English

Operating Manual

Digital pressure sensor for GMH 3111 - ex, GMH 3151 - ex, *and* GMH 3156 - ex.

MSD … … - ex

0158

Made in Germany

WEEE-Reg.-Nr. DE93889386

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Content

1 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.

2 Safety

2.1 Intended Use

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

GMH 3111 - ex, GMH 3151 - ex, GMH 3156 - ex

The sensors have following application areas:

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

2.2 Safety signs and symbols

Warnings are labelled in this document with the followings signs:

Caution!
This symbol warns of imminent danger, death, serious injuries and significant damage to property at non-observance

Caution!
This symbol indicates a potentially dangerous situation in explosion-prone areas that can result in death or severe injuries if not avoided.

Attention!
This symbol warns of possible dangers or dangerous situations which can provoke damage to the device or environment at non-observance.

Note!
This symbol points out processes which can indirectly influence operation or provoke unforeseen reactions at non-observance.

2.3 Skilled personnel

are persons who are familiar with the set-up, installation, commissioning and operation of the product and have appropriate qualification for their work. For example:

- Training or instruction and/or authorisation to activate, deactivate, disconnect, ground and identify power circuits and devices/systems in accordance with the standards of safety engineering.
- Training or instruction in accordance with the standard of safety technology for care and use of suitable safety equipment.
- Knowledge about the installation of devices in explosion-prone areas.

2.4 Safety guidelines

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.  Requirements of Directive 2014/34/EU (ATEX) and IECex must be observed
   The respective national regulations for Ex use must also be complied with (e.g. EN 60079-11).
2.  Sensor can only be used with a GMH 3111 - ex, GMH 3151 - ex or GMH 3156 - ex! Usage of other devices may result in destruction of sensor and device.
3.  Only use approved connection cable with max. 1 approved extension cable for the connection of sensor to the handheld device.
4. Please note the safety requirements of the handheld device !!
5.  When using a GMH 3156-ex with 2 stainless steel sensors, take care that the sensors are not screwed in or have contact to surfaces with different electrical potentials.
6.  **Potential equalisation:**
   All components (pressure sensor, power supply unit, interface, etc.) connected to the device must be on the same potentials! If this is not guaranteed, you have to connect them for a potential equalisation.
7.  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".
8.  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.
9. 

   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.
10. 

    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.
11. Any changes or repair of the device is not allowed.
    Please return device to manufacturer for repair or maintenance.

3 Product description

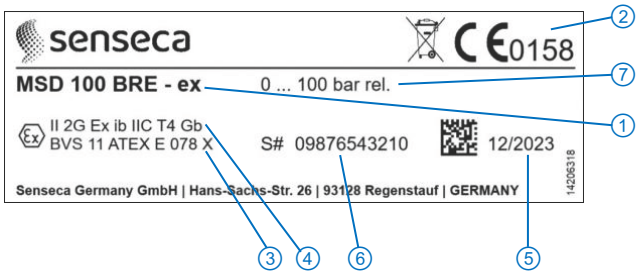
3.1 Mounting description

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 been 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.

3.2 Identification

Examples for type plates



① Type
② CE-Mark, with code of the notified body monitoring the quality assurance system for the production
③ Approval number
④ Ex identification
⑤ Date for month/year of manufacture
⑥ Serial number
⑦ Measuring range

3.3 Operating and Maintenance Advice

a.) You must only use the sensor with GMH 3111 - ex, GMH 3151 - ex or GMH 3156 - ex 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 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.

d) **MSD … .RE - ex** (= 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!

4 Specification

4.1 Specification (MSD … BAE - ex):

	MSD 1 BAE - ex	MSD 2,5 BAE - ex	MSD 4 BAE - ex	MSD 6 BAE - ex	MSD … BAE - ex (special range)
Measuring range:	0 … 1000 mbar abs.	0 … 2500 mbar abs.	0 … 4000 mbar abs.	0 … 6000 mbar abs.	*refer to type plate*
Overload: (max.)	5 bar abs.	10 bar abs.	17 bar abs.	35 bar abs.	*refer to type plate*
Resolution:	1 mbar	1 mbar	1 mbar	1 mbar	*refer to type plate*

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

4.2 Specification (MSD … ..RE - ex):

	MSD 400 MRE - ex	MSD 1 BRE - ex	MSD 2,5 BRE - ex	MSD 4 BRE - ex	MSD 6 BRE - ex	MSD 10 BRE - ex	MSD 25 BRE - ex	MSD 40 BRE - ex
Measuring range:	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.
Overload: (max.)	2 bar	5 bar	10 bar	17 bar	35 bar	35 bar	50 bar	80 bar
Resolution:	0,1 mbar	1 mbar	1 mbar	1 mbar	1 mbar	0,01 bar	0,01 bar	0,01 bar

	MSD 60 MRE - ex	MSD 100 BRE - ex	MSD 160 BRE - ex	MSD 250 BRE - ex	MSD 400 BRE - ex	MSD 600 BRE - ex	MSD 1000 BRE - ex	MSD … ..RE - ex (special range)
Measuring range:	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*
Overload: (max.)	120 bar	200 bar	320 bar	500 bar	800 bar	1200 bar	1500 bar	*refer to type plate*
Resolution:	0,01 bar	0,1 bar	0,1 bar	0,1 bar	0,1 bar	0,1 bar	1 bar	*refer to type plate*

Sensortype: 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!

