compact series	●	●	●	●		●	
3000 series	●	●	●	●	●	●	
5000 series			●[1)]	●[1)]		●[1)]	●

[1)] Silicone case color

3.

Place your own labeling

Would you like your customer logo, your own device name, or a picture on the device? Please send us your data in EPS / TIFF or JPEG file format, with 300 dpi and sufficient size by email. We work out a sketch and a proposal for size and positioning in our printing department. Even high-resolution images in photo quality can be applied using digital printing processes.

LOGO

4.

Determine the nameplate and the version of the instructions

Do you want us to be an OEM supplier for your brand? Then we will accommodate your manufacturer data here and support you with of theCE declarations of conformity..
Our sales and product manager team supports you the proper marketing and conformity assessment of your product.
Alternatively, we simply remain visible as the manufacturer - which keeps the effort to a minimum as long as the application and intended use are retained.

pH - Meter
with data logger
KUNDENTYP
-2.00 ... +16.00 pH
-5.0 .. +100.0 °C
S/N   E0600011
AT11
Made in Germany
Max Mustermann GmbH
Dagobert Str. 23a
D - 01234 Entenhausen
LOGO

KUNDENTYP
Max Mustermann GmbH
Dagobert Str. 23a
01234 Entenhausen
GERMANY
LOGO   Art. no. 666666
4 016138 780415

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LEGEND

Made in Germany

ISO calibration
certificate available at surchage

ACCREDIA calibration certificate available at surchage

Min / Max alarm constant monitoring of the measured value for the set min and max limits (can be deactivated).
Alarm: 3 alarm settings
        off: alarm function inactive
        on: alarm message via display,
                      internal buzzer and serial interface
        no sound: alarm message only via display and interface
Control function: Using the GAM3000 switching module (optionally available), external devices can be controlled (switched on / off) or monitored for an alarm

Auto-Hold
Automatic measurement stability detection

Automatic off function
- 1..120 min (can also be deactivated).
- adjustable from 1..120 min. or continuous operation.
- If the auto-off function is activated, the device switches itself off automatically if it is not operated for a longer period of time (selectable 1..120 min).

AutoRange
The conductivity measurement automatically switches to the optimal measuring range. The AutoRange mode can be deactivated in the menu.

HACCP (Hazard Analysis and Critical Control Points concept) suitable for food applications in accordance with HACCP

Backlit

Hold function
The current value is "frozen" at the push of a button.

Logger function
manual: retrieval of the data via keyboard or interface
cyclical: retrieval of the data via the interface, adjustable cycle time: 1 s..1 h
The logger is started and stopped via the keyboard or interface.
A easy-to-use softwareGSOFT3050 (see accessories) is available for the readout of the logger data.

Alarm
freely adjustable alarm limit, pulsing (measured value-dependent) alarm tone

Min / max
The maximum value and the minimum value are automatically stored in the data memory.

Offset correction (zero point)
The characteristic curve can be shifted in parallel by entering the offset value.

Offset / slope correction
Offset and slope correction can be entered digitally.

Tare function
display value and min / max value are set to zero.

Real time clock
Clock with day, month and year

OPTIONAL CONNECTION PLUG CONNECTIONS

*Mini DIN connector
used e.g. with:
GMH 3710/50, GMH 3611/51,
GMH 3692/95, GMH 3111/51/56*

*Banana plug used e.g. with:
temperature inputs of pH devices,
GMH 3511/31/51, GMH 5530/50,
GPHU 014 MP*

*BNC connector
used e.g. with:
G 1700, GMH 3831/51, GMH 3511/31/51,
GMH 5530/50, GPH 114*

*7-pole bayonet connector
used e.g. with:
GMH 5130/50/55, GMH 5430/50,
GMH 5630/50/90/95*

*NST1200 connector
used e.g. with:
GTH 1150/70, GMH 1150/70, GMH
3211/21/31/51, GIM 3590,
GMH 3331/51, GMH 3831/51*

*S7 connection
used e.g. with:
GE 171, GE 108, GE 173, GR 175*

*4-pole bayonet connector
used e.g. with:
5000 device series*

*3.5 mm jack plug
used e.g. with:
GMH 175, GFTB 200, GFTH 200*

*7-pole Diode socket
used e.g. with:
GLMU 200/400*

*M8 plug used e.g. with:
EASYLog, T-Logg*

*M12 connector i.a. used for:
GTF 111/112, GTL (Food- feeler) GLMU
400MP-Uni*

*Power plug 5.5 x 1.5
used e.g. with:
3000 device series*

*Angular plug used e.g. with:
Transmitter*

*Jack plug 2.5
used e.g. with:
discontinued products, e.g. GDH..AN series,
GPRT 1400*

*Cinch plug
used e.g. with:
discontinued products, e.g. GPH
014, GPRT 1400*

CALIBRATION CERTIFICATES
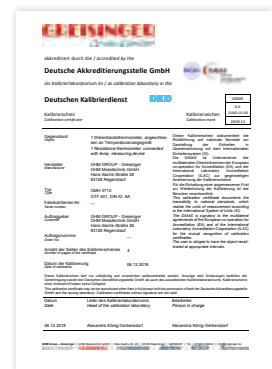
DAKKS CALIBRATION CERTIFICATE

DAkkS calibration certificates are used for very high-quality calibrations and calibrate reference instruments or standards and regulations requiring those certificates. DAkkS-DKD calibration certificates are issued using reference instruments for which traceability is ensured through a link to the laboratory of the Physikalische Bundesanstalt. DAkkS-DKD calibration certificates can only be issued by calibration laboratories accredited according to the DIN EN ISO 17025 standard.

Periodic external assessment and reaccreditation ensure that calibration is of a consistently high quality. These costs- and personnel-intensive measures result in a higher price, but, in return, provide the necessary reliability in the measurement results. Successful DAkkS assessment of the Greisinger site for the measured variable temperature. The calibration laboratory has been working in accordance with DIN EN ISO / IEC 17025 since 2018.

TEMPERATURE

DAkkS-T
Calibration certificate temperature, including 1 test point (please always specify the test point)

additional test points
(from -100 .. + 1400 ℃) pPlease always specify test point)

additional test points
-196 ℃

THE ACCREDITATION IS ONLY VALID FOR THE SCOPE OF ACCREDITATION LISTED IN THE DOCUMENT DK-21043-01-00.

DAkkS
Deutsche
Akkreditierungsstelle
D-K-21043-01-00

PRESSURE

DAkkS-P
Item No. 602731
DAkkS calibration certificate overpressure -1..100 bar (pressure, 9 test points rising and falling, procedure B, target: 0.1..0.6 % measuring span)

DAkkS-PA
Item No. 602758
DAkkS calibration certificate absolute pressure 0..70 bar (absolute pressure, 9 test points rising and falling, Sequence B, Target: 0.1..0.6 % measuring span)

further measuring ranges and accuracies on request

HUMIDITY (INCL. 1 TEMPERATURE VALUE)

DAkkS-FE
Item No. 602871
DAkkS calibration certificate, humidity (device with external sensor); (test points: humidity 15 %, 70 % and temperature approx. 23 ℃)

DAkkS-F
Item No. 602870
DAkkS calibration certificate, humidity (device with permanently attached sensor); (test points: humidity 20 %, 50 %, 80 % and temperature approx. 23 ℃)

further test points on request

CONDUCTIVITY

DAkkS-LF
Item No. 605528
DAkkS calibration certificate conductivity 3 test points, Test points 147 µS / cm, 1,413 µS / cm, 12.88 mS / cm

including 3 selectable points within
2 µS / cm - 1000 µS / cm

including 3 selectable points within
1 mS / cm - 150 mS / cm

every further test point

other measuring ranges on request

ACCREDIA

At our Delta Ohm site in Padua/Italy, calibration certificates can be issued for measurands, for which only a limited number of recognized laboratories exist in Europe. The calibration laboratory is equipped with the latest measurement technology, is also accredited according to the DIN EN 17025 standard and is regularly assessed by ACCREDIA. Due to the worldwide recognition of calibration services by the umbrella organization ILAC *, the validity of the calibration certificates in Germany and Europe and around 100 other countries is guaranteed by the ILAC. The calibration certificate will be issued in German. We offer the listed ACCREDIA calibration certificates for portable instruments marked with the symbol. ACCREDIA

*ILAC (International Laboratory Accreditation Cooperation) has been in existence for over 40 years with a sole focus on laboratory accreditation, with members representing over 70 countries and regional organizations. The ILAC MRA recognition agreement obliges all members to mutually recognize calibration results that have been created by nationally accredited laboratories (e.g. DAkkS or ACCREDIA).

For more information, see:
http://ilac.org/language-pages/german/

Calibration laboratory air velocity Delta Ohm / Padua

ACCREDIA CALIBRATION CERTIFICATES

ILLUMINANCE

ACCREDIA-B1
Item No. 611508
7 test points in the range of 50..4000 lux

ACCREDIA-B2
Item No. 611509
Radiometer UV A
10..50 Wm^{-2}

ACCREDIA-B3
Item No. 611510
Luminance
5 test points in the range 10000..30000 cdm^{-2}

ACCREDIA-B4
Item No. 611511
Pyranometer (solar irradiance)
1 test point

AIR SPEED

ACCREDIA-G1
Item No. 611512
Vane anemometer up to Ø 60 mm and hot wire probes
1..25 m/s
Test points: approx. 1, 2.5, 5, 10, 25 m/s

ACCREDIA-G2
Item No. 611513
Vane anemometers from Ø 60 mm, ultrasonic and pitot tube probes, bowl anemometers
1..25 m/s
Test points: approx. 1, 2.5, 5, 10, 25 m/s

ACOUSTICS

Calibration for integrated sound level meter (IEC 61672) and calibrator (IEC 60942)

ACCREDIA-A1
Item No. 611514
Device manufacturer Delta Ohm

ACCREDIA-A2
Item No. 611693
Any manufacturer

ISO CALIBRATION CERTIFICATES

ILLUMINANCE

ISO-WPB1
Item No. 611515
ISO calibration certificate 7 test points in the range of 50..4000 lux

ISO-WPB2
Item No. 611516
ISO calibration certificate radiometer UV A
10..50 Wm^{-2}

ISO-WPB3
Item No. 611517
ISO calibration certificate luminance
5 test points in the range 10000..30000 cdm^{-2}

ISO-WPB4
Item No. 611518
ISO calibration certificate pyranometer (solar irradiance)
1 test point

AIR SPEED

ISO-WPG1
Item No. 611519
ISO calibration certificate vane anemometer up to Ø 60 mm and hot wire probes, 1..25 m/s
Test points: approx. 1, 2.5, 5, 10, 25 m/s

ISO-WPG2
Item No. 611520
ISO calibration certificate vane anemometer abs Ø 60 mm, ultrasonic and pitot tube probes, bowl anemometer
1..25 m/s
Test points: approx. 1, 2.5, 5, 10, 25 m/s

ACOUSTICS

Calibration for integrating sound level meter (IEC 61672) and calibrator (IEC 60942)

ISO-WPA1
Item No. 611521k
ISO calibration certificate device manufacturer Delta Ohm

Octave band filter, third octave band filter calibrations (according to IEC 60942) and microphone calibrations (sensitivity, frequency response) on request

Due to the large number of calibration options, it is not possible to include all variants in this catalog.
Please contact us for a quotation.

We generally recommend ordering a case to store the devices.

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ISO

ISO CALIBRATION CERTIFICATES

GHM-Greisinger creates ISO calibration certificates (factory calibration certificates) according to the same standards as DAkkS calibration certificates. Still, since there is no need for an external assessment, these certificates can be issued at a lower cost. In addition, there are measurands for which no accreditation can be performed in the DAkkS-DKD. In these cases, ISO calibration is a valuable alternative. ISO calibration certificates are created with standards subject to regular test equipment monitoring; this ensures the traceability of the standards used.
The calibration may include an adjustment of the measuring instrument (only for Greisinger devices).

For portable instruments marked with the symbol ⊙ we offer the listed ISO calibration certificates. ISO calibration certificates can also be issued for transmitters or the combined display device and transmitter / sensor. Calibration certificates are not included in the scope of delivery of measuring instruments.
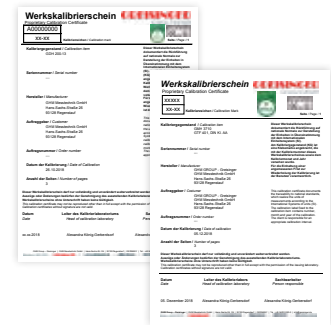
TEMPERATURE

ISO WPT
incl. 1 test point from -100..+1400 ℃
(please always specify test point)

additional test point
(from -30 .. + 500 ℃) (please always specify test point)

additional test points
(-100 ..- 30 and +500 .. + 1300 ℃)
(please always state the test point)

additional test points
-196 ℃

ISO-WPT2A
Item No. 602583
ISO calibration certificate with standard values: 0 ℃ / +70 ℃

ISO-WPT2B
Item No. 602584
ISO calibration certificate with standard values: 0 ℃ / +37 ℃

ISO-WPT3
Item No. 602596
ISO calibration certificate with standard values:
-20 ℃ / 0 ℃ / +70 ℃

ISO-WPT-IR
ISO calibration infrared temperature
Base price infrared
-20..+4 ℃ per test point
+5 .. +450 ℃ per test point

PRESSURE

ISO-WPD5
Item No. 602514
ISO calibration certificate: 5 points increasing,
5 points decreasing
-1 .. + 600 bar

ISO-WPD10
Item No. 602565
ISO calibration certificate: 10 points increasing,
10 points decreasing

over 600 bar on request

HUMIDITY

ISO-WPF4
Item No. 602543
ISO calibration certificate with standardtest values humidity / temperature (approx. 20 % / 40 % / 60 % / 80 % RH rising and falling; test point temperature at approx. +23 ℃)

ISO-80CL
Item No. 607734
ISO calibration certificate with standard test values humidity / temperature / pressure for EASYLOG 80CL (measuring points approx. 20/40/60/80 % at 23 ℃), pressure 5 points increasing, 5 points decreasing

GASEOUS OXYGEN

ISO-WPO3
Item No. 602816
ISO calibration certificate with 3 test values:
0 / 20.9 / 100 % O_2
Note: If the sensor is one year old, we recommend replacing the sensor before creating the WPO3!

CONDUCTIVITY

ISO-WPL3
Item No. 602622
ISO calibration certificate with 3 test values:
~ 147 µS / cm, ~ 1413 µS / cm, ~ 12.90 mS / cm

ISO-WPL10
Item No. 602623
ISO calibration certificate with 10 test values of approx. 2 µS, 74 µS, 147 µS, 720 µS, 1413 µS, 2.77 mS, 6.70 mS, 12.90 mS, 24.8 mS, 111.3 mS and approx. 195 mS /cm

ULTRAPURE WATER – CONDUCTIVITY

ISO-WPL3-RW
Item No. 602624
ISO calibration certificate, factory calibration conductivity, test points: approx. 2.0 µS / cm 5 µS / cm 15 µS / cm

PH

ISO-WPP3
Item No. 602767
ISO calibration certificate with 3 standardtest values:
4.00 pH, 6.87 pH, 9.18 pH

ISO-WPP9
Item No. 481417
ISO calibration certificate with 10 test values
1.68-10.0 pH (DKD: 1.68; 4.01; 6.86; 7.41; 9.18; 10.01, GPH 10.0; 7.0; 4.0 pH)

SERVICE OFFERS

Many devices are already delivered with a test report. The reports are created automatically during production and do not provide any information about the traceability of the measurement. For measurands that do not need to be traced, the following test protocols can be created as an alternative.

Our express service focuses on urgent ISO calibrations. There are no long downtimes of measuring instruments, thus fast and uncomplicated Germany-wide shipping via UPS-Express. To register, please contact us at **express@greisinger.de** .

TEST REPORTS

ISO-GCO
Item No. 603841
Test protocol for carbon monoxide measuring instruments. Test points at 0 ppm CO, 300 ppm CO

ISO-GMH38XX
Item No. 604463
Test report for material moisture. Measuring instruments GMH 38xx, GMR 110

EXPRESS (INCLUDING SHIPPING)

Temperature measuring devices
-90 .. + 500 ℃, max. 3 devices, 2 working days

Pressure measuring devices
-1 .. + 600 bar, max. 3 devices, 2 working days

Humidity measuring devices
approx. 20 % / 40 % / 60 % / 80 % RH, max. 3 devices, 3 working days

Shipment of larger quantities or further measurands is available on request.

EXPRESS ONLY POSSIBLE AFTER REGISTRATION AT EXPRESS@GREISINGER.DE

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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		●				● / –	● / –	– / ●	

INFORMATION

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:
○ **Highest** precisions attainable
○ High replacement accuracy of the sensors especially for Pt100 and Pt1000
○ 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:
○ Very small sensors can be implemented; thus, a very short response time possible – best suited for surface measurements
○ 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:

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

HIGHLIGHTS:

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

ADDITIONAL FUNCTIONS WITH GMH 3750:

ALARM   LOGG

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 ap prox. 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)
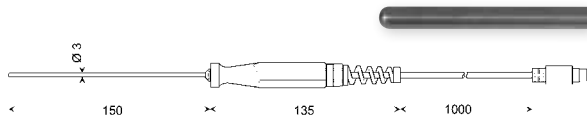
corrosion-resistant V4A pipe Ø 3 mm, plastic handle, anti-kink screw connection, approx. 1 m 4-pole PVC cable, 4-pole Mini DIN connector
Response time T_{90}: Water 0.4 m / s approx. 10 s, air 2 m / s approx. 40 s

-50 °C / +400 °C

GTF 35
Item No. 600391
Immersion sensor for liquids / gases
-50 .. + 400 °C, DIN class B
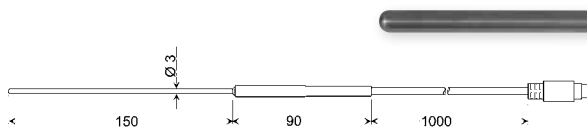
corrosion-resistant V4A pipe Ø 3 mm, shrink tubing,
approx. 1 m 4-pole PVC cable, 4-pole Mini DIN connector
Response time T_{90}: Water 0.4 m / s approx. 10 s, air 2 m / s approx. 40 s

-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)
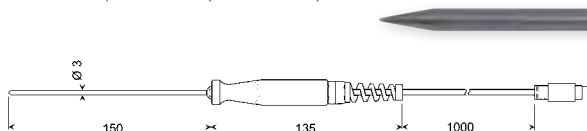
V4A tube Ø 3 mm with needle-shaped penetration tip, plastic handle, anti-kink screw connection, approx. 1 m 4-pole PVC cable, 4-pole mini DIN connector
Response time T_{90}: Water 0.4 m / s approx. 10 s, air 2 m / s approx. 40 s

-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
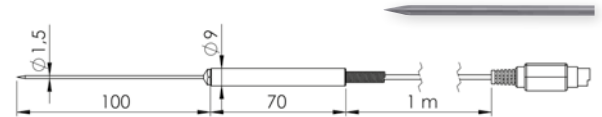
V4A tube with Ø 1.5 mm slim penetration tip, small teflon handle, stainless steel
Anti-kink protection, 1 m teflon cable, 4-pole mini DIN connector
Response time T_{90}: Water 0.4 m / s <1 s, air 2 m / s approx. 12 s

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
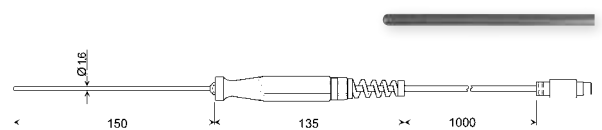
V4A shealted element, bendable, Ø 1.6 mm, plastic handle, anti-kink screw
connection, approx. 1 m 4-pole PVC cable, 4-pole mini DIN connector
Response time T_{90}: Water 0.4 m / s <2 s, air 2 m / s approx. 25 s

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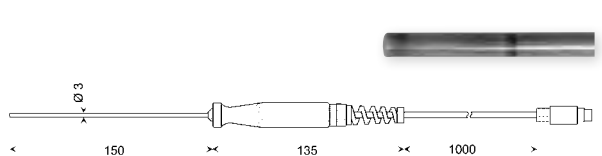
V4A sheathed element, bendable, Ø 3 mm, plastic handle, anti-kink screw
connection, approx. 1 m 4-pole PVC cable, 4-pole mini DIN connector
Response time T_{90}: Water 0.4 m / s <5 s, air 2 m / s approx. 60 s

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!

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

SUITABLE PT100 MEASURING SENSORS (4-WIRE)

GTF 601
-200 °C / +600 °C

Item No. 600387
Immersion probe with sheathed element Pt100 -200 .. + 600 °C, DIN class B

GTF 601 DIN class AA
-200 °C / +600 °C

Item No. 600388
Immersion sensor with sheathed element Pt100
-200 .. + 600 °C, DIN class AA (± 0.1 °C at 0 °C)
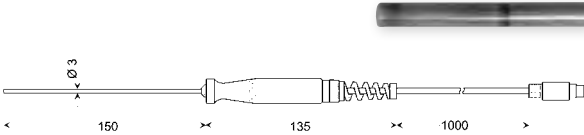
Ø 3
150 135 1000

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
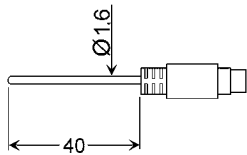**Response time T_{90}:** Water 0.4 m/s <5 s, air 2 m/s approx. 60 s

GLF 401 Mini
-25 °C / +70 °C

Item No. 600395
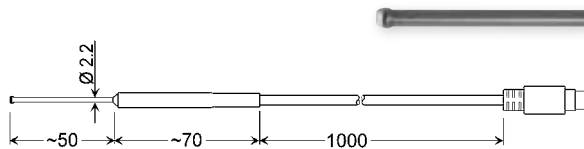Ambient air sensor without cable,
-25 .. + 70 °C, DIN class A

Ø 1.6
40

V4A pipe Ø 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
-50 °C / +200 °C

Item No. 600396
Surface sensor, ceramic front side
-50 .. + 200 °C, DIN class B

Ø 2.2
~50 ~70 1000

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

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

PRECISE PT1000 UNIVERSAL THERMOMETER

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

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

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: ± 0.1 K ± 1 digit otherwise 0.1 % of reading ± 2 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 Ø 3 mm Pt1000 class B, with BNC plug

GF 1T-E3-B-BNC
Item No. 609639
compact Pt1000 handheld sensor with silicone handle, insertion sensor Ø 3 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 Ø 1.5 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.

