

Variable-Area Flow Meter

All-Metall design

BGN

Installation and Operating Instructions

- Extreme robustness due to guide stars instead of guide rods
- Flow measurement of liquids, gases and steam
- Available up to DN 150 nominal size
- Linear characteristic curve due to conically optimized float form
- Outstandingly clear reading thanks to 90° arranged scale
- Electrical transmitter with HART®, PROFIBUS-PA® or Fieldbus Foundation®
- Suitable for installation in safety-related measuring systems according to SIL



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1. Steps prior to operation



Prior to installation and operation, it is essential that the operator familiarizes himself with all of the instructions and information contained in this manual. These Installation and Operating Instructions serve as a tool for the correct installation, operation and maintenance of the device, and apply for both the standard non-explosion proof flow-meters as well as to the explosion proof non-electrical versions of the Variable Area Meters BGN series for use in Hazardous Locations.

Read the manual carefully before the device is installed and put into use. It does not include special versions or applications. If additional manuals for special installations are required, contact Heinrichs Messtechnik GmbH to request a copy. These manuals can also be downloaded from our website.

The information in this manual contain essential data relevant to explosion protection.

All devices are thoroughly checked for order compliance and operability before delivery. Upon receipt, please conduct a visual inspection of possible damage that may be identified as having occurred during shipment. If you discover any defect, please contact our head office in Cologne or the local sales office responsible for your area (see the telephone directory at the end of this manual or on our Web site). Apart from a description of the error, we will need the equipment type and serial number of the delivery.

Heinrichs Messtechnik shall not furnish guarantee for any repair work done without prior notice. Unless otherwise agreed on, the rejected parts must be made available to us in case a claim is made.

1.1 Packaging, mounting and shipment

Carefully unpack the device to avoid damage. Depending on the device size, the float may be secured against damage in transit. Remove this transport protection from the fitting. By pressing the float from the bottom upwards (using a wooden stick, for example), check whether the float can easily be moved upwards and slides back downwards. The pointer position of the indicator unit must follow the direction of movement of the float.

With the help of the delivery note enclosed in the packaging, check whether all technically relevant data correspond with your requirements.

Storage and installation must be done in a clean and dry room so that contamination – especially of the interior of the fitting – is avoided. Follow the limit values for ambient temperature. When transporting the device to a remote mounting location, we recommend that you reuse the factory-issued packaging and the transport protection.

1.2 Mounting, Set-up, Commissioning and Maintenance

Installation, set up start up and maintenance are to be performed by a technician trained to work with explosion-proof devices, or by a Heinrichs Messtechnik service technician



Warning

Any maintenance or repair that safety relevant in terms of explosion-protection is to be carried out by the manufacturer, or an authorized Heinrichs Messtechnik service partner.

Heinrichs Messtechnik GmbH accepts no liability for any loss or damage of any kind arising from improper operation of any product, improper handling or use of any replacement part, or from external electrical or mechanical effects, overvoltage or lightning. Any such improper operation, use or handling shall automatically invalidate the warranty for the product concerned. For consequential damages due to a.m. reasons, no liability will be accepted.

In the event of a problem please contact the service centre of Heinrichs Messtechnik:

Phone: +49 221 49708-0
Fax: +49 221 49708-178
Internet: www.heinrichs.eu
E-Mail: info@heinrichs.eu

Contact our customer service department if your device needs repair or if you need assistance in diagnosing a problem with your device.

1.3 Areas of Application

The BGN meter is suitable for flow measurement of liquid or gaseous products in pipes. It displays the current flow rate in volume or mass per unit in time. Please consider also the provisions for the use in hazardous areas.

Applications: flow measurement, dosing, monitoring, adjusting and control of liquid and gaseous products.

In particular due to the meter's design, it is an ideal device for processes in difficult and adverse operating conditions. For process control, supplementary electrical equipment is also available.

The devices are available with additional electrical equipment for process monitoring and control.

1.4 Hazard Warnings

The purpose of the hazard warnings listed below is to ensure that device operators and maintenance personnel are not injured and that the flow meter and any devices connected to it are not damaged.

The safety advisories and hazard warnings in the present document that aim to avoid placing operators and maintenance personnel at risk and to avoid material damage are prioritized using the terms listed below, which are defined as follows in regard to the instructions herein and the advisories pertaining to the device itself.



Warning

means that failure to take the prescribed precautions **could result** in injury, substantial material damage or even death. Always comply to these warnings and proceed with caution!



Caution

means that failure to take the prescribed precaution **could result** in material damage or destruction of the device. We advise always to abide to these instructions!



Note

means that the accompanying text contains important information about the product, handling the product or about a section of the documentation that is of particular importance.

1.5 Intended Use of the Device



Warning

The operator is responsible for ensuring that the material used in the sensor and transmitter housing is suitable and that such material meets the requirements for the fluid being used and the ambient site conditions. The manufacturer accepts no responsibility in regard to such material and housing.



Caution

In order for the device to perform correctly and safely, it must be shipped, stored, set up, mounted operated and maintained properly.

2. Identification

2.1 Manufacturer

Manufacturer: **Heinrichs Messtechnik GmbH**
Robert-Perthel-Strasse 9
D-50739 Köln
Deutschland



Fon: +49 221 49708-0
Fax: +49 221 49708-178



Internet: www.heinrichs.eu
E-Mail: info@heinrichs.eu

Product type: Variable Area-Flow meter for liquid and gaseous media.

Product name: BGN

File name: BGN_BA_24.01_EN

Version: 24.01
Date, November 20, 2024

2.2 Assessment / Certification

The Variable Area Flow Meter BGN in the non-electrical version was assessed by the manufacturer under the Ex-Directive 2014/34/EU according to following standards:

DIN EN 1127-1:2019	Explosive atmosphere, basis concept and methodology
DIN EN ISO 80079-36:2016	Non-electrical equipment for use in hazardous areas Part 36: Principles and requirements
DIN EN ISO 80079-36:2016	Non-electrical equipment for use in hazardous areas Part 37: Device protection through constructional safety "c".