4.3 Common specifications (MSD … BAE - ex, MSD … ..RE - ex):

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-ex

Electronics: PC-board with amplifier and data memory for sensor data (measuring data, calibration etc.) integrated in sensor housing.

Nominal temperature: 25 °C

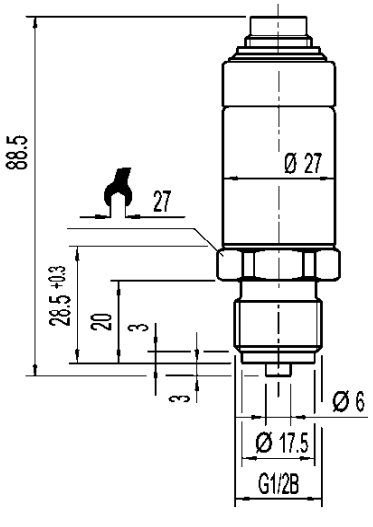
Operating conditions: -20 to +50 °C (compensated range: 0 to 50 °C)

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 instruments confirm to following European Directives:

2014/30/EU EMC Directive

Applied harmonized standards:

EN 61326-1 : 2013 class B, table A.1, additional fault: <1%

4.4 ATEX:

Ex- certification: BVS 11 ATEX E 078 X, Ⓔx II 2G Ex ib IIC T4 Gb

Connection data: Ui_max = 10,4 V, Ii_max = 100 mA, Pi_max = 500 mW
Co ≤ 600 nF, Li = ~0

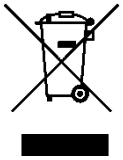
5 Reshipment and Disposal

5.1 Reshipment

All devices returned to the manufacturer have to be free of any residual of measuring media and/or other hazardous substances. Measuring residuals at housing or sensor may be a risk for persons or environment

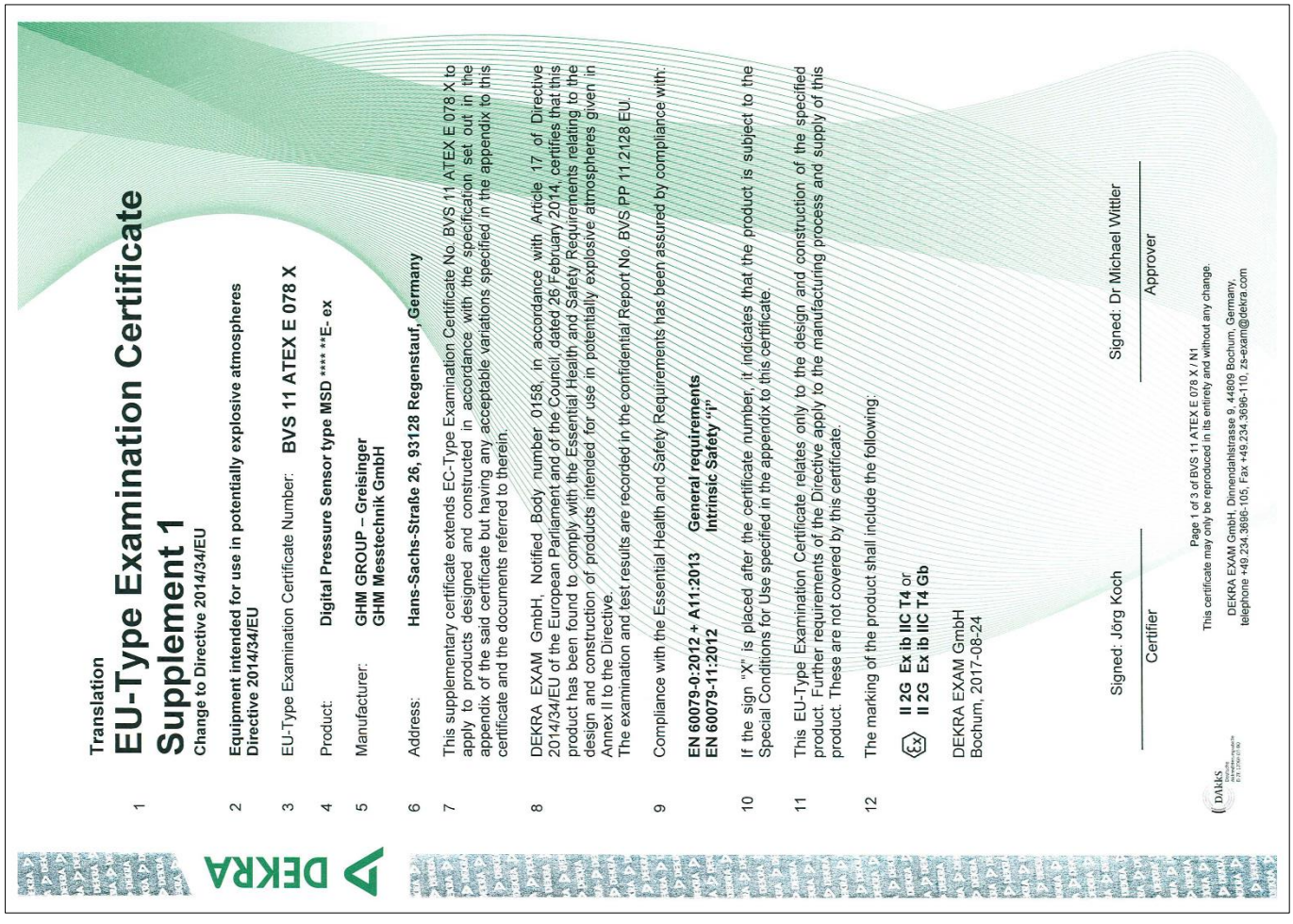
Use an adequate transport package for reshipment, especially for fully functional devices. Please make sure that the device is protected in the package by enough packing materials.