GTF 175-BNC
-70 °C / +250 °C
Item No. 607165
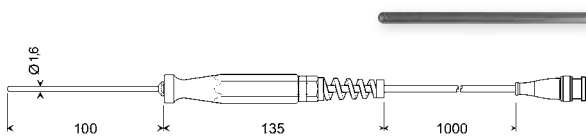Immersion sensor for liquids / gases
-70 .. + 250 °C, Pt1000 class B
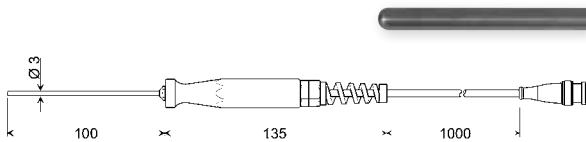
Corrosion-resistant V4A tube Ø 3 mm, plastic handle, anti-kink screw connection,
1 m highly flexible silicone cable, BNC plug
Response time T$_{90}$:   Water 0.4 m / s <2 s, air 2 m / s approx. 40 s

Advantages of the sheathed element Pt1000:	• high temperature resistance
	• sheathed tube is bendable
	• high shock resistance
	• long lifetime

GTF 175 / 1.6-BNC
-70 °C / +250 °C
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

GES 20-TB-BNC
-200 °C / +250 °C
Item No. 607377
Core temperature / food probe, compact teflon handle
-200 .. + 250 °C, Pt1000 class B
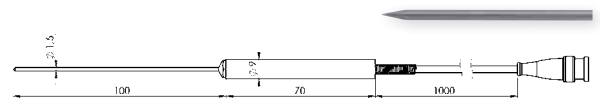
V4A tube with Ø 1.5 mm slim insertion tip, small teflon handle, stainless steel kink
protection, 1 m teflon cable, BNC plug
Response time T$_{90}$:   Water 0.4 m/s <1 s, air 2 m / s approx. 12 s

GES 175-BNC
-70 °C / +250 °C
Item No. 611324
Insertion probe for soft plastic media
-70 .. + 250 °C, Pt1000 class B
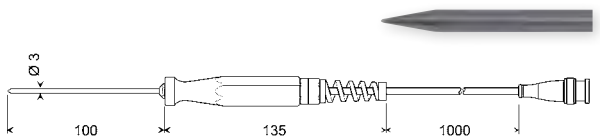
V4A tube Ø 3 mm with needle-shaped insertion tip, plastic handle, anti-kink
screw connection, 1 m highly flexible silicone cable, BNC plug
Response time T$_{90}$:   Water 0.4 m/s <2 s, air 2 m / s approx. 40 s

GES200-T-300-D8-L1.5PU
-50 °C / +250 °C
Item No. 479239
Robust insertion probe
-50 ... +250 °C, Pt1000 class B

NEW!
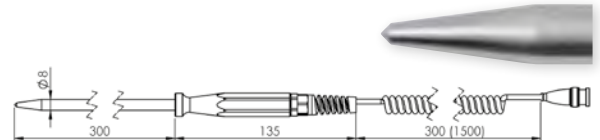
Stainless steel tube Ø8 mm with insertion tip, plastic handle, anti-kink screw
connection, spiral cable (approx. 1.5 m stretched), BNC plug, for use in soils,
bulk goods, asphalt, etc.
Response time T$_{90}$:   Water 0.4 m/s approx. 4 s

GLF 175-BNC
-70 °C / +250 °C
Item No. 607162
Air / gas sensors for clean media
-70 .. + 250 °C, Pt1000 class B
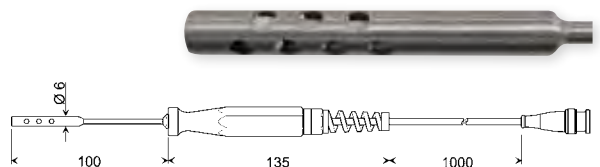
(use GTF175 for contaminated media), punched V4A protection tube, rapid
response Pt1000 miniature sensor freely arranged behind it, thus high response
speed, plastic handle, anti-kink fitting, 1 m highly flexible silicone cable, BNC plug
Response time T$_{90}$:   Air 2 m / s approx. 15 s

SUITABLE PT1000 SENSOR (2-WIRE)

GOF 175-BNC
Item No. 607163
Surface probe for solid surfaces
-70 .. + 250 °C, Pt1000 class B

-70 °C / +250 °C

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

GOF 175 Mini-BNC
Item No. 610399
Surface probe for solid surfaces
-70 .. + 120 °C, Pt1000 class B

-70 °C / +120 °C
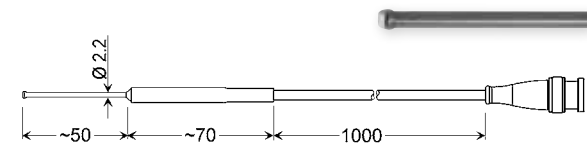
Pt1000 ceramic plate on the face, 2 x 2.3 mm, V4A tube Ø 2.2 mm, 1 m highly
flexible silicone cable, BNC plug
Response time T$_{90}$: approx. 15 s

GGF 175-BNC
Item No. 610397
Probe for deep-frozen products
-70 .. + 250 °C, Pt1000 class B

-70 °C / +250 °C
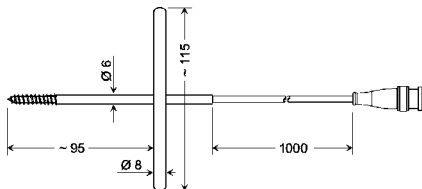
For screwing into frozen food, etc. without pre-drilling, V4A pipe Ø 6 mm with
screw tip, 1 m highly flexible silicone cable, BNC plug
Response time T$_{90}$: approx. 15 s

GTF 2000-BNC
Item No. 607164
Air- / tube mounting probe
-50 .. + 200 °C, Pt1000 class B

-50 °C / +200 °C

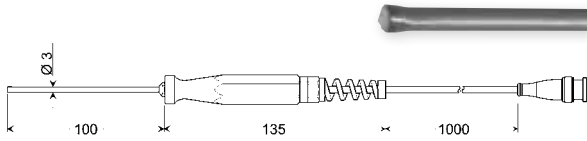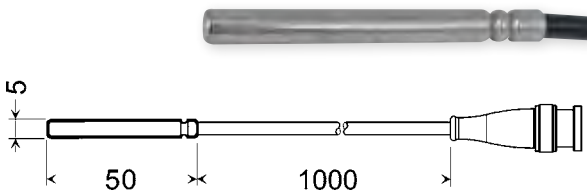V4A sensor sleeve Ø 5 mm, 1 m highly flexible silicone cable, BNC plug, every
additional meter or part thereof surcharge: € 3.20
Response time T$_{90}$: Water 0.4 m / s <10 s, air 2 m / s approx. 60 s

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:

o Lightweight, handy handle with opti-
mized ergonomics and flexible cable

o Water-resistant: can be completely
submerged

o Temporary temperature resistance
up to 250 °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
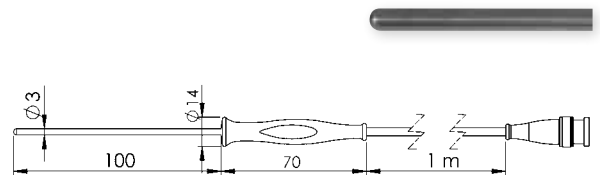
-70 °C / +250 °C

Immersion tip 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 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

GF 1T-T3-B-BNC-MB4
Item No. 611763
Pt1000 handheld sensor for low temperatures, -200 .. + 250 °C, Pt1000 class B

-200 °C / +250 °C

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

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
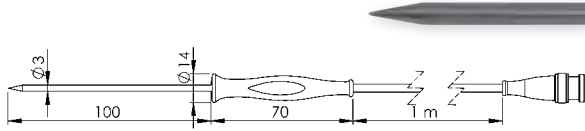
Insertion probe Ø 3 mm made of V4A tube, black silicone handle -50 .. + 250 °C, 1 m silicone cable -50 .. + 230 °C permanent/+250 °C 2 h, probe tip and silicone handle IP67, BNC plug
Response time T$_{90}$:   Water 0.4 m/s <2 s, air 2 m/s approx. 40 s

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
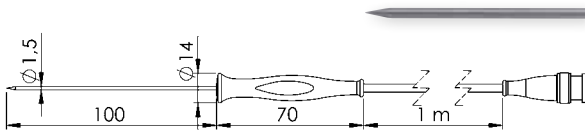
Insertion probe Ø 1.5 mm made of V4A tube, black silicone handle -50 .. + 250 °C, 1 m silicone cable -50 .. + 230 °C permanent/+250 °C 2 h, probe tip and silicone handle IP67, BNC plug
Response time T$_{90}$:   Water 0.4 m/s <1 s, air 2 m/s approx. 12 s

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
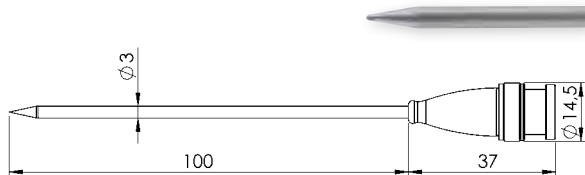
Insertion probe Ø 3 mm made of V4A tube, IP67 when plugged in, BNC plug with EPDM grommet up to +75 °C
Response time T$_{90}$:   Water 0.4 m/s <2 s, air 2 m/s approx. 40 s

-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
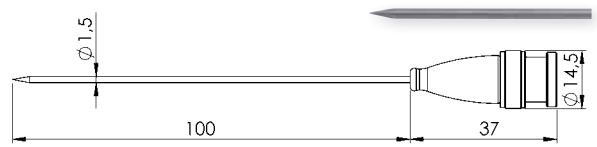
Insertion probe Ø 1.5 mm made of V4A tube, IP67 when plugged in, BNC plug with EPDM grommet up to +75 °C
Response time T$_{90}$:   Water 0.4 m/s <1 s, air 2 m/s approx. 12 s

-70 °C / +250 °C

GF 1T-L3-B-BNC
Item No. 611297
Pt1000 air probe for clean media, -70 .. + 250 °C, Pt1000 class B
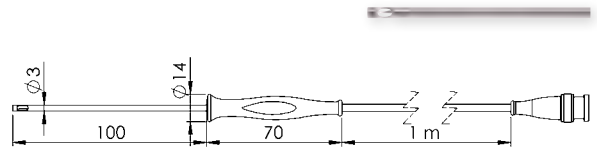
(use GF 1T-T3 for dirty media), perforated V4A tube Ø 3 mm, quick-acting Pt1000 freely arranged, black silicone handle up to +250 °C, 1 m silicone cable up to +230 °C continuously/+250 °C 2 h, BNC connector
Response time T$_{90}$:   Air 2 m/s approx. 15 s

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
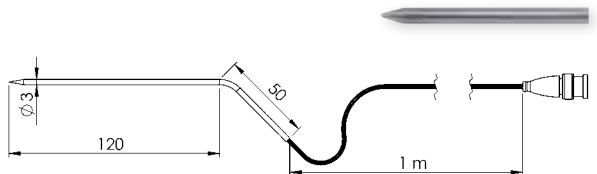
insertion probe Ø 3 mm bent from V4A tube, 1 m glass-silk-insulated cable with stainless steel braiding up to +350 °C continuously/+400 °C 2 h, BNC plug
Response time T$_{90}$:   Water 0.4 m/s approx. 10 s, air 2 m/s approx. 40 s

VARIANTS:

GF 3T-E3-B-LE
Item No. 611302
Pt1000 grill probe, Pt1000 class B, with loose ends

PRECISION UNIVERSAL THERMOMETER

ALARM

AUTO OFF

HOLD

ISO

MIN MAX

O / S-CORR

Ø 3 MM

Ø 3 MM

Ø 1.5 MM

G 1710

G 1720

G 1730

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: ± 0.1 K ± 1 digit -70 .. + 250 °C: ± 0.2 % f. MW ± 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)

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

HAY THERMOMETER

ALARM
AUTOOFF
HOLD
MIN MAX

HIGHLIGHTS:

○ 4 meter fiberglass probe
○ Backlit
○ Alarm function

hardened cutting tip

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

ALARM
AUTOOFF
HOLD
MIN MAX

HIGHLIGHTS:

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

ROBUST 1 M STAINLESS STEEL INSERTION PROBE

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

back

tip

NEW!

front

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

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: ± 0.1 K ± 1 digit, otherwise: ± 0.2 % of reading MW. ± 2 digits
Response time:	t90 water (0.4 m / s) approx. 4 s
Measuring frequency:	2 measurements / s
Sensor:	Diameter: Ø 8 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:	Poartable instrument with permanently connected sensor, test report, optional: ISO calibration report, 2xAA batteries, operating instructions

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 ± 0.2 °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:	(± 1 digit) (at nominal temperature) ± 0.5 % of reading ± 0.1 °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 Ø, total length 141 mm.
Weight:	approx. 135 g including battery
Scope of delivery:	Device, battery, operating instructions

WATERPROOF HACCP THERMOMETER WITH PT 1000 SENSOR

AUTOHOLD
AUTOOFF
HACCP
ISO
MIN MAX
O/S-CORR

BENDABLE!

LIQUIDS AIR/GAS

CORE TEMPERATURE FOOD, Ø 3 MM

SOFT PLASTIC MEDIA

CORE TEMPERATURE MEAT, Ø 1.5 MM

GMH 2710-T   GMH 2710-E   GMH 2710-K   GMH 2710-G

GMH 2710-F
GMH 2710-I

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

VERY QUICK RESPONSE TIME!

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:

TARA

GMH 3251:

TARA   ALARM   LOGG

Connection GMH 3221

Connection GMH 3231/51

Connection GMH 3211

GMH 3201
Item No. 474930
Precision second thermometer type K

GMH 3211
Item No. 611381
Precision quick-response thermometer, universal

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

PRECISION QUICK-RESPONSE THERMOMETER FOR THERMOCOUPLES

GENERAL TECHNICAL DATA:

Resolution:	0.1 °C or 1 °C
Working temperature:	-25 .. + 50 °C
Display:	two 4½-digit LCD displays (12.4 mm or 7 mm high)
Serial interface (except GMH 3201 and GMH 3221):	3-pole jack socket Ø 3.5 mm, can be connected directly to the RS232 or USB interface of a PC via an electrically isolated interface converter GRS 3100 / GRS 3105 or USB 3100 N (accessory).
Data logger (only GMH 3251):	**manually:** 1,000 data records (retrieval of data via keyboard or interface) **cyclical:** 10,000 data records (data retrieval via interface) adjustable cycle time: 1 s..1 h The logger is started and stopped via the keyboard or interface. A convenient software GSOFT 3050 (accessory) is available for reading out the logger data.
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)
Nominal temperature:	25 °C ± 5 K
Weight:	approx. 155 g
Scope of delivery:	Device, battery, test report, operating instructions

SPECIAL FEATURE (EXCEPT GMH3201 AND -21):

For each probe connection, a correction factor can be entered for surface measurements... This corrects the temperature difference of the measuring surface relative to the ambient temperature optimally in order to obtain the most precise surface measurements possible. Such as in applications where infrared thermometers have their weaknesses, for example on shiny metallic surfaces!

ACCESSORIES OR SPARE PARTS:

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

GNG 10/3000
Item No. 600273
Plug power supply for GMH 3XXX series, (220/240 V, 50/60 Hz), output voltage 10.5 V / 10 mA, suitable for devices with a power supply socket

ST-RN
Item No. 601074
GMH 3000 protective bag made of Nappa leather, 2 connections (1 x round, 1 x rectangular)

ST-N2
Item No. 601072
GMH 3000 protective bag made of Nappa leather, 2 rectangular connections

GKK 1100
Item No. 601060
Case with knob foam for universal use, 340 x 275 x 83 mm (W x H x D)

16-CHANNEL PRECISION QUICK-RESPONSE THERMOMETER FOR THERMOCOUPLES

HIGHLIGHTS:

○ Simultanous display of 4 inputs

○ 800,000 measurement data can be saved

○ For thermocouples type K, J, T, N, R, S, B, E

16 INTERCHANGEABLE SENSORS CAN BE CONNECTED AT THE SAME TIME

HD32-8-16
Item No. 700077
Precision thermocouple thermometer with 16 inputs and logger

GENERAL:

Ideal for complex temperature measurement tasks in which many temperature values are to be recorded, measured, saved and displayed at the same time.

APPLICATION:

Testing and experimental systems, drying and baking ovens, air conditioning centers, production and manufacturing processes, monitoring of the temperature in concrete or asphalt of streets and buildings

TECHNICAL SPECIFICATIONS:

Thermocouples:	K, J, T, N, R, S, B, E	
Resolution:	0.05 °C or 0.1 °C	
Measuring range: (depending on the thermocouple)	Type K: -200 °C .. + 1370 °C	Type R: +200 °C .. + 1480 °C
	Type J: -100 °C .. + 750 °C	Type S: +200 °C .. + 1480 °C
	Type T: -200 °C .. + 400 °C	Type B: +200 °C .. + 1800 °C
	Type N: -200 °C .. + 1300 °C	Type E: -200 °C .. + 750 °C
Accuracy: (depending on thermocouple)	± 0.1 .. ± 0.4 °C	
Sensor connections:	16	
Working conditions:	-5..+50 °C working temperature, -25..+65 °C storage temperature, 0..90 % relative humidity	
Logger function:	800,000 records	
Display:	Backlit LCD display, 128 x 64 pixels, enables 4 measured values to be displayed at the same time	
Serial interface:	Communication via galvanically isolated 9-pin USB connecting cable	
Power supply:	4 x 1.5 V alkaline batteries, via external 12 V DC power supply or via the interface on the PC	
Housing:	ABS, IP64	
Dimensions:	180 x 220 x 50 mm (H x W x D)	
Weight:	1100 g	
Scope of delivery:	Device, DeltaLog9 software, lanyard, batteries, manual	

ACCESSORIES OR SPARE PARTS:

SWD-10
Item No. 700039
Power supply plug for HD portable instruments, 100 ... 240 V AC

CP22
Item No. 700078
Interface converter HD32-8 <=> PC, USB

Note: Connection cables for the PC and temperature sensors must be ordered separately.

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

SUCCESSOR TO **GTH 1150** AND **GTH 1170** PRODUCTS

connection

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

THERMOMETER/DATA LOGGER WITH PT100 AND THERMOCOUPLE INPUT

HIGHLIGHTS:

○ Input for Pt100 sensor (SICRAM connector) and thermocouple

○ Data logger function

○ USB connection and software for real-time monitoring

SEE ALSO: SUITABLE TYPE K, J, T, N, E THERMOCOUPLES AND ASSOCIATED SENSOR SPECIFICATIONS

HD 2178.2
Item No. 474932
Thermometer with two inputs (1 x Pt100, 1x thermocouple) and logger

GENERAL:
The HD2178.2 can be used with both Pt100 sensors and thermocouples. Pt100 sensors with SICRAM connectors are connected to connection B (8-pole DIN 45326 connector). The SICRAM connector already carries all sensor data such as serial number and calibration data. A thermocouple of the type K, J, T, N, E with a miniature flat plug can be connected to connection A. The data logger can save up to 80,000 measured values, conveniently transferred via USB cable and the supplied software if required. Battery operation, a large display, and robustness make the HD2178.2 a perfect all-rounder. Naturally, the HD2178.2 also offers MAX, MIN, AVG, REL, and HOLD functions.

APPLICATIONS:
The wide variety of sensors offered (as contact, immersion, insertion sensors, or for air temperature) opens up a multitude of applications in a wide variety of industries.

TECHNICAL SPECIFICATIONS:

Measuring range:	Pt100 / Pt1000: -200 .. + 650 °C Type K: -200 .. + 1370 °C
Accuracy:	Pt100 / Pt1000: ± 0.05 °C Type K: ± 0.1 °C to 600 °C, ± 0.2 °C above 600 °C
Resolution:	0.1 °C
Display:	LCD, 52 x 42 mm
Operating temperatur:	-5 .. + 50 °C (instrument)
Protection class:	IP 66
Power supply:	4 batteries 1.5, type AA (optional power supply unit)
Measurement Unit:	°C or °F
Security data storage:	Regardless of the state of charge of the batteries
Data storage:	2,000 pages with 40 measured values each, a total of 80,000 measured values
Storage interval:	1, 5, 10, 15, 30 s; 1, 2, 5, 10, 15, 20, 30 min; 1 h
USB port:	USB 2.0, Type B mini USB port
Housing:	Material: ABS plastic, rubber
Dimensions:	185 x 90 x 40 mm
Weight:	470 g (incl. Batteries)
Scope of delivery:	Device including batteries, case for HD 2178.2, DeltaLog 9 software. Measuring probes, connection cables, power pack are not included in the scope of delivery.

Selection of Pt100 sensor with SICRAM connector
(Other versions on request, also bulb temperature)

Example: TP 472 I (immersion sensor)

Immersion probe, -196 .. + 500 °C, ± 0.25 °C (-196 .. + 300 °C), Ø 3 mm, probe length 300 mm, cable length 2 m

ACCESSORIES OR SPARE PARTS:

CP23
Item No. 700050
USB connection cable, USB 2.0, mini USB socket type B.

SWD10
Item No. 700039
Power supply plug for HD portable instruments, 100 ... 240 V AC

RECOMMENDED ACCESSORIES (PT100 SENSOR WITH SICRAM CONNECTOR):

further type K-probes (NiCr-Ni)

TP 472 I.
Item No. 475642
Immersion probe Ø 3 mm, FL = 300 mm, -196 ... +500 °C, Pt100, cable length 2 m, measuring range: -196 °C .. + 500 °C, accuracy: ± 0.25 °C (-196 °C .. + 300 °C), ± 0.5 °C (+300 °C .. + 500 °C)

TP 472 I.0
Item No. 415039
Immersion probe, Pt100, Ø 3 mm, length 230 mm, cable length 2 m, measuring range: -50 °C .. + 300 °C, accuracy: ± 0.25 °C (-50 °C .. + 300 °C)

TP 473 PI
Item No. 475643
Insertion probe Ø4 mm, FL = 150 mm, -50 ... +400 °C, Pt100, cable length 2 m, measuring range: -50 °C .. + 400 °C, accuracy ± 0.25 °C (-50 °C .. + 300 °C), ± 0.5 °C (+300 °C .. + 400 °C)

TP 473 P.0
Item No. 475644
Insertion probe Ø4 mm, FL = 150 mm, -50 ... +300 °C, Pt100, cable length 2 m, measuring range: -50 °C..+300 °C, accuracy: ±0.25 °C (-50 °C..+300 °C)

TP 474 CO
Item No. 475645
Surface probe, face contact area 5 mm, Pt100, Ø 4 mm, length 230 mm, cable length 2 m, measuring range: -50 °C .. + 300 °C, accuracy: ± 0.3 °C (-50 °C .. + 300 °C)

TO 475 A.0
Item No. 475646
Air probe Ø4 mm for clean media, Pt100, length 230 mm, cable length 2 m, measuring range: -50 °C .. + 250 °C, accuracy: ± 0.3 °C (-50 °C .. + 250 °C)

TP47
Item No. 475648
SICRAM connector for connecting Pt sensors, without SICRAM connection (4-wire direct Pt100, 2-wire Pt1000)

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:**   ± 1.5 °C in the range -40 .. + 375 °C
Class 1 for **type N:**   ± 1.5 °C in the range -40 .. + 375 °C
Class 1 for **type S:**   ± 1 °C in the range 0..1100 °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 .. + 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 GF1TK / GF2TK / GF3TK
We reserve the right to charge a minimum order surcharge for custom-made products.

