

Digital pressure sensor for

GMH 3111,
GMH 3151,
GMH 3156,
and GDUSB 1000

Operating Manual

GMSD ... - K31



Made in
Germany

WEEE-Reg.-Nr. DE93889386

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1 Intended use

The pressure sensors are designed for the connection to an hand-held instrument of the following types:

GMSD 3111, GMSD 3151 and GMSD 3156 as well as GMSD 3110, GMSD 3150 and GMSD 3155

And to the universally pressure measurement system:

GDUSB 1000

The sensors are designed for following application areas:

plastic pressure sensor:



- air
- non-corrosive, non-ionising gases

2 General

Read through this document attentively and make yourself familiar to the of the device before you use it. Keep this document in a ready-to-hand way in order to be able to look up in the case of doubt.

3 Disposal



This device must not be disposed as "residual waste".
To dispose this device, please send it directly to us (adequately stamped).
We will dispose it appropriately and environmentally friendly

4 Operating and Maintenance Advice

- a.) You must only use the sensor with GMH 3111, GMH 3151, GMH 3156 or GDUSB 1000 devices!
Usage of other devices may result in destruction of sensor and device.
- b) Treat sensor and device carefully. Use only in accordance with above specification. (do not throw, hit against etc.).
Protect plug from soiling.
- c) To disconnect pressure sensor do not pull at the cable but at the plug (to open lock).
When connecting the sensor make sure that arrows are pointing upwards and that plug is entered into device socket centrally. Do not twist plug when entering socket.
If plug is entered correctly, it will slide in smoothly
If plug is twisted or entered incorrectly the connecting pins of the plug can be spoilt by bending or broken
=> Plug can no longer be used and connecting cable needs to be replaced.
- d) **GMSD - K31** (= standard (plastic) pressure sensors):
Connection diagram for sensor tube connection:
- For measurements of over pressure (relative pressure sensor):**
- Connect plastic tube with internal dia of 4 mm to cable gland "B".
Connection "A" will not be used!
- For measurements of pressure differences (relative pressure sensor):**
- Connect both plastic tubes with an internal dia of 4 mm to cable gland "B" and "A";
make sure to apply higher pressure to connection "B"
- For measurements of absolute pressure (absolute pressure sensor):**
- Connect plastic tube with an internal dia of 4 mm to cable gland "A".
(Cable gland "B" is not used.)

5 Safety requirements:

This device has been designed and tested in accordance with the safety regulations for electronic devices. However, its trouble-free operation and reliability cannot be guaranteed unless the standard safety measures and special safety advises given in this manual will be adhered to when using the device.

1. Trouble-free operation and reliability of the device can only be guaranteed if the device is not subjected to any other climatic conditions than those stated under "Specification".
2. If the device is transported from a cold to a warm environment condensation may result in a failure of the device. In such a case make sure the device temperature has adjusted to the ambient temperature before trying a new start-up.
3. If there is a risk whatsoever involved in running it, the device has to be switched off immediately and to be marked accordingly to avoid re-starting.
Operator safety may be at risk if:
 - there is visible damage to the device.
 - the device is not working as specified.
 - the device has been stored under unsuitable conditions for a longer time.In case of doubt, please return device to manufacturer for repair or maintenance.
4. **Warning:** Do not use this product as safety or emergency stop device or in any other application where failure of the product could result in personal injury or material damage.
Failure to comply with these instructions could result in death or serious injury and material damage.
5. **Any changes or repair of the device is not allowed.**
Please return device to manufacturer for repair or maintenance.

6 Specification: GMSD - K31

6.1 Specification (GMSD ... BA - K31):

	GMSD 1,3 BA - K31	GMSD 2 BA - K31	GMSD 7 BA - K31
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 bar abs.
Resolution:	1 mbar	1 mbar	0,01 bar (10 mbar)
Accuracy: (typ. values)	$\pm 0,2\%$ FS (hysteresis and linearity) $\pm 0,4\%$ FS (temperature influence from 0-50 °C)		
OPTION: higher accuracy:	$\pm 0,1\%$ FS (hyst., linearity); $\pm 0,2\%$ FS (temperature influence 0-50 °C)		
Sensor:	piezoresistive absolute pressure sensor. For air pressure (barometer), vacuum, absolute pressure. Suitable for air and/or non-corrosive and non-ionising gas.		

6.2 Specification (GMSDR - K31):

	GMSD 2,5 MR - K31	GMSD 25 MR - K31	GMSD 350 MR - K31	GMSD 2 BR - K31	GMSD 10 BR - K31
Measuring range:	-1,999 ... 2,500 mbar (-199,9 ... 250,0 Pa)	-19,99 ... 25,00 mbar (-1999 ... 2500 Pa)	-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	0,01 bar
Accuracy: (typ. values)	(0-2,5mbar)	(0-25mbar)	(0-350mbar)	(0-2bar)	(0-10bar)
Hysteresis and linearity:	$\pm 0,2\%$ FS	$\pm 0,2\%$ FS	$\pm 0,2\%$ FS	$\pm 0,2\%$ FS	$\pm 0,2\%$ FS
Temperature influence from 0-50°C:	$\pm 1,0\%$ FS	$\pm 0,5\%$ FS	$\pm 0,4\%$ FS	$\pm 0,4\%$ FS	$\pm 0,4\%$ FS
OPTION: higher accuracy:			$\pm 0,1\%/\pm 0,2\%$ FS	$\pm 0,1\%/\pm 0,2\%$ FS	$\pm 0,1\%/\pm 0,2\%$ FS
Sensor:	piezoresistive relative pressure sensor. For over-/under- and difference pressure measuring. Suitable for air and/or non-corrosive and non-ionising gas. <i>If sensor is to be used in water, use air cushion!</i>				

6.3 Common specifications (GMSD ... BA - K31, GMSDR - K31):

Pressure connection:	2 nylon connecting pins for tubes 6 x 1 mm (6 mm outer Ø, 4mm internal Ø)
Electronics:	PC-board with amplifier and data memory for sensor data (measuring data, calibration etc.) integrated in sensor housing.
Nominal temperature:	25 °C
Operating conditions:	0 ... +50 °C, 0 ... +95 %RH (non condensing)
Storage temperature:	-25 ... +70 °C
Housing:	68 x 32,5 x 15 mm (L x W x D) without connection pin; 68 x 32,5 x 27,5 mm incl. connection pin. ABS housing with integrated suspension eye
Device Connection:	1m PVC connection cable, screened with integral 6-pin MiniDIN plug, lockable.
Weight:	approx. 75 g
EMC:	The GMSD ... corresponds to the essential protection ratings established in the Regulations of the Council for the Approximation of Legislation for the member countries regarding electromagnetic compatibility (2004/108/EG). Additional fault: <1%