5.2 Disposal instructions



The device must not be disposed in the unsorted municipal waste!
Send the device directly to us (sufficiently stamped), if it should be disposed.
We will dispose the device appropriate and environmentally sound.

6 Addendum 1: EC-type-examination certificate



Translation

EU-Type Examination Certificate
Supplement 1
Change to Directive 2014/34/EU

1 **Equipment intended for use in potentially explosive atmospheres Directive 2014/34/EU**

2 EU-Type Examination Certificate Number: **BVS 11 ATEX E 078 X**

3 Product: **Digital Pressure Sensor type MSD **** **E- ex**

4 Manufacturer: **GHM GROUP – Greisinger**
GHM Messtechnik GmbH

5 Address: **Hans-Sachs-Straße 26, 93128 Regenstauf, Germany**

6 This supplementary certificate extends EC-Type Examination Certificate No. BVS 11 ATEX E 078 X to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any acceptable variations specified in the appendix to this certificate and the documents referred to therein.

7 DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential Report No. BVS PP 11.2128 EU.

8 Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

EN 60079-0:2012 + A11:2013 General requirements
EN 60079-11:2012 Intrinsic Safety "i"

9 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

10 This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

11 The marking of the product shall include the following:

Ⓔx **II 2G Ex ib IIC T4** or
II 2G Ex ib IIC T4 Gb

12 DEKRA EXAM GmbH
Bochum, 2017-08-24

Signed: Jörg Koch
Certifier

Signed: Dr Michael Wittler
Approver

Page 1 of 3 of BVS 11 ATEX E 078 X / N1

DEKRA EXAM GmbH Dinnendahlstrasse 9, 44809 Bochum, Germany
telephone +49.234.3696-105, Fax +49.234.3696-110, zs-exam@dekra.com

13 **Appendix**

14 **EU-Type Examination Certificate**

BVS 11 ATEX E 078 X
Supplement 1

15 **Product description**

15.1 **Subject and type**

Digital Pressure Sensor type MSD **** **E- ex

The * in the type designation can be replaced by any characters, which describe e.g. measuring method and measuring range. This information is not Ex-relevant.

Type MSD **** **E- ex

- Measuring method
  R = Relative pressure
  A = Absolute pressure
- Unit of the measuring range
  B = bar
  M = mbar
- Measuring range

15.2 **Description**

With this supplement the certificate is changed to Directive 2014/34/EU.
(Annotation: In accordance with Article 41 of Directive 2014/34/EU, EC-Type Examination Certificates referring to 94/9/EC that were in existence prior to the date of application of 2014/34/EU (20 April 2016) may be referenced as if they were issued in accordance with Directive 2014/34/EU. Supplementary Certificates to such EC-Type Examination Certificates, and new issues of such certificates, may continue to bear the original certificate number issued prior to 20 April 2016.)

The Digital Pressure Sensor type MSD **** **E- ex transforms measured pressure into an intrinsically safe signal and consists of a tubular enclosure made of stainless steel. Its electronic is fully potted with casting compound within the enclosure. The external electrical connection of the Digital Pressure Sensor is provided by the prefabricated cable with a length of max. 5 m.