GTF 400
-65 °C / +550 °C
Item No. 600502
Immersion sensor for liquids / gases
-65 .. + 550 °C

VERY FAST

inexpensive, fast, resilient (rigid)
Corrosion-resistant V4A pipe Ø 1.5 mm, L = 130 mm, plastic handle, anti-kink screw connection, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   Water 0.4 m / s <1 s

GTF 900
-65 °C / +1000 °C
Item No. 600505
Immersion sensor for liquids / gases up to 1000 °C
-65 .. + 1000 °C

inexpensive, resilient (rigid)
Corrosion-resistant V4A pipe Ø 3 mm, L = 130 mm, plastic handle, anti-kink screw connection, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   Water 0.4 m / s <2 s, air 2 m / s approx. 40 s

GTF 1200
-200 °C / +1150 °C
Item No. 600507
Immersion sensor with sheathed thermocouple for highest temperatures
-200 .. + 1150 °C

BENDABLE

Inconel 600 sheathed tube Ø 1.5 mm, bendable, L = 150 mm, plastic handle, anti-kink screw connection, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   Water 0.4 m / s approx. 3 s

GTF 1200/300
-200 °C / +1150 °C
Item No. 600510
Immersion sensor with sheathed thermocouple for highest temperatures
-200 .. + 1150 °C

BENDABLE, POTENTIAL-FREE

Inconel 600 sheathed tube Ø 3 mm, bendable, L = 300 mm, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   Water 0.4 m/s approx. 5 s

GTF 1000 AL
-200 °C / +1000 °C
Item No. 600512
Immersion sensor with sheathed thermocouple for aluminum melt, etc.
-200 .. + 1000 °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 Ø 6 x 1.4 mm, L = 1000 mm rigid, additional internal sheathed thermocouple, plastic handle, anti-kink screw connection, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   Water 0.4 m / s approx. 30 s

GOF 130
-65 °C / +900 °C
Item No. 600490
Surface probe with type K spiral spring
-65 .. + 900 °C

VERY FAST

for solid surfaces of any kind; 2 laser-welded, resilient spiral springs made of NiCr-Ni, V4A tube Ø 8 mm, plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   approx. 5 s

GOF 900 HO
-65 °C / +900 °C
Item No. 600500
Surface probe with type K spiral spring, curved
-65 .. + 900 °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

GOF 200 HO
-65 °C / +400 °C
Item No. 600492
Surface probe with thermocouple spring strip, fast, angled
-65 .. + 400 °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
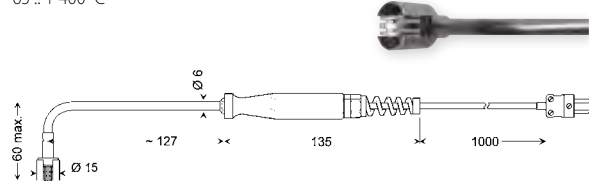**Response time T$_{90}$:**   approx. 2 s

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 spring strip, fast, angled
-65 .. + 400 °C

for fastest measurements
angled design, thermocouple spring spring strip, plastic handle,
anti-buckling glanding, 1 m silicone cable, mini flat plug
Response 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 °C
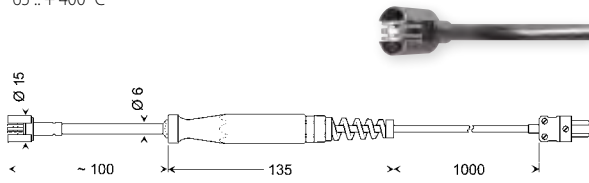
for fastest measurements, thermocouple spring strip, plastic handle,
anti-buckling glanding, 1 m silicone cable, mini flat plug
Response time T$_{90}$: approx. 2 s

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 °C
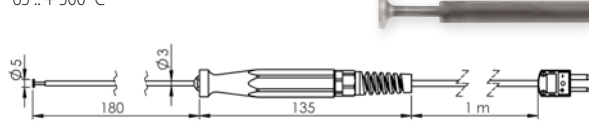
For straight and solid surfaces of any kind, solid silver plate, plastic handle,
anti-buckling glanding, 1 m silicone cable, mini flat plug
Response time T$_{90}$: approx. 3 s

-65 °C
+500 °C

GOF 501 HO
Item No. 475072
Surface probe with silver measuring surface, angled
-65 .. + 500 °C
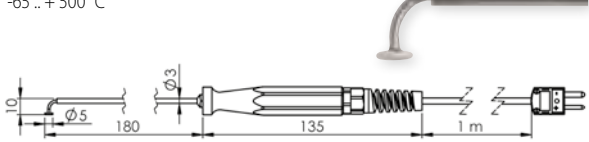
For straight and solid surfaces of any kind, angled design, solid silver plate,
plastic handle, anti-buckling glanding, 1 m silicone cable, mini flat plug
Response time T$_{90}$: approx. 3 s

-65 °C
+500 °C

GOF 130 CU
Item No. 600486
Surface probe with resilient copper plate
-65 .. + 500 °C
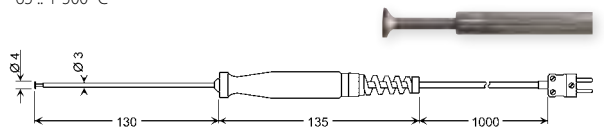
for straight and solid surfaces of any kind
Spring-loaded Cu plate, plastic handle, anti-buckling glanding,
1 m silicone cable, mini flat plug
Response time T$_{90}$: approx. 5 s

-65 °C
+550 °C

GES 20-K
VERY THIN
Item No. 602591
Core temperature / food probe, compact teflon handle
-65 .. + 550 °C
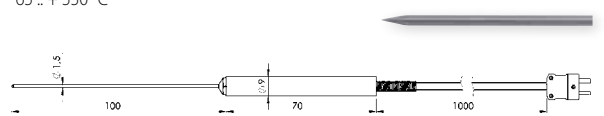
for canteen kitchens, bakeries, butcher's shops, etc.
V4A tube with Ø 1.5 mm slim penetration tip, small teflon handle,
stainless steel kink protection, 1 m teflon cable, mini flat plug
Temperature resistance: teflon handle and teflon cable 250 °C
Response time T$_{90}$: Water 0.4 m / s <1 s, air 2 m / s approx. 12 s

-50 °C
+250 °C

GES 21-K
Item No. 600074
Core temperature/food probe
-50 .. + 250 °C, potential-free
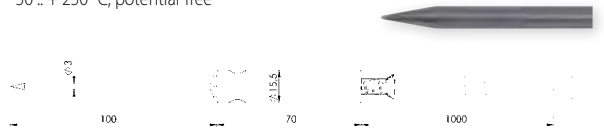
for canteen kitchens, bakeries, butcher's shops, etc.
V4A tube Ø 3 mm with needle-shaped penetration tip, large white Teflon handle,
stainless steel kink protection, 1 m Teflon cable, mini flat plug
Temperature resistance: teflon handle and teflon cable 250 °C
Response time T$_{90}$: Water 0.4 m / s <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 °C
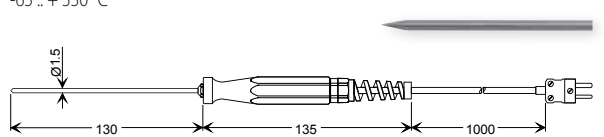
V4A tube with Ø 1.5 mm slim penetration tip, plastic handle, anti-kink screw
connection, 1 m silicone cable, mini flat plug
Response time T$_{90}$: Water 0.4 m / s approx. 1 s, air 2 m / s approx. 1.5 s

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

GES 500
-65 °C / +550 °C
Item No. 600516
Insertion probe for soft plastic media
-65 .. + 550 °C
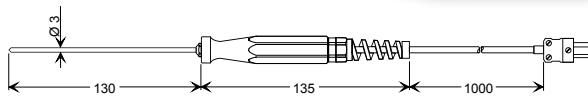
V4A tube Ø 3 mm with needle-shaped penetration tip, plastic handle,
anti-buckling glanding, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   Water 0.4 m/s <2 s

GES 900
-65 °C / +1000 °C
Item No. 600518
Insertion probe for soft plastic media
-65 .. + 1000 °C
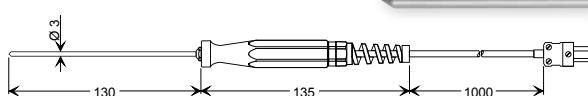
Spring-loaded V4A tube with Ø 3 mm penetration tip, plastic handle,
anti-buckling glanding, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   Water 0.4 m/s approx. 5 s

GTL 130
-65 °C / +600 °C
Item No. 602304
Air/gas probe
-65 .. + 600 °C

VERY FAST
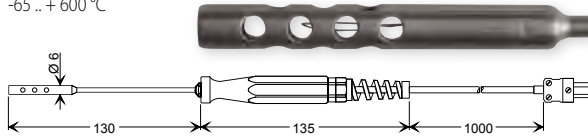
for room temperature, smoke gases, etc.; Perforated V4A protective tube with
thermocouple wires welded behind it, plastic handle, anti-buckling glanding, 1
m silicone cable, mini flat plug
Response time T$_{90}$:   Air 2 m/s approx. 15 s

GTF 40 K-620
-50 °C / +250 °C
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
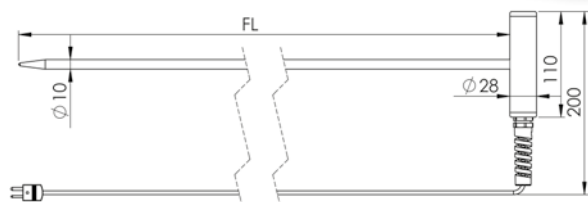
Stainless steel tube Ø10 mm with insertion tip, robust and ergonomic T-handle
made of stainless steel, anti-buckling glanding, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   Water 0.4 m/s approx. 6 s

GKF 125
-65 °C / +200 °C
Item No. 600520
Compost sensor/grain sensor
-65 .. + 200 °C

VERY ROBUST
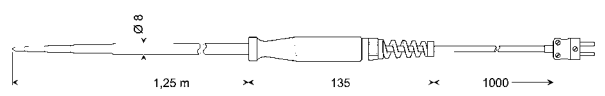
fast in seconds and yet stable
V4A pipe Ø 8 mm at the front stepped down to Ø 3 mm, plastic handle,
anti-buckling glanding, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   Water 0.4 m/s approx. 6 s

GES200-K
-50 °C / +250 °C
Item No. 478767
Robust insertion probe,
for application in soils, bulk material, asphalt, etc.
-50 ... +250 °C, type K, class 1

NEW!
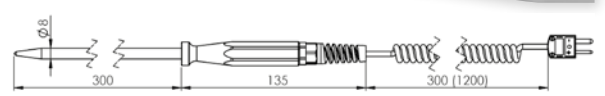
Stainless steel pipe Ø 8 mm with penetration tip, plastic handle,
anti-buckling glanding, spiral cable (approx. 1.2 m stretched), mini flat plug
Response time T$_{90}$:   Water 0.4 m/s approx. 4 s

GAF 200
-65 °C / +550 °C
Item No. 600522
Asphalt probe or insertion probe
-65 .. + 550 °C
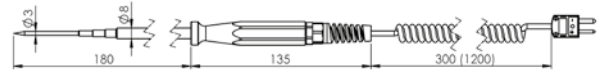
for liquids, soft plastic media, etc.; V4A pipe Ø 8 mm at the front stepped down
to Ø 3 mm, plastic handle, anti-buckling glanding, spiral cable
(approx. 1.2 m stretched), mini flat plug
Response time T$_{90}$:   Water 0.4 m/s approx. 6 s

GRF 200
-50 °C / +200 °C
Item No. 604663
Tire sensor
-50 .. + 200 °C
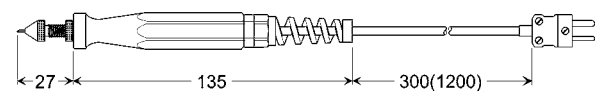
Insertion sensor within seconds with depth stop (needle adjustable
from 0..14 mm depth). Suitable for tire temperature and other soft plastic media.
Plastic handle, anti-buckling glanding, spiral cable (approx. 1.2 m stretched),
mini flat plug
Response time T$_{90}$:   approx. 5 s

GTZ 300
-65 °C / +150 °C
Item No. 603287
Clamp probe, type K
-65 .. + 150 °C
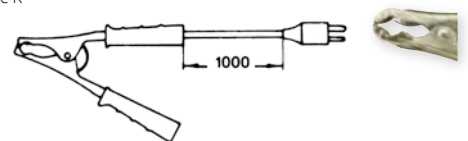
for pipe surface temperature measurements
for pipes up to approx. Ø 25 mm, 1 m silicone cable, mini flat plug
Response time T$_{90}$:   approx. 3 s

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

GTF 300
-65 °C / +300 °C
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
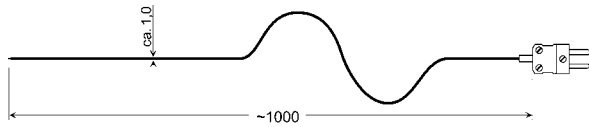
for air, gases, liquids, smallest surfaces
Teflon-insulated twisted Ø 0.2 mm thermocouple wires,
welded measuring tip, very flexible, mini flat plug
Response time T$_{90}$:   Water 0.4 m / s approx. 0.3 s

GTF 300 GS
-65 °C / +400 °C
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
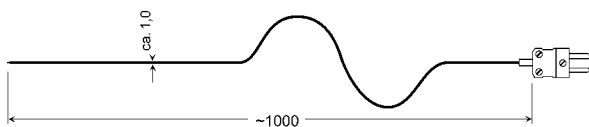
for air, gases, smallest surfaces (not for liquids)
Glass silk insulated Ø 0.2 mm thermocouple wires, mini flat plug
Response time T$_{90}$:   Water 0.4 m / s approx. 0.3 s surcharge for any length
                per m

GMF 250
-65 °C / +250 °C
Item No. 600071
Surface magnetic probe
-65 .. + 250 °C
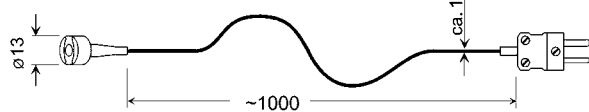
self-adhesive on magnetic materials, spring-loaded copper plate Ø 5 mm,
1 m teflon-insulated twisted cable, mini flat plug
Response time T$_{90}$:   approx. 5 s

GMF 200
-65 °C / +200 °C
Item No. 601377
Surface magnetic probe
-65 .. + 200 °C
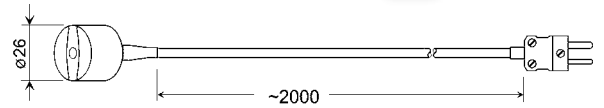
self-adhesive on magnetic materials (higher magnetic holding force),
spring-loaded copper plate Ø 5 mm, stable 2 m long silicone cable, mini flat plug
Response time T$_{90}$:   approx. 5 s

GGF 200
-65 °C / +200 °C
Item No. 603418
Screw-in frozen food probe, type K
-65 .. + 200 °C
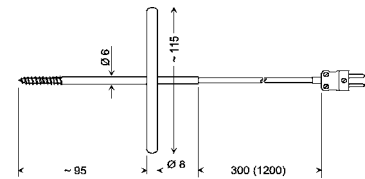
for screw insertion into frozen food, etc., without previous pre-drilling,
V4A tube Ø 6 mm with screw tip, spiral cable (approx. 1.2 m stretched),
mini flat plug
Response time T$_{90}$:   approx. 15 s

GKF 250
-50 °C / +250 °C
Item No. 600141
Cable lug probe
-50 .. + 250 °C
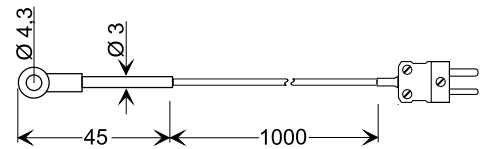
For tightening with a suitable screw (standard M4), 1 m teflon cable,
mini flat plug
Response time T$_{90}$:   approx. 10 s

GLS 500
-50 °C / +500 °C
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 Ø, mini flat plug
Response time T$_{90}$:   approx. 2 s

GTO 130 OK
-65 °C / +400 °C
Item No. 600134
Air/gas probe without cable
-65 .. + 400 °C
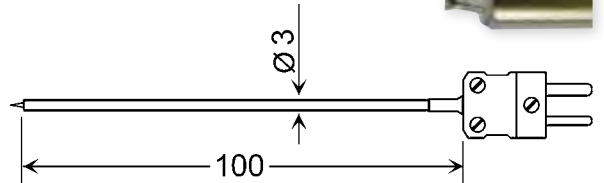
Interchangeable probe without cable, also suitable for surfaces to
a limited extent
Type K-wires Ø 0.5 mm, front welded and ground flat, V4A tube Ø 3 mm,
mini flat plug rigidly connected
Response time T$_{90}$:   approx. 2 s

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

Ø 1,5

100
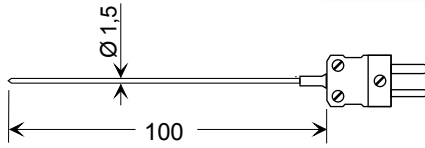
Interchangeable probe without cable, for soft plastic media
Spring-loaded V4A tube with Ø 1.5 mm slim insertion tip,
mini flat plug rigidly connected
Response time T_{90}: Water 0.4 m/s <1 s

-200 °C
+1150 °C

GTT-15-150
Item No. 607552
Sheathed thermocouple type K (NiCr-Ni), Immersion probe
-200 .. + 1150 °C

Ø 1,5

150
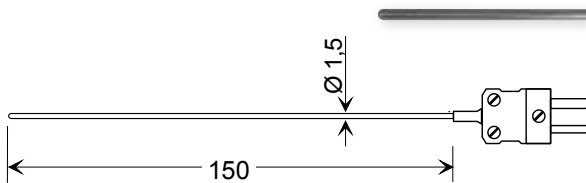
for air, gases, liquids
Sheathed thermocouple with Inconel 600 sheathed tube Ø 1.5 mm, bendable,
mini flat plug rigidly connected
Response time T_{90}: Water 0.4 m/s approx. 3 s

+50 °C
+1550 °C

GBF 1550
Item No. 603037
Bunsen burner probe type S
+50 .. + 1550 °C

FOR HIGH TEMPERATURES

Request daily rate

Type S wire
0.5 Ø

Ø55 Ø 8

<~ 25 >
~ 80   135   1000
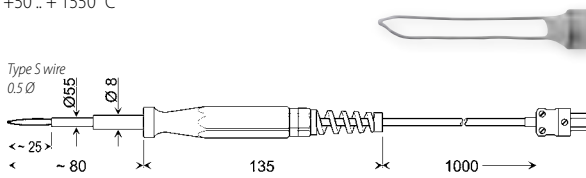
The tip of the probe may be held directly in the flame. V4A pipe Ø 8 mm,
with stepped ceramic pipe Ø 5.5 mm, plastic handle, silicone cable, mini flat plug
Response time T_{90}: approx. 2 s

-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

Ø 3   Ø 14

100   70   1 m
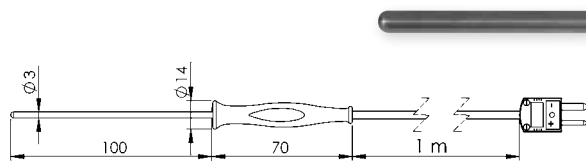
Immersion tip Ø 3 mm made of V4A tube, black silicone handle -50 .. + 250 °C,
1 m silicone cable -50 .. + 200 °C, sensor tip and silicone handle IP67,
mini flat plug
Response time T_{90}: Water 0.4 m/s <2 s, air 2 m/s approx. 40 s

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

Ø 3   Ø 14

100   70   1 m
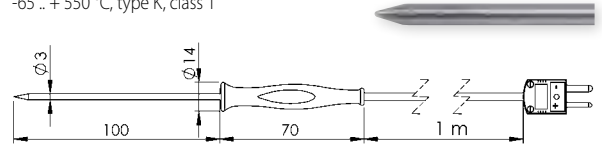
Insertion tip Ø 3 mm made of V4A tube, black silicone handle -50 .. + 250 °C,
1 m silicone cable -50 .. + 200 °C, probe tip and silicone handle IP67,
mini flat plug
Response time T_{90}: Water 0.4 m/s <2 s, air 2 m/s approx. 40 s

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

Ø 1,5   Ø 14

100   70   1 m
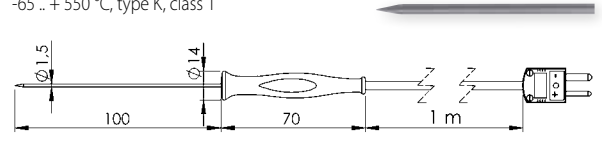
Insertion tip Ø 1,5 mm made of V4A tube, black silicone handle -50..+250 °C,
1 m silicone cable -50..+200 °C, probe tip and silicone handle IP67, mini flat plug
Response time T_{90}: Water 0.4 m/s <1 s, air 2 m/s approx. 15 s

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

Ø 3   14

100   70   1 m
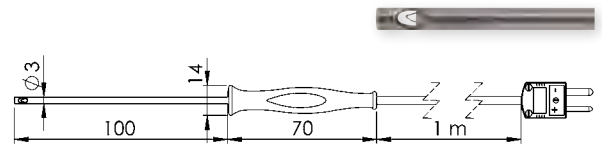
(use GF 1TK-T3 for dirty media), perforated V4A tube Ø 3 mm, measuring element
freely arranged, black silicone handle -50 .. + 250 °C,
1 m silicone cable -50 .. + 200 °C, mini flat plug
Response time T_{90}: Air 2 m/s approx. 15 s

VARIANT:

GF 1TK-L3-LE
Item No. 611300
compact type K hand probe with silicone handle with loose ends

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

HUMIDITY / FLOW

	GMH 3331 + TFS 0100 E.	GMH 3351 + TFS 0100 E.	GFTH 95	GFTH 200	GFTB 200
APPLICATION:					
Air conditioning / indoor air monitoring	●	●	●	●	●
Meteorology					●
Indoor climate	●	●	●	●	●
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

HIGHLIGHTS:

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

ADDITIONAL FUNCTIONS GMH 3351:

ALARM   LOGG

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 %
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 s
Logger 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 djustable 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

NEW!

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

NEW!

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
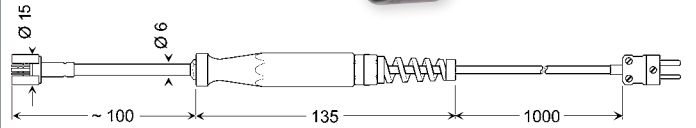
GOF 400VE
Item No. 600496
Surface probe with thermocouple spring, antibuckling glanding, fast, fast response surface
probe for walls, floors, etc.
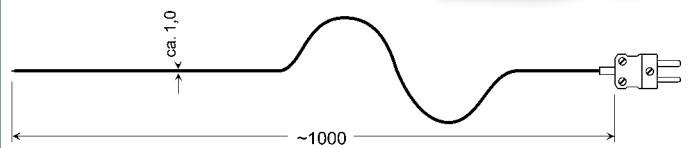
GTF 300
Item No. 600072
Wire probe, Type K (NiCr-Ni), within seconds, for universal applications
(including surface measurement)

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION. LEVEL

CLIMATE METER – PRECISION HYGRO- / THERMO- / BAROMETER

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 T_{90}:	10 s
Display:	4½-digit, approx. 11 mm high LCD display with additional displays
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
Humidityreference 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 T_{90}:	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 T_{90}:	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

MATERIAL MOISTURE

	GMK 210	GMK 100	GMI 15	GMH 3810	GMH 3831 + suitable electrode	GMH 3851 + suitable electrode	BaleCheck 150	BaleCheck 200
APPLICATION:								
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		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						●		

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

INFORMATION

MATERIAL ⬡ GREISINGER 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 [%] = (mass wet – mass dry) / 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 [%] = (mass wet – mass dry) / 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

NON-DESTRUCTIVE MEASUREMENT

Rear of device

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 .. + 50 °C (material not frozen)
Storage temperature:	-25 .. + 70 °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

NON-DESTRUCTIVE MEASUREMENT

Rear of device

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.
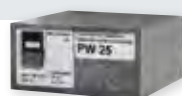
GMK 210
Item No. 600107
Material moisture meter for caravans and boats

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 .. + 50 °C (material not frozen)
Storage temperature:	-25 .. + 70 °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

SOFTWARE

ACCESSORIES

ALARM / PROTECTION LEVEL

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

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:

LOGG

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

466 WOOD TYPE CHARACTERISTICS
28 BUILDING MATERIAL CHARACTERISTICS

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 firewood 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)
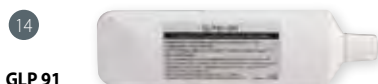
GLP 91
Item No. 601299
Conductive paste for materialmoisture measurement,
for surface measurement and depth measurement in walls,
screed etc. with brush probes

(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 sen-
sor) 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*

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

OPTIONAL ACCESSORIES

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GSF 40TF (67 cm)
Item No. 601319
Material moisture insertion probe, with 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

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GTF 38
Item No. 601347
Material moisture temperature sensor Ø 2.2 mm, for insertion in measuring pole holes, potential-free, recommended for wood moisture measurement

22

GES 38
Item No. 601350
Insertion sensor, Type K, potential-free, Ø 4 x 150 mm, 1 m cable (recommended for wood moisture measurement)

23

GPAD 38
Item No. 601328
Test adapter (with 2 test points) for GMH 38xx and GMR 110

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Fig .: GMH3831 in ST-RN

GKK 3500
Item No. 601052
Soft case with cutout e.g. 2x GMH 3000 or 5000, 395 x 295 x 106 mm (W x H x D) (devices and accessories not included)

25

ST-RN
Item No. 601074
GMH 3000 protective bag made of Nappa leather, 2 connections (1 x round, 1 x rectangular) (suitable for GMH 3831, GMH 3851)

ACCESSORY SETS

SET WITHOUT DEVICE

SET 38 HF
Item No. 602071
Material moisture supplement set for GMH 3831/51 (without device), wood moisture

CONTENT:
- GKK 3500 (case)
- GMK 38 (measuring cable)
- GSE 91 (impact electrode)
- GST 91 (measuring pins)
- GTF 38 (temperature probe)

USAGE:
Wood

SET WITHOUT DEVICE

SET 38 BF
Item No. 602073
Material moisture supplement set for GMH 3831/51 (without device), wood and building moisture

CONTENT:
- GKK 3500 (case)
- GMK 38 (measuring cable)
- GSE 91 (impact electrode)
- GST 91 (measuring pins)
- GTF 38 (temperature probe)
- GMS 300/91 (measuring rods)
- GBSK 91 (wire brush probes)
- GLP 91 (conductive paste)

USAGE:
Wood, concrete, screed, plaster

SET WITHOUT DEVICE

SET 38 MPA
Item No. 602075
Material moisture supplement set for GMH 3831/51 (without device), MPA wood moisture, accessories as tested by MPA for glued wood construction requiring approval

CONTENT:
- GKK 3500 (case)
- GMK 38 (measuring cable)
- GHE 91 (Reciprocating piston electrode)
- GST 91 (measuring pins)
- GTF 38 (temperature probe)

USAGE:
Wood, glued wood construction, production of glued laminated timber

MATERIAL MOISTURE COMPLETE SET

GMH 38-LW1-TF
Item No. 606470

GMH 38-LW1-TFK
Item No. 606462

GMH 38-LW2-TF
Item No. 606471

GMH 38-LW2-TFK
Item No. 606463
Moisture measurement set for agriculture

GENERAL:
Measuring instrument for fast material moisture determination in bales and bulk goods. Universally applicable aid for damage prevention and quality assurance.
The over 1 m long probe with integrated temperature probe is very well suited for measurements in hay and straw bales as well as bulk material. By penetration the material to be measured, moisture and temperature can be determined quickly and easily.

