

# PRESSURE



	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	GDH 200-07 GDH 200-13	GDH 200-14	GPB 3300 GTD 1100	GDUSB 1000
<b>APPLICATION:</b>									
Relative pressure meas. (over, under- and pressure difference)	• • •	• • •		•	•	• •			•
Absolute pressure measuring	• • •	• • •	• •				•	• •	•
Heating, ventilation, climate	• • •	• • •	• •	•	•	• •	•	• •	•
Measuring in liquids	• • •	• • •							•
Vacuum measuring	• • •	• • •	• •				•		•
Meteorology			• •				•		
Altitude measuring (sports)								•	
Water-proof application	• • •								
Ex-protection		• • •	• •	•	•				
<b>EQUIPMENT:</b>									
Plug-in probe	1 1 2	1 1 2							1
Min/Max, Zero	• • •	• • •	• •	•	•	• •	•	• •	•
Alarm / Data logger / Analog output	• •	• •	•		•				
<b>DEVICE INFORMATION:</b>									
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## WATER-PROOF HANDHELD DEVICE FOR PRESSURE MEASUREMENT WITH EXTERNAL CHANGEABLE PROBES



GMH 5130/50



GMH 5155

suitable pressure probes  
p. r. t. page 88/89

WATER-PROOF DEVICE AND  
PLUG-IN CONNECTIONS

**GMH 5130**

Art. no. 600027

Pressure measurement device with 1 sensor connection, without sensor

**GMH 5150**

Art. no. 600031

Pressure measurement device with 1 sensor connection, analog output and data logger, without sensor

**GMH 5155**

Art. no. 600033

Pressure measurement device with 2 sensor connections, analog output and data logger, without sensors

**General:**

This handheld instrument is a valuable tool for demanding pressure measurements. Extremely robust plug connections, the silicone protection cover, backlight and a water-proof design allow its usage in harsh industrial and field environments.

**Application:**

- Industry and craft, HVAC: heating, ventilation, air-conditioning
- Leakage test / pressure test
- Chimney draft measurement: under pressure, leakage test at buildings (i.e. 4 Pascal test)
- Measurements of gas and oil firings
- Automobile trade, hydraulic analysis (peak pressure)

**Specifications: GMH 5130**

<b>Sensor connections:</b>	1
<b>Suitable probes:</b>	GMSD / MSD sensors, available ranges (resolutions) from -1.999 ... 2.500 mbar (0.001 mbar) to 0 ... 1000 bar (1 bar)
<b>Display range max.:</b>	-19999 ... +19999 digit
<b>Display unit: *</b>	depends on measuring range selection and sensor: mbar, bar, Pa, kPa, MPa, mmHg, inHg, PSI, mH <sub>2</sub> O
<b>Measuring frequency:</b>	4 measurements / s or 1000 measurements / s with peak value memory
<b>Average filter:</b>	adjustable: 1 ... 120 s
<b>Accuracy:</b>	±0.1 % FS ±1 digit
<b>Connections</b>	
<b>Sensor:</b>	1 x 7-pole bayonet connector
<b>Output / external supply:</b>	4-pole bayonet connector for serial interface, supply (with accessories: USB adapter USB 5100)
<b>Display:</b>	4 ½ digit 7-segment, illuminated (white)
<b>Operating conditions:</b>	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
<b>Storage temperature:</b>	-25 ... +70 °C
<b>Power supply:</b>	2 x AAA-battery, battery life 500 h (without illumination, 4 measurings / s)
<b>Housing:</b>	impact resistant ABS housing with pop-up clip
<b>Protection class:</b>	IP65 / IP67
<b>Dimensions:</b>	160 x 86 x 37 mm (H x W x D) incl. silicone protection cover (red)
<b>Weight:</b>	approx. 250 g incl. battery and protection cover
<b>Scope of supply:</b>	Device, battery, calibration protocol, manual

**HIGHLIGHTS:**

- Peak value detection (1000 measurements / s)
- Large double display with background illumination
- Calibrated and fully interchangeable pressure probes
- incl. calibration protocol

**ADDITIONAL FUNCTIONS GMH 5150 AND 5155:****ADDITIONAL FUNCTIONS GMH 5155:**

- 2 GMSD/MSD-probes connectable.
- Difference measurement of two probes

**Specifications: GMH 5150 and GMH 5155**

<b>Sensor connections:</b>	1, GMH 5155: 2
<b>Suitable probes:</b>	GMSD / MSD sensors, available ranges (resolutions) from -1.999 ... 2.500 mbar (0.001 mbar) to 0 ... 1000 bar (1 bar)
<b>Display range max.:</b>	-19999 ... +19999 digit
<b>Display unit:</b>	depends on measuring range selection and sensor: mbar, bar, Pa, kPa, MPa, mmHg, inHg, PSI, mH <sub>2</sub> O, user
<b>Measuring frequency:</b>	4 measurements / s or 1000 measurements / s with peak value memory
<b>Average filter:</b>	adjustable: 1 ... 120 s
<b>Accuracy:</b>	±0.1 % FS ±1 digit
<b>Connections</b>	
<b>Sensor:</b>	1 x 7-pole bayonet connector GMH 5155 only: 2 x 7-pole bayonet connector
<b>Output / external supply:</b>	4-pole bayonet connector for serial interface, supply (with accessories: USB adapter USB 5100)
<b>Analog output:</b>	0 ... 1 V, freely adjustable, connection with 4-pole bayonet connector, resolution 12 bit
<b>Display:</b>	4 ½ digit 7-segment, illuminated (white)
<b>Operating conditions:</b>	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
<b>Storage temperature:</b>	-25 ... +70 °C
<b>Power supply:</b>	2 x AAA-battery, battery life 500 h (without illumination, 4 measurings / s)
<b>Housing:</b>	impact resistant ABS housing with pop-up clip
<b>Protection class:</b>	IP65 / IP67
<b>Dimensions:</b>	160 x 86 x 37 mm (H x W x D) incl. silicone protection cover (red)
<b>Weight:</b>	approx. 250 g incl. battery and protection cover
<b>Scope of supply:</b>	Device, battery, calibration protocol, manual

**Additional functions:**

**Additional Display for Battery:** Bar graph display  
**Background Illumination:** duration adjustable (off, 5 s ... 2 min.)  
**Adjustment:** offset / slope adjustable in menu  
**User-defined displayed unit: (user/GMH 5150/55)**  
 conversion to any unit with help of linear factor  
**Leakage test function (GMH 5150/55):**  
 leak rate display, leak rate alarm (/s, /min, /h)  
**Air velocity / flow volume (GMH 5150/55):**  
 Pitot tube measurement (accessories)  
**peak-detect (Peak value memory):**  
 The min- / max- value memory stored unfiltered pressure peaks ≥ 1 ms  
**Logger function:**  
 with measuring point input, adjustable cycle time: 1 s ... 1 h,  
 recording time: 416 days at interval 1 h, data logger: cyclic: 10.000 data sets (GMH 5150),  
 8.000 data sets (GMH 5155); manual: 1.000 data sets (with measuring point input, 40 adjustable measuring point texts or measuring point numbers)

**\* = Note to the pressure unit selection:**

The choice of a specific pressure unit is possible, if its whole measuring range is displayable within the display of the device and the sensor is supporting these resolution.

ACCESSORIES

Accessories and spare parts:

**GMSD ... - K51**

pressure sensors (p.r.t. page 88)  
Application field: non-aggressive gases for over / under pressure and difference pressure meas. or absolute pressure meas.



**MSD ...**

pressure sensors / stainless steel (p.r.t. page 89)  
Application field: air, aggressive gases for over / under pressure and relative pressure meas. or absolute pressure meas.