The technical documentation, according to 2014/34/EU Article 8, paragraph 1b ii guideline was deposited at the notified Body; **DEKRA Testing and Certification GmbH** under the registration number: **BVS 03 ATEX H/B 112**.

3. General Information on the marking of Explosion Protection Equipment

2014/34/EU (ATEX) Regulations	Example designation			CE ₀₁₅₈	Ex	II	2G	Ex	ia	IIC	T6	Gb
	Equipment groups											
	I	Equipment group I applies to equipment intended for use in underground parts of mines as well as those parts of surface installations of such mines endangered by firedamp and/or combustible dust.										
	II	Equipment group II applies to equipment intended for use in other places liable to be endangered by explosive atmospheres. This group is subdivided into three categories.										
	Equipment category											
	Gas	Dust	Definition									
	1G (0)	1 D (20)	Equipment in this category is intended for use in areas in which explosive atmospheres caused by mixtures of air and gases, vapours or mists or by air/dust mixtures are present continuously, for long periods or frequently.									
	2 G (1)	2 D (21)	Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists or air/dust mixtures are likely to occur.									
	3G (2)	3D (22)	Equipment in this category is intended for use in areas in which explosive atmospheres caused by gases, vapours, mists, or air/dust mixtures are unlikely to occur or, if they do occur, are likely to do so only infrequently and for a short period only.									
	(The numbers in round brackets correspond to the IEC Zones.)											
Acc. EN 60079-0 ff	Ex = Explosion-proof equipment											
	Examples of electrical types of protection											
		General requirements		EN DIN 60079-0								
	„d“	Flameproof enclosure (db, dc)		EN DIN 60079-1								
	„e“	Increased safety (eb, ec)		EN DIN 60079-7								
	„i“	Intrinsic safety (ia, ib, ic)		EN DIN 60079-11								
	„t“	Equipment dust ignition protection by enclosure "t" (ta, tb, tc)		EN DIN 60079-31								
	Non-electrical types of protection											
	„h“	Basic Method and requirements		DIN EN ISO 80079-36								
	Explosion groups											
Gases and vapours												
IIA	Acetone, benzene, fuel oil, ethanoic acid											
IIB	City gas, ethylene, isoprene											
IIC	Acetylene, hydrogen, carbon bisulphide											
Dust Atmospheres												
IIIA	Fibers and flyings											
IIIB	Non-conductive dusts											
IIIC	Metal dusts											

Temperature classes	
Maximum surface temperature	Temperature class
450 °C	T1
300 °C	T2
200 °C	T3
135 °C	T4
100 °C	T5
85 °C	T6

Equipment protection level, EPL	
Gases: Ga, Gb or Gc	Dust: Da, Db or Dc

Explosion protection designations [square brackets] refer to "Related electrical equipment or circuits".

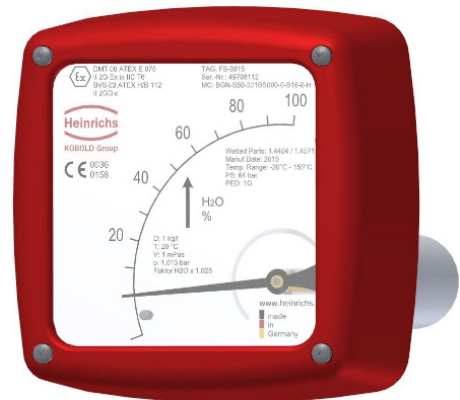
3.1 Ex-Marking BGN

Instruments series BGN will be delivered without label stickers.

All important information such as:

- Measuring range
- Manufacturer
- Serial number
- Model code
- CE marking
- Necessary Ex marking

are printed on instrument scale and can be read directly from it.



3.2 Ex-Marking of Supplementary Electrical Apparatus

Supplementary mounted electrical EX-equipment are supplied with their own rating plates.

To ease the identification of the mounted electrical equipment, the type approval number and the associated Ex-Marking is additionally printed onto the indicating units scale.

To obtain the EX-parameters of the supplement equipment for installation purposes, please refer to relevant type approval certificate.

4. Safety instructions



Warning

Only devices with Ex marking may be operated in hazardous areas!



Warning

The BGN variable-area flow meter may be used only for flow measurements of fluid and gaseous media. The manufacturer shall not be liable for damages that may result from unintended or inappropriate use.



Warning

The required mounting, electrical installation, start-up and maintenance work may only be carried out by expert and authorized persons designated by the plant operator.

Basically, follow the conditions and provisions applicable in your country.

4.1 Atmospheric Conditions

According to DIN/BS EN 1127-1 a hazardous area is defined as a mixture of air and flammable gases, vapours mist or dust under atmospheric conditions. These are defined according to DIN/BS EN ISO 80079-36, para 1 with following values: $T_{atm} = -20^{\circ}\text{C} \dots +60^{\circ}\text{C}$ and $P_{atm} = 0.8 \dots 1.1 \text{ bar}$. Outside of this range, there are no safety related parameters available for most ignition sources.

Inside the tube, Variable Area Flow Meters typically work outside of the defined atmospheric conditions of 0.8 ... 1.1 bar. Therefore, regardless of zoning, explosion protection cannot be applied due to a lack of safety related characteristics.

The operation with flammable media is therefore only permissible if no explosive atmosphere (medium / air mixture) can be formed inside the Flow Meter. If this condition is not met, the risk of ignition must be evaluated by the operator in each individual case has, taking into account the existing parameters (e.g. pressure, temperature, medium, construction materials of the tube).