APPLICATIONS:
- Hay, flax
- Straw, grain
- Wood chips
- Wheat
- Barley

A simplified moisture assessment is carried out in 9 stages.

TECHNICAL SPECIFICATIONS:

Device:	GMH 3831 or GMH 3851
Insertion probe:	GSF 50, GSF 50K, GSF 50TF, GSF 50TFK
scope of delivery	
GMH 38-LW1-TF:	GMH 3831, GSF 50 TF, battery, operating instructions
GMH 38-LW1-TFK:	GMH 3831, GSF 50 TFK, battery, operating instructions
GMH 38-LW2-TF:	GMH 3851, GSF 50 TF, battery, operating instructions
GMH 38-LW2-TFK:	GMH 3851, GSF 50 TFK, battery, operating instructions

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

RESISTIVE MATERIAL MOISTURE METER

HIGHLIGHTS:

○ 494 material characteristics

○ including calibration protocol

WOOD, PLASTER, BUILDING MOISTURE MEASUREMENT

GMH 3810
Item No. 600350
Resisitves 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

BaleCheck150
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 ℃ (temperature sensor not included) or device temperature -25…+ 50 ℃
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 ℃ (device), 0 .. + 100 ℃ (lance), 0..95 % RH (non-condensing)
Measuring lance:	Stainless steel, 600 mm x O 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 moistureand 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 ℃ (device)
Resolution:	0.1 %, 0.1 ℃
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 ℃ (device), 0 .. + 100 ℃ (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 ℃
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		●		●			

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

APPLICATION:	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
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:

	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
Measuring ranges — pH, mV	•/rH	•		•/rH		pH	•	•/ppm, hPa		•/ppm, hPa		•	•/ppm, hPa
mg/l, %O$_2$													
temperature	•	•		•	•		•		•		•		•
Sensor connections	BNC socket			BNC socket		BNC socket	BNC socket	7-pole bayonet		6-pole Mini DIN socket		Electrode firmly connected	BNC-socket
Temperature	2 x banana			2 x banana		–	2 x banana						2 x banana, 7-pole Baj.
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

HIGHLIGHTS:

○ Conductivity, resistance, salinity, TDS

○ Large double backlit display

○ Automatic cell correction with reference solutions

○ Incl. test protocol

ADDITIONAL FUNCTIONS GMH 5450:

WATERPROOF – DEVICE AND PLUG CONNECTIONS

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 µS/cm * or 0.0..500.0 µS/cm **
largest measuring range:	0..5000 µS/cm * or 0..1000 mS/cm **
Spec. Resistance:	0.005..500.0 kOhm * 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 ALCOHOL, GASOLINE, DIESEL

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 µS / cm
Temperature range:	-5 .. + 100 °C
Cell constant *:	approx. 0.1
Temperature measurement:	NTC 10 k
Shaft:	Stainless steel, Ø 12 mm x 75 mm
Electrode:	2-pole stainless steel / PEEK
Cable length:	1 m
Scope of delivery:	Measuring cell, operating instructions

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 µS / cm
Temperature range:	-5 .. + 100 °C
Cell constant *:	approx. 1
Temperature measurement:	NTC 10 k
Shaft:	Glass, Ø 12 mm x 120 mm
Electrode:	2-pole glass / platinum
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 Ø 12 mm

GKL 100
Item No. 601396
Conductivity control solution
(100 ml bottle with 1413 µS / cm, according to DIN EN 27888)

GKL 101
Item No. 601398
Conductivity control solution
control solution 84 µs / 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 Ø 12 mm,
tube connection Ø 6 mm

FOR UNIVERSAL USE

HIGH ACCURACY
ROBUST AND PRECISE

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, Ø 12 mm x 120 mm
Electrode:	4-pole graphite
Cable length:	2 m
Scope of delivery:	Measuring cell, operating instructions

* 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.

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, Ø 16 mm x 145 mm
Electrode:	4-pole graphite
Cable length:	1 m
Scope of delivery:	Measuring cell, operating instructions

ISO
ALARM
AUTOHOLD
AUTOOFF
LOGG
MIN MAX

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 µS / cm or 0.0..500.0 µS / cm
largest measuring range:	0..5000 µS / cm or 0..1000 mS / cm
Spec. Resistance:	0.005..500.0 kOhm 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

Electrode LF 425

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, Ø 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

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

*2-pole measuring cell
GMH 3431*

*4-pole Measuring cell
GMH 3451*

ADDITIONAL FUNCTIONS OF GMH 3451:

GMH 3431
Item No. 601917
Conductivity meter with 2-pole measuringcell

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)

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

OPTIMIZED EC-METER FOR HYDROCULTURE, INDOOR FARMING, HYDROPONICS

NEW!

LF 209

HIGHLIGHTS:

- Carefree precise measurements up to 5000 µS/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 µS/cm, 2-pole titanium measuring cell

G1409-1002
Item No. 480847
waterproof compact EC meter / conductivity device up to 5000 µS/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 µS/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 µS/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 µS/cm:	Type. ± 1 % of meas. MW ± 0.5 % FS
Temperature:	± 0.3 °C
Temperature compensation:	Off: deactivated nLF: non-linear, according to EN 27888
Sensor:	Permanently connected measuring cell, 2-pole , Ø 12 mm (titanium) with fast integrated temperature sensor
Cable length:	1,2 m
Display:	3-line with battery status display, backlit, 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 µS/cm in a wide neck bottle

CASE

GKK 1001
Item No. 611604
Cut-out for device andexcess 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

AUTO OFF

HOLD

ISO

MIN MAX

ROBUST AND GOOD VALUE

G 1410   G 1420

HIGHLIGHTS:

o Modern and functional housing

o Excellent price-performance ratio

o 3-line display / overhead display at the push of a button

o Backlit

o Waterproof (IP67)

o Robust, long battery life

o including high-quality measuring cells for a wide range of applications

o 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	

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION LEVEL

PH / ORP / TEMPERATURE MEASURING DEVICES

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:

ALARM   LOGG

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 GHM 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 GHM 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)

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

WATERPROOF METER FOR MEASURING PH/REDOX

WATER- PROOF DEVICE AND PLUG CONNECTIONS

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

ADDITIONAL FUNCTIONS OF GMH 5550:

ALARM   LOGG

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: 416 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 T$_{90}$: Water 0.4 m / s <2 s, air 2 m / s approx. 40 s
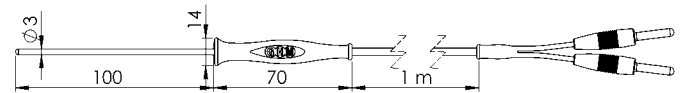
GE 100-BNC
Item No. 600704
Universal pH electrode, BNC connector

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.

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

PRECISE PH-METER

Connection G 1500

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

○ BNC connection for interchangeable electrodes

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.

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

APPLICATION:

Aquarium and aquaculture, plant farming and agricul-
ture,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)

PRECISE PH-METER

AUTOHOLD

HOLD

ISO

MIN MAX

ALARM

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)

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

PH ELECTRODES

STERILIZABLE

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

GAD 1 BNC
Item No. 601382

	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	without	without	PG 13.5	PG 13.5
Electrode shaft	Tyril, 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 compen-sated	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	GE 100	GE 101	GE 104	GE 108	GE 114	GE 117	GE 120	GE 125	GE 126	GE 151	GE 171	GE 173	GR 105	GR 175
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:	Tyril, 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

BUFFER CAPSULES AND SOLUTIONS

ELECTRODE ACCESSORIES

GPH 4.0 / 5
Item No. 602614
pH buffer capsules (5 pieces), pH 4.0

GPH 4.0 / 10
Item No. 602615
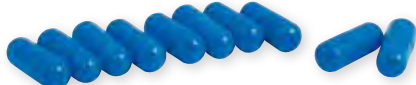pH buffer capsules (10 pieces), pH 4.0

GPH 7.0 / 5
Item No. 602616
pH buffer capsules (5 pieces), pH 7.0

GPH 7.0 / 10
Item No. 602617
pH buffer capsules (10 pieces), pH 7.0

GPH 10.0 / 5
Item No. 602618
pH buffer capsules (5 pieces), pH 10.0

GPH 10.0 / 10
Item No. 602619
pH buffer capsules (10 pieces), pH 10.0

GPH 12.0 / 5
Item No. 602620
pH buffer capsules (5 pieces), pH 12.0

GPH 12.0 / 10
Item No. 602621
pH buffer capsules (10 pieces), pH 12.0
The buffer capsules are traceable to NIST standards and have
a deviation of ± 0.02 pH at 25 °C.

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

PHL 4-1000
Item No. 415029
Ready-to-use pH buffer solution,
(pH 4.01 / 25 °C), 1000 ml
PHL 7-1000
Item No. 415030
Ready-to-use pH buffer solution,
(pH 7.00 / 25 °C), 1000 ml
PHL 10-1000
Item No. 415031
Ready-to-use pH buffer solution,
 (pH 10.01 / 25 °C), 1000 ml

KCL 3 M
Item No. 602477
3 mol KCL electrolyte for refilling or storing electrodes with
3 mol KCl electrolyte, 100 ml spray bottle.
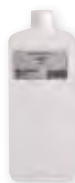
CaCl
Item No. 603254
Electrolyte for soil pH measurement,
Solution in 1000 ml square bottle

GRL 100
Item No. 601422
HCL / Pepsin cleaning solution, 100 ml

GEAK-2S7-BNC
Item No. 601996
Adapter cable pH, adapter cable S7, 2 m
GEAK-5S7-BNC
Item No. 601998
Adapter cable pH, adapter cable S7, 5 m

VD120
Item No. 601380
Injection aid for penetration electrode GE101

GAD 1 BNC
Item No. 601382
Adapter for attaching electrodes with BNC plug to devices
with cinch sockets.

GPF 100
Item No. 601417
Plastic wide neck bottle, 100 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, 3 x GPF100, 1x KCL3M, 1x GRL 100

GWA1Z
Item No. 602914
Pressure accessories, plastic adapters
Adapter G 1 outside, Pg 13.5 inside, plastic

PG 13.5
Item No. 603205
Pluggable thread adapter Pg 13.5 for
sensors with a Ø 12 mm shaft

GWA 11 PG
Item No. 605379
Pressure accessories, plastic adapters from PG11 external
thread to PG 13.5 internal thread incl. seal and PG11counter
nut, material: polyamide, glass fiber reinforced,
O-ring: NBR, temperature range: -10 .. + 100 °C

HD-22-3
Item No. 700040
Freely positionable laboratory
sensor holding arm for
sensors Ø 12 mm

SDW 500
Item No. 606171
Deionized water,
refillable 500 ml dosing bottle

WATERPROOF DISSOLVED O$_2$ 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
additionally GMH 5650: 1 point water, 2 point or 3 point (air + zero point and 100 % O$_2$)

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 (O$_2$ 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)

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

DISSOLVED O$_2$ 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:	0,0..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)

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

ROBUST AND GOOD VALUE

SUCCESSOR OF **GOX 20**

GSKA 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) O_2 concentration 0..200 % O_2 saturation
accuracy	
Oxygen:	± 1.5 % of meas. Mean ± 0.2 mg / l or ± 1.5 % of meas. MW ± 2 % O_2 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 T_{95}:	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

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

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)

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

OXYGEN METER FOR DISSOLVED OXYGEN IN LIQUIDS

MEASURED VARIABLES:
O₂CONCENTRATION, O₂SATURATION AND
O₂PARTIAL PRESSURE (ONLY GMH3651)

HIGHLIGHTS:

- Automatic air pressure compensation
- Salinity correction
- Simple calibration

ADDITIONAL FUNCTIONS GMH 3651:

ALARM   LOGG

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)

O₂concentration:	0.00..70.00 mg/l (ppm) (resolution can be selected)
O₂saturation:	0.0..600.0 % O₂ (resolution selectable)
O₂partial pressure:	3651: 0..1200 hPa O₂ (0.0..427.5 mmHg)
Temperature:	0,0..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)
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 connected 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 (suitable 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:

* 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

OXYGEN METER SETS

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*

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)

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..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

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 convinient 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

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
O_2 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 O_2 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 surchage 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.

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 O_2 / 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 O_2 / 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 1 / 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 partialpressure: 0 ..1013 mbar O_2 (Accuracy depending on the sensor and Calibration, with flow> 20 cm / s, plus ± 1.5 % FS @ 25 °C, 100 % sat. O_2
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)

MULTISENSOR WATER ANALYSIS PORTABLE INSTRUMENT

Based on our proven single parameter instruments G 1000 / GMH 3000 / GMH 5000 a multi-channel measuring instrument has been developed. This combines the multi-channel measurement in the proven housing of the GMH 5000 series.

Numerous applications require the simultaneous measurement of several measurands. For example, the simultaneous measurement of pH and oxygen is desired in water monitoring – the G 7500 determines both measured values in one device.

One of the very interesting areas of application, the combination of pH and conductivity, are the current trend markets of vertical farming / Urban farming.

A backlit graphic display suitable for daylight is used for optimal visualization. At the same time, simple measurement and comparison are guaranteed thanks to the plain text display that can be converted into different languages. There are no longer any limitations in the recording of measured values, as the memory size of the data logger is very large.

Our proven sensor connections are consciously built into the devices. This keeps the system costs manageable and ensures the flexibility of free sensor selection to match your focus.

Display:	LCD (180 x 128 pixels), monochrome, adjustable Backlight
Interface:	USB 2.0, micro USB socket
Calibration:	pH 1..5 point calibration (PHL buffer, DIN buffer) LF cell constant O_2: air saturated with water
Data logger:	Yes (8 GB with FAT file system)
Alarm:	Yes, Acoustic alarm (sounder) visual (red LDC background)
Power supply:	3 x NiMh AAA (max. 750 mAh)
Power consumption:	On: approx. 75 mA in operation; Off: approx. 0.1 mA
Housing:	impact-resistant ABS, with stand-up / hanging bracket
Protection class:	water protected, IP67
Dimensions:	160 x 86 x 37 mm (H x W x D) including protective cover
Weight:	300 g including battery and protective cover
Scope of delivery:	Device with 3 AAA rechargeable batteries, quick reference guide, operating manual and test report as pdf on mass storage device

ACCESSORIES AND SPARE PARTS:

GWO5610-L02
Item No. 607386
Spare sensor for dissolved oxygen, GMH 56 & GMH 75, sensor with 2 m cable

GWO5610-L04
Item No. 607764
Spare dissolved oxygen sensor, GMH 56 & GMH 75, Sensor with 4 m cable

GWOK 02
Item No. 608012
Spare membrane head for GWO 5610

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

LF425-L02
Item No. 608773
Conductivity measuring cell, 7-pole, waterproof bayonet connection, for GMH 5400 / G 7500 series

LF400-L02
Item No. 602968
Conductivity measuring cell, 7-pole, waterproof bayonet connection, for GMH 5400 / G 7500 series

GKL-100
Item No. 601396
Conductivity control solution, Control solution 1413 µs / cm, 100 ml bottle

GKL-102
Item No. 601400
Conductivity control solution, Control solution 50 ms / cm, 100 ml bottle

GE117-BNC-L02
Item No. 600730
pH electrode with Pt1000, pressure-resistant, BNC connector

GE125-BNC-L02
Item No. 600731
Waterproof pH electrode with Pt1000, BNC connector

PHL 4
Item No. 601369
Ready-to-use pH buffer solution, Buffer solution pH 4 in 250 ml dosing bottle

PHL 7
Item No. 601371
Ready-to-use pH buffer solution, Buffer solution pH 7 in 250 ml dosing bottle

PHL 10
Item No. 601373
Ready-to-use pH buffer solution, Buffer solution pH 10 in 250 ml dosing bottle

GRL100
Item No. 601422
HCL / Pepsin cleaning solution, 100 ml

HD-22-3
Item No. 700040
Freely positionable laboratory sensor holding arm for sensors Ø12mm

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)

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)

GAS ANALYSIS

	GMH 5690	GMH 5695	GMH 3692 + sensor	GMH 3695 + sensor	ResOx
APPLICATION:					
Measurement of atmospheric oxygen % vol. O_2	●	●	●	●	●
Ambient pressure / pressure connection	● / −	● / ●	● / −	● / ●	● / ●
Relative humidity					
Temperature	●	●	●	●	●
CO concentration					
CO_2 concentration (carbon dioxide)					
Diving application / MOD *					
Exhaust gas path monitoring					
Ambient air monitoring					
EQUIPMENT:					
Measuring ranges					
O_2 concentration	0..100 % O_2	0..100 % O_2	0..100 % O_2	0..100 % O_2	0..100 % O_2
CO_2 concentration	0..1100 hPa	0..1100 hPa	0..1100 hPa	0..1100 hPa	0..1100 hPa
CO concentration					
Temperature	-5..+50 ℃	-5..+50 ℃	-5..+50 ℃	-5..+50 ℃	-5..+50 ℃
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	●	●	●	●	●
Hold, auto-off	●	●	●	●	●
Backlit	●	●			●
Alarm / interface	● / ●	● / ●	● / ●	● / ●	● / ●
Logger		●		●	●

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. O_2	●	●			
Ambient pressure / pressure connection					● / –
Relative humidity					●
Temperature			●		●
CO concentration				●	●
CO_2 concentration (carbon dioxide)			●		
Diving application / MOD *	● / –	● / ●			
Exhaust gas path monitoring				●	●
Ambient air monitoring			●	●	●
EQUIPMENT:					
Measuring ranges					
O_2 concentration	0..100 % O_2	0..100 % O_2			
CO_2 concentration			-02: 0..2000 (max 10000) ppm CO_2 / -20: 0..2 % CO_2		0..5000 ppm CO_2
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

HIGHLIGHTS

○ High display resolution (0.01 % O_2 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!

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.)

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

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)	

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 % O_2)

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 (O_2 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

HIGHLIGHTS:

○ Alarm monitoring with integrated sounder

○ Ambient pressure compensation with integrated barometer

ADDITIONAL FUNCTIONS OF GMH 3695:

○ Pressure connection

LOGG

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 O$_2$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

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION LEVEL

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 <= 0.2 vol. % $O_2$and> 35 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 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 <= 0.2 vol. % $O_2$and> 35 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 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 <= 0.2 vol. % $O_2$and> 35 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 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 <= 0.2 vol. % $O_2$and> 35 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 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 <= 0.2 vol. % $O_2$and> 35 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 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 <= 0.2 vol. % $O_2$and> 35 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 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 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 <= 0.2 vol. % $O_2$and> 35 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 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 <= 0.2 vol. % $O_2$and> 35 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.

TECHNICAL DATA FOR ATMOSPHERIC OXYGEN SENSORS
Gxx 570/370 and Gxx 581/381

TECHNICAL SPECIFICATIONS:	Gxx 570/370	Gxx 581/381
Sensor element:	GOEL 370	GOEL 381
	Oxygen partial pressure sensor, built into the housing, interchangeable (temperature sensor integrated into the housing)	
Special features:	long service life for shielding gases with high O_2 concentration and oxygen content <35 vol. % O_2	for the lowest O_2 concentrations, for protective gases in general, precise even with very small measured values and over 35 vol. % O_2
Measuring range		
Oxygen partial pressure:	0..1100 hPa O_2	0..1100 hPa O_2
Oxygen concentration:	0.0..100.0 % O_2	0.0..100.0 % O_2
Response time: T_{90}	<10 s	<10 s
Accuracy (at 25 °C, 1013 hPa)		<1.5 % O_2
<2 % O_2	± 0.2 % O_2	± 0.1 % O_2
<25 % O_2	± 0.5 % O_2	± 0.5 % O_2
> 25 % O_2	± 0.5 % O_2	not specified
Working conditions:	0..45 °C 0..95 % RH (not condensing)	0..45 °C 0..95 % RH (not condensing)
Ambient pressure:	0.6..1.75 bar abs.	
Over/under pressure:	max. 0.25 bar (pressure difference sensor membrane to environment – if mounted)	
Storage temperature:	-15 .. + 60 °C	
Lifespan:	in air:> 4 years (warranty on sensor element: 12 months)	in air:> 2 years (warranty on sensor element: 12 months)
Device connection:	Gxx 3 ...: approx. 1.2 m long cable with mini-DIN connector; GGA / GGO / Gxx 5 ...: approx. 1 m long cable with 7-pole bayonet connection	
Housing dimensions:	GGA .../ GGO ...: approx. Ø 36 mm x 95 mm (150 mm including kink protection) GOO ..: approx. Ø 40 mm x 105 mm (160 mm including kink protection) housing with M16X1 screw thread (sensor can be coupled into line tube using the tube adapter supplied.)	
Weight:	approx. 135 g (GGO ...) or approx. 145 g (GOO .../ GGA ...)	
Scope of delivery:	GGA .../ GGO ...: sensor, tube adapter, T-piece; GOO ... : Sensor, tube adapter	

Note: not suitable for use in "underwater applications" (rebreather, etc.).

ACCESSORIES GMH 3692 / -95 AND GMH 5690 / -95

GOEL 370   *GOEL 381*

GOEL 370
Item No. 601490
Replacement sensor element oxygen (acidic electrolyte)

GENERAL:

Integrated in GGO 370, GGA 370, GOO 370 (for GMH 3690/91/92/95) or GGO 570, GGA 570, GOO 570 (for GMH 5690/95); universal sensor element, long-life, recommended for immersion gas and protective gases from 0.2..35 % O_2, also with an increased CO_2 content.

Note: not suitable for use in "underwater applications" (rebreather, etc.)

GOEL 381
Item No. 610035
Spare sensor element oxygen (alkaline electrolyte)

GENERAL:

Integrated in GGO 381, GGA 381, GOO 381 (for GMH 3690/91/92/95) or GGO 581, GGA 581, GOO 581 (for GMH 5690/95); fast sensor element recommended for immersion gas and shielding gases from 0.0 to 100 % O_2, not permanent with increased CO_2 content.

Note: not suitable for use in "underwater applications" (rebreather, etc.)

