HANDHELD INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM. / PROTECTION, LEVEL

# PRESSURE



**R. B. M. Ltd.**
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| | 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 GDH 200-11 | GDUSB 1000 |
|---|---|---|---|---|---|---|---|---|---|
| **APPLICATION:** | | | | | | | | | |
| 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 | | ● ● ● | ● ● | ● | ● | | | | |
| **EQUIPMENT:** | | | | | | | | | |
| Plug-in probe | 1 1 2 | 1 1 2 | | | | | | | 1 |
| Min/Max, Zero | ● ● ● | ● ● ● | ● ● | ● | ● | ● ● | ● | ● ● ● | ● |
| Alarm / Data logger / Analog output | ● ● | ● ● | ● | | ● | | | | |
| **DEVICE INFORMATION:** | | | | | | | | | |
| Catalogue page | **Page 83** | **Page 84 / 85** | **Page 92** | **Page 91 - 93** | **Page 91 - 93** | **Page 93** | **Page 94** | **Page 95** | **Page 87** |

# WATER-PROOF HANDHELD DEVICE FOR PRESSURE MEASUREMENT WITH EXTERNAL CHANGEABLE PROBES

*GMH 5130 / 50*

*GMH 5155*

**WATER-PROOF DEVICE AND PLUG-IN CONNECTIONS**

### 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:

**ALARM**   **LOGG**

### ADDITIONAL FUNCTIONS GMH 5155:

○ 2 GMSD/MSD-probes connectable.

○ Difference measurement of two probes

**SUITABLE PRESSURE PROBES**
**P. R. T. PAGE 88 / 89**

## GMH 5130
*Art. no. 600027*
Waterproof handheld device for pressure measurement with 1 sensor connection, without sensor

## GMH 5150
*Art. no. 600031*
Waterproof handheld device for pressure measurement with 1 sensor connection, analog output and data logger, without sensor

## GMH 5155
*Art. no. 600033*
Waterproof handheld device for pressure measurement 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 |
|---|---|
| **Sensor connections:** | 1 |
| **Suitable probes:** | GMSD / MSD sensors, available ranges (resolutions) from -1.999 ... 2.500 mbar (0.001 mbar) to 0 ... 1000 bar (1 bar) |
| **Display range max.:** | -19999 ... +19999 digit |
| **Display unit:** * | depends on measuring range selection and sensor: 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 connector |
| **Output / external supply:** | 4-pole bayonet connector for serial interface, supply (with accessories: USB adapter USB 5100) |
| **Display:** | 4 ½ digit 7-segment, illuminated (white) |
| **Operating conditions:** | -25 ... +50 °C, 0 ... 95 % RH (non-condensing) |
| **Storage temperature:** | -25 ... +70 °C |
| **Power supply:** | 2 x AAA-battery, battery life 500 h (without illumination, 4 measurings / s) |
| **Housing:** | impact resistant ABS housing with pop-up clip |
| **Protection class:** | IP65 / IP67 |
| **Dimensions:** | 160 x 86 x 37 mm (H x W x D) incl. silicone protection cover (red) |
| **Weight:** | approx. 250 g incl. battery and protection cover |
| **Scope of supply:** | Device, battery, calibration protocol, manual |

| Specifications: | GMH 5150 and GMH 5155 |
|---|---|
| **Sensor connections:** | 1, GMH 5155: 2 |
| **Suitable probes:** | GMSD / MSD sensors, available ranges (resolutions) from -1.999 ... 2.500 mbar (0.001 mbar) to 0 ... 1000 bar (1 bar) |
| **Display range max.:** | -19999 ... +19999 digit |
| **Display unit:** | depends on measuring range selection and sensor: 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 connector GMH 5155 only: 2 x 7-pole bayonet connector |
| **Output / external supply:** | 4-pole bayonet connector for serial interface, supply (with accessories: USB adapter USB 5100) |
| **Analog output:** | 0 ... 1 V, freely adjustable, connection with 4-pole bayonet connector, resolution 12 bit |
| **Display:** | 4 ½ digit 7-segment, illuminated (white) |
| **Operating conditions:** | -25 ... +50 °C, 0 ... 95 % RH (non-condensing) |
| **Storage temperature:** | -25 ... +70 °C |
| **Power supply:** | 2 x AAA-battery, battery life 500 h (without illumination, 4 measurings / s) |
| **Housing:** | impact resistant ABS housing with pop-up clip |
| **Protection class:** | IP65 / IP67 |
| **Dimensions:** | 160 x 86 x 37 mm (H x W x D) incl. silicone protection cover (red) |
| **Weight:** | approx. 250 g incl. battery and protection cover |
| **Scope of supply:** | 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 intervall 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.*

**HANDHELD INSTRUMENTS**

## ACCESSORIES

### Accessories and spare parts:

**GMSD ... - K51**
pressure sensors (p.r.t. page 87) 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 88) Application field: air, aggressive gases for over / under pressure and relative pressure meas. or absolute pressure meas.