4.2 Hot Surfaces

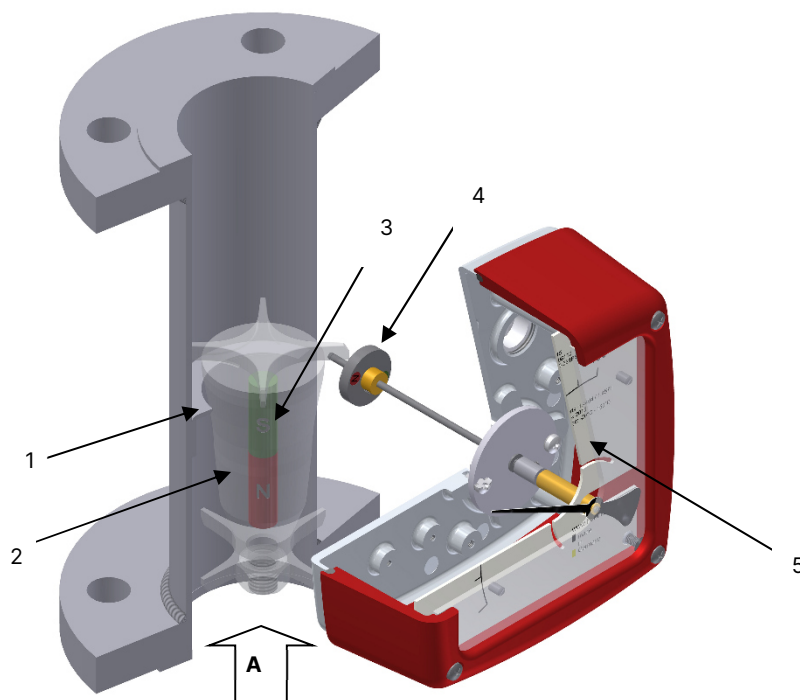
The unit possesses no own energy sources, which would lead to an increase in surface temperature. Thus, the maximum surface temperature is therefore dependent on the operating conditions (such as fluid temperature, heat radiation or with heating jacket version of the heating medium).

For this reason, a temperature class / surface temperature range is stated on the rating plate of the device. Further information is given in these operating instructions. The max. permissible ambient and operating temperatures corresponds to those of the standard operating instructions.

5. Operational mode and system design

5.1 Measuring principle

The measuring element consists of a sharp-edged **measuring ring (1)** and a **conical float (2)**. A medium flows from the bottom to the top through the measuring ring, lifting the float until the **buoyancy force (A)** and the weight of the float establish equilibrium. As the height of the float varies, an annular clearance proportional to the flow appears between the float and the measuring ring. The height of the float in the measuring ring is a measure of the flow. The **permanent magnet (3)** embedded in the float then transmits this measure to the **scale (5)** and by means of a **magnet tracking system (4)** to the optional electronic evaluation devices.



5.2 System design

The meter consists of a cylindrical fitting pipe with flange connections on both sides. For smaller measuring ranges of up to 4–40 l/h, the measuring cell consists of a conical measuring tube with cylindrical float. For measuring ranges above 5 to 50 l/h, a measuring ring is inserted in the tube in which a conical float can move with vertical freedom.

The height of the float resulting from the flow rate is transmitted in a rotary motion by a built-in permanent magnet through a magnet tracking indicator system in a rotation to the pointer axis of the analog indicator unit.

6. Measuring ranges

Measured variable

Volume flow

Measuring ranges

The lower-range value is considered 10% of the upper-range value.

- Measuring range span: 10-100% ¹
- Smallest measuring range: 0.5-5.0 l/h water
- Largest measuring range: 13.000 - 130.000 l/h water (stainless steel)

¹ for water like liquids

Measuring range chart

DIN EN1092-1 ⁷⁾	ASME B16.5-2003 ⁷⁾	Fitting S ... Stainless steel P ... PTFE H ... Hastelloy	Measuring range	Measuring range for water (1000 kg/m ³ ; 1 mPas)	Measuring range for air (1,013 bar abs., 20°C) ^{1),2)}	Pressure loss
				[l/h]	[m ³ /h]	[mbar]
15 25	½" ¾" 1"	(S)10	A	0,5...5,0	0,015...0,15	40
		(S)10	B	1...10	0,030...0,30	40
		(S)10	C	1,6...16	0,045...0,48	40
		(S)10	D	2,5...25	0,075...0,75	40
		(S)10	E	4...40	0,13...1,3	40
15 20 25 32	½" ¾" 1" 1 ¼"	(S/P/H)15	F	5...50	0,15...1,5	40
		(S/P/H)15	G	7...70	0,2...2,1	40
		(S/P/H)15	H	10...100	0,3...3,0	60
		(S/P/H)15	I	16...160	0,5...4,6	60
		(S/P/H)15	J	25...250	0,7...7,0	60
		(S/P/H)15	K	40...400	1,0...11	70
		(S/P/H)15	L	60...600	1,7...17	80
15 ³⁾ 20 ³⁾ 25 32	¾" ³⁾ 1"	(S/P/H)25	M	100...1.000	3...30	60
		(S/P/H)25	N	160...1.600	4...46	70
		(S/P/H)25	P	250...2.500	7...70	100
		(S/P/H)25	Q	400...4.000	11...110	100
40	1 ½"	(S/H)40 ⁴⁾	P	250...2.500	7...70	50
		(S/H)40 ⁴⁾	Q	400...4.000	11...110	120
		(S/H)40 ⁴⁾	R	600...6.000	17...170	180
50 65	2" 2 ½"	(S/P/H)50	Q	400...4.000	11...110	80
		(S/P/H)50	R	600...6.000	17...170	90
		(S/P/H)50	S	1.000...10.000	29...290	110
		(S/P/H)50	T	1.600...16.000	46...460	230
		(S/H)50 ⁴⁾	U	2.500...25.000 ⁵⁾	70...700	500
80	3" 3 ½"	(S/P/H)80	T	1.600...16.000	46...460	70
		(S/P/H)80	U	2.500...25.000	70...700	100
		(S/P/H)80	V	4.000...40.000	110...1.100	350
100 125	4" 5"	(S/P/H)1H	V	4.000...40.000	110...1.100	120
		(S/P/H)1H	W	6.000...60.000	170...1.700	360
		(S/H)1H ⁴⁾	X	8.000...80.000 ⁵⁾	240...2.400	600
		(S/H)1H ⁴⁾	2	10.000...100.000 ⁵⁾	- ⁶⁾	
150	6"	(S/H)H5 ⁴⁾	2	10.000...100.000 ⁵⁾	- ⁶⁾	
		(S/H)H5 ⁴⁾	4	13.000...130.000 ⁵⁾	- ⁶⁾	