Reason for this supplement:

- Change to Directive 2014/34/EU
- The manufacturer's name was changed from GREISINGER electronic GmbH to GHM GROUP – Greisinger, GHM Messtechnik GmbH.
- Assessment of the Digital Pressure Sensor in accordance with the current standard versions.

15.3 **Parameters**

15.3.1 Power supply

Max. input voltage	U_i	DC	10.4	V
Max. input current	I_i		100	mA
Max. input power	P_i		500	mW
Max internal capacitance	C_i		600	nF
Max internal inductance	L_i			negligible

15.3.2 Ambient temperature range T_a -20 °C up to +50 °C

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telephone +49.234.3696-105, Fax +49.234.3696-110, zs-exam@dekra.com

16 **Report Number**

BVS PP 11.2128 EU, as of 2017-08-24

17 **Special Conditions for Use**

17.1 The Digital Pressure Sensor type MSD **** **E- ex can be used in an ambient temperature range of -20 °C to +50 °C.

17.2 For the Digital Pressure Sensor type MSD **** **E- ex equipotential bonding along the external circuits has to be guaranteed.

18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 **Drawings and Documents**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
Bochum, dated 2017-08-24
BVS-Hil/Nu A 20170663

Certifier Approver

DEKRA EXAM GmbH, Dinnendahlstrasse 9, 44809 Bochum, Germany,
telephone +49.234.3696-105, Fax +49.234.3696-110, zs-exam@dekra.com

7 Addendum 1: EU - Declaration of Conformity

CE

EU-KONFORMITÄTSERKLÄRUNG
EU-DECLARATION OF CONFORMITY

Senseca | Senseca Germany GmbH | Hans-Sachs-Str. 26 | 93128 Regenstauf | GERMANY

Dokument-Nr. / Monat.Jahr:
Document-No. / Month.Year: **1008 / 01.2024**

Wir erklären hiermit unter alleiniger Verantwortung, dass die folgenden Produkte konform sind mit den Schutzzielen der Richtlinie des Europäischen Parlaments:
We declare herewith under our sole responsibility that the following products are in compliance with the protection requirements defined in the European Council directives:

Produktbezeichnung:
Product identifier: **MSD … … - ex**

Produktbeschreibung:
Product description: **Drucksensor für Handmessgeräte**
Pressure probe for handheld instrument

Die Produkte entsprechen den folgenden Europäischen Richtlinien:
The products conforms to following European Directives:

Richtlinien / *Directives*	
2014/30/EU	EMV Richtlinie / *EMC Directive*
2014/34/EU	ATEX / *ATEX*
2014/68/EU	DGRL (Modul A, interne Fertigungskontrolle) / *PED (Module A, internal control of production)*
2011/65/EU	RoHS / *RoHS*

Angewandte harmonisierte Normen oder angeführte technische Normen:
Applied harmonized standards or mentioned technical specifications:

Harmonisierte Normen / *harmonized standards*	
EN 61326-1 : 2013	Allgemeine EMV Anforderungen / *General EMC requirements*
EN 61326-2-3 : 2013	Besondere EMV Anforderungen / *Particular EMC requirements*
EN IEC 60079-0 : 2018 *	Allgemeine ATEX Anforderungen / *General ATEX requirements*
EN 60079-11 : 2012	Geräteschutz durch Eigensicherheit "i" / *Protection by intrinsic safety "i"*
EN IEC 63000 : 2018	Beschränkung der gefährlichen Stoffe / *Restriction of hazardous substances*

EG-Baumusterprüfbescheinigung / ausgestellt von:
EC Type Examination Certificate / issued by: **BVS 11 ATEX E 078 X** / DEKRA EXAM GmbH (Reg.No. 0158)

Qualitätssicherung / *quality assurance*: DEKRA Testing and Certification GmbH (Reg.No. 0158)

* *Die in der zugehörigen EU-Baumusterprüfbescheinigung genannten Normen wurden durch neue Ausgaben ersetzt. Wir erklären für das genannte Produkt auch die Übereinstimmung mit den Anforderungen der neuen Normenausgabe. The standards associated to the EU-certificate of conformity have been replaced by new editions. We therefore declare the conformity to the stated product with the requirements of the new issued standards.*

Diese Erklärung wird verantwortlich für den Hersteller abgegeben durch:
The manufacturer is responsible for the declaration released by:

Roland Bäuml

Standortleiter
Site Director

Regenstauf, 2. Januar 2024

Diese Erklärung bescheinigt die Übereinstimmung mit den genannten Harmonisierungsrechtsvorschriften, beinhaltet jedoch keine Zusicherung von Eigenschaften
This declaration certifies the agreement with the harmonization legislation mentioned, contained however no warranty of characteristics.