**MSD-K51**
*Art. no. 603809*
Connecting cable for MSD sensor to GHM 51xx, 1 m
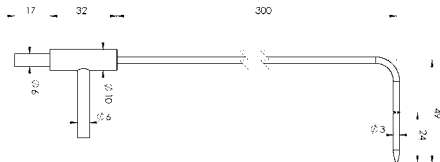
**Prandtl-Staurohr**
*Art. no. 604150*
(made of stainless steel)
for air velocity / flow volume measurement
Ø = 3 mm, NL = 300 mm, max. 600 °C
*GMSD 2,5 MR-K51 or GMSD 25 MR-K51 are required*

**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*
Measuring data acquisition software for EASYBus & GMH
(p.r.t. page 109)

**GSOFT 3050**
*Art. no. 601336*
Windows software for GMH 3000 and GMH 5000 with logger for operation of logger devices (p.r.t. page 110)

**USB 5100**
*Art. no. 601095*
Interface converter GMH 5xxx <=>PC

**GNG 5 / 5000**
*Art. no. 602287*
Plug in power supply for devices of the series GMH 5XXX
(p.r.t. page 115)

**GKK 3500**
*Art. no. 601052*
Device case soft lining e.g. for 2x GMH 3000 or 5000
(394 x 294 x 106 mm)

## HAND-HELD PRESSURE MEASURING DEVICE

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

### GMH 3111
*Art. no. 600374*
Hand-held pressure measuring device with 1 sensor input, without sensor

### GMH 3111-EX
*Art. no. 600380*
Hand-held pressure measuring device with 1 sensor input, without sensor, Ex

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**

| Specifications: | |
|---|---|
| **Max. display range:** | -19999 ... +19999 digit |
| **Measuring range:** | corresponding to used probe |
| **Überlast:** | corresponding to used probe |
| **Resolution:** | corresponding to used probe |
| **Accuracy: (device)** | ±0.1 % FS ±1 digit (at nominal temperature = 25 °C) |
| **Pressure units: \*** | mbar, bar, Pa, kPa, MPa, mmHg, PSI, $mH_2O$, can be selected |
| **Probe connection:** | 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. |
| **Display:** | 2 x 4½ digit LCD |
| **Output:** | Interface |
| serial interface: | direct connection to RS232 or USB interface of a PC via electrically isolated interface converter GRS 3100, GRS 3105 or USB 3100 N. |
| **Power supply:** | 9 V battery, d.c. connector for external 10.5 ... 12 V direct voltage supply. (suitable power supply: GNG10/3000) |
| **Sensor adjustment:** | digital offset and scale input |
| **Measuring cycle:** | 4 measurements / s |
| **Battery life:** | approx. 120 h |
| **Operating conditions:** | -25 ... +50 °C, 0 ... 95 % RH, **GMH 3111-EX:** -10 ... +50 °C, 0 ... 95 % RH |
| **Housing:** | impact-resistant ABS plastic housing, foil keypad, clear viewing pane; **GMH 3111 only:** integrated pop-up clip for table top or suspended use. |
| **Dimensions:** | 142 x 71 x 26 mm (H x B x D) |
| **Weight:** | approx. 150 g, **GMH3111-EX:** approx. 190 g (incl. leather case) |
| **Scope of supply:** | Device, battery, calibration protocol, manual |

**Note to Ex-design types:**

**Technical changes compared to standard instrument (valid for all GMH31xx-EX)**

**Ex qualification** ⟨Ex⟩ 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
**Please 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.

# PRESSURE MEASURING DEVICE WITH LOGGER

LOGGER FUNCTION

GMH 3151

GMH 3156

SUITABLE PRESSURE PROBES
P.R.T. PAGE 88 / 89

**HIGHLIGHTS:**

○ 4½-digit display, probes with higher reso-
lution up on request

○ Peak value memory 1000 measurments / s

○ Analog output 0 ... 1 V

○ Digital adjustmentable

○ Integrated horn

**ADDITIONAL FUNCTIONS GMH 3156:**

○ 2 GMSD/MSD-probes connectable.

○ Difference measurement of two probes

## GMH 3151
*Art. no. 600381*
Hand-held pressure measuring device with 1 sensor input, logger, without sensor

## GMH 3156
*Art. no. 600386*
Hand-held pressure measuring device with 2 sensor inputs, logger, without sensor

## GMH 3151-EX
*Art. no. 600383*
Hand-held pressure measuring device with 1 sensor input, logger, without sensor, Ex
(see previous page for information on Ex versions)

## GMH 3156-EX
*Art. no. 600394*
Hand-held pressure measuring device with 2 sensor inputs, logger, without sensor, Ex
(see previous page for information on Ex versions)

| Specifications: | |
|---|---|
| Max. display range: | -19999 ... +19999 digit |
| Measuring range: | corresponding to used probe |
| Overload: | corresponding to used probe |
| Resolution: | corresponding to used probe |
| Accuracy (device): | ±0.1 % FS ±1 digit (at nominal temperature = 25 °C) |
| Pressure units*: | mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH$_2$O, can be selected. |
| Probe connection: | 1, **GMH 3156/-EX:** 2<br>6-pin screended lockable Mini-DIN-socket(s) for GMSD/MSD-sensors. Automatic probe detection and setting of measuring range upon plugging in of probe. |
| Display: | 2 x 4½ digit LCD |
| Output: | serial interface or AAG |
|   Serial interface: | direct connection to RS232 or USB interface of a PC via electrically isolated interface converter GRS 3100, GRS 3105 or USB 3100 N. |
|   Analog output: | 0 ... 1 V, freely adjustable (resolution 12 bit) |
| Power supply: | 9 V-battery, d.c. connector *<br>for external 10.5 ... 12 V direct voltage supply.<br>(i. e. GNG10/3000) |
| Sensor adjustment: | digital offset and scale input |
| Measuring cycle: „slow" | 4 measurements / s |
| „fast" / „peak-detect" | ≥1000 measurements / s |
| peak-detect: | The min- / max- value memory stored unfiltered pressure peaks ≥1 m |