Reference conditions: according to IEC 770: Water at 20°C, air at 20°C and 1.013 bar abs.

1. Provide spring choke or gas damping in the S version for gas measurement. The spring choke or gas damping is not available for P or H versions. Additional pressure loss approx. 200 mbar.
2. No measurement is possible at atmospheric pressure upstream and downstream of the flowmeter.
The values given are for orientation only. For gases, the required upstream pressure should be approx. 2...3 times the pressure loss of the measuring device.
3. Only in versions S and H, only with the reduced sealing strip.
4. not available in version P.
5. Conversion under consideration of viscosity is impossible.
6. Gas measurement not available.
7. Restrictions for devices with PTFE lining.

7. Characteristic values

7.1 Measuring accuracy

Reference conditions

Acc. to IEC 770: Water 20°C, Air 20°C and 1,013 bar abs.

Measuring accuracy

	BGN-S/H	BGN-P
Water	± 1,6% of actual value	± 2% of actual value
Gas	± 1,8% of actual value	± 2,2% of actual value

qG=50% VDI/VDE 3513-2

Additional inaccuracy for electronic transmitter ES ± 0,2 %

Repeatability

± 0,5 % of full scale

Influence of ambient temperature

- Without electrical equipment and with limit transducer without influence
- With transmitter ES +/- 0,5 % / 10 K reference temperature 22 °C

7.2 Influence of fluid temperature

Deviations in fluid temperature from the temperature observed during calibration can result in a proportional display fault because of the corresponding change in density. Changes in viscosity cause a non-linear display fault.

8. Output signal / electrical equipment / options


Inside the indicator housing different electrical switches (max. 2) or transmitters may be mounted.

8.1 Binary output

By using the segment disks (double or single) for adjust the proximity switches or by using discs with mounted magnets for adjust the reed contacts switches, any switching point between 10% and 90% of the flow rate can be set.

8.1.1 Limit switches KEI1 or KEI2

 KEI1 = 1x Inductive limit switch

 KEI2 = 2x Inductive limit switches

Model SJ 3,5N, manufacturer Pepperl & Fuchs (special switches e.g. safety technology or 3-wire version possible)

BGN flow meters can be equipped with max. 2 switches.

The switch points are usually factory pre-set. For adjusting the switch points see 9.3.1 Adjusting the switch point for the inductive limit switch KEI on page 17.

8.1.2 Limit switches KER1 or KER2

Design as SPDT switch (Reed switch).

KER 1 = 1 SPDT switch

KER 2 = 2 SPDT switch

Maximum switching capacity: U_{max} :175VDC, I_{max} :0,25A, P_{max} :5W. None of the specified limit values may be exceeded.

The switch points are usually factory pre-set. For adjusting the switch points see 9.3.2 Adjusting the switch point of limit switch KER 18.

8.2 Analog output with the-electronic transmitter ES

The electrical transmitter ES is factory-calibrated to the delivered scale values. The signal output can only be supplied in two-wire connection with 4-20 mA.

The 4-20 mA signal includes HART® protocol. Alternatively, it can have Profibus® PA or Foundation Fieldbus® interface see 8.3.

Additional options: 2 limit switches, alternatively 1x limit switch and 1x pulse output.

The signal output and the limit switches can be configured using a HART® modem operating on the following configuration programs: "PDM" from Siemens or "AMS" from Rosemount. Furthermore, a HART® hand-held terminal (with DD software) can also be used. For more information about configuration, please refer to the separate Operating Instructions for the ES.



Caution

When installing electrical equipment in hazardous areas, the conditions and provisions specified in the approval documents must be adhered to. See section 9.4 Installation in hazardous areas on page 18

8.3 Model ES-PPA and ES-FF

The ES-PPA and ES-FF transmitters are FISCO field devices that are connected via a two-wire field bus circuit according to the FISCO model.

The devices can also be connected to intrinsically safe fieldbus circuits which do not correspond to the FISCO model. In this case the electrical maximum values (U_i , I_i , P_i , L_i and C_i) must be observed.

Details for the use and operation can be found in separate instruction manual ES-PPA and ES-FF

8.4 Electrical connection

Wiring

To connect the power supply to electrical supplementary equipment, remove the indicator cover, insert the connector cable into the cable gland and attach it to the terminals according to the terminal diagram. Tighten the cable gland securely, remount the indicator cover and close it tightly.