ACCESSORIES OR SPARE PARTS:

GZ-11
Item No. 603144
Flow adapter, M16x1 internal thread with 6/4 mm tube connection, for measuring the oxygen concentration

ESA 369
Item No. 603058
Tube adapter / flow diverter, M16x1 thread, for tubes with an inner diameter of 15 mm

ZOT 369
Item No. 603094
T-piece for plugging onto ESA 369 / ESA 100

GAS PUMP

SUPPLEMENT FOR GAS ANALYSIS AND AIR QUALITY MEASURING DEVICES

HIGHLIGHTS:

○ Simple application
○ Robust membrane pump
○ Quiet
○ Low gas flow
○ Mobile operation with battery
○ Battery level indicator

GS 150
Item No. 610005
Gas pump for gas sampling

APPLICATION:

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

TECHNICAL SPECIFICATIONS:

Working principle:	motor-operated membrane pump with inlet / outlet connection, battery-operated
Max. Negative pressure:	approx. -360 mbar
Delivery rate:	open: approx. 280 ml / min, with GDZ 29: approx. 150 ml / min
Connection:	universal pressure connection for 6/4 mm tube (inside Ø 4 mm)
Usable gases:	non-corrosive, dust-free gases; a condensate trap is recommended for high gas moisture
Service:	On / off slide switch
Environmental conditions:	+10 .. + 50 °C, 0..95 % RH
Battery / lifetime:	9 V block battery, approx. 10 h
Battery level indicator:	2 LEDs: full / weak
Scope of delivery:	device, battery, operating instructions

ACCESSORIES OR SPARE PARTS:

GDZ-29
Item No. 601599
Filter membrane including Luer locks (GDZ-32 and GDZ-33), prevents contamination from even the finest particles and liquids

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION LEVEL

RESIDUAL OXYGEN MEASURING SYSTEM RESOX

Compact device with 1 m cable reach

Fine resolution with 0.01 % O_2

Independent battery operated gas pump

IMPROVED SUCCESSOR TO OUR POPULAR GOG SET

Membrane filter prevents unintentional suction of particles / liquid

HIGHLIGHTS:

- With data logger and interface
- Pressure-compensated measurement - especially important for ridgid 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 CO_2 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:	O_2, T, air pressure
Measuring ranges	
O_2:	0.0..100.0 % O_2 or display in hPa O_2 / mmHg O_2
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 mambrane 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
O_2analyzer, CO_2-resistant, recommended 0.2..35 %

G1690-MAX
Art. No. 482459
O_2analyzer, 0..100 %

G1690T-35
Item No. 482716
O_2analyzer, MOD function, recommended 0.2..35 %

G1690T-MAX-DIVE-CAN
Art. No. 482448
O_2analyzer, 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 O_2, recommended for 0.2 ... 35.0 % vol % O_2 (outside of reduced accuracy) Standard for diving gas in recreational diving, protective gases with increased CO_2 content and much more.
	G 1690-MAX / G 1690T-MAX: 0.0 ... 100.0 % by volume O_2 (also for values <= 0.2 and over vol .- % O_2) e.g. for shielding gases with the lowest O_2 proportion or high percentage oxygen mixtures with low O_2 proportion, resolution: 0.1 % by volume O_2
	G 1690T-XXX: Recreational diver variant : MOD calculation for nitrox up to 36 % 0 .. + 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 % O_2:	+/-0,2 %
	< 35 vol % O_2:	+/- 0.5 %, not specified above
	Variants G 1690_-MAX:	GOEL 381 sensor
	< 2 vol % O_2:	+/- 0.1 %
	< 35 vol % O_2:	+/- 0,5 %
	< 100 % by volume O_2:	+/- 1,5 %

Sensor cable:	0.95 m, jack plug, elastic sensor protection
Measuring rate:	approx. 1 measurement per second
Nominal temperature:	25 ℃
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 ℃; recommended 5..30 ℃: in this range optimized temperature compensation 0 .. + 95 % RH (short-term condensation possible)
Storage temperature:	-20 .. + 50 ℃
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

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

COMPACT CO_2 MONITOR WITH INTEGRATED SENSOR AND ALARM

ALARM

AUTO OFF

HOLD

MIN MAX

NEW!

Sensor on the front

USB connection

HIGHLIGHTS:

o Made in Germany

o Wide measuring range: up to 19,999 ppm / 2 % CO_2 (variant -20)

o Rechargeable via micro-USB socket: 24 hours battery life

o Quick measurement

o Loud 2-stage alarm acoustically and optically

o Illuminated display

o With metal belt clip and carrying strap

o With calibration connection

G 1910-02
Item No. 476043
Compact CO_2 monitor with integrated sensor and alarm
0 ... 2000 (max 10000) ppm CO_2 / 0.000 ... 0.200 (max 1.000) % CO_2

G 1910-20
Item No. 476044
Compact CO_2 monitor with integrated sensor and alarm
0 ... 19999 ppm CO_2 / 0.000 ... 2.000 % CO_2

G1910-02-AQ-B
Item No. 482018
Compact CO_2 Monitor with integrated sensor and alarm
0 ... 2000 (max 10000) ppm CO_2 , "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).
CO_2 – 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 CO_2 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 CO_2

GZ-12
Item No. 479183
Gas cylinder with 12 l test gas: N_2 for CO and CO_2-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 CO_2 MAY EXCEED 3 % OR 30000 PPM CO_2 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/m³ CO concentration 0..60.0 % CO Hb (estimate via breathing air)
Resolution:	1 ppm, 1 mg/m³ 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 of 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:	9 V battery and power supply socket for external 10.5..12 V DC 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

MSK 100   GRV 100   ZOT 369

GAS 100
Item No. 603587
Supplementary set for breathing air control (consisting of ESA 100, ZOT 369, GRV 100 and 5 pieces MSK 100)

ESA 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

INDOOR AIR QUALITY MONITOR

AIR QUALITY

HIGHLIGHTS:

○ The measurement of the air conditioning parameters enables a meaningful assessment of the air quality and ventilation efficiency.

HD21-ABE-17
Item No. 409559
Indoor air quality monitoring device (IAQ)

GENERAL:

The HD21-ABE-17 IAQ monitor is a laboratory device / portable device for analyzing indoor air quality (IAQ), Indoor Air Quality.
The device simultaneously measures the following values:
• Carbon dioxide (CO_2)
• Carbon monoxide (CO)
• Atmospheric pressure
• Temperature
• Relative humidity
and calculates:
• Dew point
• Wet temperature
• Absolute humidity
• Mixing ratio
• Enthalpy
For closed rooms in which people are staying. kitchens, bathrooms, changing rooms and swimming pools are also included due to their high humidity. The measurement of the CO_2 concentration also allows conclusions to be drawn about chemical, physical and biological pollutants. The devices have a wide dot matrix display with a resolution of 160 x 160 pixels.
Typical areas of application for the devices are:
• Measurement of the IAQ (indoor air quality) and comfort conditions in schools, offices and closed rooms
• Analysis and investigation of the Sick-Building-Syndrom (SBS) (headache, nausea, irritation) and the resulting consequences
• Testing of HVAC system efficiency (heating, ventilation and air conditioning systems)
• Study of indoor air quality in factories to optimize the microclimate and improve productivity
• Building automation checks

TECHNICAL SPECIFICATIONS:

Device

Dimensions:	300 x 90 x 40 mm (H x W x D) (with probe)
Material:	ABS, rubber
Display:	Backlit dot matrix, 160 x 160 dots, display area 52 x 42 mm

Operating conditions

Working temperature:	-5 .. + 50 °C
Storage temperature:	-25 .. + 65 °C
Relative working humidity:	0..85 % RH, no condensate
Protection class:	IP30
Measurement uncertainty:	± 1 digit @ 20 °C

power supply

Power supply unit (code SWD-10):	12 V dc / 1 A
Batteries:	4 x 1.2 V rechargeable NiMH batteries, type AA
Battery operation:	8 h continuous operation in measuring mode

Serial interface

Jack:	Mini USB
Type:	USB 1.1 or 2.0 not isolated
Storage capacity:	67,600 records
Scope of delivery:	IAQ monitor data logger set. Complete with: DeltaLog10 software (version 0.1.5.3 or later), monitor and data processing on PC, 4 x 1.2 V rechargeable NiMH batteries, operating instructions, carrying case, with USB cable and power adapter

CO_2 CARBON DIOXIDE

Sensor:	NDIR Dual Wavelength (two frequencies)
Measuring range:	0..5,000 ppm
Sensor working range:	-5 .. + 50 °C
Accuracy:	± 50 ppm ± 3 % of the measured value
Resolution:	1 ppm
Temperature dependence:	0.1 % fs / °C
Response time (T_{90}):	<120 s (air speed = 2 m / s)

CO CARBON MONOXIDE

Sensor:	Electrochemical cell
Measuring range:	0..500 ppm
Sensor working range:	-5 .. + 50 °C
Accuracy:	± 3 ppm ± 3 % of the measured value
Resolution:	1 ppm
Response time (T_{90}):	<50 s
Lifespan:	> 5 years under normal environmental conditions

ATMOSPHERIC PRESSURE (PATM)

Sensor type:	Piezoresistive
Measuring range:	750..1,100 hPa
Accuracy:	± 1.5 hPa @ 25 °C
Resolution:	1 hPa
Temperature drift:	± 3 hPa with temperature -20 .. + 60 °C

RELATIVE HUMIDITY(RH)

Sensor type:	Capacitive
Sensor protection:	Stainless steel mesh filter (on request 10 µm sintered filter P6 in AISI 316 or 20 µm sintered filter P7 in PTFE)
Measuring range:	0..100 % RH
Sensor working range:	-20 .. + 60 °C
Accuracy:	± 1.5 % RH (0..90 % RH) ± 2 % RH (elsewhere) for T = 15..35 °C ± (1.5 +1.5 % of the measurement) % RH for T = -20 .. + 60 °C
Resolution:	0.1 °C
Temperature dependence:	± 2 % over the entire temperature range
Hysteresis and repeatability:	1 % RH
Response time (T_{90}):	<20 s (air speed = 2 m / s) without filter

TEMPERATURE T

Sensor type:	NTC 10 kΩ
Measuring range:	-20 .. + 60 °C
Accuracy:	± 0.2 °C ± 0.15 % of the measured value
Resolution:	0.1 °C
Response time (T_{90}):	<30 s (air speed = 2 m / s)

EQUIPMENT:

SWD-10
Item No. 700039
Power supply unit, -100 - 240 V AC/ 12 V DC/ -1 A mains voltage

CP23
Item No. 700050
USB connection cable, USB 2.0, mini USB socket type B.

BAT-40
Item No. 700051
NiMH battery 4 x 1.2 V AA with integrated temperature sensor

MINICAN-12-A-0
Item No. 475309
Gas cylinder with test gas for CO and CO_2-Calibration at 0 ppm, Gas bottle with 20 l test gas: N_2

HD-37-36
Item No. 700053
Connection pipe set for CO calibration

HD-37-37
Item No. 700054
Connection tube set for HD21-ABE and MINICAN, For CO_2-Calibration

HD-33-0
Item No. 700055
Humidity reference cell including adapter for relative moisturesensors, 33 % RH

PRESSURE

APPLICATION:	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 1111VAC G1110	GDUSB 1000
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

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:

ALARM   **LOGG**

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 potable 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, mH$_2$O
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, mH$_2$O, 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 (/ 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
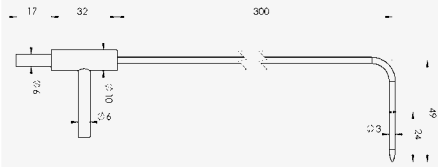for over / under and
relative pressure measurement

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: (Ex) 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

ISO
ALARM
AUTO OFF
HOLD
LOGG
MIN MAX
O/S-CORR
TARA

SPECIAL ACCESSORIES – TUBES, CLAMPS, ADAPTERS, COUPLINGS, ETC.

for GMH31xx, GMSD, MSD, GDHs and pressure transmitters

GDZ-01
Item No. 601541
PVC tube 6/4
(6 mm outer Ø, 4 mm inner Ø, 5 bar at 23 ℃)

GDZ-02
Item No. 601543
PE (polyethylene) 6/4
(6 mm outer Ø, 4 mm inner Ø, 10 bar at 23 ℃)

GDZ-03
Item No. 601545
PUR (polyurethane) 6/4
(6 mm outer Ø, 4 mm inner Ø, 9 bar at 23 ℃)

GDZ-04
Item No. 601547
PA (polyamide) 6/4
(6 mm outer Ø, 4 mm inner Ø, 25 bar at 23 ℃)

GDZ-05
Item No. 601549
Screw-in screw connection for tube 6/4 with
external thread G 1/8

GDZ-06
Item No. 601551
Screw-on screw connection for tube 6/4 with
internal thread G 1/8

GDZ-08
Item No. 601555
Double socket for tube 6/4 on tube 6/4

GDZ-09
Item No. 601557
Coupling adapter (nominal width 5) with internal thread G ¼,
made of brass (suitable for GDZ-12)

GDZ-10
Item No. 601559
Coupling adapter (nominal width 5) for tube with
6 mm inner Ø, made of brass (suitable for GDZ-12)

GDZ-11
Item No. 601561
Coupling adapter (nominal width 5) with male thread G ¼,
made of brass (suitable for GDZ-12)

GDZ-12
Item No. 601564
Coupling socket (nominal width 5), one-hand operation,
with internal thread G ¼, made of brass
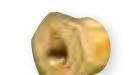
GDZ-13
Item No. 601566
Adapter G ½ A outside, G 1/8 inside, made of brass

GDZ-14
Item No. 601568
Screw-in nozzle for tube 6/4 with external thread R 1/8

GDZ-15
Item No. 601570
Screw-in nozzle for tube inside Ø 6 mm with
outside thread R ¼

GDZ-16
Item No. 601572
Screw-in nozzle for tube 6/4 with external thread R ¼

GDZ-17
Item No. 601574
Screw-in fitting for tube 6/4 with male thread G ¼

GDZ-18
Item No. 601576
Tube clamp for tube 6/4

GDZ-19
Item No. 601578
Tube clamp for tube 10/7 and 8/6
(10 or 8 mm outside Ø, 7 or 6 mm inside Ø)

GDZ-20
Item No. 601580
Screw-on fitting for tube 6/4 with female thread G ¼,
made of brass

GDZ-21
Item No. 601582
T-piece for tubes 6/4

GDZ-22
Item No. 601584
Coupling adapter (nominal width 5) for tube 6/4,
made of brass (suitable for GDZ-12)

GDZ-23
Item No. 601586
Adapter G ¼ A outside, G ½ inside, made of brass

GDZ-27
Item No. 601594
Pressure gauge profile seal for thread G ¼
(thickness 3 mm, Cu)

GDZ-28
Item No. 601597
Pressure gauge profile seal for thread G ½
(thickness 5 mm, Cu)

GDZ-29
Item No. 601599
Filter membrane including Luer locks (GDZ-32 and GDZ-33)

GDZ-30
Item No. 601601
Adapter G ½ inside to tube 6/4

GDZ-31
Item No. 606070
Silicone tube 8/5 (8 mm outer Ø, 5 mm inner Ø,
2 bar at 23 ℃, max. 200 ℃), very flexible

GDZ-32
Item No. 607951
Adapter Luer-Lock male to tube 6/4

GDZ-33
Item No. 607952
Adapter Luer-Lock female to tube 6/4

GWA 1214
Item No. 603979
Adapter G ½ A outside, G ¼ inside, made of brass

GOG-N
Item No. 603047
Insertion needle, Ø0.9 mm (5 pieces) – suitable for Luer-Lock
male (not shown)

GDZ-UT
Item No. 479260
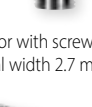Pressure socket for tube 6/4 or 8/6 with screw-in thread
G 1/8, brass nickel-plated

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

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION, LEVEL

UNIVERSAL PRESSURE MEASUREMENT SYSTEM

1000 LIVE MEASUREMENTS PER SECOND

SAME SENSORS AS FOR HANDHELD GMH 3151 CAN BE USED

HIGHLIGHTS:

○ Complete package including software for current MS-Windows Version

○ Live display and live curve display

GDUSB 1000
Item No. 600271

Complete package for high-speed live measurement data acquisition for MSD / GMSD sensors including high-speed live measurement data acquisition software GDUSB FastView

GENERAL:

The GDUSB 1000 adapter enables a standard pressure sensor of the type GMSD / MSD to be connected directly to the USB interface of a PC. The adapter provides 4 channels, i.e. current measured value, mean value, maximum and minimum value. In addition, the device has two operating modes:

Fast mode:
Up to 1000 readings per second. The supplied software displays the data and saves it for further processing at a later date. The software can start and stop the recording under various adjustable trigger conditions.

Standard mode:
Up to 32 readings per second. Similar to a GMH portable instrument or EASYBus device. using the EBS 20M / EBS 60M software then offers the option of long-term recording (2 measured values per second).

APPLICATIONS:

• Test rigs and laboratory experiments
• Detection of pressure peaks
• Checking of operating pressure curves, for example in process technology, in machine and plant construction
• Live display of the measured values of several GDUSB 1000
• Data evaluation and logging for process optimization or for statistics
• Multi-channel measurements with a high recording rate
• Measurement setups or on-site recording with GDUSB 1000

TECHNICAL SPECIFICATIONS:

Measuring range:	according to connected sensor
Max. Range:	-19999 .. + 19999 digit
Pressure units:	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH_2O, switchable, depending on the sensor used
Measuring rate:	1000 measurements / s (= 1 ms)
Accuracy:	± 0.2 % FS (at nominal temperature = 25 °C)
Recording interval:	1 ms (with fast mode) .. 10 s adjustable via software
Connections	
PC:	standard USB plug (USB type A)
GMSD / MSD:	6-pole shielded mini-DIN socket with locking
Supply voltage:	is supplied from the USB interface
Dimensions:	56 x 31 x 24 mm
Cable length (USB):	about 20 cm
Weight:	39 g (device only)
Scope of delivery:	device, operating instructions, software and driver CD

HIGH-SPEED DATA ACQUISITION
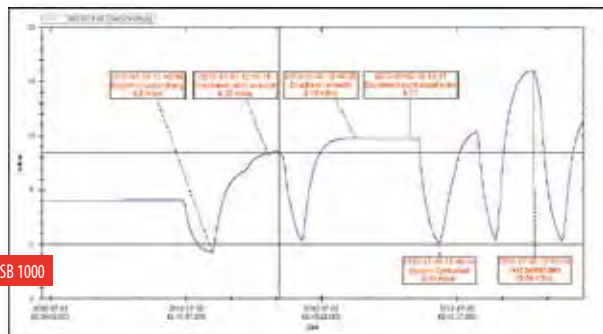
FOR GDUSB 1000

GDUSB FastView

The high speed live measurement data acquisition software for fast pressure measurements.

FUNCTIONS:

• Several GDUSB 1000 can be used at the same time on one PC
• Measurement rates with up to 1000 measurements per second
• Live display as digital value and measurement curve, even at the highest measuring rates
• Different measuring rates can be set for each sensor
• Secure storage of measurement and sensor data in an SQL-based database
• Fast diagram display
• Comment function for measuring points
• Data export as a CSV file and as an image
• Multilingual software in German, English, French, Italian and Czech
• 32-bit or 64-bit application

SYSTEM REQUIREMENTS:

1 GHz CPU, 1 GB RAM, 100 MB HDD, 1 free USB port
Microsoft Windows 7 SP1 or higher (32 or 64 bit)
(cannot run under Windows RT, on ARM or Intel Itanium based Windows systems)

This software uses open source components according to the LGPL.
For more details, please refer to the license terms of the software.

ACCESSORIES

ACCESSORIES OR SPARE PARTS:

GMSD ...
Pressure sensors with plastic tube connections for Ø 6mm tubes

MSD ...
Stainless steel pressure sensors
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: GMSD ..- Ex:	1.2 m PVC connection cable, shielded with molded 6-pole mini DIN connector and lock
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!

ACCESSOIRIES:

ISO-WPD5
Item No. 602514
ISO calibration certificate: Factory calibration pressure, 5 points rising and falling, max 600 bar

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

STAINLESS STEEL PRESSURE SENSORS G½ INCH

FOR AIR, AGGRESSIVE GASES
AND LIQUIDS

SUCCESSOR 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
MSD 1 BAE *Item No. 600583*	0..1000 mbar abs.	max. 5 bar abs.	1 mbar
MSD 2.5 BAE *Item No. 600585*	0..2500 mbar abs.	max. 10 bar abs.	1 mbar
MSD 4 BAE *Item No. 600587*	0..4000 mbar abs.	max. 17 bar abs.	1 mbar
MSD 6 BAE *Item No. 600592*	0..6000 mbar abs.	max. 35 bar abs.	1 mbar
MSD 10 BAE *Item No. 600594*	0..10.00 bar abs.	max. 35 bar abs.	10 mbar
MSD 16 BAE *Item No. 600596*	0..16.00 bar abs.	max. 80 bar abs.	10 mbar
MSD 25 BAE *Item No. 600598*	0..25.00 bar abs.	max. 50 bar abs.	10 mbar

RELATIVE PRESSURE	MEASURING RANGE	OVERLOAD LIMIT	RESOLUTION
MSD 100 MRE *Item No. 600600*	0.0..100.0 mbar rel.	max. 1 bar rel.	0.1 mbar
MSD 250 MRE *Item No. 600604*	0.0..250.0 mbar rel.	max. 2 bar rel.	0.1 mbar
MSD 400 MRE *Item No. 600606*	0.0..400.0 mbar rel.	max. 2 bar rel.	0.1 mbar
MSD -1 / 1.5 BRE *Item No. 600608*	-1000 .. + 1500 mbar rel.	max. 10 bar rel.	1 mbar
MSD -1/3 BRE *Item No. 600610*	-1000 .. + 3000 mbar rel.	max. 17 bar rel.	1 mbar
MSD 1 BRE *Item No. 600612*	0..1000 mbar rel.	max. 5 bar rel.	1 mbar
MSD 2.5 BRE *Item No. 600614*	0..2500 mbar rel.	max. 10 bar rel.	1 mbar
MSD 4 BRE *Item No. 600616*	0..4000 mbar rel.	max. 17 bar rel.	1 mbar
MSD 6 BRE *Item No. 600618*	0..6000 mbar rel.	max. 35 bar rel.	1 mbar
MSD 10 BRE *Item No. 600620*	0.00..10.00 bar rel.	max. 35 bar rel.	10 mbar
MSD 25 BRE *Item No. 600622*	0.00..25.00 bar rel.	max. 50 bar rel.	10 mbar
MSD 40 BRE *Item No. 600624*	0.00..40.00 bar rel.	max. 80 bar rel.	10 mbar
MSD 60 BRE *Item No. 600627*	0.00..60.00 bar rel.	max. 120 bar rel.	10 mbar
MSD 100 BRE *Item No. 600629*	0.0..100.0 bar rel.	max. 200 bar rel.	0.1 bar
MSD 160 BRE *Item No. 600631*	0.0..160.0 bar rel.	max. 320 bar rel.	0.1 bar
MSD 250 BRE *Item No. 600639*	0.0..250.0 bar rel.	max. 500 bar rel.	0.1 bar
MSD 400 BRE *Item No. 600633*	0.0..400.0 bar rel.	max. 800 bar rel.	0.1 bar
MSD 600 BRE *Item No. 600635*	0.0..600.0 bar rel.	max. 1200 bar rel.	0.1 bar
MSD 1000 BRE *Item No. 600637*	0..1000 bar rel.	max. 1500 bar rel.	1 bar

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
MSD 25 MRE *Item No. 606904*	0.00..25.00 mbar	max. 500 mbar	0.01 mbar
MSD -20/60 MRE *Item No. 606765*	-20.00 .. + 60.00 mbar	max. 500 mbar	0.01 mbar

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-WPD5
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:

o Integrated pressure sensor

o Stable metal connection pieces

o Tare function / zero point adjustment

o Execution with EX protection possible

ADDITIONAL FUNCTIONS OF GMH 3181 -...:

ALARM   LOGG

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 ℃, 0..95 % RH (not condensing)		-10 .. + 50 ℃, 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

MANOMETER FOR POSITIVE / NEGATIVE 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	

-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, 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:	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"

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

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 600bar

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!

AUTO OFF

HOLD

ISO

MIN MAX

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.

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

SUCCESSOR TO GDH 200-07 PRODUCTS

Connection ...- UT

Connection ...- QC6

Connection ...- ST6

Connection ...- MCM

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!

APPLICATION:

The measuring range up to 200 mbar / 20 kPa and the high resolution of up to 0.1 Pascal im 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-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 600bar

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION LEVEL

MANOMETER

NEW!

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

SUCCESSOR TO GDH 200-13 PRODUCTS

Connection ...- UT

Connection ...- QC6

Connection ...- ST6

Connection ...- MCM

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 2bar 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!

APPLICATION:

The sister device of the extremely high-resolution G 1107 is the first choicewhen differential pressures> ± 200 hPa 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, gasolinefilter, 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-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 600bar

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!