**MSD-K51**

Art. no. 603809  
1 m connection cable for MSD sensors

**Prandtl-Staurohr**

Art. no. 604150  
(made of stainless steel)  
for air velocity / flow volume measurement  
Ø = 3 mm, NL = 300 mm, max. 600 °C  
GMSD 2,5 MR-K51 or GMSD 25 MR-K51 are required

**GDZ-01**

Art. no. 601541  
PVC tube 6/4 (6 mm outer Ø, 4 mm inner Ø)  
(5 bar at 23 °C)



**GDZ-30**

Art. no. 601601  
Adapter G1/2" inner to tube 6/4

**EBS 20M**

Art. no. 601158  
Software for long-term monitoring (p.r.t. page 108)

**GSOFT 3050**

Art. no. 601336  
Software for operation of logger devices (p.r.t. page 109)

**USB 5100**

Art. no. 601095  
Electrically isolated interface converter, supplied via USB

**GN5 5 / 5000**

Art. no. 602287  
Plug-in power supply 5 V DC, suitable for GMH 5000 series (p.r.t. page 113)

**GKK 3500**

Art. no. 601052  
Device case (394 x 294 x 106 mm) with eggcrate foam and cut-outs for 1 device

HAND-HELD PRESSURE MEASURING DEVICE



HIGHLIGHTS:

- One device for any measuring range (2.500 mbar ... 1000 bar)
- Calibrated and fully interchangeable pressure probes

Suitable pressure probes  
p.r.t. page 88 / 89

**GMH 3111**

Art. no. 600374  
Hand-held pressure measuring device with 1 sensor connection, without sensor

**GMH 3111-EX**

Art. no. 600380  
Hand-held pressure measuring device with 1 sensor connection, without sensor, Ex



Specifications:

<b>Max. display range:</b>	-19999 ... +19999 digit
<b>Measuring range:</b>	corresponding to used probe
<b>Overload:</b>	corresponding to used probe
<b>Resolution:</b>	corresponding to used probe
<b>Accuracy: (device)</b>	±0.1 % FS ±1 digit (at nominal temperature = 25 °C)
<b>Pressure units: *</b>	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH <sub>2</sub> O, can be selected
<b>Probe connection:</b>	1 sensor socket 6-pin lockable Mini-DIN-socket(s) for GMSD/MSD-sensors. Automatic probe detection and setting of measuring range upon plugging in of probe.
<b>Display:</b>	2 x 4½ digit LCD
<b>Output:</b>	Interface
<b>Serial interface:</b>	direct connection to RS232 or USB interface of a PC via electrically isolated interface converter GRS 3100, GRS 3105 or USB 3100 N.
<b>Power supply:</b>	9 V battery, d.c. connector for external 10.5 ... 12 V direct voltage supply. (suitable power supply: GNG10/3000)
<b>Sensor adjustment:</b>	digital offset and scale input
<b>Measuring cycle:</b>	4 measurements / s
<b>Battery life:</b>	approx. 120 h
<b>Operating conditions:</b>	-25 ... +50 °C, 0 ... 95 % RH, <b>GMH 3111-EX:</b> -10 ... +50 °C, 0 ... 95 % RH
<b>Housing:</b>	impact-resistant ABS plastic housing, foil keypad, clear viewing pane <b>GMH 3111 only:</b> integrated pop-up clip for table top or suspended use.
<b>Dimensions:</b>	142 x 71 x 26 mm (H x W x D)
<b>Weight:</b>	approx. 150 g, <b>GMH3111-EX:</b> approx. 190 g (incl. leather case)
<b>Scope of supply:</b>	Device, battery, calibration protocol, manual

Note to Ex-design types:

**Technical changes compared to standard instrument (valid for all GMH31xx-EX)**  
**Ex qualification:** II 2 G Ex ib IIC T4 Gb  
**Ref. document:** EPS 09 ATEX 1 227 X  
**Standards:**  
The device meets the standards for electric resources in explosion endangered areas according to EN 60079-0 : 2012, EN 60079-11 : 2012  
**Sensor:**  
(GMH 3111-EX, GMH 3151-EX, GMH 3156-EX)  
All GMSD sensors with option „Ex type“ can be used.  
**Interface:**  
suitable interface adapter are USB 3100 N, GRS 3100 and GRS 3105  
**Please note:** The operation of the interface is not allowed within the Ex area!  
**Working temperature:** -10 ... +50 °C  
**Power supply:** 9 V battery, d.c. connector  
**Note:** the use of d.c. connector is not allowed within the Ex area! Just d.c. connectors of type GNG10/3000 can be used.  
**Alarm function:**  
(GMH 3151-EX, GMH 3156-EX, GMH 3181-EX)  
The device is without a horn, in the alarm settings are only the parameter „no.so“ and „off“ adjustable.  
**Scope of supply:**  
device with associated leather case.



\* Note to the pressure unit selection: (information for all GMH 31xx)

The choice of a specific pressure unit is possible, if its whole measuring range is displayable within the display of the device and the sensor is supporting these resolution.

HANDHELD INSTRUMENT  
DISPLAY/CONTROLLER  
LOGGER-/BUS SYSTEMS  
TRANSMITTER  
TEMPERATURE PROBE  
ALARM/PROTECTION, LEVEL

## PRESSURE MEASURING DEVICE WITH LOGGER



## LOGGER FUNCTION



GMH 3151



GMH 3156

## HIGHLIGHTS:

- 4½-digit display, probes with higher resolution up on request
- Peak value memory 1000 measurements / s
- Analog output 0 ... 1 V
- Digital adjustable
- Integrated horn

## ADDITIONAL FUNCTIONS GMH 3156:

- 2 GMSD/MSD-probes connectable.
- Difference measurement of two probes

Suitable pressure probes  
p.r.t. page 88 / 89

## GMH 3151

Art. no. 600381

Pressure measuring device with 1 sensor connection, analog output and data logger, without sensor

## GMH 3156

Art. no. 600386

Pressure measuring device with 2 sensor connections, analog output and data logger, without sensor

## GMH 3151-EX

Art. no. 600383

EX-Pressure measuring device with 1 sensor connection, analog output and data logger, without sensor (see previous page for information on Ex versions)

## GMH 3156-EX

Art. no. 600394

EX-Pressure measuring device with 2 sensor connections, analog output and data logger, without sensor (see previous page for information on Ex versions)

## Specifications:

<b>Max. display range:</b>	-19999 ... +19999 digit
<b>Measuring range:</b>	corresponding to used probe
<b>Overload:</b>	corresponding to used probe
<b>Resolution:</b>	corresponding to used probe
<b>Accuracy (device):</b>	±0.1 % FS ±1 digit (at nominal temperature = 25 °C)
<b>Pressure units*:</b>	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH <sub>2</sub> O, can be selected.
<b>Probe connection:</b>	1, bei GMH 3156/-EX: 2 6-pin screened lockable Mini-DIN-socket(s) for GMSD/MSD-sensors. Automatic probe detection and setting of measuring range upon plugging in of probe.
<b>Display:</b>	2 x 4½ digit LCD
<b>Output:</b>	serial interface or AAG
<b>Serial interface:</b>	direct connection to RS232 or USB interface of a PC via electrically isolated interface converter GRS 3100, GRS 3105 or USB 3100 N.
<b>Analog output:</b>	0 ... 1 V, freely adjustable (resolution 12 bit)
<b>Power supply:</b>	9 V-battery, d.c. connector * for external 10.5 ... 12 V direct voltage supply. (i. e. GNG10/3000)
<b>Sensor adjustment:</b>	digital offset and scale input
<b>Measuring cycle: „slow“</b>	4 measurements / s
<b>„fast“ / „peak-detect“</b>	≥1000 measurements / s
<b>peak-detect:</b>	The min- / max- value memory stored unfiltered pressure peaks ≥1 ms

## Logger functions

<b>manually data sets:</b>	99 data sets
<b>cycle data sets:</b>	10000 <b>GMH 3156/-EX:</b> 4000 (max. 64 recording sequences)
<b>adjustable cycle time:</b>	1 ... 3600 s
<b>Averaging function:</b>	x
<b>Battery life:</b>	approx. 180 h (4 measurements / s) approx. 40 h (1000 measurements / s)
<b>Operating conditions:</b>	-25 ... +50 °C, 0 ... +95 % RH (non condensing), <b>GMH 315x-EX:</b> -10 ... +50 °C, 0 ... 95 % RH (non condensing)
<b>Housing:</b>	impact-resistant ABS plastic housing, foil keypad, clear viewing pane <b>GMH315x-EX only:</b> pop-up clip for table top or suspended use.
<b>Dimensions:</b>	142 x 71 x 26 mm (H x W x D)
<b>Weight:</b>	approx. 150 g, <b>GMH 315x-EX:</b> approx. 190 g (incl. case)
<b>Scope of supply:</b>	Device, battery, calibration protocol, manual

## Additional functions:

**Averaging function:** integrates the meas. values during a selectable period of time and then calculates the average display value.