Caution

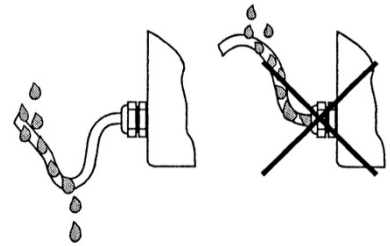
Please observe the following wiring instruction carefully. (Improper wiring will cause loss of guarantee)

Cable glands are not part of the delivery

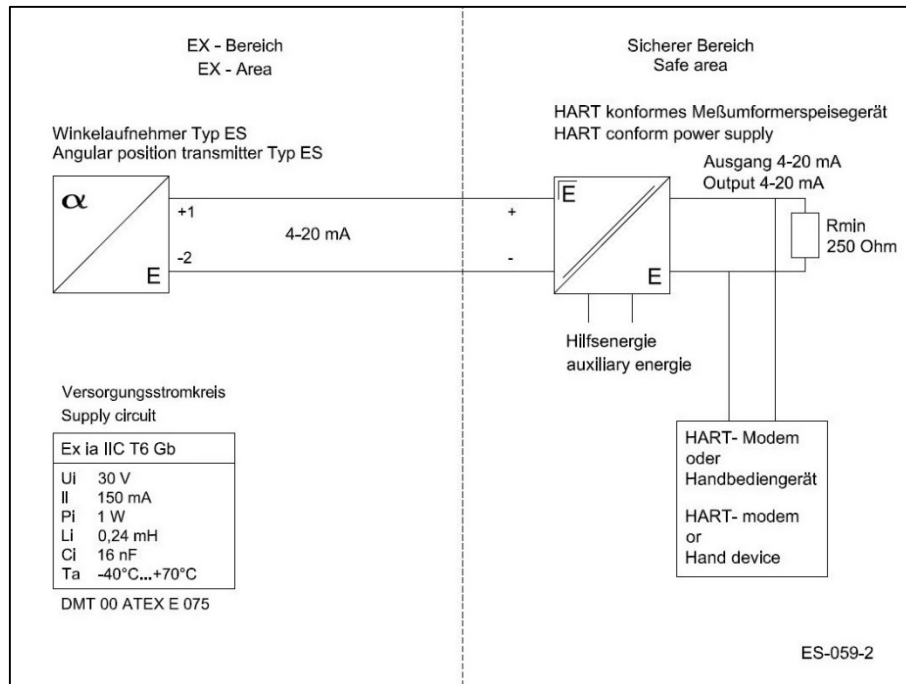
- The cable gland must the specified outer diameter
- The cable gland must fit to the diameter of the cable
- The cable must form a pig tale in front of the gland to avoid water ingress. See sketch on the right



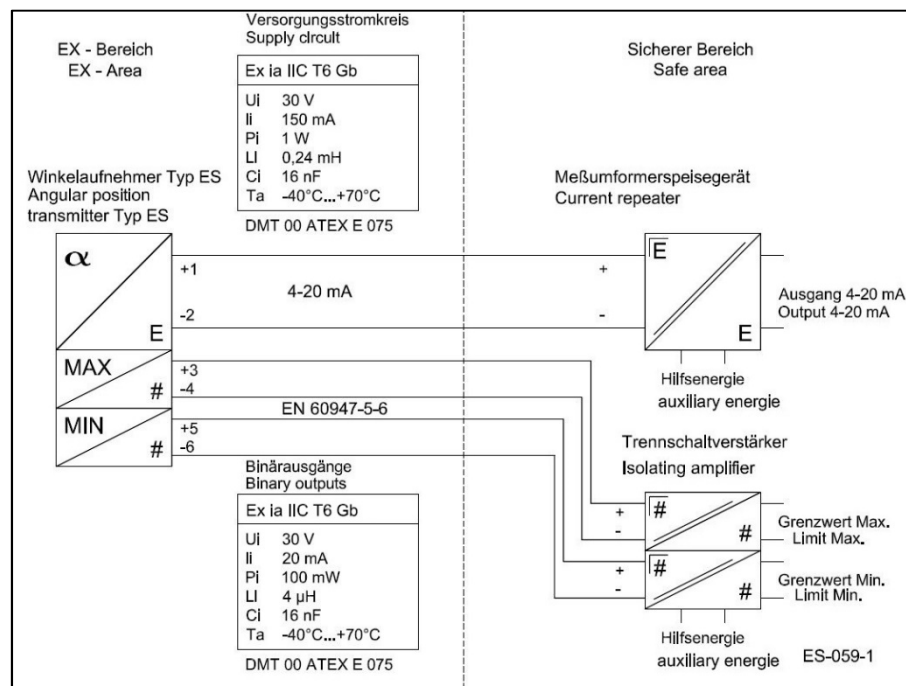
- Cable glands must not point upward
- The delivered cable gland connection sealing screw delivered with instruments with no signal transmitter must be removed
- The sealing of the cable glands must correspond with the instructions of the original cable gland manufacturer. Wrongly or incorrect tightened cable glands will cause water ingress into the indicator housing.