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

**HANDHELD INSTRUMENTS**

**SOFTWARE**

**ACCESSORIES**

**ALARM. / PROTECTION, LEVEL**

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

GDZ-01

GDZ-02

GDZ-03

GDZ-04

GDZ-05  GDZ-06  GDZ-08  GDZ-09  GDZ-10

GDZ-11  GDZ-12  GDZ-13  GDZ-14  GDZ-15

GDZ-16  GDZ-17  GDZ-18  GDZ-19  GDZ-20  GDZ-21  GDZ-22

GDZ-23  GDZ-27  GDZ-28  GDZ-29  GDZ-30  GDZ- 31  GDZ-32  GDZ-33  GWA 1214

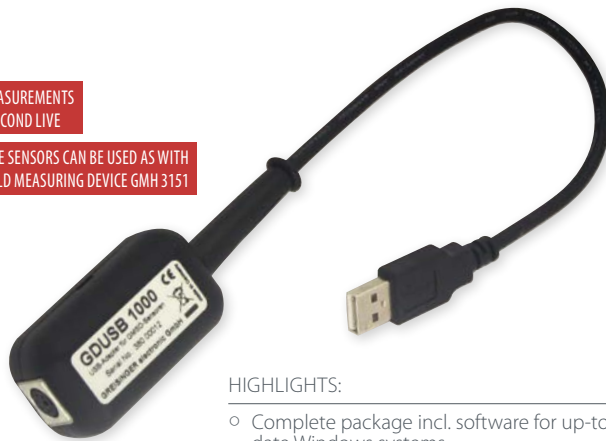**for GMH31xx, GMSD, MSD, GDHs and pressure measuring transducers**

**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. 601567*
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)

**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

**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

**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

**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**

**SUITABLE PRESSURE PROBES P.R.T. PAGE 88 / 89**

HIGHLIGHTS:

○ Complete package incl. software for up-to-date Windows systems

○ Live display before and live diagram display

## GDUSB 1000

*Art. no. 600271*

Complete package for higspeed live data aquisition for GMSD/MSD sensors incl. software for high-speed live measurement data logging GDUSB FastView

### General:

The GDUSB 1000 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 GDUSB 1000 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).
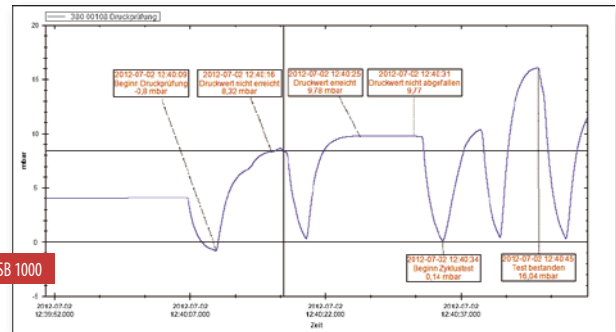
### Application:

• 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 GDUSB 1000
• Data evaluation and logging, for optimization of processes and other statistics
• Multi-channel measurements with high recoding rate
• Test setups or on-site recordings with GDUSB 1000

### Specifications:

| | |
|---|---|
| **Measuring range:** | depends on connected sensor |
| **Max. range:** | -19999 ... +19999 digit |
| **Pressure units:** | mbar, bar, Pa, kPa, MPa, mmHg, PSI, mH$_2$O, selectable, depending on connected sensor |
| **Measuring rate:** | 1000 measurements / s (= 1 ms) |
| **Accuracy:** | ±0.2 % FS (at nominal temperature = 25 °C) |
| **Recording interval:** | 1 ms (FAST mode) ... 10 s, adjustable via software |
| **Connections** | |
| PC: | standard USB plug (type A) |
| GMSD / MSD: | 6-pole screened mini-DIN socket with locking |
| **Power supply:** | supplied by USB interface |
| **Dimensions:** | 56 x 31 x 24 mm |
| **Cable length (USB):** | approx. 20 cm |
| **Weight:** | 39 g (device only) |
| **Scope of supply:** | Device, manual, software- and driver-CD |

# HIGH-SPEED LIVE MEASUREMENT



**FOR GDUSB 1000**

## GDUSB FastView

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

### Functions:

• Serveral GDUSB 1000 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.*
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## PLASTIC PRESSURE SENSORS WITH TUBE CONNECTION

FOR AIR AND NON AGGRESSIVE GASES

**General:**

for use with
**GMH 31xx, GDUSB:** 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 GMSD...