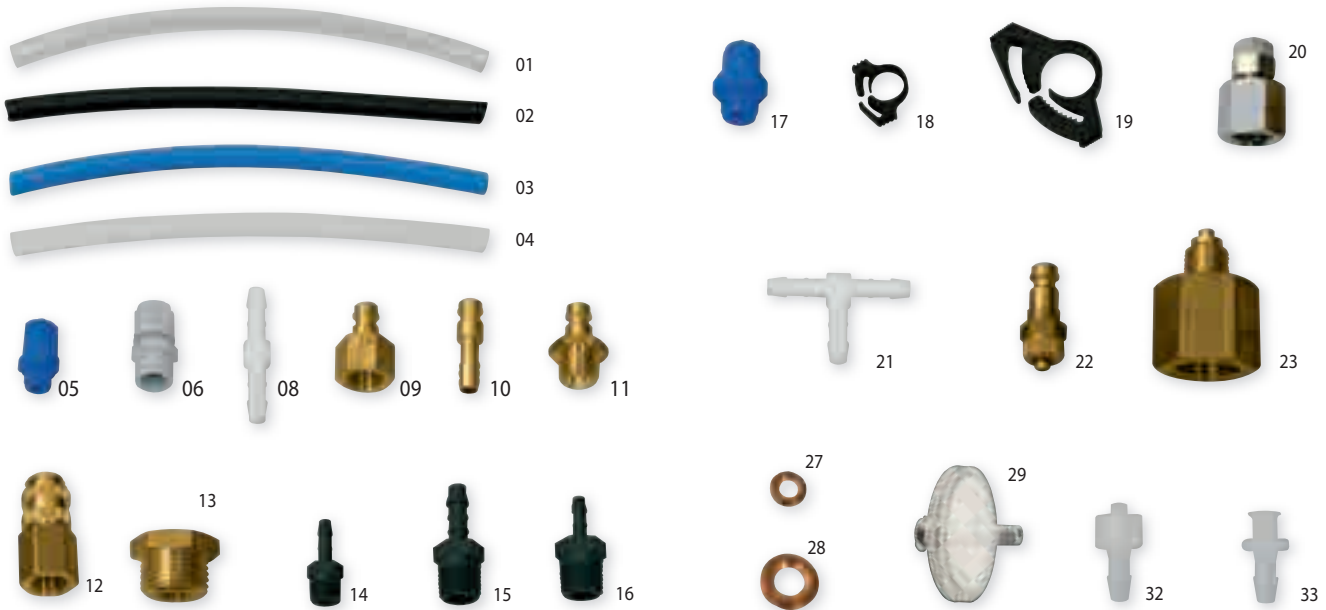
**Sea-Level-correction:** when connecting an abs. pressure probe the barom. air pressure can also be displayed corrected to sea level „zero“. (Air pressure compensation achieved by entering the meters above sea level „zero“)

**Logger Functions:**  
- manual: 99 data sets  
- cyclic: 10000 data sets (GMH 3151)  
4000 data sets (GMH 3156)  
(max. 64 Aufzeichnungsreihen), adjustable cycle time: 1 ... 3600 s; The logger is started or stopped by keypad or interface. The software GSOFT3050 (see accessories) is available for comfortable read-out of logger data.

## \* Note to the pressure unit selection: (information for all GMH 31xx)

The choice of a specific pressure unit is possible, if its whole measuring range is displayable within the display of the device and the sensor is supporting these resolution.

## TUBE, TUBE CLIPS, ADAPTER, COUPLINGS, ETC.



## for GMH31xx, GMSD, MSD, GDHs and pressure measuring transducers

**GDZ-01**

Art. no. 601541

PVC-tube 6/4 (6 mm outside-Ø, 4 mm inside-Ø) (5 bar @ 23 °C)

**GDZ-02**

Art. no. 601543

PE (polyethylene) 6/4 (6 mm outside-Ø, 4 mm inside-Ø) (10 bar @ 23 °C)

**GDZ-03**

Art. no. 601545

PUR (polyurethane) 6/4 (6 mm outside-Ø, 4 mm inside-Ø) (9 bar @ 23 °C)

**GDZ-04**

Art. no. 601547

PA (polyamide) 6/4 (6 mm outside-Ø, 4 mm inside-Ø) (25 bar @ 23 °C)

**GDZ-05**

Art. no. 601549

Screw-type glanding for 6/4 tube with outside thread G1/8"

**GDZ-06**

Art. no. 601551

Increaser glanding for 6/4 tube with inside thread G1/8"

**GDZ-08**

Art. no. 601555

Double adapter for 6/4 tube to 6/4 tube

**GDZ-09**

Art. no. 601557

Coupling adapter (NW5) made of brass with inside thread G1/4" (suitable for GDZ-12)

**GDZ-10**

Art. no. 601559

Coupling adapter (NW5) made of brass for tube with 6 mm inside-Ø (suitable for GDZ-12)

**GDZ-11**

Art. no. 601561

Coupling adapter (NW5) made of brass with outside thread G1/4" (suitable for GDZ-12)

**GDZ-12**

Art. no. 601564

Coupler socket (NW5) made of brass (single-hand use) with inside thread G1/4"

**GDZ-13**

Art. no. 601566

Increaser/reducer made of brass with G1/2" outside thread and G1/8" inside thread

**GDZ-14**

Art. no. 601568

Screw-in nozzle for 6/4 tube with outside thread G1/8"

**GDZ-15**

Art. no. 601570

Screw-in nozzle for tube with 6 mm inside-Ø with outside thread G1/4"

**GDZ-16**

Art. no. 601572

Screw-in nozzle for 6/4 tube with outside thread G1/4"

**GDZ-17**

Art. no. 601574

Screw-in connection for 6/4 tube with outside thread G1/4"

**GDZ-18**

Art. no. 601576

Tube clamp for 6/4 tube

**GDZ-19**

Art. no. 601578

Tube clamp for 8/6 tube (8 mm outside-Ø and 6 mm inside-Ø)

**GDZ-20**

Art. no. 601580

Screw-on connection made of brass for 6/4 tube with inside thread G1/4"

**GDZ-21**

Art. no. 601582

T-piece for 6/4 tubes

**GDZ-22**

Art. no. 601584

Coupling adapter (NW5) made of brass with tube connection 6/4 (suitable for GDZ-12)

**GDZ-23**

Art. no. 601586

G1/2" female to G1/4" male adapter, brass

**GDZ-27**

Art. no. 601594

Manometer profile gasket (thickness 3 mm, Cu) for G1/4" hread

**GDZ-28**

Art. no. 601597

Flat gasket (thickness 5 mm, Cu) for thread G1/2"

**GDZ-29**

Art. no. 601599

Filter-Membrane incl. Luer-Locks (GDZ-32 and GDZ-33)

**GDZ-30**

Art. no. 601601

Adapter G1/2" inside thread to tube 6/4 (w/o picture)

**GDZ-31**

Art. no. 606070

Silicone tube 8/5 (8 mm outer / 5 mm inner) (2 bar at 23 °C) temperature-resistant up to 200 °C, very flexible (figure similar to GDZ-04)

**GDZ-32**

Art. no. 607951

Luer-lock male to hose 6/4

**GDZ-33**

Art. no. 607952

Luer-lock female to hose 6/4

**GWA 1214**

Art. no. 603979

Adapter G1/4" inside thread to G1/2" outside thread (without picture)

**GOG-N**

Art. no. 603047

needle, Ø 0.9 mm - suitable to Luer-Lock male (5 pieces) (without picture)

## UNIVERSAL PRESSURE MEASUREMENT SYSTEM



1000 MEASUREMENTS  
PER SECOND LIVE

THE SAME SENSORS CAN BE USED AS WITH  
HANDHELD MEASURING DEVICE GMH 3151



## HIGHLIGHTS:

- Complete package incl. software for up-to-date Windows systems
- Live display before and live diagram display

Suitable pressure probes  
p.r.t. page 88 / 89

## GDU1000

Art. no. 600271

Full set incl. software for high-speed live measurement data logging GDU1000 FastView (p.r.t. page 87)

## Application:

- Test rigs and laboratory experiments
- Detection of pressure peaks
- Monitoring system pressure curves e.g. for process technology, engineering, etc.
- Live displaying of measuring data of several GDU1000
- Data evaluation and logging, for optimization of processes and other statistics
- Multi-channel measurements with high recording rate
- Test setups or on-site recordings with GDU1000

## Functions:

The GDU1000 adapter allows to connect a standard pressure sensor of type GMSD / MSD directly to the USB interface of a PC. It provides 4 channels, i.e. currently measured value, average value, max and min value. There are two operation modes:

## Fast mode:

Up to 1000 measured values per second. The provided software displays the data and records for later usage. The software can be configured to start or stop the recording with several selectable trigger conditions

## Standard mode:

Up to 32 measurements per second. A GDU1000 in standard mode can be responded similarly to GMH handheld devices or EASYBus modules. Then a long term recording can be archived with the software EBS 20M / EBS 60M (2 measurements per second).