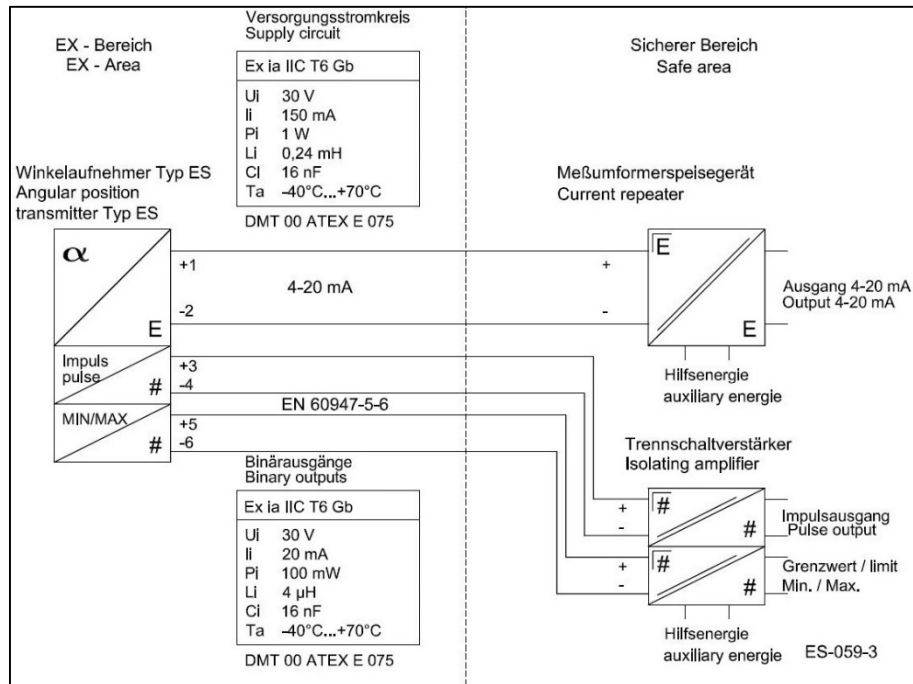
8.4.1 Wiring diagram for ES transmitter



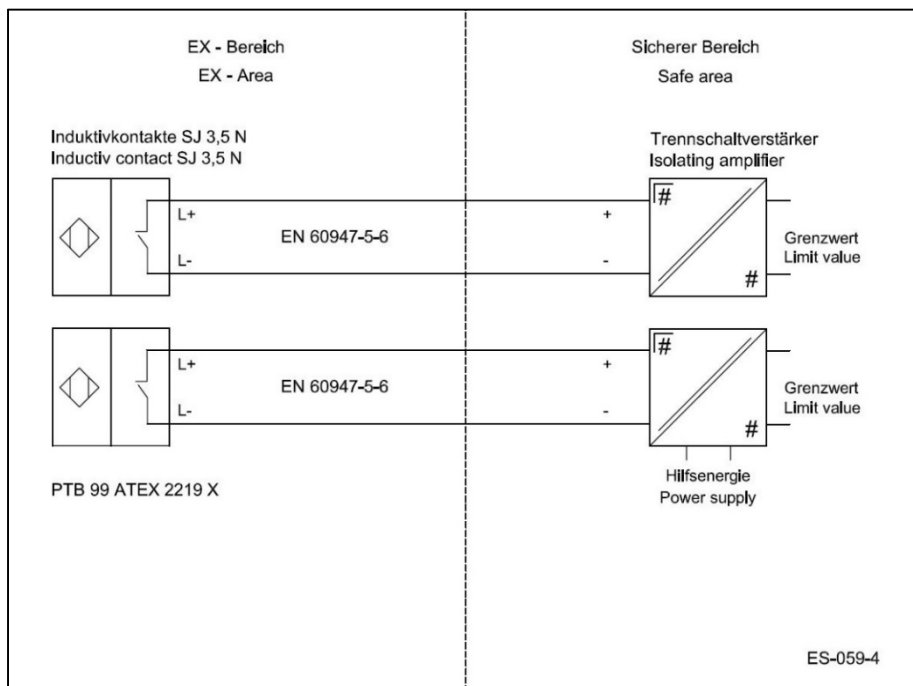
8.4.2 Wiring diagram for ES transmitter with 4-20 mA output and 2 limit switches



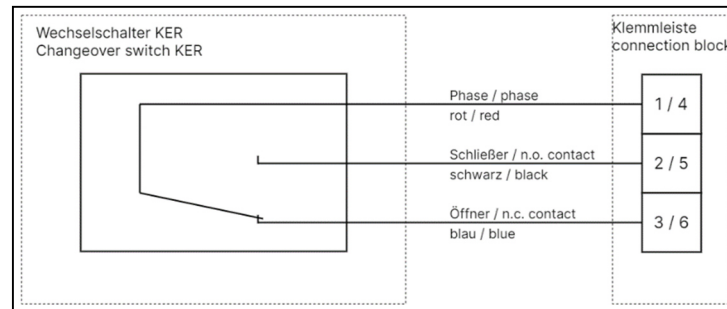
8.4.3 Wiring diagram for ES transmitter with 4- 20 mA output, pulse output and limit switch



8.4.4 Wiring diagram for inductive limit switches KEI



8.4.5 Wiring diagram for limit switches KER 1 and KER 2



8.4.6 Devices with unconnected cable end

For simple electrical connection, especially for the units with stainless steel indicating unit enclosures, the device can be supplied with a cable end (silicon cable). The standard cable length is 2.5 m. The cable has 7 wires, yellow / green for earth and 6 black wires with white numbers 1-6. The function of the wires (1-6) corresponds to the terminal numbers.

If the connection is made in a hazardous area, the cable must be connected in an enclosure that meets the requirements according to IEC EN 60079-14.

9. Conditions of use

For the use in any process the VDI/VDE guidelines 3513, sheet 3, must be observed.

The meter is suitable for:

- Liquids with sufficient flow capabilities, which are free of solids, do not bond and do not tend for deposits.
- Gases with linear / laminar flow behaviour and an adequate inlet pressure.

9.1 Mounting requirements

The mounting location must be suitable for a **vertical direction of flow from the bottom to the top**.



Note

If a vertical mounting is not possible, then the flow meter series **BGF** may be installed. This device can be used for both horizontal and vertical flow directions.

The limit values for temperature and air humidity at the mounting location must be maintained. Avoid corrosive atmospheres. If this cannot be avoided, ventilation must be installed.



Caution

Please ensure that there is adequate clearance from parts that might cause magnetic interferences such as solenoid valves and ferromagnetic components like steel brackets/supports.

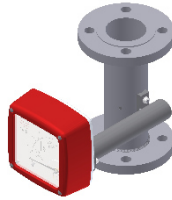
We recommend the minimum lateral distance between two adjacently mounted devices to be 300 mm.

The devices can be mounted close together if vertically offset by one device length. The minimum lateral clearance for interfering steel parts should be **300 mm**. In case of doubt, check the interference by moving the device back and forth in the selected distance by about 300 mm and evaluate whether the pointer position changes.