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 .. |
|---|---|---|---|---|---|
| **Measuring range:** | -1.999 ... +2.500 mbar | -19.99 ... +25.00 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. 4 bar | max. 10.34 bar |
| **Resolution:** | 0.001 mbar (0.1 Pa) | 0.01 mbar (1 Pa) | 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 |
| **Temperature influence (from 0 ... 50 °C):** | ±1.0 % FS | ±0.5 % FS | ±0.4 % FS | ±0.4 % FS | ±0.4 % FS |
| **OPTION higher probe accuracy:** | | | ±0.1 % / ±0.2 % FS | ±0.1 % / ±0.2 % FS | ±0.1 % / ±0.2 % FS |
| **GMSD ... - K31** *Art. no.* | *601039* | *601148* | *601154* | *601170* | *601183* |
| **GMSD ... - K51** *Art. no.* | *601038* | *601149* | *601157* | *601171* | *601184* |

## ABSOLUTE PRESSURE SENSORS GMSD...

for absolut pressure measuring (one terminal is without functionality)

|  | 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 |
| **Temperature influence (from 0 ... 50 °C):** | ±0.4 % FS | ±0.4 % FS | ±0.4 % FS |
| **OPTION higher probe accuracy:** | ±0.1 % FS (hysteresis., linearity); ±0.2 % FS (temperature influence 0 ... 50 °C) | | |
| **GMSD ... - K31** *Art. no.* | *601192* | *601196* | *601200* |
| **GMSD ... - K51** *Art. no.* | *601193* | *601197* | *601201* |

**Specifications:**

| | |
|---|---|
| **Sensor:** | piezoresistive pressure sensor |
| **Pressure connection:** | 2 connection pins for tubes 6 x 1 mm (6 mm inside-Ø and 4 mm outside-Ø) |
| **Electronics:** | PC board with amplifier and data memory for sensor data (measuring range / calibration etc.) integrated in sensor housing |
| **Working temperature:** | 0 ... +50 °C |
| **Relative humidity:** | 0 ... +95 % RH (non-condensing) |
| **Storage temperature:** | -25 ... +70 °C |
| **Housing:** | ABS plastic with suspension eye, dimensions do not incl. connection 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. |
| **Weight:** | approx. 75 g (...-K51: approx. 82 g) |
| **Device connection** | |
| **GMSD ... - K31:** **GMSD ... - Ex:** | 1.2 m PVC connection cable, screened with integral 6-pin Mini-DIN-plug, lockable |
| **GMSD ... - K51:** | 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*
ISO certificates: 5 points ascending, 5 points descending

## STAINLESS STEEL PRESSURE SENSORS G½ INCH

FOR AIR, AGGRESSIVE GASES AND LIQUIDS

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

### MSD...

exchangeable handheld instruments pressure sensors st.steel G½B
*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 |
|---|---|---|---|
| **MSD 1 BAE**<br>*Art. no. 600583* | 0 ... 1000 mbar abs. | max. 5 bar abs. | 1 mbar |
| **MSD 2.5 BAE**<br>*Art. no. 600585* | 0 ... 2500 mbar abs. | max. 10 bar abs. | 1 mbar |
| **MSD 4 BAE**<br>*Art. no. 600587* | 0 ... 4000 mbar abs. | max. 17 bar abs. | 1 mbar |
| **MSD 6 BAE**<br>*Art. no. 600592* | 0 ... 6000 mbar abs. | max. 35 bar abs. | 1 mbar |
| **MSD 10 BAE**<br>*Art. no. 600594* | 0 ... 10,00 bar abs. | max. 35 bar abs. | 10 mbar |
| **MSD 16 BAE**<br>*Art. no. 600596* | 0 ... 16.00 bar abs. | max. 80 bar abs. | 10 mbar |
| **MSD 25 BAE**<br>*Art. no. 600598* | 0 ... 25.00 bar abs. | max. 50 bar abs. | 10 mbar |

| Rel. pressure | Measuring range | Overload | Resolution |
|---|---|---|---|
| **MSD 100 MRE**<br>*Art. no. 600600* | 0.0 ... 100.0 mbar rel. | max. 1 bar rel. | 0.1 mbar |
| **MSD 250 MRE**<br>*Art. no. 600604* | 0.0 ... 250.0 mbar rel. | max. 2 bar rel. | 0.1 mbar |
| **MSD 400 MRE**<br>*Art. no. 600606* | 0.0 ... 400.0 mbar rel. | max. 2 bar rel. | 0.1 mbar |
| **MSD -1/1.5 BRE**<br>*Art. no. 600608* | -1000 ... +1500 mbar rel. | max. 10 bar rel. | 1 mbar |
| **MSD -1/3 BRE**<br>*Art. no. 600610* | -1000 ... +3000 mbar rel. | max. 17 bar rel. | 1 mbar |
| **MSD 1 BRE**<br>*Art. no. 600612* | 0 ... 1000 mbar rel. | max. 5 bar rel. | 1 mbar |
| **MSD 2,5 BRE**<br>*Art. no. 600614* | 0 ... 2500 mbar rel. | max. 10 bar rel. | 1 mbar |
| **MSD 4 BRE**<br>*Art. no. 600616* | 0 ... 4000 mbar rel. | max. 17 bar rel. | 1 mbar |
| **MSD 6 BRE**<br>*Art. no. 600618* | 0 ... 6000 mbar rel. | max. 35 bar rel. | 1 mbar |
| **MSD 10 BRE**<br>*Art. no. 600620* | 0.00 ... 10.00 bar rel. | max. 35 bar rel. | 10 mbar |
| **MSD 25 BRE**<br>*Art. no. 600622* | 0.00 ... 25.00 bar rel. | max. 50 bar rel. | 10 mbar |
| **MSD 40 BRE**<br>*Art. no. 600624* | 0.00 ... 40.00 bar rel. | max. 80 bar rel. | 10 mbar |
| **MSD 60 BRE**<br>*Art. no. 600627* | 0.00 ... 60.00 bar rel. | max. 120 bar rel. | 10 mbar |
| **MSD 100 BRE**<br>*Art. no. 600629* | 0.0 ... 100.0 bar rel. | max. 200 bar rel. | 0.1 bar |
| **MSD 160 BRE**<br>*Art. no. 600631* | 0.0 ... 160.0 bar rel. | max. 320 bar rel. | 0.1 bar |
| **MSD 250 BRE**<br>*Art. no. 600639* | 0.0 ... 250.0 bar rel. | max. 500 bar rel. | 0.1 bar |
| **MSD 400 BRE**<br>*Art. no. 600633* | 0.0 ... 400.0 bar rel. | max. 800 bar rel. | 0.1 bar |
| **MSD 600 BRE**<br>*Art. no. 600635* | 0.0 ... 600.0 bar rel. | max. 1200 bar rel. | 0.1 bar |
| **MSD 1000 BRE**<br>*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 |
|---|---|---|---|
| **MSD 25 MRE**<br>*Art. no. 606904* | 0.00 ... 25.00 mbar | max. 500 mbar | 0.01 mbar |
| **MSD -20/60 MRE**<br>*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)<br>±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);<br>-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 rating:** | IP 67 (Sensor) |
| **Scope of supply:** | pressure sensor, calibration protocol, manual;<br>**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*
ISO certificates: 5 points ascending, 5 points descending