## Specifications:

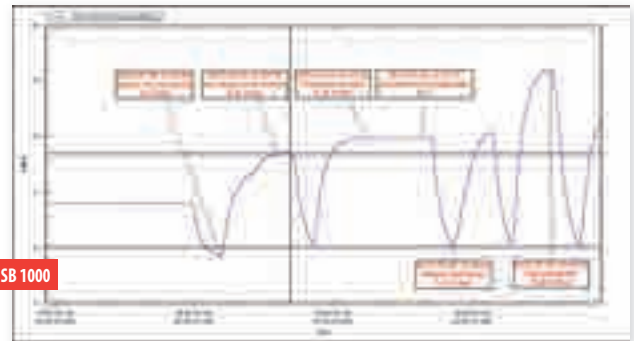
<b>Measuring range:</b>	depends on connected sensor
<b>Max. range:</b>	-19999 ... +19999 digit
<b>Pressure units:</b>	mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH <sub>2</sub> O, selectable, depending on connected sensor
<b>Measuring rate:</b>	1000 measurements / s (= 1 ms)
<b>Accuracy:</b>	±0.2 % FS (at nominal temperature = 25 °C)
<b>Recording interval:</b>	1 ms (FAST mode) ... 10 s, adjustable via software

## Connections

<b>PC:</b>	standard USB plug (type A)
<b>GMSD / MSD:</b>	6-pole screened mini-DIN socket with locking
<b>Power supply:</b>	supplied by USB interface
<b>Dimensions:</b>	56 x 31 x 24 mm
<b>Cable length (USB):</b>	approx. 20 cm
<b>Weight:</b>	39 g (device only)
<b>Scope of supply:</b>	Device, manual, software- and driver-CD



## HIGH-SPEED LIVE MEASUREMENT



FOR GDU1000

## GDU1000 FastView

Software for high-speed live measurement data logging of fast pressure measurements

## Functions:

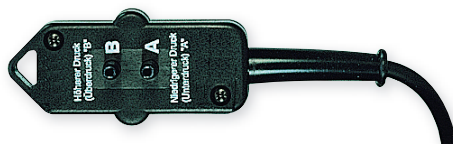
- Several GDU1000 usable at one PC at the same time
- Measuring rates up to 1000 measurements per second
- Live display with current value and measurement diagram, even for highest measuring rates
- Different measuring rates for each sensor selectable
- Safe storage of measurement and sensor data in a SQL based data base
- Fast diagram display
- Comment function for measured values
- Data export as CSV file and as picture
- Multi-language software (German, English, French, Italian, Czech)
- 32-bit or 64-bit application

## System requirements:

1GHz CPU, 1GB RAM, 100 MB HDD, 1 available USB Port  
Microsoft Windows 7 SP1 (32 or 64 bit)  
(not executable with Windows RT, ARM or Intel Itanium based Windows systems)

*This software uses open-source components under LGPL conditions.  
The license terms of this software provide further information.*

## PLASTIC PRESSURE SENSORS WITH TUBE CONNECTION

FOR AIR AND NON  
AGGRESSIVE GASES**General:**

for use with  
**GMH 31xx, GUSB:** Type GMSD ... -K31,  
**GMH 51xx:** Type GMSD ... -K51

**Application:**

air and non aggressive gases  
*Plastic pressure sensors are not suitable for water / liquids.*

## SENSORS FOR MEASURING PRESSURE DIFFERENCE

for differential pressure measuring (both pressures are connected) as well as for relative pressure measuring (pressure / vacuum, one terminal is left open)

	GMSD 2,5 MR ..	GMSD 25 MR ..	GMSD 350 MR ..	GMSD 2 BR ..	GMSD 10 BR ..
<b>Measuring range:</b>	-1.999 ... +2.500 mbar	-19.99 ... +25.00 mbar	-199.9 ... +350.0 mbar	-1000 ... +2000 mbar	-1.00 ... +10.00 bar
<b>Overload:</b>	max. 200 mbar	max. 300 mbar	max. 1 bar	max. 4 bar	max. 10.34 bar
<b>Resolution:</b>	0.001 mbar (0.1 Pa)	0.01 mbar (1 Pa)	0.1 mbar	1 mbar	10 mbar
<b>Accuracy (typ.)</b>					
<b>Hysteresis / linearity:</b>	±0.2 % FS	±0.2 % FS	±0.2 % FS	±0.2 % FS	±0.2 % FS
<b>Temperature influence (from 0 ... 50 °C):</b>	±1.0 % FS	±0.5 % FS	±0.4 % FS	±0.4 % FS	±0.4 % FS
<b>OPTION Higher probe accuracy:</b>			±0.1 % / ±0.2 % FS	±0.1 % / ±0.2 % FS	±0.1 % / ±0.2 % FS
<b>GMSD ... - K31</b>					
Art. no.	601039	601148	601154	601170	601183
<b>GMSD ... - K51</b>					
Art. no.	601038	601149	601157	601171	601184

## ABSOLUTE PRESSURE SENSORS

for absolute pressure measuring (one terminal is without functionality)

	GMSD 1,3 BA ..	GMSD 2 BA ..	GMSD 7 BA ..
<b>Measuring range:</b>	0 ... 1300 mbar abs.	0 ... 2000 mbar abs.	0.00 ... 7.00 bar abs.
<b>Overload:</b>	max. 4 bar abs.	max. 4 bar abs.	max. 10.34 bar abs.
<b>Resolution:</b>	1 mbar	1 mbar	10 mbar
<b>Accuracy (typ.)</b>			
<b>Hysteresis / linearity:</b>	±0.2 % FS	±0.2 % FS	±0.2 % FS
<b>Temperature influence (from 0 ... 50 °C):</b>	±0.4 % FS	±0.4 % FS	±0.4 % FS
<b>OPTION Higher probe accuracy:</b>	±0.1 % FS (hysteresis, linearity); ±0.2 % FS (temperature influence 0 ... 50 °C)		
<b>GMSD ... - K31</b>			
Art. no.	601192	601196	601200
<b>GMSD ... - K51</b>			
Art. no.	601193	601197	601201

**Specifications:**

<b>Sensor:</b>	piezoresistive pressure sensor
<b>Pressure connection:</b>	2 connection pins for tubes 6 x 1 mm (6 mm inside-Ø and 4 mm outside-Ø)
<b>Electronics:</b>	PC board with amplifier and data memory for sensor data (measuring range / calibration etc.) integrated in sensor housing
<b>Working temperature:</b>	0 ... +50 °C
<b>Relative humidity:</b>	0 ... +95 % RH (non condensing)
<b>Storage temperature:</b>	-25 ... +70 °C
<b>Housing:</b>	ABS plastic with suspension eye, dimensions do not incl. conn. pin: 68 x 32.5 x 15 mm (H x W x D), dimensions with connection pin: 68 x 32.5 x 27.5 mm.
<b>Weight:</b>	approx. 75 g (...K51: approx. 82 g)

**Device connection**

<b>GMSD ... - K31:</b>	1.2 m PVC connection cable, screened with integral 6-pin Mini-DIN-plug, lockable
<b>GMSD ... - ex:</b>	
<b>GMSD ... - K51:</b>	1 m PVC connection cable, screened with 7-pin bayonet plug

**Scope of supply:** Device, calibration protocol, manual

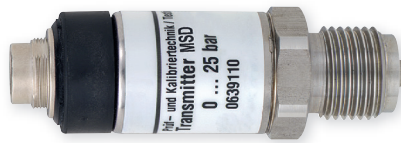
**Options:****Ex-protection****Higher probe accuracy**

by multi point calibration  
 Additional individual linearisation points are stored in sensor memory. (not possible for GMSD 2,5 MR and GMSD 25 MR!)