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

SUCCESSOR FOR GTD 1100 AND GPB 3300 -PRODUCTS

Connection ...- UT *Connection ...- QC6* *Connection ...- ST6* *Connection ...- MCM*

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 theheart 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

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 600bar

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

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

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

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!

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

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, DAkkS), 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
Accuracy	**Barometer:** typ.: ± 1 hPa (bei T: 0 .. 30 °C) max.: ± 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.: ± 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 ode 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, ford 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

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION / LEVEL

INTEGRATING SOUND LEVEL METER

ACCREDIA

ISO

HIGHLIGHTS:

○ Acoustics standard IEC61672, IEC 61260, IEC61094-4

PC programs:	Noise Studio (supplied with the device): PC interface for data download, setup and device management. Licensed software modules must be activated using a hardware key. • NS4 monitor module. PC-based real-time acquisition. Synchronized audio recording. Remote monitoring and data collection. Remote control also via modem. The program enables the programming of measurements and calibrations with timers and event-controlled audio recordings with programmable trigger levels.
Operating conditions:	• Working temperature -10 .. + 50 °C, 25..90 % RH, (no conden-sate), 65..108 kPa. Degree of protection: IP64
Power supply:	• 4 alkaline batteries or rechargeable NiMH batteries, type AA or external power supply 9..12 V DC or 300 mA
Dimensions:	445 x 100 x 50 mm with preamplifier (H x W x D)
Scope of delivery:	Class 1 sound level meter HD-2010-UC-1, preamplifier HD2010PNE2, pre-polarized free field microphone UC52/1, windshield, USB connection cable. Noise Studio PC software, transport case and printed operating instructions. Supplied with an individual ACCREDIA calibration certificate, in accordance with IEC 61672.

HD-2010-UC-1
Item No. 700060
integrating sound level meter

GENERAL:

The HD-2010-UC-1 is a portable, integrating sound level meter for performing statistical analysis. During the development of the device, the focus was on combining the simplest possible operation with low costs. In addition, special care was taken to ensure that the device can be adjusted and set. The user can update the firmware directly using the noise studio program supplied with the device. The HD-2010-UC-1 has a graphic display with backlighting.

APPLICATIONS:

• Assessment of the ambient noise level
• Optional "extended measurement data logging"
• Optional recording and analysis of sound events
• Statistical analysis with calculation of 3 percentile levels and optional comprehensive statistical analysis
• Noise monitoring (option "Extended measurement data acquisition" required)
• Detection of impulsive noises
• Measurements at workplaces (analysis of noise and vibration exposure)
• Selection of personal protective equipment (hearing protection, SNR and HML method)
• Control of the production quality
• Measurement of machine noise, sound power measurements
• Noise emissions from vehicles

With the sound level meter HD-2010-UC-1, the sound pressure level can be measured by programming 3 parameters, whereby the frequency weighting and the time constants can be freely selected. The measured sound levels can be recorded in a large memory and transferred to a PC using the Noise Studio software package supplied.

The class 1 sound level meter HD-2010-UC-1 with the option "Extended measurement data acquisition" is suitable for noise monitoring and acoustic mapping as well as with the optional acquisition and analysis of sound events for the evaluation of the acoustic climate. When measuring traffic noise near airports, railways and roads, the sound level meter can be used as a multi-parameter sound recorder, which also offers static analysis functions.

TECHNICAL SPECIFICATIONS:

½ inch microphone:	UC52 free field, pre-polarized, capacitor type
Dynamic range:	30 dBA..143 dB peak
Linearity range:	80 dB
Acoustic parameters:	Spl, L_{eq}, $L_{eq}l$, SEL, $L_{EP,d}$, L_{max}, L_{min}, L_{pk}, Dose, L_n
Frequency weightings:	simultaneous A, C, Z (only C and Z for L_{pk})
Time ratings:	simultaneously FAST, SLOW, IMPULSE
Integration:	from 1 s..99 h with delete function (back-erase)
Statistical analysis:	Display of up to 3 percentile levels, from L_1 to L_{99} Probability distribution and percentile level calculation from L_1 to L_{99} • Parameters: L_{Fp}, L_{eq}, L_{pk} weighted A, C or Z (only C or Z for L_{pk}) • Measurement frequency: 8 measurements/s • Classification: classes of 0.5 dB
Display:	Graphic LCD display with backlight 128 x 64 • 3 parameters in numeric format
Storage:	• 4 MB internal, memory for more than 500 data records.
Input Output:	• RS232 serial and USB interfaces • AC output (LINE) • DC output

NECESSARY ACCESSORIES:
HD-2020
Item No. 700062
Class 1 sound calibrator according to IEC 60942: 2003

ACCESSORIES:

HD 2110-USB
Item No. 700038
Serial connection cable, PC connection: USB 2.0 type A

SWD-10
Item No. 700039
Power in supply plug for HD portable instruments, 100 ... 240 V AC

CPA/10
Item No. 700061
Microphone extension cable 10 m

HD 40.1
Item No. 700056
Portable thermal printer incl. SWD-10 power supply and 5 rolls of paper

HD 2110-RS
Item No. 700057
Serial connection cable, Printer connection: 9-pole Sub-D socket

RCT
Item No. 475423
Spare paper, 4 rolls of thermal paper, 57 mm wide

Noise Studio: NS4 "monitoring" module; PC-based sound recording with synchronized audio recording (for later playback).

Noise Studio NS4
Item No. 475424
NS4 monitor module (demo version included in delivery HD2010)

GENERAL:

With this software module it is possible to control the sound level meter remotely via PC. The main features are:
• Real-time display of the recorded data in graphical and tabular form
• Possibility to remotely connect to the sound level meter via modem
• Acquisition of sound level data directly in the mass storage of the PC (monitoring function)
• Management of diagnostic and calibration functions
• Automatic acquisition and monitoring programs
• Possibility of capturing synchronized audio recordings with the sound level measurements by using simple trigger functions

IMPORTANT INFORMATION:
THE DEVICE IS SHIPPED WITH A CALIBRATION CERTIFICATE.
CUSTOMER NAME MUST BE SPECIFIED WHEN ORDERING.

ACOUSTIC CALIBRATOR

HD-2020

HIGHLIGHTS:

○ The 1,000 Hz frequency enables sound level meters to be calibrated with any weighting

○ Independent of the atmospheric pressure

○ The 114 dB sound level allows calibrations to be carried out even in environments with loud background noise

○ User friendly

HD 2020
Item No. 700062
Class 1 sound calibrator, according to IEC 60942: 2003

GENERAL:

The sound level calibrator HD-2020 is a portable, battery-operated sound source for the calibration of sound level meters (portable as well as laboratory devices) acoustic stations. It enables the calibration of ½ "microphones with mechanical dimensions according to IEC 61094-1. The calibration pressure levels of 94 dB and 114 dB can be selected using the keypad. If the microphone is not or not correctly inserted into the calibrator, the indicator on the display flashes. With the calendar / time function, the expiry date of the calibration can be stored as a reminder. When the validity expires, a corresponding symbol flashes on the display.

TECHNICAL SPECIFICATIONS:

Coupling cavity:	For 1/2 "standard microphones (12.7 ± 0.03 mm) according to IEC 61094-1 and IEC 61094-4
Frequency:	1.000 Hz
Frequency tolerance:	1 % in the range -10 .. + 50 °C and 10..90 % RH
Sound pressure level:	94.0 dB and 114.0 dB ± 0.2 dB at 1 kHz (based on 101.3 kPa, 23 °C ± 3 °C and 65 % RH)
Reference conditions:	+20 °C, 50 % RH, 101.3 kPa, 10 mm³ capsule volume
Response speed:	10 s
Distortion factor:	<1 %
Influence of the environmental conditions	
Influence of temperature and humidity:	<0.3 dB in the range -10 .. + 50 °C and 10..90 % RH
Influence of static pressure:	<0.1 dB in the range -65 .. + 108 kPa
Operating conditions	
Working temperature:	-10 .. + 50 °C
Relative humidity:	≤90 % RH
Storage temperature:	-25 .. + 70 °C
Microphone equivalent volume:	5..250 mm
Power supply:	9 V alkaline battery IEC type 6LR61. 9 V rechargeable batteries are also allowed.
Battery operation with 9 V battery:	48 h permanent function with good quality alkaline batteries
Display:	3½ LCD display, battery symbol
Clock / date display:	internal with 3 V lithium buffer battery
Housing material:	ABS
Dimensions:	83 x 43 x 53 mm (H x W x D)
Protection class:	IP64
Influences from electromagnetic fields:	<0.3 dB
Scope of delivery:	Calibrator HD-2020, 1x 9 V alkaline battery, instruction manual. Including individual ACCREDIA calibration certificate.

IMPORTANT INFORMATION:
THE DEVICE IS SHIPPED WITH A CALIBRATION CERTIFICATE.
ORDER MUST BE ACCOMPANIED BY THE CUSTOMER'S NAME.

PHOTO AND RADIOMETER

ILLUMINATION LEVEL, LUMINANCE, PHOTON FLOW, UVA, UVB, UVC IRRADIANCE STRENGTH, RADIATION LEVEL IN THE SPECTRAL BAND OF BLUE LIGHT, GLOBAL SOLAR IRRADIANCE

HIGHLIGHTS:

○ Measurement of many different light values, illuminance, luminance, irradiance

○ Wide range of sensors, interchangeable sensors

HD 2302.0
Item No. 700063
Photo and radiometer

GENERAL:

Depending on the sensor used, the device measures illuminance, luminance, PAR, and irradiance (via the spectral ranges VIS-NIR, UVA, UVB, and UVC or measurement of the effective irradiance in accordance with the UV effect curve). The probes have the SICRAM automatic detection module: in addition to detection, the measuring unit is also selected automatically. The factory calibration data are already saved in the device.

APPLICATION:

Measurement of illuminance and irradiance at workplaces with increased exposure or at adjacent traffic routes and workplaces. Further applications in museums, for non-destructive testing, on photovoltaic systems or in tanning salons.

TECHNICAL SPECIFICATIONS:

Device		
	Dimensions:	140 x 88 x 38 mm (H x W x D)
	Material:	ABS
	Display:	2 x 4½ characters and symbols, 52 x 42 mm (display area)
Operating conditions		
	Working temperature:	-5 .. + 50 °C
	Storage temperature:	-25 .. + 65 °C
	Relative working humidity:	0..90 % RH., No condensate
	Protection class:	IP67
Feed		
	Batteries:	3 batteries 1.5 V type AA
	Battery operation:	200 hours with 1,800 mAh alkaline batteries
	Power consumption when the device is switched off:	20 µA
	Measurement Unit:	lux - fcd - µmol / m³s - cd / m² - W / m² - µW / cm² - µW / lumen
	Connections:	Input module for the probes: 8-pole connector DIN45326
	Scope of delivery:	Device HD-2302-0, 3 x 1.5 V alkaline batteries, operating instructions, transport bag / case. *The probes have to be ordered separately.*

EQUIPMENT:

LP 471-PHOT

LP 471-LUM2

LP 471-PAR

LP 471-UVA

LP 471-UVB

LP 471-UVC

LP 471-PA

LP 471 BLUE

LP 471-SILI-PYRA

For technical data, see the following pages

PHOTOMETRIC AND RADIOMETRIC PROBES

LIGHTING LEVEL

LUMINOUS DENSITY

PHOTON FLOW

HIGHLIGHTS:

○ Photosynthetic activity, radiation measurement (PAR), langley radiation measurement

LP 471-PHOT
Item No. 700064
Probe for photo- and radiometer HD2302, illuminance

APPLICATION:

Measurement of illuminance at workplaces / stations, traffic and escape routes

TECHNICAL SPECIFICATIONS:

Measuring range (lux):	0,10..199,99 ..1999,9 ..19999 ..199.99 · 10^3
Resolution (lux):	0.01 0.1 1 0.01 · 10^3
Spectral range:	in accordance with a photopic standard curve V (λ)
α (temperature coefficient) f_6 (T):	<0.05 % K
Calibration uncertainty:	<4 %
f '$_1$ (in agreement with photopic sensitivity V (λ)):	<6 %
f_2 (sensitivity according to cosine law):	<3 %
f_3 (linearity):	<1 %
f_4 (read error of the device):	<0.5 %
f_5 (fatigue):	<0.5 %
Class:	B
Working temperature:	0 .. + 50 °C

LP 471-LUM 2
Item No. 700065
Probe for photo- and radiometer HD2302, luminance

GENERAL:

Spectral sensitivity according to the photopic curve, optical angle 2 °. Measuring range: 1.0 cd / m².2,000 · 10^3 cd / m².

APPLICATION:

The sensor measures the luminance like a human eye, e.g. Monitors, lamps, etc. diaphanoscope, reading from X-ray plates. For monitoring the lighting conditions at PC workstations and reflections from white surfaces.

TECHNICAL SPECIFICATIONS:

Measuring range (cd / m²):	1,0..1999,9 ..19999 ..199.99 · 10^3 ..1999.9 · 10^3
Resolution (cd / m²):	0.1 1 0.01 · 10^3 0.1 · 10^3
Optical angle:	2°
Spectral range:	in accordance with a photopic standard curve V (λ)
α (temperature coefficient) f_6 (T):	<0.05 % K
Calibration uncertainty:	<5 %
f '$_1$ (in agreement with photopic sensitivity V (λ)):	<8 %
f_3 (linearity):	<1 %
f_4 (read error of the device):	<0.5 %
f_5 (fatigue):	<0.5 %
Class:	
Drift after 1 year:	<1 %
Working temperature:	0 .. + 50 °C
Reference standards:	CIE n.69 - UNI 11142

LP 471-PAR
Item No. 700066
Probe for photo- and radiometer HD2302, quantum radiometric PHOTON FLOW in the chlorophyll PAR range

GENERAL:

For measuring the flow of photons in the chlorophyll range PAR (photosynthetically active radiation 400..700 nm), µmol m^{-2}s^{-1} measurement, diffuser for cosine correction. measuring range 0.10 µmol m^{-2}s^{-1}..10 · 10^3 µmol m^{-2}s^{-1}

APPLICATION:

Plants, agriculture, greenhouses

TECHNICAL SPECIFICATIONS:

Measuring range (µmol m^{-2}s^{-1}):	0,10..199,99 200,0..1999,9 2000..10000
Resolution (µmol m^{-2}s^{-1}):	0.01 0.1 1
Spectral range:	400..700 nm
Calibration uncertainty:	<5 %
f_2 (sensitivity according to cosine law):	<6 %
f_3 (linearity):	<1 %
f_4 (read error of the device):	± 1 digit
f_5 (fatigue):	<0.5 %
Drift after 1 year:	<1 %
Working temperature:	0 .. + 50 °C

PHOTOMETRIC AND RADIOMETRIC PROBES

HIGHLIGHTS:

○ Light treatment for psoriasis with UVB lamps

HIGHLIGHTS:

○ Control of the UVC lamps during pasteurization, air and water sterilization

UVA IRRADIANCE

HIGHLIGHTS:

○ Control of UV lamps in cosmetic centers and solariums

○ Review of the control of cosmetic tanning systems

○ Measurement of the UVA irradiance during penetrant tests according to DIN EN ISO 3059 (crack / surface test)

UVB IRRADIANCE

UVC IRRADIANCE

LP 471-UVA
Item No. 700067
Probe for photo- and radiometer HD2302, UVA irradiance

GENERAL:
Radiometric probe for measuring the irradiance in the UVA spectral range 315..400 nm, tip at 360 nm, quartz diffuser for cosine correction.
Measuring range: $1.0 \cdot 10^{-3}$ W / m^2..2000 W / m^2.

APPLICATION:
Timing light to avoid eye problems. For casting and welding control, polymerisation of paints, resins, adhesives

TECHNICAL SPECIFICATIONS:

Measuring range (W / m^2):	$1.0 \cdot 10^{-3}$..$999.9 \cdot 10^{-3}$ 1000..19999 20,00..199,99 200,0..1999,9
Resolution (W / m^2):	$0.1 \cdot 10^{-3}$ 0.001 0.01 0.1
Spectral range:	315..400 nm (peak 360 nm)
Calibration uncertainty:	<5 %
f_3 (linearity):	<1 %
f_4 (read error of the device):	± 1 digit
f_5 (fatigue):	<0.5 %
Drift after 1 year:	<2 %
Working temperature:	0 .. + 50 ℃

LP 471-UVB
Item No. 700068
Probe for photo- and radiometer HD2302, UVB irradiance

GENERAL:
Radiometric probe for measuring the irradiance in the UVB spectral range 280..315 nm, peak at 305..310 nm, quartz diffuser for cosine correction.
Measuring range: $1.0 \cdot 10^{-3}$ W / m^2..2000 W / m^2.

APPLICATION:
Polymerization of paints, resins, adhesives.
Quality control by UV lamps. In offset printing and lithography & electronics, for casting and welding control, timing light to avoid eye problems

TECHNICAL SPECIFICATIONS:

Measuring range (W / m^2):	$1.0 \cdot 10^{-3}$..$999.9 \cdot 10^{-3}$ 1000..19999 20,00..199,99 200,0..1999,9
Resolution (W / m^2):	$0.1 \cdot 10^{-3}$ 0.001 0.01 0.1
Spectral range:	280..315 nm (peak 305 nm..310 nm)
Calibration uncertainty:	<5 %
f_3 (linearity):	<2 %
f_4 (read error of the device):	± 1 digit
f_5 (fatigue):	<0.5 %
Drift after 1 year:	<2 %
Working temperature:	0 .. + 50 ℃

LP 471-UVC
Item No. 700069
Probe for photo- and radiometer HD2302, UVC irradiance

GENERAL:
For measurements in the UVC spectral range 220..280 nm, peak at 260 nm, quartz diffuser for cosine correction.
Measuring range: $1.0 \cdot 10^{-3}$ W / m^2..2000 W / m^2.

TECHNICAL SPECIFICATIONS:

Measuring range (W / m^2):	$1.0 \cdot 10^{-3}$..$999.9 \cdot 10^{-3}$ 1.000..19.999 20,00..199,99 200,0..1.999,9
Resolution (W / m^2):	$0.1 \cdot 10^{-3}$ 0.001 0.01 0.1
Spectral range:	220..280 nm (peak 260 nm)
Calibration uncertainty:	<5 %
f_3 (linearity):	<1 %
f_4 (read error of the device):	± 1 digit
f_5 (fatigue):	<0.5 %
Drift after 1 year:	<2 %
Working temperature:	0 .. + 50 ℃

PHOTOMETRIC AND RADIOMETRIC PROBES

IRRADIANCE IN THE SPECTRAL BAND OF BLUE LIGHT

HIGHLIGHTS:

o Non-destructive material measurement according to ISO 3059: 2001

ILLUMINATION LEVEL AND UVA IRRADIANCE LEVEL

GLOBAL SOLAR IRRADIANCE

LP 471-BLUE
Item No. 700070
Probe for photo- and radiometer HD2302,
illuminance in the spectral band of blue light

GENERAL:

The radiometric probe LP471-BLUE measures the irradiance (W/m²) in the spectral band of blue light. The probe consists of a photodiode and a corresponding filter and is equipped with a diffuser for cosine correction.

APPLICATION:

The spectral sensitivity curve of the probe enables the measurement of the radiation that is the cause of damage due to blue light (curve B (λ) according to the ACGIH/IC-NIRP standards) in the spectral range of 380..550 nm. Radiation in this part of the spectrum can cause photochemical damage to the retina. Another area of application is the monitoring of the irradiance with blue light as it is used, for example, in the treatment of neonatal jaundice.

TECHNICAL SPECIFICATIONS:

Measuring range (W/m²):	$1.0 \cdot 10^{-3}$..$999.9 \cdot 10^{-3}$ 1,000..19,999 20.00..199.99 200.0..1,999.9
Resolution (W/m²):	$0.1 \cdot 10^{-3}$ 0.001 0.01 0.01
Spectral range:	380..550 nm. Effect curve for damage caused by blue light B (λ)
Calibration uncertainty:	<10 %
f_2 (sensitivity according to cosine law):	<6 %
f_3 (linearity):	<3 %
f_4 (read error of the device):	± 1 digit
f_5 (fatigue):	<0.5 %
Drift after 1 year:	<2 %
Working temperature:	0 .. + 50 °C

LP 471 P-A
Item No. 700071
Probe LP 471 P-A with two sensors,
combines illuminance and UVA irradiance

GENERAL:

Combined probe for the measurement of illuminance (lux) with standard photopic sensitivity and irradiance (μW/cm²) in the UVA spectral range (315..400 nm, with peak at 360 nm). Both sensors have a diffuser for correction according to the cosine law.
Measuring range for illuminance: 0.10..200 · 10³ lux
Measuring range for irradiance: 1.0 mW/m²..2,000 W/m². This probe offers a balanced relationship between UVA irradiance and illuminance in μW/lumen (decisive factor in museums). The probe is equipped with a SICRAM module and a 2 m long cable.

APPLICATION:

Lighting conditions and protection against UVA irradiance in museums. Measurement of illuminance and UVA irradiance in penetrant tests according to DIN EN ISO 3059 (crack/surface test), ...

TECHNICAL SPECIFICATIONS:	ILLUMINANCE	UVA IRRADIANCE
Measuring range:	0.10..199.99 lux ..1,999.9 lux ..19,999 lux ..199.99 · 10³ lux	0.10..199.99 μW/cm² ..1,999.9 μW/cm² ..19.999 μW/cm² ..199.99 · 10³ μW/cm²
Resolution:	0.01 lux 0.1 lux 1 lux 0.01 · 10³ lux	0.01 μW/cm² 0.1 μW/cm² 1 μW/cm² 0.01 · 10³ μW/cm²
Spectral range:	in accordance with a photopic standard curve V (λ)	315..400 nm (peak 360 nm)
α (temperature coefficient) f_6 (T):	<0.05 % K	
Calibration uncertainty:	<4 %	<5 %
f'1 (in agreement with photopic sensitivity V (λ)):	<6 %	
f_2 (sensitivity according to cosine law):	<3 %	<6 %
f_3 (linearity):	<1 %	<1 %
f_4 (read error of the device):	<0.5 %	± 1 digit
f_5 (fatigue):	<0.5 %	<0.5 %
Class:	B	
Drift after 1 year:	<1 %	<2 %
Working temperature:	0 .. + 50 °C	0 .. + 50 °C
Reference standards:	CIE n.69 - UNI 11142	

LP 471-SILI-PYRA
Item No. 700072
Probe for photo- and radiometer HD2302,
global solar irradiance

GENERAL:

Solar meter with silicon photodiode for measuring global solar irradiance, diffuser for cosine correction. Spectral range 400..1,100 nm. Measuring range: 1.0 x 10⁻³..2.000 W/m² the probe is equipped with a SICRAM module and a 5 m long cable.

APPLICATION:

Efficiency control for photovoltaic panels in the home and industrial solar energy sector.

TECHNICAL SPECIFICATIONS:

Measuring range (W/m²):	$1.0 \cdot 10^{-3}$..$999.9 \cdot 10^{-3}$ 1,000..19.999 20.00..199.99 200.0..1,999.9
Resolution (W/m²):	$0.1 \cdot 10^{-3}$ 0.001, 01 0.01
Spectral range:	400..1,100 nm
Calibration uncertainty:	<3 %
f_2 (sensitivity according to cosine law):	<3 %
f_3 (linearity):	<1 %
f_4 (read error of the device):	± 1 digit
f_5 (fatigue):	<0.5 %
Drift after 1 year:	<2 %
Working temperature:	0 .. + 50 °C

3-CHANNEL MULTIFUNCTIONAL DATA LOGGER

HIGHLIGHTS:

o Three independent sensor inputs with automatic probe recognition

o Graphic color display

o Data logger with SD card

o Automatic creation of PDF reports

o Mobility thanks to rechargeable batteries

Connections

HD 31
Item No. 482870
Universal 3-channel multifunctional data logger with graphic display

GENERAL:

The HD 31 is a universal data logger with the option of connecting up to 3 "SICRAM" probes. All relevant data (serial number, type, calibration data) are stored in the SICRAM connectors, so that the probes can be connected as required. The connected probe is automatically recognized by the HD 31. Further variables can be derived from the measured values. For example, the dew point temperature, wet bulb temperature, absolute humidity, etc. can be calculated from temperature and humidity. A total of 36 different measured variables are available.