**Accessories:**

**MSD-K31**
*Art. no. 600657*
Connecting cable for MSD sensor to GMH 31xx and 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*
Connecting cable for MSD sensor to GHM 51xx
1 m PVC connection cable, screened with 7-pin bayonet plug cabel 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*
Connecting cable for MSD-Ex sensor to GMH 31xx-ex
Connection to GMH 31xx, 1 m onnection cable, screened with integral 6-pin Mini-DIN-plug and M12-socket

HANDHELD INSTRUMENTS

SOFTWARE

ACCESSORIES

ALARM / PROTECTION, LEVEL

# 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 FUNCTIONS GMH 3181-...:

| Type specific data: | | 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 internally built into the instrument. Suitable for air and non-aggressive gases. *(Note: Not suited for water!)* | | | |
| Pressure connection: | | 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 | | | |
| Output: | | interface | interface or AAG | interface* | interface or AAG* |
| Serial interface: | | x | x | x | x |
| Analog output: | | -- | 0 ... 1 V, freely adjustable (resolution 12 bit) | -- | 0 ... 1 V, freely adjustable (resolution 12 bit) |
| Power supply: | | 9 V battery, d.c. connector | 9 V battery, d.c. connector | 9 V battery, d.c. connector* | 9 V battery, d.c. connector* |
| | | suitable 9 V-battery,  d.c. connector for external 10.5 ... 12 V direct voltage supply. (suitable power supply: GNG10 / 3000) | | | |
| Sensor adjustment: | | digital offset and scale input | digital offset and scale input | digital offset and scale input | digital offset and scale 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 filter) | -- | ≥1000 measurements / s | -- | ≥1000 measurements / s |
| | „peak-detect" (Spitzenwertspeicher) | -- | ≥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 |
| Averaging function: | | -- | x | -- | x |
| Battery life: | | 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) |
| Operating conditions: | | -25 ... +50 °C, 0 ... +95 % RH (non-condensing) | | -10 ... +50 °C, 0 ... 95 % RH (non-condensing) | |
| Housing: | | 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 | | | |
| Weight: | | approx. 165 g | approx. 170 g | approx. 205 g (incl. leather case) | approx. 210 g (incl. leather case) |
| Scope of supply: | | 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

## -500.0 ... +500.0 Pa (±500.0 Pa*²)

### GMH 3161-002
*Art. no. 600469*
Pressure hand-held measuring device with integr. sensor

### GMH 3181-002
*Art. no. 600470*
Pressure hand-held measuring device with integr. sensor

### GMH 3161-002-EX
*Art. no. 606685*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex II 2 G Ex ib IIC T4 Gb)

### GMH 3181-002-EX
*Art. no. 609063*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex II 2 G Ex ib IIC T4 Gb)

| 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, mH₂O |
| 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*
*\*3 Option higher accuracy*

## -100 ... +2500 Pa (±2500 Pa *¹)

### GMH 3161-01
*Art. no. 600397*
Pressure hand-held measuring device with integr. sensor

### GMH 3181-01
*Art. no. 600411*
Pressure hand-held measuring device with integr. sensor

### GMH 3161-01-EX
*Art. no. 607458*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex II 2 G Ex ib IIC T4 Gb)

### GMH 3181-01-EX
*Art. no. 600796*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex II 2 G Ex ib IIC T4 Gb)

## -1,00 ... +70,00 mbar (±70,00 mbar *¹)

### GMH 3161-07H
*Art. no. 600405*
Pressure hand-held measuring device with integr. sensor

### GMH 3181-07H
*Art. no. 600417*
Pressure hand-held measuring device with integr. sensor

### GMH 3161-07H-EX
*Art. no. 610042*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex II 2 G Ex ib IIC T4 Gb)
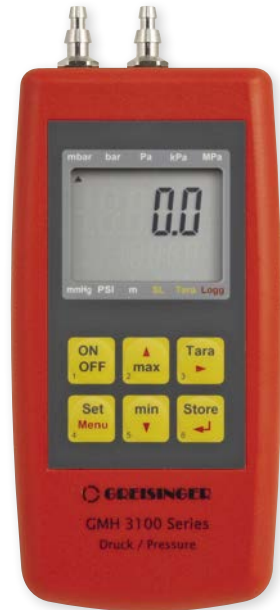
### GMH 3181-07H-EX
*Art. no. 604074*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex II 2 G Ex ib IIC T4 Gb)