**ISO-WPD5**

Art. no. 602514

Certificate of calibration: 5 points ascending, 5 points descending

STAINLESS STEEL PRESSURE SENSORS G $\frac{1}{2}$  INCH

FOR AIR, AGGRESSIVE  
GASES AND LIQUIDS

FOLLOW-ON TYPE FÜR GMSD-  
STAINLESS-STEEL-SENSORS

## MSD...

Stainless steel pressure sensors without cable

Connection cable MSD-K31 or MSD-K51 has to be ordered separately (accessories)

## General:

for use with GMH31xx, GMH 51xx and GDUSB 1000

## Application:

Air, aggressive gases, aggressive liquids / water, etc.

Abs. pressure	Measuring range	Overload	Resolution
<b>MSD 1 BAE</b> Art. no. 600583	0 ... 1000 mbar abs.	max. 5 bar abs.	1 mbar
<b>MSD 2,5 BAE</b> Art. no. 600585	0 ... 2500 mbar abs.	max. 10 bar abs.	1 mbar
<b>MSD 4 BAE</b> Art. no. 600587	0 ... 4000 mbar abs.	max. 17 bar abs.	1 mbar
<b>MSD 6 BAE</b> Art. no. 600592	0 ... 6000 mbar abs.	max. 35 bar abs.	1 mbar
<b>MSD 10 BAE</b> Art. no. 600594	0 ... 10.00 bar abs.	max. 35 bar abs.	10 mbar
<b>MSD 16 BAE</b> Art. no. 600596	0 ... 16.00 bar abs.	max. 80 bar abs.	10 mbar
<b>MSD 25 BAE</b> Art. no. 600598	0 ... 25.00 bar abs.	max. 50 bar abs.	10 mbar
Rel. pressure	Measuring range	Overload	Resolution
<b>MSD 100 MRE</b> Art. no. 600600	0.0 ... 100.0 mbar rel.	max. 1 bar rel.	0,1 mbar
<b>MSD 250 MRE</b> Art. no. 600604	0.0 ... 250.0 mbar rel.	max. 2 bar rel.	0,1 mbar
<b>MSD 400 MRE</b> Art. no. 600606	0.0 ... 400.0 mbar rel.	max. 2 bar rel.	0,1 mbar
<b>MSD -1/1.5 BRE</b> Art. no. 600608	-1000 ... +1500 mbar rel.	max. 10 bar rel.	1 mbar
<b>MSD -1/3 BRE</b> Art. no. 600610	-1000 ... +3000 mbar rel.	max. 17 bar rel.	1 mbar
<b>MSD 1 BRE</b> Art. no. 600612	0 ... 1000 mbar rel.	max. 5 bar rel.	1 mbar
<b>MSD 2,5 BRE</b> Art. no. 600614	0 ... 2500 mbar rel.	max. 10 bar rel.	1 mbar
<b>MSD 4 BRE</b> Art. no. 600616	0 ... 4000 mbar rel.	max. 17 bar rel.	1 mbar
<b>MSD 6 BRE</b> Art. no. 600618	0 ... 6000 mbar rel.	max. 35 bar rel.	1 mbar
<b>MSD 10 BRE</b> Art. no. 600620	0.00 ... 10.00 bar rel.	max. 35 bar rel.	10 mbar
<b>MSD 25 BRE</b> Art. no. 600622	0.00 ... 25.00 bar rel.	max. 50 bar rel.	10 mbar
<b>MSD 40 BRE</b> Art. no. 600624	0.00 ... 40.00 bar rel.	max. 80 bar rel.	10 mbar
<b>MSD 60 BRE</b> Art. no. 600627	0.00 ... 60.00 bar rel.	max. 120 bar rel.	10 mbar
<b>MSD 100 BRE</b> Art. no. 600629	0.0 ... 100.0 bar rel.	max. 200 bar rel.	0,1 bar
<b>MSD 160 BRE</b> Art. no. 600631	0.0 ... 160.0 bar rel.	max. 320 bar rel.	0,1 bar
<b>MSD 250 BRE</b> Art. no. 600633	0.0 ... 250.0 bar rel.	max. 500 bar rel.	0,1 bar
<b>MSD 400 BRE</b> Art. no. 600635	0.0 ... 400.0 bar rel.	max. 800 bar rel.	0,1 bar
<b>MSD 600 BRE</b> Art. no. 600637	0.0 ... 600.0 bar rel.	max. 1200 bar rel.	0,1 bar
<b>MSD 1000 BRE</b> Art. no. 600637	0 ... 1000 bar rel.	max. 1500 bar rel.	1 bar

## MSD 25 MRE

## MSD -20/60 MRE

not suited for aggressive media, water, etc., no Ex design and no option „higher accuracy“ available

Rel. pressure	Measuring range	Overload	Resolution
<b>MSD 25 MRE</b> Art. no. 606904	0.00 ... 25.00 mbar	max. 500 mbar	0.01 mbar
<b>MSD -20/60 MRE</b> Art. no. 606765	-20.00 ... +60.00 mbar	max. 500 mbar	0.01 mbar

## Specifications:

**Sensor:** stainless steel pressure sensor (parts coming into 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 or slope)

**Electronics:** PC board with amplifier and data memory for sensor data (meas. range, etc.) integrated in sensor housing, sealed sensor electronic

**Reaction time:** 1 ms

**Medium temperature:** -25 ... +100 °C (compensated range: 0 ... 80 °C);  
-25 ... +80 °C at MSD 25 MRE and MSD -20/60 MRE

**Working temperature:** -20 ... +80 °C

**Storage temperature:** -40 ... +80 °C

**Pressure connection:** connection thread G1/2B (other on request).

**Cable connection:** M16 built-in plug

**Housing:** CrNi-steel or elgiloy (parts coming into contact with media)  
length: 88.5 mm, Ø 27 mm, approx. 220 g

**Protection class:** IP 67 (sensor)

**Scope of supply:** pressure sensor, calibration protocol, manual;  
**Note: Connection cable has to be ordered separately.**

## Options:

**Higher probe accuracy**  
by multi point calibration. Additional individual linearisation points are stored in sensor memory. (not available for MSD 25 MRE and MSD -20 / 60 MRE)

## ISO-WPD5

Art. no. 602514

Certificate of calibration: 5 points ascending, 5 points descending

## Accessories:

## MSD-K31

Art. no. 600657

Connection cable for use with GMH 31xx / GDUSB 1000

1.2 m PVC connection cable, screened with integral 6-pin Mini-DIN-plug and M16-socket (IP 54)

## MSD-K51

Art. no. 603809

Connection cable for use with GMH 51xx

1 m PVC connection cable, screened with 7-pin bayonet plug cable and plug connection water proof acc. to IP 67 and M16-socket

## MSD-K31-xx

Longer connection cable (as MSD-K31); Length 2 ... 10 m please specify

## MSD-K51-xx

Longer connection cable (as MSD-K51); Length 2 ... 10 m please specify

## Ex-Protection:



**MSD ... - ex**  
Stainless steel pressure sensor (without cable) with Ex-protection

## MSD-K31 - ex

Art. no. 600871

Connection cable with Ex-protection

Connection to GMH 31xx, 1 m connection cable, screened with integral 6-pin Mini-DIN-plug and M12-socket



## HAND-HELD MEASURING DEVICES WITH INTEGRATED SENSOR



## HIGHLIGHTS:

- Integrated pressure sensor
- Sturdy metal connection pin
- Tare function / zero point offset
- Model with protection available