Large color display to show three measured values in numerical form or a real-time graphic. The data is saved in CSV format on an SD card (storage capacity several months, even if several measured variables are logged every second). The HD 31 can be connected directly to a PC using the optional USB cable and is recognized as a mass storage device. In addition, the HD 31 automatically generates PDF logs, which are also stored on the SD card.

APPLICATIONS:

A large number of sensors and the measured variables derived from them provide a wide range of applications, for example in air conditioning and ventilation technology or in clean rooms. The following measured variables can be recorded:
• Temperature
• Relative humidity
• Pressure (absolute, gauge or differential pressure)
• Air speed
• Illuminance (lux)
• Irradiance (W/m^2)
• CO_2
Numerous derived variables can be calculated, displayed and saved from the above-mentioned measured values. For example, the absolute moisture in g/m^3 (from temperature and rel. humidity) or when measuring in ventilation ducts the volume flow (from the speed and dimensions of the ventilation duct), among other things more.

SICRAM modules are also available, via which external sensors with analog output signals can be connected:
VP 473:
SICRAM plug module for signal recording of external measuring transducers with voltage output, measuring range ± 20 VDC, input impedance 1 MΩ
IP 472:
SICRAM plug module for signal recording of external measuring transducers with current output, measuring range 0..24 mA, input impedance 25 Ω
VP 472:
SICRAM plug module for connecting pyranometers and albedometers with non-amplified signal output (adjustable sensitivity of 5..30 µV per W/m^2)

Our product data sheet at www.ghm-group.de gives you a complete overview

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION LEVEL

3-CHANNEL MULTIFUNCTIONAL DATA LOGGER

TECHNICAL DATA (BASIC DEVICE HD31):

Power supply:	Rechargeable internal 3.7 V lithium battery, 2250 mA / h, 3-pole JST connector (SWD05 power supply optional)
Battery life:	18 hours of continuous operation with 3 Pt100 sensors (the effective runtime depends on the type and number of sensors connected)
Storage interval:	1, 5, 10, 15, 30 s; 1, 2, 5, 10, 15, 20, 30 min; 1 h
Storage capacity:	SD memory card 4 GB, capacity depends on the number of record-ed values, typically several months with several measured variables and recording every second
Inputs:	3 SICRAM connections (8-pole, DIN 45326) for connecting measur-ing sensors with intelligent SICRAM plugs (up to 36 measured variables)
Accuracy:	± 0.02 % of the measured value (based on the HD31 basic device)
Accuracy clock:	max.dift 1 min / month
Display:	Graphic color display, 43 x 58 mm (visible)
USB port:	Mini USB connection, USP port (HID)
RS232C connection:	1 serial RS232C output with RJ12 connection for serial printer (optional)
Auto-off:	Can be set after 2, 5, 10, 15, 20 or 30 minutes
Operating temperatur:	-10 .. + 60 °C, 0..85 % RH non-con-densing (instrument)
Storage temperature:	-25 .. + 65 °C (instrument)
Protection class:	IP64
Housing:	ABS plastic, hard rubber 55 SHORE (sides and protective cover)
Dimensions:	165 x 88 x 35 mm (without protec-tive cover)
Weight:	approx. 400 g (incl. Battery and protective cover)
Scope of delivery:	Batteries, SD card, software Delta-Log 9, CP31, HD31.28 and case. Connection modules, sensors and power pack are optional and not included in the scope of delivery.

ACCESSORIES OR SPARE PARTS:

CP31
USB connection cable, USB 2.0, mini USB socket type B.

SWD05
Stabilized power supply, 100..240 VAC, 5 VDC, output type A USB plug

Hard rubber protective cover (55 SHORE) with stand and magnet for use in harsh environments

TEMPERATURE SENSORS:

Temperature sensors with thermocouples and Pt100 / 1000 are available. Either as a complete sensor with SICRAM plug or alternatively as a SICRAM module for connecting external sensors (including for thermocouples of type K, J, T, E, N, R, S, B).

Example: **TP 472 I (Pt100, immersion sensor)**
Item No. 475642
Immersion probe, -196 .. + 500 °C, ± 0.25 °C (-196 .. + 300 °C), Ø 3 mm, probe length 300 mm, cable length 2 m

SICRAM adapter for DO9847 and HD31

TP471
Item No. 482871
for 4-wire Pt100 platinum temperature sensor

TP471D
Item No. 482872
for 1 thermocouple, input DIN miniature socket

TP471D1
Item No. 482872
for 2 thermocouples, input 2 x DIN miniature socket

TP471D0
for 1 thermocouple, without ice point compensation, 2-core copper output cable 1.5 m for connection to the thermocouple at 0 °C in the ice

3-CHANNEL MULTIFUNCTIONAL DATA LOGGER

COMBINED MOISTURE AND TEMPERATURE SENSORS

Nine different sensors with SICRAM plugs are currently available. Temperature measuring range, depending on the version up to 180 °C, moisture measuring range 0..100 % RH.

Example:
HP 478 ACR (Pt100, capacitive)
Item No. 482875
Measuring range: -40 .. + 150 °C, 0..100 % RH, probe length 130 mm, cable length 5 m
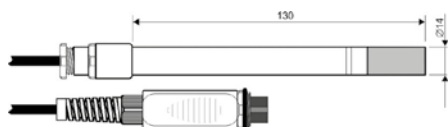
PRESSURE SENSORS (ABSOLUTE, RELATIVE AND DIFFERENTIAL PRESSURE)

PP 472:
SICRAM probe for measuring the barometric pressure (600..1.100 mbar, ± 0.3 mbar, working range -10 .. + 60 °C.

PP 473 S1 ..S8:
SICRAM probes (differential pressure, measuring range depending on the probe from 10 mbar to 2,000 mbar)

AIR VELOCITY SENSORS:

According to various measuring methods
(heat wire or impeller anemometer and pilot probes).

Heat wire probes:
Direction-dependent (measuring range 0.1..40 m/s) or omnidirectional for measuring thermal comfort (0.1..5 m/s)
(see next page)

Impeller probes:
Measuring range 0.6..25 m/s (Ø 100 mm) or 0.4..20 m/s (Ø 60 mm)
(see next page)

Pitot pressure probes:
Measuring ranges, 2..40 m/s to 2..130 m/s, depending on the probe design (T1 to T4) and the SICRAM differential pressure module used (PP 473 S1 ..S4)

... Details in data sheet HD 31.

PHOTOMETRIC AND RADIOMETRIC PROBES:

Wide range of photo- and radiometric probes (completely ready for connection with SICRAM connectors) for the measurement of:

- Illuminance (lux)
- Luminance (cd/m²)
- UVA, UVB, UVC irradiance (W/m²)
- UVeff irradiance, weighted (W/m²)
- Irradiance in the visible and NIR range, 400..1050 nm (W/m²)
- "PAR" photosynthetically active radiation (W/m²)
- Irradiance of blue light, 380..550 nm (W/m²)
- Global solar radiation (W/m²)
  (see next page)

LP 471 PYRA02.5
for measuring solar radiation (class 2 pyranometer according to WMO. Further pyranometers according to class 1, secondary standard or low cost version with silicon sensor on request)

HD31.B3
Item No. 482877
CO_2 probe (NDIR) with SICRAM connector, measuring range 0..5,000 ppm CO_2, working temperature -5 .. + 50 °C

ANEMOMETER (AND THERMOMETER)

HD-2303-0

AP-471-S1   *AP-471-S2*   *AP-472-S2*

HD 2303.0

Item No. 700073
Anemometer

GENERAL:

The HD-2303-0 is designed for use in air conditioning, heating, ventilation and indoor comfort applications. It uses hot-wire or impeller probes to measure air velocity, volumetric flow and temperature in ductwork and ventilation ducts. If only the temperature is to be measured, immersion, penetration, air and contact probes are available. The temperature sensor can be selected as Pt100 or Pt1000. The probes have the SICRAM module with integrated storage of the factory calibration.

TECHNICAL SPECIFICATIONS:

Device	
Dimensions:	140 x 88 x 38 mm (H x W x D)
Material:	ABS
Display:	2 x 4½ characters and symbols, display area: 52 x 42 mm
Operating conditions	
Working temperature:	-5 .. + 50 ℃
Storage temperature:	-25 .. + 65 ℃
Relative working moisture:	0..90 % RH., No condensate
Protection class:	IP67
power supply	
Batteries:	3 batteries 1.5 V type AA
Battery operation:	200 hours with 1,800 mAh alkaline batteries
power consumption when the device is switched off:	<20 µA
Measurement Unit:	℃ - ℉ - m/s - km/h - ft/min - mph - knot - l/s m³/min - m³/h - ft³/s - ft³/min
connections	
Input module for the probes:	8-pole DIN45326 connector
Temperature measurement of the device	
Measuring range Pt100:	-200 .. + 650 ℃
Measuring range Pt1000:	-200 .. + 650 ℃
Resolution:	0.1 ℃
Accuracy:	± 0.1 ℃
Scope of delivery:	Device HD-2303-0, 3 x 1.5 V alkaline batteries, operating instructions, transport bag/case *The probes have to be ordered separately.*

THERMAL ANEMOMETER PROBES / IMPELLER PROBES

AP 471-S1
Item No. 700074
Anemometer probe for air speed

AP 471-S2
Item No. 700075
Anemometer probe for air speed

TECHNICAL SPECIFICA-TIONS:	AP-471-S1	AP-471-S2
Measurement type:	Air speed, calculated volume flow, air temperature	
Sensor type		
Speed:	NTC thermistor	Omnidirectional NTC thermistor
Temperature:	NTC thermistor	NTC thermistor
Measuring range		
Speed:	0.1..40 m/s	0.1..5 m/s
Temperature:	-25 .. + 80 ℃	-25 .. + 80 ℃
Measurement resolution		
Speed:	0.01 m/s - 0.1 km/h - 1 ft/min - 0.1 mph - 0.1 knot	
Temperature:	0.1 ℃	
Measurement accuracy		
Speed:	± 0.2 m/s (0..0.99 m/s) ± 0.4 m/s (1.00..9.99 m/s) ± 0.8 m/s (10.00.. .40.0 m/s)	± 0.2 m/s (0..0.99 m/s) ± 0.3 m/s (1.00..5.00 m/s)
Temperature:	± 0.8 ℃ (-10 .. + 80 ℃)	± 0.8 ℃ (-10 .. + 80 ℃)
Minimum speed:	0.1 m/s	
Air temperature compensation:	0 .. + 80 ℃	
Sensor working range:	Clean air, RH <80 %	
Battery life:	approx. 20 hours @ 20 m/s with alkaline batteries	approx. 30 hours @ 5 m/s with alkaline batteries
Unit of measurement		
Speed:	m/s - km/h - ft/min - mph - knot	
Volume flow:	l/s - m³/s - m³/min - m³/h - ft³/s - ft³/min	
Cable cross-section for volume flow calculation:	0,0001..1,9999 m²	
Cable length:	~ 2 m	
Scope of delivery:	Extendable hot-wire probe	Omnidirectional hot-wire probe

AP 472-S2
Item No. 700076
Anemometer probe for air speed, Impeller

TECHNICAL SPECIFICATIONS:	
Measurement type:	Air speed, calculated volume flow
Diameter:	60 mm
Measurement type	
Speed:	Wind wheel
Measuring range	
Speed:	0.5..20 m/s
Temperature:	-25 .. + 80 ℃ (*)
Resolution	
Speed:	0.01 m/s - 0.1 km/h - 1 ft/min - 0.1 mph - 0.1 knot
Accuracy	
Speed:	± (0.4 m/s + 1.5 % fs)
Minimum speed:	0.5 m/s
Unit of measurement	
Speed:	m/s - km/h - ft/min - mph - knot
Flow rate:	l/s - m³/s - m³/min - m³/h - ft³/s - ft³/min
Pipe diameter for volume flow calculation:	0,0001..1,9999 m²
Cable length:	~ 2 m
Scope of delivery:	Impeller probe

(*) The specified value refers to the working range of the impeller.

SOFTWARE

APPLICATION:	EBS 20M EBS 60M	EASYControl net	GSOFT 3050
GMH 3xxx and GMH 5xxx	●	●	●
GDUSB 1000			
Several interfaces can be used at the same time	● *	● *	
Live measured value acquisition and display	●	●	
Number of data points (recommendation)	up to 1 million	from 1 million	
Change alarm limits		●	
Change correction (offset, slope)			●
Network-compatible (simultaneous access to data from several computers possible)		●	
Access possible via your own SQL queries		●	
Activate EBB Out		● **	
At extra charge	●	●	●
Commitment	laboratory, test and test bench	long-term monitoring	read out GMH data logger

* Interfaces can be mixed as required, GMH 3xxx/5xxx and EASYBus can also be used at the same time.
** Cross-interface, alarm on the GMH 3xxx/5xxx can be assigned to EBB-Out on the EASYBus.

MEASUREMENT DATA ACQUISITION

HIGHLIGHTS:

○ "Real-time" display of the measurement data

○ Simultaneous support of several interfaces

HIGHLIGHTS:

○ Visualization via LAN

○ User accounts

○ Simultaneous support of several interfaces

○ Create reports from measurement data

EBS 20M
Item No. 601158
Measurement data acquisition software for EASYBus & GMH, for 20 channels

EBS 60M
Item No. 601160
Measurement data acquisition software for EASYBus & GMH, for 60 channels

GENERAL:

This software allows you to build an inexpensive and convenient multi-channel measurement data acquisition system. The program is ideal for recording, monitoring, displaying and documenting.

APPLICATIONS:

• Data evaluation on site
• Process, plant, climate and building monitoring
• "Real-time" display of the measurement data, for example for data evaluation and logging for cost listings, consumption overview, optimization of processes or other statistics

TECHNICAL SPECIFICATIONS:

Program execution:	Application with user interface
Data storage:	File (SQlite)
Export formats:	* .csv
Languages:	German English
Access control:	-
Remote access:	-
Alarm:	optically in the surface
Devices:	EASYBus devices (via EASYBus level converter) GMH 3000 Series (via GRS 3100 or USB 3100N) GMH 5000 Series (via USB 5100) GDUSB 1000 (in standard mode)
Multiple interfaces:	shareable
Recording interval:	from 0.5 s
Live display:	Yes
Data extraction of data loggers:	No
System requirements:	Windows 7 SP1 and higher (32 or 64 Bit Edition) Not executable under Windows RT, Windows 10 in S mode, on ARM or Intel Itanium based Windows systems
Scope of delivery:	DVD, printed instructions

EASYControl net
Item No. 601152
Network-compatible measurement data acquisition for Windows PC: EASYBUS, GMH3000, GMH5000

GENERAL:

This software can be used to build a network-based data acquisition and monitoring system at a low cost. The visualization can take place from any computer in the network.

APPLICATIONS:

Long-term monitoring of climate cabinets, refrigerators.
As soon as a visualization of distributed measuring points is to take place.

TECHNICAL SPECIFICATIONS:

Program execution:	Application with user interface
Data storage:	Database (PostgreSQL)
Export formats:	* .doc (Word) * .xls (Excel) * .pdf (Adobe Reader)
Languages:	German English
Access control:	Own user login
Remote access:	In the local network
Alarm:	optically in the surface Relay control via EBB Out
Devices:	EASYBus devices (via EASYBus level converter) GMH 3000 Series * (via GRS 3100 or USB 3100N) GMH 5000 Series * (via USB 5100)
Multiple interfaces:	Usable at the same time
Recording interval:	From 5 s
Live display:	Yes
Data extraction of data loggers:	No
System requirements:	Windows 7 SP1 and higher (32 or 64 bit edition) Not executable under Windows RT, Windows 10 in S mode, on ARM or Intel Itanium based Windows systems
Scope of delivery:	DVD, printed instructions

* Only devices with a unique serial number (printed on the nameplate)

LOGGER SOFTWARE
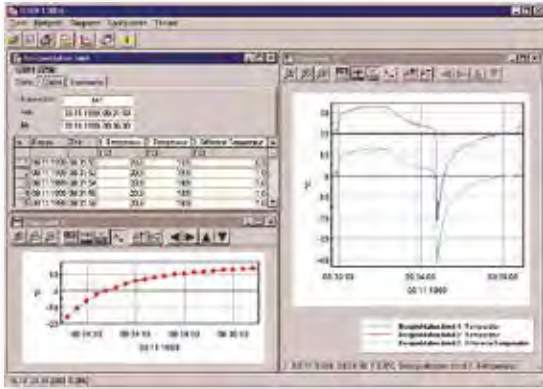
HIGHLIGHTS:

- Operation of the logger function
- Diagram display
- Export function

GSOFT 3050
Item No. 601336
Windows software for GMH 3000 and GMH 5000 with logger

GENERAL:

Software for starting, stopping and reading out GMH 3000 Series and GMH 5000 Series devices with data logger. The extracted data can be visualized, stored, and prepared for further processing.

APPLICATIONS:

Pressing of heating systems, laboratory tests, test benches, and mobile data acquisition.

TECHNICAL SPECIFICATIONS:

Program execution:	Application with user interface
Data storage:	File (binary)
Export formats:	* .csv
Languages:	German English French Czech
Access control:	-
Remote access:	-
Alarm:	-
Equipment:	GMH 3000 Series with data logger (via GRS 3100 or USB 3100N) GMH 5000 Series with data logger (via USB 5100)
Recording interval:	Depending on the data logger
Live display:	No
Data extraction of data loggers:	Yes
System requirements:	Windows 7 SP1 and higher (32 or 64 bit edition) Not executable under Windows RT, Windows 10 in S mode, on ARM or Intel Itanium based Windows systems
Scope of delivery:	DVD, printed instructions

SOFTWARE CONNECTION

	GMH 3000-DLL (Windows library)	GDUSB 1000-DLL (Windows library) (not shown)	Protocol description (www.greisinger.de) (not shown)
GMH 3xxx, GMH 5xxx	●		●
EASYBus and EB-Logg			●
TLogg			●
GDUSB 1000		●	
Start, stop, delete, read out logger	●		
Program examples	Visual studio, Excel VBA	Visual studio	
at extra charge	●	●	

GMH 3000.DLL
Item No. 603027
Windows function library for GMH For the interface communication
GMH3xxx / GMH5xxx <-> PC

PROTECTIVE BAGS / COVERS

ST-R2

ST-KF

ST-G1000

ST-R1
Item No. 601066
GMH 3000 protective bag made of Nappa leather,
1 connection round, suitable for:
GMH 3111, GMH 3151, GMH 3161-12, GMH 3181-12,
GMH 3211, GMH 3431, GMH 3451, GMH 3611, GMH 3651,
GMH 3692, GMH 3710, GMH 3750

ST-R1-US
Item No. 605929
GMH 3000 protective bag made of Nappa leather,
1 connection round, with neck strap

ST-R2
Item No. 601068
GMH 3000 protective bag made of Nappa leather,
2 connections round, suitable for:
GMH 3156, GMH 3161-002, GMH 3161-01, GMH 3161-07,
GMH 3161-13, GMH 3181-002, GMH 3181-01, GMH 3181-07,
GMH 3181-13

ST-R3
Item No. 605931
GMH 3000 protective bag made of Nappa leather,
3 connections (1 x round, 2 x round small),
suitable for: GMH 3511/31/51

ST-N1
Item No. 601070
GMH 3000 protective bag made of Nappa leather,
1 rectangular connection,
suitable for: GMH 1150, GMH 3201/11/31/51

ST-N2
Item No. 601072
GMH 3000 protective bag made of Nappa leather,
2 rectangular connections,
suitable for: GMH 3221/31/51

ST-RN
Item No. 601074
GMH 3000 protective bag made of Nappa leather,
2 connections (1 x round, 1 x rectangular),
suitable for: GMH 3331, GMH 3351, GMH 3831, GMH 3851

ST-KF
Item No. 601084
GFTH xxx protective bag, 2 connections
(1 x round sensor head, 1 x round small),
suitable for: GFTH 95, GFTH 200, GFTB 200, GTH 200 air
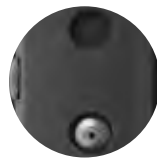
ST-KD
Item No. 601086
GDH / GMR protective bag, 2 connections round,
suitable for: GDH 200-07, GDH 200-13, GDH 200-14, GMR 110

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

ST-G1000-US
Item No. 481598
G 1000 protective bag made of Nappa leather,
a universal recess for sensors, belt clip, shoulder loop

Devices and accessories not included.

DEVICE CASE

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)

GKK 1002
Item No. 411907
Case for G1000 series water analysis small
with cut-outs for 1 device of the G 4xx- / 15xx- /
16xx- series incl. sensor in standard length,
235 x 185 x 48 mm (W x H x D)

GKK 1001
Item No. 611604
Case for G1000 series water analysis universal
with cut-outs for 1 device of the G 1xxx series and
accessories for water analysis
395 x 295 x 106 mm (W x H x D)

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 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)

GKK 3500
Item No. 601052
Device case soft cut-outs e.g.
2x GMH 3000 or 5000,
395 x 295 x 106 mm (W x H x D)

Inlay GKK 5001

GKK 5001
Item No. 611606
Case for GMH 5000 / G7500 series water analysis / universal
with cut-outs for 1 instrument of the GMH 5xxx/7500 series
and accessories for water analysis (395 x 295 x 106 mm)

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)

Devices and accessories not included.

UNIVERSAL CASE

GKK 252
Item No. 601056
Case with knob foam for universal use,
235 x 185 x 48 mm (W x H x D)

GKK 3100
Item No. 601058
Case with knob foam for universal use,
75 x 229 x 83 mm (B x H x T)

GKK 1100
Item No. 601060
Case with knob foam for universal use,
340 x 275 x 83 mm (W x H x D)

GKK 3600
Item No. 601062
Case with knob foam for universal use,
395 x 295 x 106 mm (W x H x D)

GKK 3700
Item No. 601064
Case with knob foam for universal use
450 x 360 x 123 mm (W x H x D)

SILICONE PROTECTIVE COVERS

K 50 BL

K 50 RE

K 50 BL
Item No. 601352
Silicone protective cover blue,
suitable for: G 7500, GMH 5xxx, GMH 2710

K 50 RE
Item No. 607456
Silicone protective cover red,
suitable for: G 7500, GMH 5xxx, GMH 2710

Devices and accessories not included.

MAGNET MOUNTS

MH-S
Item No. 475187
Magnetic table holder with screw clamp, incl. 2 magnetic plates

MH-T
Item No. 475188
Magnetic table stand with stand, incl. 2 magnetic plates

MH-W
Item No. 475189
Magnet wall mount, self-adhesive, incl. 2 magnetic plates

EQUIPMENT:

MH-MP
Item No. 475190
Magnetic plate, set of 2, self-adhesive

MOUNTS

GMH 1300
Item No. 601091
Magnet holder for hanging up devices GMH 3000 & GMH 5000 with integrated suspension bracket

HD-22-3 with probe

HD-22-3
Item No. 700040
Freely positionable laboratory sensor holding arm for sensors Ø12mm

Device not included

G 1000
Item No. 481885
Plastic stand with connection option for USB cable,
order free 3D print data or use it yourself

GCLIP1000
Item No. 475820
Metal belt clip, self-adhesive for G1000 series

PORTABLE THERMAL PRINTER

HD 40.1
Item No. 700056
Portable thermal printerwhich is connected to a PC or to devices of the DeltaOhm series via a serial RS232 input.

TECHNICAL SPECIFICATIONS:

Printing process:	Thermal printing
Resolution:	203 DPI (8 dots / mm)
Print speed:	Up to 90 mm / s (depending on the state of charge of the battery and the ambient conditions)
Dimensions:	53 x 165 x 105 mm (H x W x D)
Material:	ABS
Scope of delivery:	Device, 4x 1.2 V NiMH batteries,SWD-10 power supply unit, operating instructions, 5 rolls of thermal paper

ACCESSORIES:

HD2110-CSNM
Item No. 700041
Serial connection cable, 8-pole mini-DIN connector to 9-pole sub-D socket for RS232C, for connecting the printer to devices with a mini-DIN connection.