| 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, mH₂O | bar, Pa, kPa, PSI, mmHg, mH₂O |
| 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 available: | no | already integrated |
| Pressure connection: | 2 | |

## -10,0 ... +350,0 mbar (±350,0 mbar *¹)

### GMH 3161-07
*Art. no. 600400*
Pressure hand-held measuring device with integr. sensor

### GMH 3181-07
*Art. no. 600413*
Pressure hand-held measuring device with integr. sensor

### GMH 3161-07-EX
*Art. no. 604435*
Pressure hand-held measuring device with integr. sensor, Ex-Schutz (Ex II 2 G Ex ib IIC T4 Gb)

### GMH 3181-07-EX
*Art. no. 601386*
Pressure hand-held measuring device with integr. sensor, Ex-Schutz (Ex II 2 G Ex ib IIC T4 Gb)

## -10,0 ... +420,0 mbar (-7,5 ... +315,0 mmHg)

### GMH 3161-07B
*Art. no. 600402*
Pressure hand-held measuring device with integr. sensor

### GMH 3181-07B
*Art. no. 600415*
Pressure hand-held measuring device with integr. sensor

### GMH 3161-07B-EX
*Art. no. 609064*
Pressure hand-held measuring device with integr. sensor, Ex-Schutz (Ex II 2 G Ex ib IIC T4 Gb)

### GMH 3181-07B-EX
*Art. no. 604724*
Pressure hand-held measuring device with integr. sensor, Ex-Schutz (Ex II 2 G Ex ib IIC T4 Gb)

| 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, mH₂O | bar, kPa, MPa, PSI, mH₂O |
| 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 available: | yes | already integrated |
| Pressure connection: | 2 | |

## MANOMETER FOR OVER/UNDER PRESSURE AND PRESSURE DIFFERENCE

**-100 ... +2000 mbar (±2000 mbar*¹)**

### GMH 3161-13
*Art. no. 600409*
Pressure hand-held measuring device with integr. sensor

### GMH 3181-13
*Art. no. 600421*
Pressure hand-held measuring device with integr. sensor

### GMH 3161-13-EX
*Art. no. 600647*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex) II 2 G Ex ib IIC T4 Gb)

### GMH 3181-13-EX
*Art. no. 602263*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex) II 2 G Ex ib IIC T4 Gb)

| Specifications: | |
|---|---|
| **Measuring range:** | -100 ... 2000 mbar (optional: -1000 ... 2000 mbar) |
| **Overload:** | max. 4 bar |
| **Resolution:** | 1 mbar |
| **Additional pressure units:** | bar, kPa, MPa, PSI, mmHg, mH₂O |
| **Accuracy: (typ. values)** | |
| **Hysteresis and linearity:** | ±0.2 % FS; (±0.1 % FS)*3 |
| **Temperature-influence from 0 ... 50 °C:** | ±0.4 % FS |
| **Option higher accuracy available:** | yes |
| **Pressure connection:** | 2 |

**Variants: Measuring range -1000 ... +2000 mbar *²**

**GMH 3161-13-00-MB**
*Art. no. 600527*
Pressure hand-held measuring device with integr. sensor,

**GMH 3161-13-EX-MB**
*Art. no. 607243*
Pressure hand-held measuring device with integr. sensor

**GMH 3181-13-00-MB**
*Art. no. 600529*
Pressure hand-held measuring device with integr. sensor

**GMH 3181-13-MB-00-EX**
*Art. no. 432507*
Pressure hand-held measuring device with integr. sensor

*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- OR BAROMETER

HIGHLIGHTS:
○ can be operated completely in a vacuum

**FOR ABSOLUTE PRESSURE MEASUREMENT**

**0 ... 1300 mbar abs.**

### GMH 3161-12
*Art. no. 600407*
Pressure hand-held measuring device with integr. sensor

### GMH 3181-12
*Art. no. 600419*
Pressure hand-held measuring device with integr. sensor

### GMH 3161-12-EX
*Art. no. 610043*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex) II 2 G Ex ib IIC T4 Gb)

### GMH 3181-12-EX
*Art. no. 610044*
Pressure hand-held measuring device with integr. sensor, Ex-protection (Ex) II 2 G Ex ib IIC T4 Gb)

| Specifications: | |
|---|---|
| **Measuring range:** | 0 ... 1300 mbar abs. |
| **Overload:** | max. 4 bar abs. |
| **Resolution:** | 1 mbar |
| **Pressure units** | mbar, bar, kPa, MPa, PSI, mmHg, mH₂O |
| **Accuracy: (typ. values)** | |
| **Hysteresis and linearity:** | ±0.2 % FS; (±0.1 % FS)*3 |
| **Temperature-influence from 0 ... 50 °C:** | ± 0.4 % FS |
| **Option higher accuracy available:** | yes |
| **Druckanschlüsse:** | 1 |