## ADDITIONAL FEATURES GMH 3181-...:



Type specific data:	GMH 3161 - ...	GMH 3181 - ...	GMH 3161 - ... -EX	GMH 3181 - ... -EX
<b>Display:</b>	2 x 4½-digit LCD	2 x 4½-digit LCD	2 x 4½-digit LCD	2 x 4½-digit LCD
<b>Sensor:</b>	Piezoresistive differential pressure sensor internally built into the instrument. Suitable for air and non-aggressive gases. (Note: Not suited for water!)			
<b>Pressure connection:</b>	2 pressure port for universal 6 x 1 mm (4 mm hose inside diameter) or 8 x 1 mm (6 mm hose inside diameter) plastic tubing			
<b>Output:</b>	interface	interface or AAG	interface*	interface or AAG*
<b>Serial interface:</b>	x	x	x	x
<b>AnalogOutput:</b>	--	0 ... 1 V, freely adjustable (resolution 12 bit)	--	0 ... 1 V, freely adjustable (resolution 12 bit)
<b>Power supply:</b>	9 V battery, d.c. connector suitable 9V-battery, d.c. connector for external 10.5 ... 12 V direct voltage supply. (suitable power supply: GNG10/3000)			
<b>Sensor adjustment:</b>	digital offset and scale input			
<b>Peak value memory:</b>	--	≥1 ms	--	≥1 ms
<b>Measuring cycle:</b>	„slow“ 4 measurements / s	4 measurements / s	4 measurements / s	4 measurements / s
	„fast“ (with filter) --	≥1000 measurements / s	--	≥1000 measurements / s
	„peak-detect“ --	≥1000 measurements / s The min- / max- value memory stored unfiltered pressure peaks ≥1 ms.	--	≥1000 measurements / s The min- / max- value memory stored unfiltered pressure peaks ≥1 ms.
<b>Averaging function:</b>	--	x	--	x
<b>Battery life:</b>	approx. 500 h	approx. 500 h (slow mode) approx. 120 h (fast = 1000 Hz)	approx. 500 h	approx. 500 h (slow mode) approx. 120 h (fast = 1000 Hz)
<b>Operating conditions:</b>	-25 ... +50 °C, 0 ... +95 % RH (non condensing)		-10 ... +50 °C, 0 ... 95 % RH (non condensing)	
<b>Housing:</b>	142 x 71 x 26 mm (H x W x D) (without pressure connection pin - pin approx. 16 mm protruding at front side of device), Impact-resistant ABS plastic housing, membrane keyboard, transparent panel, integrated pop-up clip			
<b>Weight:</b>	approx. 165 g	approx. 170 g	approx. 205 g (incl. leather case)	approx. 210 g (incl. leather case)
<b>Scope of supply:</b>	Device, battery, calibration protocol, manual	Device, battery, calibration protocol, manual	Device, battery, manual	Device, battery, manual

\* Please refer to note to Ex-design types (p. 84)

## Additional functions:

**Serial interface:** direct connection to RS232 or USB interface of a PC via electrically isolated interface adapter GRS 3100, GRS 3105 or USB 3100 N.

## GMH 3181:

**Low power logger mode:** (only in measuring cycle „slow“) Only one measurement carried out at the end of the respective logger cycle. The battery life is considerably prolonged. For long-term recordings (e.g. leaktest).

**Averaging function:** integrates the meas. values during a selectable period of time and then calculates the average display value.

**Controlling function:** with the help of the switching module GAM3000 (optionally) electric equipment can be switched on/off or alarm monitored (see accessories)

## Logger functions:

- manual: 99 data sets

- cyclic: 10000 data sets (max. 64 recording sequences),  
adjustable cycle time: 1 ... 3600 s

## Note to the pressure unit selection: (information for all GMH31xx):

The choice of a specific pressure unit is possible, if its whole measuring range is displayable within the display of the device and the sensor is supporting these resolution.

## FINEST MANOMETER / MANOMETER FOR OVER / UNDER PRESSURE AND PRESSURE DIFFERENCE

**GMH 3161-002**

Art. no. 600469

Device -500.0 ... +500.0 Pa ( $\pm 500.0$  Pa<sup>2</sup>)**GMH 3181-002**

Art. no. 600470

Device -500.0 ... +500.0 Pa ( $\pm 500.0$  Pa<sup>2</sup>, Logger)**GMH 3161-002-EX**

Art. no. 606685

Device type with Ex-protection

**GMH 3181-002-EX**

Art. no. 609063

Device type with Ex-protection

**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<sub>2</sub>O**Accuracy: (typ. values)****Hysteresis and linearity:** 0.3 % FS**Temperature-influence from 0 - 50 °C:** 0.4 % FS**Option higher accuracy available:** no**Pressure connection:** 2

For type specific data please refer to page 90.

\*1 measuring range possible by changing the pressure connection ports

\*2 without changing the pressure connection ports

**GMH 3161-01**

Art. no. 600397

Device -100 ... 2500 Pa ( $\pm 2500$  Pa<sup>2</sup>)**GMH 3181-01**

Art. no. 600411

Device -100 ... 2500 Pa ( $\pm 2500$  Pa<sup>2</sup>), Logger**GMH 3161-07H**

Art. no. 600405

Device -1.00 ... 70.00 mbar ( $\pm 70.00$  mbar<sup>2</sup>)**GMH 3181-07H**

Art. no. 600417

Device -1.00 ... 70.00 mbar ( $\pm 70.00$  mbar<sup>2</sup>), Logger**GMH 3161-01-EX**

Art. no. 607458

Device type with Ex-protection

**GMH 3181-01-EX**

Art. no. 600796

Device type with Ex-protection

**GMH 3161-07H-EX**

Art. no. 610042

Device type with Ex-protection

**GMH 3181-07H-EX**

Art. no. 604074

Device type with Ex-protection

**Specifications:****Measuring range:** -100 ... 2500 Pa (-1.00 ... 25.00 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<sub>2</sub>O bar, Pa, kPa, PSI, mmHg, mH<sub>2</sub>O**Accuracy: (typ. values)****Hysteresis and linearity:**  $\pm 0.3$  % FS  $\pm 0.1$  % FS**Temperature-influence from 0 - 50 °C:**  $\pm 0.4$  % FS  $\pm 0.4$  % FS**Option higher accuracy available:** no already integrated**Pressure connection:** 2

For type specific data please refer to page 90.

\*1 measuring range possible by changing the pressure connection ports

**GMH 3161-07**

Art. no. 600400

Device -10.0 ... +350.0 mbar ( $\pm 350.0$  mbar<sup>2</sup>)**GMH 3181-07**

Art. no. 600413

Device -10.0 ... +350.0 mbar ( $\pm 350.0$  mbar<sup>2</sup>), Logger**GMH 3161-07B**

Art. no. 600402

Device -10.0 ... 420.0 mbar (-7.5 ... 315.0 mmHg)

**GMH 3181-07B**

Art. no. 600415

Device -10.0 ... 420.0 mbar (-7.5 ... 315.0 mmHg), Logger

**GMH 3161-07-EX**

Art. no. 604435

Device type with Ex-protection

**GMH 3181-07-EX**

Art. no. 601386

Device type with Ex-protection

**GMH 3161-07B-EX**

Art. no. 609064

Device type with Ex-protection

**GMH 3181-07B-EX**

Art. no. 604724

Device type with Ex-protection

**Specifications:****Measuring range:** -10.0 ... +350.0 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<sub>2</sub>O bar, kPa, MPa, PSI, mH<sub>2</sub>O**Accuracy: (typ. values)****Hysteresis and linearity:**  $\pm 0.2$  % FS  $\pm 0.1$  % FS ( $\pm 0.1$  % FS)<sup>3</sup>**Temperature-influence from 0 - 50 °C:**  $\pm 0.4$  % FS  $\pm 0.4$  % FS**Option higher accuracy available:** yes already integrated**Pressure connection:** 2

For type specific data please refer to page 90.

\*1 measuring range possible by changing the pressure connection ports

\*2 without changing the pressure connection ports

\*3 Option higher accuracy

**Special design type:****Ex-protection (II 2 G Ex ib IIC T4 Gb)**  
Device type with Ex-protection

HANDHELD INSTRUMENT

DISPLAY / CONTROLLER

LOGGER- / BUS SYSTEMS

TRANSMITTER

TEMPERATURE PROBE

ALARM / PROTECTION, LEVEL

**MANOMETER FOR OVER/UNDER PRESSURE AND PRESSURE DIFFERENCE**



**GMH 3161-13**

Art. no. 600409  
Device -100 ... 2000 mbar ( $\pm 2000$  mbar<sup>1</sup>)

**GMH 3181-13**

Art. no. 600421  
Device -100 ... 2000 mbar ( $\pm 2000$  mbar<sup>1</sup>), with data logger

**GMH 3161-13-EX**

Art. no. 600647  
Device type with Ex-protection

**GMH 3181-13-EX**

Art. no. 602263  
Device type with Ex-protection

Specifications:	
<b>Measuring range:</b>	-100 ... 2000 mbar (optional: -1000 ... 2000 mbar)
<b>Overload:</b>	max. 4 bar
<b>Resolution:</b>	1 mbar
<b>Additional pressure units:</b>	bar, kPa, MPa, PSI, mmHg, mH <sub>2</sub> O
<b>Accuracy: (typ. values)</b>	
<b>Hysteresis and linearity:</b>	$\pm 0,2$ % FS; ( $\pm 0,1$ % FS)*3
<b>Temperature-influence from 0 - 50 °C:</b>	$\pm 0,4$ % FS
<b>Option higher accuracy available:</b>	ja
<b>Pressure connection:</b>	2
<b>Option:</b>	
<b>MB -1...2 BAR</b>	Measuring range:-1000 ... 2000 mbar *2

For type specific data please refer to page 90.  
\*1 measuring range possible by changing the pressure connection ports  
\*2 without changing the pressure connection ports  
\*3 Option higher accuracy

**VAKUUM- BZW. BAROMETER**



**FÜR ABSOLUT-DRUCKMESSUNG**

**GMH 3161-12**

Art. no. 600407  
Device 0 ... 1300 mbar abs.