Select the mounting location so as to enable a reliable reading of the scale values. Please take note as well of the space requirement for any possible disassembly of the device.

For process temperature $< -40\text{ °C}$ and/or $> +200\text{ °C}$ the instruments must be equipped with a displaced indication. Please consider the additional required space (see 10.1).

Sample aluminium indicator displaced



Sample st.st. indicator displaced



As a rule, **inlet and outlet** sections in front of and behind the device are not necessary if the medium does have a linear flow profile. Avoid mounting accessories converging on one side in front of the device. However, if this is indispensable maintain a minimum $5xD$ as inlet and $3xD$ as outlet section.

The nominal size of the pipes to be connected must correspond to that of the meter. Avoid fittings converging on one side directly in front of the device. As a rule, install valves behind the measuring equipment if there are gases involved.

9.2 Mounting / start-up

The device must be mounted in accordance with the direction of flow from the bottom to the top (perpendicularly). Please observe the prior reference to the BGF-type device.

The nominal size of the device and that of the pipes must be the same. The pressure rating and, hence, the dimensions of the flanges must coincide. The surface roughness of the flange sealing surface must be suitable for the prescribed gaskets.

Please check whether possible accessories like spring stops, gas/liquid-type dampers are still correctly sitting on the flange. Check whether the mounting clearance between the flanges of the pipes corresponds to the assembly dimension of the device plus two gaskets.



Note

To achieve stress-free mounting, the flanges of the pipes must be aligned parallel to each other

Use connecting bolts and gaskets in the prescribed dimensions. The gaskets must be suitable for the operating pressure, the temperature and the measured medium. With PTFE-lined devices, use gaskets whose interior and exterior diameter correspond to the sealing strip of the device.

Tighten the screws crosswise so that the process connections are tight. Refer to the screw torques especially with PTFE-coated devices.

The maximum torques for PTFE-coated devices (BGN-P) are:

- DN15 / DN25 = 14 Nm
- DN50 = 25 Nm
- DN80 = 35 Nm
- DN100 = 42 Nm

acc. to VDI/VDE 3513 Guideline

Please check whether the pipe is adequately fixed and stable to prevent vibration or swinging of the device. (Do not use steel mounting parts on the device.)

When used with gaseous medias the installation position of e.g. adjusting valve (e.g. special option). If the device is calibrated to more than 1,013 bars abs., the valve is usually installed at the flow meter outlet. At 1,013 bars abs. (free outlet) the valve is installed at the flow meter inlet.

If there is risk of dirt or solid matter penetrating the process pipes, flush them beforehand so that those materials do not get deposited in the device. Ferromagnetic solid matter such as weld spatters can lead to the breakdown of the device. If these materials cannot be excluded during normal operating conditions, mount a magnetic filter (accessory) in front of the device. When using liquids, flush to avoid a surge of gas bubbles. Slowly increase the supply pressure when

using gases to prevent pressure surges. Basically, avoid activation using solenoid valves to prevent the float from shooting upwards.

9.2.1 Liquid Measurement / start up



Caution

When measuring liquids process pipes must be accurately vented to avoid water hammers through gas contents. To avoid float hammering the use of solenoid valves is to be avoided.

9.2.2 Gas measurement / start up

When measuring gases, increase flow very slow to avoid float hammers inside the flow tube. At the same time, vary the operating pressure through a setting valve so that the float will not be exposed by any flow hammer otherwise this would damage the float or measuring ring. Avoid fluid pulsation. On gas measurements flow meters with gas damping systems will be recommended



Warning

Float hammering can damage the float and/or measuring ring and occur especially at start-up and stop events.

9.3 Device settings

The measuring instrument is delivered ready for operation according to your order specifications.

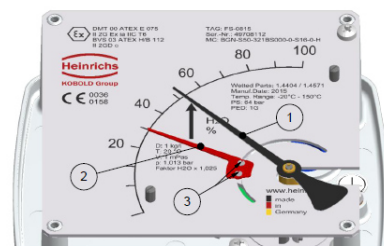
The limit switches are set to the desired values. If you have submitted no requirements, the basic settings are:

- 1 limit switch: As min switch. Switching point at 10 % falling flow rate.
- 2 limit switches: As min./max switches. Switching point at 10 % falling flow rate and at 90 % rising flow rate

9.3.1 Adjusting the switch point for the inductive limit switch KEI

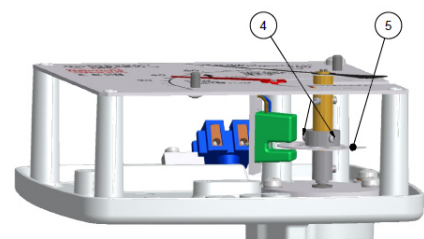
The inductive contact can be adjusted via a limit switch indicator **(2)** located at the front side of the scale.

1. unscrew **4 screws** of the front cover and lift off the cover
2. **! do not remove the scale !**
3. unfasten 2 locking screws (3) of the red limit switch indicator (2)
4. move the red switch indicator to the desired switch point on the scale and tighten the locking screws (3) again
5. mount the cover and tighten its four screws again.



Legend:

- (1) Point
- (2) Limit switch indicator (fig. MIN)
- (3) Limit switch indicator locking screws
- (4) Lockings screws switching disc
- (5) Single switching disc KEI



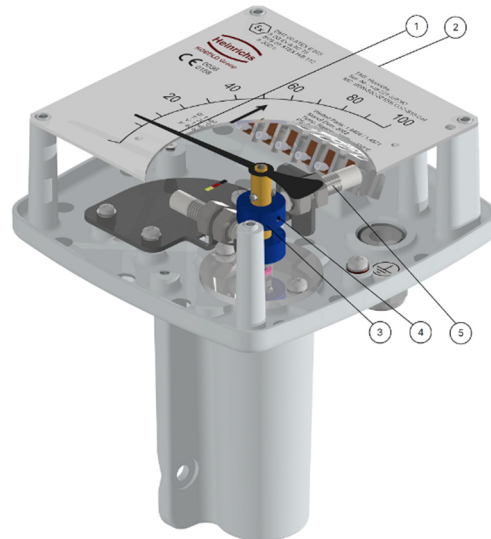
9.3.2 Adjusting the switch point of limit switch KER


Note:

KER1 and KER2 limit switches do not have limit switch indicators.
Switch point(s) are normally factory set.