**Special function:**

**SeaLevel-Correction:**
The barometric air pressure can also be displayed relative to sea level 'zero'. (The air pressure correction takes place with entry of the height above 'zero' in metres)
*For type specific data please refer to page 90.*

*\*3 Option higher accuracy*

## 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 certificates: 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 for devices of the series GMH 3XXX

**GRS 3100**
*Art. no. 601097*
Interface Converter GMH3xxx <=>PC, RS232

**USB 3100 N**
*Art. no. 601092*
Interface Converter GMH3xxx <=>PC, USB

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

*for miscellaneous accessories p.r.t. page 86*

## FINE MANOMETER

FOR OVER/UNDER PRESSURE
OR PRESSURE DIFFERENCE

### GDH 200-07

*Art. no. 601254*
Fine manometer 0.00 ... 19.99 / 199.9 mbar (±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: | |
|---|---|
| **Measuring range:** | 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 |
| **Resolution:** | automatic change 0.1 / 0.01 |
| **Overload:** | max. 500 mbar |
| **Accuracy:** | (at nominal temperature = 25 °C and automatic zero point-adjustment) |
| **Measuring range: up to 200 mbar** | ±0.2 % f.s. hysteresis and linearity, ±0.4 % f.s. temperature drift from 0 ... 50 °C |
| **Measuring range: up to 20 mbar** | ±1 % f.s. hysteresis and linearity, ±2 % f.s. temperature drift from 0 ... 50 °C |
| **Sensor:** | piezoresistive relative pressure sensor |
| **Pressure connection:** | 2 pressure port sockets made of nickel-plated brass, for pressure tubings 6 x 1 mm (4 mm inner-diameter) |
| **Operating conditions:** | -25 ... +50 °C, 0 ... 95 % RH (non-condensing) |
| **Display:** | 3½ digit LCD display, approx. 13 mm high |
| **Pushbuttons:** | 3 membrane keys |
| **Power supply:** | 9 V battery |
| **Battery life:** | approx. 1200 h |
| **Housing:** | impact resistant ABS plastic housing, approx. 106 x 67 x 30 mm (H x W x D) +16 mm pressure port sockets |
| **Weight:** | approx. 135 g (incl. battery) |
| **Zero point-adjustment:** | automatically |
| **Slope-adjustment:** | manually |
| **Scope of supply:** | 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*
Pressure gauge 0.0 ... 199.9 / 1999 mbar (±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: | |
|---|---|
| **Measuring range:** | 0.0 ... 199.9 or 200 ... 1999 mbar (hPa) 0.0 ... 199.9 or 200 ... 1500 mmHg 0.00 ... 19.99 PSI |
| **Resolution:** | automatic change 1 / 0.1 |
| **Overload:** | max. 4000 mbar |
| **Accuracy:** | (at nominal temperature = 25 °C and automatic zero point-adjustment) |
| **Measuring range: up to 2000 mbar** | ±0.2 % f.s. hysteresis and linearity, ±0.4 % f.s. temperature drift from 0 ... 50 °C |
| **Measuring range: up to 200 mbar** | ±1 % f.s. hysteresis and linearity, ±2 % f.s. temperature drift from |
| **Sensor:** | piezoresistive relative pressure sensor |
| **Pressure connection:** | 2 pressure port sockets made of nickel-plated brass, for pressure tubings 6 x 1 mm (4 mm inner-diameter) |
| **Operating conditions:** | -25 ... +50 °C, 0 ... 95 % RH (non-condensing) |
| **Display:** | 3½ digit LCD display, approx. 13 mm high |
| **Pushbuttons:** | 3 membrane keys |
| **Power supply:** | 9 V battery |
| **Battery life:** | approx. 1200 h |
| **Housing:** | impact resistant ABS plastic housing, approx. 106 x 67 x 30 mm (H x W x D) +16 mm pressure port sockets |
| **Weight:** | approx. 135 g (incl. battery) |
| **Zero point-adjustment:** | automatically |
| **Slope-adjustment:** | manually |
| **Scope of supply:** | 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

## VACUUM- / BAROMETER OR MANOMETER



FOR ABSOLUTE PRESSURE

### GDH 200-14
*Art. no. 601258*
Vacuum / Barometer with pressure port, 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: | |
|---|---|
| Measuring range: | 0 ... 11000 mbar (hPa) abs.<br>0 ... 8250 mmHg abs.<br>0.000 ... 11.000 bar abs.<br>0.00 ...160.00 PSI abs. |
| Resolution: | 1 mbar, 1 mmHg, 0.001 bar, 0.02 PSI |
| Overload: | max. 13 bar abs. |
| Accuracy: (at nominal temperature = 25 °C) | ±3 mbar or 0.10 % of m.v. (whichever is higher);<br>±0.3 % f.s. temperature drift from 0 ... 50 °C |
| Sensor: | piezoresistive absolute pressure sensor |
| Pressure connection: | Pressure connection ports in nickel-plated brass, for pressure tubings 6 x 1 mm (4 mm inner-diameter) |
| Operating conditions: | -25 ... +50 °C, 0 ... 95 % RH (non-condensing) |
| Display: | 4½ digit LCD display, approx. 12 mm high |
| Pushbuttons: | 3 membrane keys |
| Power supply: | 9 V battery |
| Battery life: | approx. 7500 h |
| Sea level correction: | Barometric values can be converted to sea level (therefore the input of the current altitude is needed). |
| Housing: | impact resistant ABS plastic housing,<br>approx. 106 x 67 x 30 mm (H x W x D)<br>+16 mm pressure port sockets |
| Weight: | approx. 135 g (incl. battery) |
| Zero point-adjustment: | manually |
| Slope-adjustment: | manually |
| Scope of supply: | Device, battery, calibration protocol, manual |