**GMH 3181-12**

Art. no. 600419  
Device 0 ... 1300 mbar abs., with data logger

**GMH 3161-12-EX**

Art. no. 610043  
Device type with Ex-protection

**GMH 3181-12-EX**

Art. no. 610044  
Device type with Ex-protection

Specifications:	
<b>Measuring range:</b>	0 ... 1300 mbar abs.
<b>Overload:</b>	max. 4 bar abs.
<b>Resolution:</b>	1 mbar
<b>Pressure units:</b>	mbar, bar, kPa, MPa, PSI, mmHg, mH <sub>2</sub> O
<b>Accuracy: (typ. values)</b>	
<b>Hysteresis and linearity:</b>	$\pm 0,2$ % FS; ( $\pm 0,1$ % FS)*3
<b>Temperature-influence from 0 - 50 °C:</b>	$\pm 0,4$ % FS
<b>Option higher accuracy available:</b>	ja
<b>Pressure connection:</b>	1
<b>Sonderfunktion:</b>	
<b>SealLevel-Korrektur:</b>	Der barometrische Luftdruck kann auch auf Meereshöhe „Null“ bezogen angezeigt werden. (Die Luftdruckkorrektur erfolgt durch Eingabe der Höhe über „Null“ in Meter)

For type specific data please refer to page 90.  
\*3 Option higher accuracy

**Special design type:** **Ex-protection (II 2 G Ex ib IIC T4 Gb)**  
Device type with Ex-protection

**COMPLETE SOLUTIONS**



**GMH 3161-07-WPD5**

Art. no. 602684  
Complete Solution incl. certificate of calibration ISO-WPD5 (5 points ascending / descending) and case GKK 3000.

**GMH 3161-12-WPD5**

Art. no. 602685  
Complete Solution incl. certificate of calibration ISO-WPD5 (5 points ascending / descending) and case GKK 3000.

**GMH 3161-13-WPD5**

Art. no. 602686  
Complete Solution incl. certificate of calibration ISO-WPD5 (5 points ascending / descending) and case GKK 3000.

**ACCESSORIES**

**Options:**

**Higher sensor accuracy**  
by multi point calibration  
Note: not possible for all device types!

**ISO-WPD5**  
Art. no. 602514  
ISO Certificate of calibration: 5 points increase, 5 points decrease.

**ISO-WPD10**  
Art. no. 602565  
ISO Certificate of calibration: 10 points increase, 10 points decrease.

**Accessories and spare parts:**

**GNG 10/3000**  
Art. no. 600273  
plug-in power supply

**GRS 3100**  
Art. no. 601097  
interface converter, RS232, electrically isolated

**USB 3100 N**  
Art. no. 601092  
interface converter, USB, electrically isolated

**GDZ-01**  
Art. no. 601541  
PVC-tube (5 bar) 6/4 (6 mm outside-Ø, 4 mm inside-Ø)

**GDZ-08**  
Art. no. 601555  
Double adapter for 6/4 tube to 6/4 tube

**GDZ-18**  
Art. no. 601576  
tube clamp for 6/4 tube

**GDZ-21**  
Art. no. 601582  
T-piece for 6/4 tubes

**GKK 3000**  
Art. no. 601048  
case (275 x 229 x 83 mm) with cut-outs for GMH3xxx  
for miscellaneous accessories p.r.t. page 90

## FINE MANOMETER



FOR OVER/UNDER PRESSURE  
OR PRESSURE DIFFERENCE

## GDH 200-07

Art. no. 601254

0.00 ... 19.99 / 199.9 mbar ( $\pm 199.9$  mbar) \*1

## Functions:

- Differential and relative pressure measurement
- Autorange
- Excellent zero point stabilisation
- Manual slope adjustment
- 4 selectable measuring units: Pa, mbar, mmHg, PSI
- automatic off-function: 1 ... 120 min

## Specifications:

<b>Measuring range:</b>	0.00 ... 19.99 or 20.0 ... 199.9 mbar (hPa) 0.00 ... 19.99 or 20.0 ... 150.0 mmHg 0.000 ... 1.999 PSI / 0 ... 1999 Pa
<b>Resolution:</b>	automatic change 0.1 / 0.01
<b>Overload:</b>	max. 500 mbar
<b>Accuracy:</b>	(at nominal temperature = 25 °C and automatic zero point-adjustment)
<b>Measuring range: up to 200 mbar</b>	$\pm 0.2$ % f.s. hysteresis and linearity, $\pm 0.4$ % f.s. temperature drift from 0 ... 50 °C
<b>Measuring range: up to 20 mbar</b>	$\pm 1$ % f.s. hysteresis and linearity, $\pm 2$ % f.s. temperature drift from 0 ... 50 °C
<b>Sensor:</b>	piezoresistive relative pressure sensor
<b>Pressure connection:</b>	2 pressure port sockets made of nickel-plated brass, for pressure tubings 6 x 1 mm (4 mm inner-diameter)
<b>Working conditions:</b>	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
<b>Display:</b>	3½ digit LCD display, approx. 13 mm high
<b>Pushbuttons:</b>	3 membrane keys
<b>Power supply:</b>	9 V battery
<b>Battery life:</b>	approx. 1200 h
<b>Housing:</b>	impact resistant ABS plastic housing, approx. 106 x 67 x 30 mm (H x W x D) +16 mm pressure port sockets
<b>Weight:</b>	approx. 135 g (incl. battery)
<b>Zero point-adjustment:</b>	automatically
<b>Slope-adjustment:</b>	manually
<b>Scope of supply:</b>	Device, battery, calibration protocol, manual

\*1 measuring range possible by changing the pressure connection ports  
Tubes, clamps, adapters, accessories, etc. p.r.t. page 86

## MANOMETER



FOR OVER/UNDER PRESSURE  
OR PRESSURE DIFFERENCE

## GDH 200-13

Art. no. 601256

0.0 ... 199.9 / 1999 mbar ( $\pm 1999$  mbar) \*1

## Functions:

- Differential and relative pressure measurement
- Autorange
- Excellent zero point stabilisation
- Manual slope adjustment
- 3 selectable measuring units: mbar, mmHg, PSI
- automatic off-function: 1 ... 120 min

## Specifications:

<b>Measuring range:</b>	0.0 ... 199.9 or 200 ... 1999 mbar (hPa) 0.0 ... 199.9 or 200 ... 1500 mmHg 0.00 ... 19.99 PSI
<b>Resolution:</b>	automatic change 1 / 0.1
<b>Overload:</b>	max. 4000 mbar
<b>Accuracy:</b>	(at nominal temperature = 25 °C and automatic zero point-adjustment)
<b>Measuring range: up to 2000 mbar</b>	$\pm 0.2$ % f.s. hysteresis and linearity, $\pm 0.4$ % f.s. temperature drift from 0 ... 50 °C
<b>Measuring range: up to 200 mbar</b>	$\pm 1$ % f.s. hysteresis and linearity, $\pm 2$ % f.s. temperature drift from 0 ... 50 °C
<b>Sensor:</b>	piezoresistive relative pressure sensor
<b>Pressure connection:</b>	2 pressure port sockets made of nickel-plated brass, for pressure tubings 6 x 1 mm (4 mm inner-diameter)
<b>Working conditions:</b>	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
<b>Display:</b>	3½ digit LCD display, approx. 13 mm high
<b>Pushbuttons:</b>	3 membrane keys
<b>Power supply:</b>	9 V battery
<b>Battery life:</b>	approx. 1200 h
<b>Housing:</b>	impact resistant ABS plastic housing, approx. 106 x 67 x 30 mm (H x W x D) +16 mm pressure port sockets
<b>Weight:</b>	approx. 135 g (incl. battery)
<b>Zero point-adjustment:</b>	automatically
<b>Slope-adjustment:</b>	manually
<b>Scope of supply:</b>	Device, battery, calibration protocol, manual

\*1 measuring range possible by changing the pressure connection ports  
Tubes, clamps, adapters, accessories, etc. p.r.t. page 86

VAKUUM- / BAROMETER OR  
MANOMETER

FOR ABSOLUTE PRESSURE

## GDH 200-14

Art. no. 601258

0 ... 11000 mbar abs.

