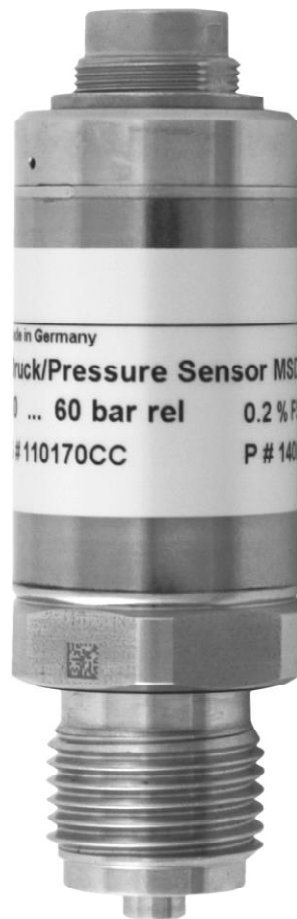


Digital pressure sensor for

**GMH 3111,  
GMH 3151,  
and  
GMH 3156**

Operating Manual

## MSD ... ..E



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:

**GMH 3111, GMH 3151, GMH 3156** *as well as* **GMH 3110, GMH 3150, GMH 3155**

and for USB interface adaptor´s:

**GDUSB 1000**

The sensors have following application areas:

- air, aggressive gases
- water, aggressive media, etc.

## 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 Operating and Maintenance Advice

- You must only use the sensor with suitable devices!  
Usage of other devices may result in destruction of sensor and device.
- Treat sensor and device carefully. Use only in accordance with above specification. (do not throw, hit against etc.).  
Protect plug from soiling.
- To disconnect pressure sensor adapter cable from the device 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.
- MSD ... .RE** (= relative pressure sensor):  
Caution: The pressure compensation hole has to be kept clean! It is placed at the back part of the housing.  
Do not cover with stickers or similar things!

## e) Instructions for mounting:

- When mounting the instrument, ensure that the sealing faces of the instrument and the measuring point are clean and undamaged.
- Screw in or unscrew the instrument only via the flats using a suitable tool (fixed spanner, wrench size 27mm) and the prescribed torque. The appropriate torque depends on the dimension of the pressure connection and on the sealing element used (form/material).  
A maximum torque of 50 Nm must not be exceeded. Do not use the case as working surface for screwing in or unscrewing the instrument.
- When screwing the transmitter in, ensure that the threads are not jammed.
- As described in the installation example the sealing (**GDZ-28**) must be made at the face surface of the pressure connection.



## 4 General 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.**

## 5 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

## 6 Specification

### 6.1 Specification (MSD ... BAE):

	MSD 1 BAE	MSD 2.5 BAE	MSD 4 BAE	MSD 6 BAE	MSD ... BAE (special range)
<b>Measuring range:</b>	0 ... 1000 mbar abs.	0 ... 2500 mbar abs.	0 ... 4000 mbar abs.	0 ... 6000 mbar abs.	refer to type plate
<b>Overload: (max.)</b>	5 bar abs.	10 bar abs.	17 bar abs.	35 bar abs.	refer to type plate
<b>Resolution:</b>	1 mbar	1 mbar	1 mbar	1 mbar	refer to type plate

**Sensortyp:** stainless steel absolute pressure sensor.  
Suitable for aggressive media, water, etc.

### 6.2 Specification (MSD ... ..RE):

	MSD 400 MRE	MSD 1 BRE	MSD 2.5 BRE	MSD 4 BRE	MSD 6 BRE	MSD 10 BRE	MSD 25 BRE	MSD 40 BRE
<b>Measuring range:</b>	0,0 ... 400,0 mbar rel.	0 ... 1000 mbar rel.	0 ... 2500 mbar rel.	0 ... 4000 mbar rel.	0 ... 6000 mbar rel.	0,00 ... 10,00 bar rel.	0,00 ... 25,00 bar rel.	0,00 ... 40,00 bar rel.
<b>Overload: (max.)</b>	2 bar	5 bar	10 bar	17 bar	35 bar	35 bar	50 bar	80 bar
<b>Resolution:</b>	0,1 mbar	1 mbar	1 mbar	1 mbar	1 mbar	0,01 bar	0,01 bar	0,01 bar

	MSD 60 BRE	MSD 100 BRE	MSD 160 BRE	MSD 250 BRE	MSD 400 BRE	MSD 600 BRE	MSD 1000 BRE	MSD ... ..RE (Sonderbereich)
<b>Measuring range:</b>	0,00 ... 60,00 bar rel.	0,0 ... 100,0 bar rel.	0,0 ... 160,0 bar rel.	0,0 ... 250,0 bar rel.	0,0 ... 400,0 bar rel.	0,0 ... 600,0 bar rel.	0 ... 1000 bar rel.	refer to type plate
<b>Overload: (max.)</b>	120 bar	200 bar	320 bar	500 bar	800 bar	1200 bar	1500 bar	refer to type plate
<b>Resolution:</b>	0,01 bar	0,1 bar	0,1 bar	0,1 bar	0,1 bar	0,1 bar	1 bar	refer to type plate

**Sensortyp:** stainless steel relative pressure sensor for overpressure measuring.  
Suitable for aggressive media, water, etc.

*Caution:* The pressure compensation hole at the back part of the housing has to be kept clean!

### 6.3 Common specifications (MSD ... BAE, MSD ... ..RE):

- Accuracy:** (typ. values) ±0,2%FS (hysteresis and linearity)  
±0,4%FS (temperature influence from 0-50°C)
- Pressure connection:** connections thread G1/4. Key width: 27 mm
- Device Connection:** M12-plug, for connection cable MSD-K31
- 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:** -20 to +70 °C (compensated range: 0 to 70 °C)
- Storage temperature:** -40 to +80 °C
- Housing:** made of stainless steel (CrNi steel or Elgiloy®)
- Weight:** 220 g
- IP rating:** IP 67 (sensor), IP 54 (plug)

**EMC:** The MSD ... 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%