| Variant: | |
|---|---|

**GDH 200-14-QC6**
*Art. no. 415125*
Vacuum / Barometer with pressure port
Quick-connect hose coupling

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

## VACUUM- / BAROMETER



NEW!

### GDH 200-11
*Art. no. 474063*
Vacuum / Barometer with pressure port

| Specifications: | |
|---|---|
| Measuring range: | 10.0 ... 1200.0 mbar abs. (Resolution: 0.1 mbar)<br>7.5 ... 900.0 mmHg abs. (Resolution: 0.1 mmHg) |
| Max. Overload: | 4000 mbar abs. |
| **Accuracy: (at nominal temperature)** | |
| @25 °C, 750 mbar: | 1.5 min. +1.5 max. mbar |
| -20 ... +85 °C, 300 ... 1100 mbar: | -2.5 min. +2.5 max. mbar |
| Long-term stability: | typ. ±1 mbar / year |
| 25 °C, 700 ... 1100 mbar: | -1.5 min. +1.5 max. mbar |
| 0 ... 50 °C, 300 ... 1100 mbar: | -2.0 min. +2.0 max. mbar |
| -20 ... +85 °C, 300 ... 1100 mbar: | -3.5 min. +3.5 max. mbar |
| 25 °C, 100 ... 300 mbar: | -5 min. +5 max. mbar |
| 25 °C, 10 ... 100 mbar: | -10 min. +10 max. mbar |
| Pressure connection: | Pressure connection ports in nickel-plated brass, for pressure tubings 6 x 1 mm (4 mm inner-diameter) or 8 x 1 mm (6 mm inner-diameter) |
| Nominal temperature: | 25 °C |
| Operating conditions: | -25 ... +50 °C, 0 ... 80 % RH (non-condensing) |
| Storage temperature: | -25 ... +70 °C |
| Display: | 4½ digit LCD display, approx. 13 mm high |
| Pushbuttons: | 3 membrane keys for ON/OFF, min/max value query, offset comparison, etc. |
| Measuring frequency: | 1 measuring / s |
| Sea level correction: | Barometric values can be converted to sea level (therefore the input of the current altitude is needed). |
| Zero point-adjustment: | manually |
| Slope-adjustment: | manually |
| Power supply: | 9 V battery |
| Battery life: | >5000 h |
| Housing: | impact resistant ABS plastic housing, front-side IP65 |
| Dimensions: | approx. 106 x 67 x 30 mm (H x W x D)<br>+16 mm pressure port sockets |
| Weight: | approx. 145 g (incl. battery) |
| Scope of supply: | Device, battery, manual |

| Variant: | |
|---|---|

**GDH 200-11-QC6**
*Art. no. 415124*
Vacuum / Barometer with pressure port,
10.0 ... 1200.0 mbar abs. (hPa)
**Pressure connection:** Quick-connect hose coupling

**HANDHELD INSTRUMENTS**

**SOFTWARE**

**ACCESSORIES**

**ALARM / PROTECTION, LEVEL**

## BAROMETER



ISO
AUTOOFF
MIN MAX
O/S-CORR
TARA

### GPB 3300
*Art. no. 600129*
Barometer 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:

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

#### Accessories and spare parts:

**GKK 252**
*Art. no. 601056*
Case with punched lining for universal application (235 x 185 x 48 mm)

**GB 9 V**
*Art. no. 601115*
Spare battery 9V, type IEC 6F22

## ALTIMETER / BAROMETER / THERMOMETER / PRECISION BAROMETER



ISO
AUTOOFF
MIN MAX
O/S-CORR
TARA

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

### GTD 1100
*Art. no. 600132*
Precision barometer / Altimeter
300.0 ... 1100.0 mbar abs. + Altimeter

#### General:
Device for simple determination of a building size (steeples, skyscrapers, bridges, etc.)

#### Application:
hiking, hang gliding, cycling, motorsports, etc.

#### Specifications:

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

| | |
|---|---|
| **Power supply:** | 9 V battery |
| **Battery life:** | approx. 6.000 h |
| **System notifications:** | permanent self-diagnosis and error indication |
| **Housing:** | impact resistant ABS housing |
| **Dimensions:** | approx. 106 x 67 x 30 mm (H x W x D) |
| **Weight:** | approx. 135 g (incl. battery) |
| **Scope of supply:** | 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 9V, type IEC 6F22

**ISO-WPD 5**
*Art. no. 602514*
ISO certificates: 5 points rising, 5 points falling

**GKK 252**
*Art. no. 601056*
Case with punched lining for universal application (235 x 185 x 48 mm)

Calibration certificate, p.r.t. page 15



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