## Functions:

- Sea level-adjustment possible
- suitable for relative pressure measurement (-1 ... 10 bar) by use the zero function
- Manual slope and offset adjustment
- 4 selectable measuring units: mbar, mmHg, bar, PSI
- automatic off-function: 1 ... 120 min

## Specifications:

<b>Measuring range:</b>	0 ... 11000 mbar (hPa) abs. 0 ... 8250 mmHg abs. 0.000 ... 11.000 bar abs. 0.00 ... 160.00 PSI abs.
<b>Resolution:</b>	1 mbar, 1 mmHg, 0.001 bar, 0.02 PSI
<b>Overload:</b>	max. 13 bar abs.
<b>Accuracy:</b> (at nominal temperature = 25 °C)	$\pm 3$ mbar or 0.10 % of m.v. (whichever is higher); $\pm 0.3$ % f.s. temperature drift from 0 ... 50 °C
<b>Sensor:</b>	piezoresistive absolute pressure sensor
<b>Pressure connection:</b>	2 pressure port sockets made of nickel-plated brass, for pressure tubings 6 x 1 mm (4 mm inner-diameter)
<b>Working conditions:</b>	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
<b>Display:</b>	4½ digit LCD display, approx. 12 mm high
<b>Pushbuttons:</b>	3 membrane keys
<b>Power supply:</b>	9 V battery
<b>Battery life:</b>	approx. 7500 h
<b>Sea level correction:</b>	Barometric values can be converted to sea level (therefore the input of the current altitude is needed).
<b>Housing:</b>	impact resistant ABS plastic housing, approx. 106 x 67 x 30 mm (H x W x D) +16 mm pressure port sockets
<b>Weight:</b>	approx. 135 g (incl. battery)
<b>Zero point-adjustment:</b>	manually
<b>Slope-adjustment:</b>	manually
<b>Scope of supply:</b>	Device, battery, calibration protocol, manual

Tubes, clamps, adapters, accessories, etc. p.r.t. page 86

BAROMETER



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**GPB 3300**

Art. no. 600129  
300.0 ... 1100.0 mbar abs.

**Functions:**

- Manual offset and slope adjustment
- Sea level-adjustment possible
- 2 measuring units selectable: mbar, mmHg
- Auto-off-function: 1 ... 120 min

**Specifications:**

<b>Measuring range:</b>	300.0 ... 1100.0 mbar (hPa) abs. 225.0 ... 825.0 mmHg abs.
<b>Max. Overload:</b>	4000 mbar or 3000 mmHg
<b>Accuracy: (at nominal temperature)</b>	±2.0 mbar (typ. bei 0 ... 50 °C)
<b>Sensor:</b>	absolute pressure sensor, integrated in housing
<b>Nominal temperature:</b>	25 °C
<b>Operating temperature:</b>	-25 ... +50 °C, 0 ... 95 % RH (non-condensing)
<b>Display:</b>	4½-digit, 12 mm high LCD-display
<b>Pushbuttons:</b>	3 membrane key for ON/OFF, min-/max-value memory, tara, etc.
<b>Power supply:</b>	9 V battery
<b>Battery life:</b>	approx. 5000 h
<b>Zero point-adjustment:</b>	manually
<b>Slope-adjustment:</b>	manually
<b>Sea level correction:</b>	Barometric values can be converted to sea level (therefore the input of the current altitude is needed).
<b>Housing:</b>	impact resistant ABS housing
<b>Dimensions:</b>	approx. 106 x 67 x 30 mm (H x W x D)
<b>Weight:</b>	approx. 135 g (incl. battery)
<b>Scope of supply:</b>	Device, battery, manual

**Accessories and spare parts:**

- GKK 252**  
Art. no. 601056  
small case (235 x 185 x 48 mm) with foam lining
- GB 9 V**  
Art. no. 601115  
spare battery

ALTIMETER / BAROMETER / THERMOMETER / PRECISION BAROMETER



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**GTD 1100**

Art. no. 600132  
300.0 ... 1100.0 mbar abs. + Altimeter

**General:**

Device for simple determination of a building size (steeple, skyscrapers, bridges, etc.)

**Application:**

hiking, hang gliding, cycling, motorsports, etc.

**Specifications:**

<b>Measuring range:</b>	
<b>Temperature:</b>	-10.0 ... +50.0 °C. or 14.0 ... +122.0 °F.
<b>Pressure:</b>	300.0 ... 1100.0 mbar abs. or 225.0 ... 825.0 mmHg abs.
<b>High:</b>	-500 ... -200 m, res. 1 m or -1640 ... -655 ft, res. ~5 ft -200 ... +2000 m, res. 0.5 m or -654 ... +1999 ft, res. ~2 ft 2000 ... 9000 m, res. 1 m or 2000 ... 19999 ft, res. ~5 ft
<b>Measuring units:</b>	hPa / mbar, mmHg, °C, °F, m, ft
<b>Max. Overload:</b>	pressure: 4000 mbar or 3000 mmHg
<b>Accuracy: (at nominal temperature = 25 °C)</b>	
<b>Temperature:</b>	±1% FS ±1 digit
<b>Absolute pressure:</b>	±1.5 mbar ±1 digit (750 ... 1100 mbar), with certificate of calibration: ±0.5 mbar ±1 digit
<b>Sensor:</b>	absolute pressure sensor, integrated in housing
<b>Operating conditions:</b>	-10 ... +50 °C; 0 ... 80 % RH (non condensing)
<b>Storage temperature:</b>	-20 ... +70 °C
<b>Measuring frequency:</b>	1 measuring / s
<b>Display:</b>	approx. 12 mm high, 4½-digit LCD-display
<b>Sum function:</b>	The covered altitude can be displayed (ascent, descent, total)
<b>Tendency indicator:</b>	Air pressure rising/falling
<b>Sea level correction:</b>	Barometric values can be converted to sea level (therefore the input of the current altitude is needed).
<b>Pushbuttons:</b>	keypad (3 push-buttons) for On/off, min-/max-value, tara-function, zero-, slope-, and sea level-adjustment slide switch for unit selection.

FOR PROFESSIONAL USAGE IN MEASUREMENT TECHNOLOGY AS WELL AS IN SPARE TIME SPORTS

<b>Power supply:</b>	9 V battery
<b>Battery life:</b>	approx. 6.000 h
<b>System notifications:</b>	permanent self-diagnosis and error indication
<b>Housing:</b>	impact resistant ABS housing
<b>Dimensions:</b>	approx. 106 x 67 x 30 mm (H x W x D)
<b>Weight:</b>	approx. 135 g (incl. battery)
<b>Scope of supply:</b>	Device, battery, manual

**Functions:**

- manual offset and slope-adjustment
- sea level-adjustment possible
- tendency-meter, summing-function (ascendency, descendency, overall)
- over 6.000 operating hours

**Accessories and spare parts:**

- GB 9 V**  
Art. no. 601115  
Spare battery
  - ISO-WPD 5**  
Art. no. 602514  
5 points rising, 5 points falling
  - GKK 252**  
Art. no. 601056  
Small case (235 x 185 x 48 mm) with foam lining
- Calibration certificate, p.r.t. page 15

HANDHELD INSTRUMENT | DISPLAY / CONTROLLER | LOGGER- / BUS SYSTEMS | TRANSMITTER | TEMPERATURE PROBE | ALARM / PROTECTION, LEVEL