HD 2110-RS
Item No. 700057
9-pole sub-D socket for M12, for connecting the printer to devices with an M12 connection.

SWD-10
Item No. 700039
100 - 240 V AC/ 12 V DC-1 A mains charger.

BAT-40-1
Item No. 475817
NiMH battery 4 x 1.2 V AA with integrated temperature sensor for HD40-1 printer

RCT
Item No. 475423
Spare paper
The set includes 4 rolls of thermal paper with a width of 57 mm and a diameter of 32 mm

REMOTE ACCESS

LAN 3200

WLAN 3200

LAN 3200
Item No. 609253
Gigabit Ethernet to USB converter

GENERAL:

For accessing EASYBus modules, GMH portable instruments with the interface or GDUSB 1000 via a network. 2 USB ports for direct connection of EBW 3, USB 3100N or GDUSB 1000 (up to 15 with USB hub). A USB adapter is included in the scope of delivery for the EBW 1, EBW 64 or EBW 250.
Scope of delivery: LAN 3200, Power supply, USB adapter, manual, driver CD

WLAN 3200
Item No. 610289
WLAN or Gigabit Ethernet to USB converter

GENERAL:

For accessing EASYBus modules, GMH portable instruments with the interface or GDUSB 1000 via a network. With 1 USB port, an EBW 3, USB 3100N or GDUSB 1000 can be connected directly (up to 15 with USB hub). A USB adapter is included in the scope of delivery for the EBW 1, EBW 64 or EBW 250.
Weight: 118 g
Dimensions: 100 x 100 x 25.5mm (W x D x H)
Scope of delivery: WLAN 3200, power supply unit, USB adapter, manual, CD

POWER SUPPLY

GB-AA
Item No. 610049
Spare battery Mignon (AA) 1.5 V

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

GAK 9 V
Item No. 601118
NiMH battery 9V

AAA battery
Item No. 601121
AAA battery, 1.2V, NiMH, 2 pieces

AAA battery
Item No. 478759
AAA battery, 1.2V, NiMH, 3 pieces

AA BATTERY
Item No. 478760
AA battery, 1.2V, NiMH, 2 pieces

GNG 5/5000
Item No. 602287
Plug power supply for GMH 5XXX series (220/240 V, 50/60 Hz), output voltage 5 V DC / 30 mA, suitable for devices with bayonet socket

GNG 10/3000
Item No. 600273
Plug power supply for GMH 3XXX series (220/240 V, 50/60 Hz), output voltage 10.5 V / 10 mA, suitable for devices with a power supply socket

CONNECTOR AND CABLE

MINIDIN 4S
Item No. 601111
Mini-DIN plug, 4-pole with locking for self-assembly, for GMH 3700 Series

AAG2M
Item No. 601112
GMH 3000 analog output cable, Cable length 2 m, with 2 x banana plugs and 3.5 mm jack plugs

AAG 5000
Item No. 603871
GMH 5000 analogue output cable, cable length 1 m, plug: 1 x bayonet socket LTW 4-pole, 1 x loose ends, with wire end ferrules

INTERFACE

USB 3100 N
Item No. 601092
Interface converter GMH3xxx <=> PC, USB, for the electrically isolated connection of a GMH 3xxx to the USB interface of your PC. (Converter is supplied from the interface of the PC)

USB 5100
Item No. 601095
Interface converter GMH 5xxx <=> PC, for the galvanically isolated connection of a GMH 5xxx to the USB interface of your PC. (Converter is supplied from the interface of the PC)

USB 5200
Item No. 607177
Interface converter GMH 5xxx <=> PC with analog output (like USB 5100). Analog output can be set on the device.

GRS 3100
Item No. 601097
Interface converter GMH3xxx <=> PC, RS232, 9-pole SUB-D, Connection of a GMH 3xxx to the RS232 interface

GRS 3105
Item No. 601099
5-way interface converter GMH3xxx <=> PC, RS232, 9-pole SUB-D. Connection of 5 GMH 3xxx to the RS232 interface of your PC (converter is supplied via a permanently connected plug-in power supply). Delivery incl. 9-pole sub extension cable and 5 connection cables VEKA 3105

VEKA 3105
Item No. 601101
Spare connection cable, 2 m, GMH 3xxx <=> GRS 3105

USB adapter
Item No. 601109
Adapter for connecting an RS232 interface converter to a USB interface

ALARM / PROTECTION, LEVEL

APPLICATION:	ALSCHU 300 FG / ALSCHU 300 SP	GEWAS 300 FG / GEWAS 300 SP	RWI-016 PPK RWI-016 / PVK RW-015 HKL	GEWAS 191 N / GEWAS 191 AN	GEWAS 200
Universal application	●	●			●
Level controller	●				
Leak detector		●		● ●	●
Electrodes included		●	●	● ●	
Alarm buzzer				●	
Control output	●	●/-			
Water cut-off		●	●	● ●	●
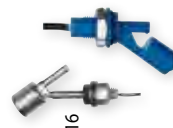
ELECTRODE CONTROL DEVICE / LEVEL REGULATOR

ALSCHU 300 SP

ALSCHU 300 FG

ALSCHU 300 FG
Item No. 600476
Electrode control device / level regulator in field housing for wall mounting –
device without sensor

ALSCHU 300 SP
Item No. 600479
Electrode control device / level regulator in snap-on housing for top-hat rail mounting –
device without sensor

APPLICATION:

Automatic control of drainage pumps and sewage lifting systems, overflow and boil-dry protection, automatic filling and emptying of containers, basins, tanks, control of the liquid level in storage containers, aquariums, holding basins etc. The ALSCHU 300 ... is suitable for the detection of conductive media (water , Etc.). Less suitable are weak or non-conductive media (oils or greasy liquids) which form conductive foam or which build up an electrically insulating deposit on the electrodes.

MEASUREMENT METHOD:

The measuring method for level detection is based on the conductive principle, i.e. the electrical conductivity of the medium is monitored. If the switching amplifier detects a value lower than the preset conductivity, the status "medium recognized" is output, otherwise "no medium". Depending on the number and design of the connected level sensors, the device can be used for limit level detection (min / max detection) or as a 2-point controller.

TECHNICAL SPECIFICATIONS:

Power supply:	18 V..250 V AC / DC wide range power supply
Power consumption:	<2 VA
2 signal inputs:	
Trigger threshold:	<80 kΩ
Reaction time:	2 s
1 relay switching output:	
Contact:	Changeover contact, potential-free
Switching voltage:	≤250 V AC
Switching current:	≤5 A (resistive load)
Protection class:	IP20 (ALSCHU 300 SP) or IP65 (ALSCHU 300 FG)
Operating temperatur:	-20 .. + 60 °C, <75 % RH (not condensing)
Storage temperature:	-40 .. + 80 °C
Condensation:	not allowed
Functions / displays	
Red / Green LED:	Display of the switching status of the relay, switching status of the sensors, status (supply) of the device
Housing:	
ALSCHU 300 SP:	22.5 x 75 x 110 mm (W x H x D)
ALSCHU 300 FG:	100 x 100 x 60 mm (W x H x D) without PG screw connection
Scope of delivery:	device, operating instructions

ACCESSORIES OR SPARE PARTS:

See sensors

WATER MONITOR WITH SIGNAL INPUT AND RELAY OUTPUT

GEWAS 300 SP

GEWAS 300 FG

GEWAS 300 FG
Item No. 600472
Water detector in field housing for wall mounting, device without sensor

GEWAS 300 SP
Item No. 600474
Water detector in snap-on housing for top-hat rail mounting, device without sensor

GENERAL:

The measuring method for level detection is based on the conductive principle, i.e., the electrical conductivity of the medium is monitored. If the switching amplifier detects a value lower than the preset conductivity, the status "medium recognized" is output, otherwise "no medium".

APPLICATION:

Versatile alarm and protection device for DIN rail or wall mounting with universal input (screw terminal) for a large number of external sensors. All sensors with a switching threshold of <100 kOhm can be connected, such as water sensors, float switches, level switches, magnetic contacts, etc. In the event of an alarm, a connected device (e.g. pump, machine) can be switched on or off using a potential-free changeover contact, and an additional sound is emitted an acoustic alarm on the GEWAS 300 FG. To delete the alarm, the internal / external reset button must be pressed. The GEWAS 300 .. is suitable for the detection of conductive media (water, etc.). Less suitable are weak or non-conductive media (oils or greasy liquids) which form conductive foam or which build up an electrically insulating deposit on the electrodes.

TECHNICAL SPECIFICATIONS:

Power supply:	18 V..250 V AC / DC, wide range power supply
Power consumption:	<2 VA
1 signal input:	
Trigger threshold:	<80 kΩ
Reaction time:	2 s
1 relay switching output	
Contact:	Changeover contact, potential-free
Switching voltage:	≤250 V AC
Switching current:	≤5 A (resistive loads)
external alarm output:	**only GEWAS 300 FG:** 8 V, 3 kHz, ≤5 mA
Protection class:	**GEWAS 300 SP:** IP20 **GEWAS 300 FG:** IP65
Operating temperatur:	-20 .. + 60 °C
Storage temperature:	-40 .. + 80 °C
Condensation:	not allowed
Functions / displays	
Red / Green LED:	Display of the switching status of the relay, switching status of the sensor, status (supply) of the device, status of the battery
Audible alarm:	**only with GEWAS 300 FG:** internal alarm buzzer with battery backup
Battery backup:	**only GEWAS 300 FG:** Monitoring and acoustic alarm are also guaranteed, e.g. in the event of a power failure
Alarm reset:	to cancel the alarm **GEWAS 300 SP:** Connection for external push button **GEWAS 300 FG:** front push button
Housing:	**GEWAS 300 SP:** 22.5 x 75 x 110 mm (W x H x D) **GEWAS 300 FG:** 100 x 100 x 60 mm (W x H x D), without PG screw connection
Scope of delivery:	device, operating instructions

ACCESSORIES OR SPARE PARTS:

See sensors

3-POLE LEVEL SENSOR (CONDUCTIVE)

SHORTENABLE

upper level

lower level
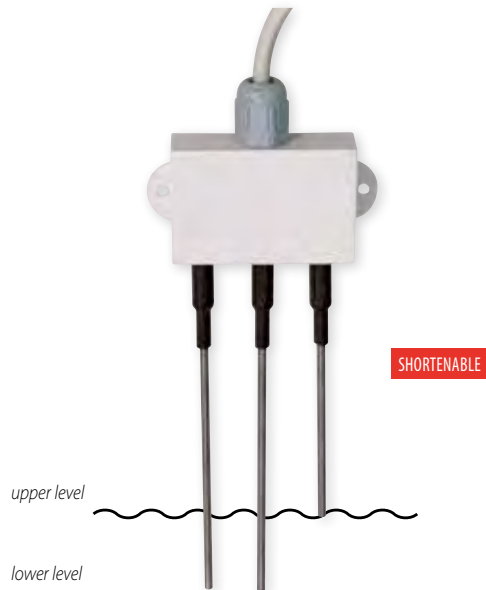
GNS-3P
Item No. 603170
3-pin Sensor for level monitoring

GENERAL:

- For all industrial applications
- Alarm, level and dosage regulation
- Optional teflon shrinking
- Together with control electronics (ALSCHU 300, ALSCHU 485 OE / 3P)
  a very precise monitoring system

TECHNICAL SPECIFICATIONS:

Number of electrodes:	3 pieces
Length of electrodes:	150 mm other lengths on request, electrodes can be shortened to the required length in order to be adapted to the local conditions.
Electrical connection:	2 m cable connection
Switching distance:	10 mm
Dimensions:	
Electrode diameter:	3 mm
Electronics box:	55 x 35 mm (W x H)
Scope of delivery:	Device, operating instructions

OPTION:

Electrode rods with teflon shrinkage
only tip is clear (measurements in seawater,...)

TO GO WITH:

ALSCHU 300 FG, ALSCHU 300 SP, ALSCHU 485 OE / 3P

FLOAT SWITCH

RWI-016PPK

RW-015HKL

RWI-016PPK
Item No. 947581
Float switch (Polypropylene)

RWI-016PVK
Item No. 947653
Float switch (PVDF)

RW-015HKL
Item No. 947652
Float switch (stainless steel)

GENERAL:

Mechanical level monitor for liquid media, with contactless control of a reed contact.
- wall mounting
- reliable and repeatable
- stainless steel version suitable for high temperatures

APPLICATION:

Sensors suitable for: water, oil

TECHNICAL SPECIFICATIONS:	RWI-016PPK	RWI-016PVK	RW-015HKL
Switching principle:	Reed switch	Reed switch	Reed switch
Circuit diagram:	Normally open contact or normally closed contact, depending on mounting position		
Switching capacity:	250 V AC, 0.5 A, 50 VA	250 V AC, 0.5 A, 50 VA	220 V AC, 0.14 A, 30 VA
Density medium:	> 0.6 g / cm³	> 0.75 g / cm³	> 0.70 g / cm³
Working temperature:	max. +90 ℃	max. +130 ℃	max. +200 ℃
Operating pressure:	PN = 3 bar	PN = 6 bar	PN = 5 bar
Installation position:	horizontal	horizontal	horizontal
Protection class:	IP 65	IP 65	IP 65
Electrical connection:	~ 50 cm cable	~ 50 cm cable	~ 60 cm strand
Materials			
Body:	PP	PVDF	Stainless steel 1.4571
Swimmer:	PP	PVDF	Stainless steel 1.4571
Seal:	Viton	Viton	
Weight:	approx. 75 g	approx. 75 g	approx. 120 g

Density medium values in g/cm^3.
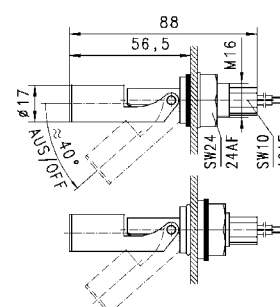
RWI / 016 ...
Internal installation:
hole diameter Ø 16.5 mm

External installation:
hole diameter Ø 23 mm

WATER LEAKAGE DETECTOR WITH SOLENOID VALVE

AN END TO
WATER DAMAGE

HIGHLIGHTS:

○ Safe warning in case of water leakage: loud sounder

○ Water is reliably blocked by a solenoid valve

○ Version-AN with machine shutdown via integrated socket up to 16A – prevents dry running!

○ Simple commissioning and installation due to Schuko plug and socket

○ Different valves suitable for drinking water for pipes and ¾ "taps

○ Always safe: no battery changes due to mains operation

○ Incl. compact universal water sensor, can even be used on metal surfaces for water treatment, washing machines, dishwashers and much more.

○ Made in Germany

NEW!

Solenoid valves GMV 191-M-XX:
For ¾" taps or pipe mounting

SUCCESSOR FOR
GEWAS 181 AND
GEWAS 183

GEWAS 191-N
Item No. 601742
Leak detector, ½ inch plastic valve for ¾ inch tap

GEWAS 191-AN
Item No. 601744
Leak detector machine shutdown, ½ inch plastic. for ¾ inch tap

GEWAS 191-AN-MH
Item No. 482632
Leak detector, machine shutdown, ½ inch brass for ¾ inch tap

GEWAS 191-AN-M-1/2
Item No. 482633
Leakage alarm machine shutdown, ½ inch brass for pipe mounting

GEWAS 191-AN-M-3/4
Item No. 482692
Leakage alarm machine shutdown, ¾ inch brass for pipe mounting

GEWAS 191-AN-M-1
Item No. 482693
Leakage alarm machine shutdown, 1 inch brass for pipe mounting

GEWAS 191-ANOV
Item No. 482735
Leakage alarm machine shutdown, without solenoid valve control

GENERAL:

The compact water sensor lies flat on the floor (can be floor-mounted) and detects the finest water films – the device gives a loud alarm! Depending on the model, a solenoid valve is also switched off to stop the water from escaping and the machine is switched off to prevent sensitive pumps from running dry, for example. This combination of features surpasses the safety of simple aquastop systems or even that of many battery-powered control devices.

APPLICATION:

• Increased protection of washing machines and dishwashers and other catering equipment with a water connection
• For water filters such as reverse osmosis systems, where simple tubing and connection systems can tend to leak.
• For water treatment systems and pumps in hospitals, industrial systems, heating systems and much more besides!
GEWAS 191 – the best possible security against water damage.

TECHNICAL SPECIFICATIONS:

Power supply:	230 V 50/60 Hz (control unit)
Power consumption:	approx. 3 VA
Control output:	GEWAS 191-AN: switched integrated socket; GEWAS 191-N: none, integrated socket always on
Switching current:	max. 16 A (resistive load)
Water sensor:	Highly sensitive water sensor, ready to plug in, 2 m cable. Already triggers an alarm at ½ mm water film. Using the GAZ-1 branch connector, several water sensors can be connected at the same time. Plug-in extension cables 2 m, 5 m and 10 m available.
Alarm:	In the event of water detection or unintentional unplugging of the solenoid valve or water sensor
Valve voltage:	Safety extra-low voltage 12 V DC.
Solenoid valves suitable for drinking water – depending on the version	GMV 191: glass fiber reinforced polyamide. Screw connection ¾" for direct attachment to water taps or ½" washing or dishwasher hose with ¾" wing nut at the valve outlet; working pressure: max. 6 bar, servo-controlled. Opening at pressure difference between inlet and outlet: min. 0.5 bar
	GMV 191-MH: Brass - assembly like GMV191
	GMV 191-M-1/2: Brass - pipe assembly with internal thread ½", suitable for water installation; working pressure: max. 13 bar, servo-controlled. Opening at pressure difference between inlet and outlet: min. 0.15 bar
	GMV 191-M-3/4: Brass - pipe assembly with internal thread ¾"
	GMV 191-M-1: Brass - pipe assembly with internal thread 1" suitable for water installation; working pressure: max. 10 bar, servo-controlled. Opening at pressure difference between inlet and outlet: min. 0.15 bar
Environmental conditions:	0 to 50 °C; 0 to 90 % RH (not condensing)
Housing:	Break-proof ABS
Protection class:	IP20, use in closed rooms
Dimensions:	Control unit 126 x 79 x 54 mm (LxWxH)

*) Note: Extensions and branch plugs are special components (no audio components!) that trigger an alarm if unintentionally unplugged!

Hose assembly on the tap   **Pipe assembly**

Plastic valve   *Brass valve MH*   *Brass valve GMV 191-M-1/2*

SPARE VALVES:

GMV 191
Item No. 601664
Spare valve ½ inch plastic for ¾ inch tap assembly

GMV 191-MH
Item No. 482685
Spare valve ½ inch brass for ¾ inch tap assembly

GMV 191-M-1/2
Item No. 482689
Spare valve ½ inch brass for pipe mounting

GMV 191-M-3/4
Item No. 482690
Spare valve ¾ inch brass for pipe mounting

GMV 191-M-1
Item No. 482691
Spare valve 1 inch brass for pipe mounting

SENSORS: WATER SENSOR GWF-1, STANDARD

GWF-1S / 2 m
Item No. 601706

GWF-1S / 5 m
Item No. 601708

GWF-1S / 10 m
Item No. 601710

SENSORS: FLOAT SWITCH

GSS-1S
Item No. 603247
Float switch also for electrically non-conductive media, PVC, thread PG 7, 2 m cable

SENSOR EXTENSION CABLE *)

VEKA 2/2 m
Item No. 601726

VEKA 5/5 m
Item No. 60172

VEKA 10/10 m
Item No. 601731

BRANCH CONNECTOR FOR USING SEVERAL SENSORS *)

GAZ-1
Item No. 602748

WATER SENSOR

GWF-1
Item No. 601712
Water sensor, 2-pole, without connector, 2 m cable

VARIANTS:

GWF-1 / 5m
Item No. 601717
Water sensor 2-pole, without connector, 5 m cable

GWF-1 / 10m
Item No. 601723
Water sensor, 2-pole, without connector, 10 m cable

TO GO WITH:

GEWAS 200, GEWAS 300 FG

FOR ULTRAPURE WATER

Textile tape on the bottom of the device

GWF-2

GWF-2
Item No. 601778
Textile tape water sensor with loose ends for ultrapure water, 2 m cable

TECHNICAL SPECIFICATIONS:

Housing:	Made of ABS with two mounting holes and PG screw connection
Dimension:	65 x 35 x 50 mm (L x W x H), without PG screw connection
Scope of delivery:	Device

TO GO WITH:

GEWAS 200, GEWAS 300 FG, GEWAS 300 SP

GWF-2S
Item No. 601779
Textile tape water sensor ready to plug in for ultrapure water, 2 m cable

UNIVERSAL PROTECTION DEVICE

PANEL MOUNTED DEVICE WITH SWITCHING OUTPUTV

GEWAS 200
Item No. 600279
Alarm and protection device (without sensor) for panel mounting with snap-on mounting for DIN rail mounting

GENERAL:
Versatile alarm and protection device for DIN rail mounting with universal input (screw terminal) for a large number of external sensors. All sensors with a switching threshold <100 kOhm can be connected, e.g. B. water sensors, float switches, level switches, magnetic contacts, etc. In the event of an alarm, a connected device (e.g. pump, machine) can be switched on or off using a potential-free changeover contact. The internal / external reset button must be pressed to delete the alarm.

TECHNICAL SPECIFICATIONS:
Power supply:	220 / 240 V 50 / 60 Hz
Power consumption:	approx. 3 VA
Sensor input:	2-pole screw terminal
Trigger threshold:	Input resistance <100 kOhm (e.g. from NPN normally open contacts, relays, reed contacts, etc.)
Control output:	potential-free changeover contact
Switching capacity:	250 V AC, 10 A (resistive load), max. 2400 VA 150 V DC, 2 A (resistive load), max. 240 W.
Red / Green LED:	LED for status display (green) on board LED for alarm status (red) on board
Attachment:	Universal base for all common DIN EN support rails
Environmental conditions:	-20 .. + 50 °C and 0..80% RH
Dimensions:	49 x 96 x 59 mm (L x W x H)
Scope of delivery:	Device, operating instructions

VARIANTS:
GEWAS 200 KL
Item No. 600306
Device with screw terminal (2-pole) for connecting an external reset button

GEWAS 200 AL
Item No. 601041
Device with automatic alarm cancellation

ACCESSORIES OR SPARE PARTS:
GWF-1
Item No. 601712
Water sensor, 2-pole, without connector, 2 m cable

GSS-1
Item No. 606016
Float switch, 2 m cable for electrically non-conductive media (NC or NO function can be selected)

GNS-1
Item No. 602531
Level sensor, Stainless steel, 2-pole, 2 m cable

GWF-2
Item No. 601778
Textile tape water sensor with loose ends for ultrapure water, 2 m cable

ACCESSORIES

GNS-1-2-KS
Item No. 602526
Level sensor, 2-pole

GENERAL:
PVC body with 2 stainless steel poles, 2 m PVC cable and 2.5 mm jack plug

VARIANTS:
GNS-1-5-KS
Item No. 602529
Level sensor, Stainless steel, 2-pole, 5 m cable

GNS-1-10-KS
Item No. 602530
Level sensor, Stainless steel, 2-pole, 10 m cable

GWF-1S
Item No. 601706
Pluggable, highly sensitive water sensor

GENERAL:
2 m cable length, with 2.5 mm jack plug; using the GAZ-1 branch connector, several water sensors can be connected at the same time

VARIANTS:
GWF-1S / 5m
Item No. 601708
Pluggable water sensor, 2-pole, with plug, 5 m cable

GWF-1S / 10m
Item No. 601710
Pluggable water sensor, 2-pole, with plug, 10 m cable

FOR ULTRAPURE WATER

VEKA 5

VEKA 2
Item No. 601726
Extension cable for GWF, 2 m

VEKA 5
Item No. 601728
Extension cable for GWF, 5 m

VEKA 10
Item No. 601731
Extension cable for GWF, 10 m

GENERAL:
Connections: 1 x jack plug 2.5 mm, 1 x jack socket 2.5 mm

GAZ-1
Item No. 602748
Branch connector

GENERAL:
with 2 x jack socket 2.5 mm and 1 x jack plug 2.5 mm; required for each additional water sensor

INDEX

PORTABLE INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION, LEVEL

GREISINGER

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)**