To adjust the switch points use the following procedure:

- 1) Ensure that the supply lines are powerless and cannot not be switched active during operation by other persons.
- 2) unscrew 4 screws of the front cover and remove the cover.
- 3) **! do not remove the scale !**
- 1) Move the **pointer (1)** carefully in direction of the desired switch point.
- 2) Loosen the **screw (4)** from the **disk (3)** and rotate it to the switching point of the **switch (5)**.
- 3) Depending on the "normally open" or "normally closed" switching function, the switch must be activated ("normally closed") or deactivated ("normally open").


Legend:

- (1) Pointer
- (2) Scale
- (3) Disk
- (4) Screw
- (5) Switch

9.4 Installation in hazardous areas


Warning

Only devices with Ex marking may be operated in hazardous areas!



Ambient-Temp.	Process-Temp.	Marking	Zone	Description Max. Ambient temperature
-40 ... +80°C	-25 ... +150 °C	II 2G Ex h IIC T6...T3 Gb II 2D Ex h IIIC T85°C...T200°C Db	1	With built-in switch max. 80°C. Observe type certificate of the contact manufacturer.
	-25 ... +200 °C		1	With built in ES max. 70°C
	-40 ... +350 °C	II 2G Ex h IIC T6...T1 Gb II 2D Ex h IIIC T85°C...T350°C Db	1	Purely mechanical device max. 80°C

9.4.1 Without electrical equipment

The basic version of the flow meter is a non-electrical device without its own ignition sources and meets DIN EN 13463-1 requirements. It can be used in hazardous areas that require Category 2 equipment.

Marking:

II 2G Ex h IIC T6...T2 Gb

II 2D Ex h IIIC 80°C...T350°C Db

Reg. No.: BVS 03 ATEX H/B 112

Tech. File Ref. EE0088-3001-X

Since the device does not have its own power sources that would result in a temperature increase, the fluid temperature is decisive for the maximum surface temperature.

**Warning**

When used in potentially explosive dust atmospheres, the device must be cleaned regularly in order to avoid deposits exceeding 5 mm.

**9.4.2 With built-in limit switches**

When the limit switches are installed, the device becomes an electrical assembly and gets a marking in accordance with DIN EN 60079 of built-in electrical limit transducers.

The electrical and thermal data and the special conditions of the EU Type Examination Certificate of the built-in limit transducers must be observed.

The influence of the fluid temperature on the built-in limit transducers must be observed. The excess temperature of the maximum fluid temperature based on the maximum ambient temperature must be considered with a factor according to Table 1:

Nominal size	Factor for standard version	Factor for instruments with the indicator on distance
DN15 and DN25 / 1/2" and 1"	0,2	0,07
DN40 and DN50 / 1,5" and 2"	0,25	0,085
DN80 and DN100 / 3" and 4"	0,3	0,1
DN150 / 6"		

Table 1 Temperature Factors for indicating unit

Example for built-in limit switch at DN 15 (1/2") and DN 25 (1"):

T_{amb}	=	Max. ambient temperature	=	40 °C
T_m	=	Max. fluid temperature	=	120 °C
F	=	Factor for heat input	=	0,2
T_4	=	Temperature class	=	135 °C
$T_{\bar{u}}$	=	Excess temperature		
T_a	=	Ambient temperature of limit switch		

$$T_{\bar{u}} = T_m - T_{amb} = 120^\circ\text{C} - 40^\circ\text{C} = 80^\circ\text{C}$$

$$T_a = T_{\bar{u}} * F + T_{amb} = 80^\circ\text{C} * 0,2 + 40^\circ\text{C} = 56^\circ\text{C}$$

In accordance with the tables in the PTB 99 ATEX 2219 X EU Type Examination Certificate, the SJ 3,5-... N... inductive sensor must be operated in the T5 temperature class with an intrinsically safe circuit that does not exceed the maximum values of the Type 3 circuit.

When using the device in hazardous areas, follow the applicable national installation rules.

Example for calculating the max. fluid temperature based on the max. ambient temperature for the built-in sensor Type ES for DN 15/25.

$$T_a = 70^\circ\text{C}$$

$$T_{amb} = 60^\circ\text{C}$$

$$F = 0,2$$

$$T_m = \left(\frac{T_a - T_{amb}}{F} \right) + T_{amb} = \left(\frac{70^\circ\text{C} - 60^\circ\text{C}}{0,2} \right) + 60^\circ\text{C} = 110^\circ\text{C}$$

Marking for the device with built in SJ 3,5...N... limit switch

The built-in limit value transmitter from Pepperl & Fuchs is certified

- for the gas Ex area by the EU type examination certificate PTB 99 ATEX 2219 X
- and for the dust Ex area by the EU type examination certificate ZELM 03 ATEX 0128 X.



PTB 99 ATEX 2219 X
II 2G Ex ia IIC T6 Gb
II 1D Ex ia IIIC T₂₀₀ 135°C Da

Marking for the device with built in electric transmitter ES



DMT 00 ATEX 075
II 2G Ex ia IIC T6 Gb

9.4.3 Atmospheric conditions

In accordance with EN 1127, a "potentially explosive atmosphere" is defined as a mixture of air and combustible gases, vapour, mist or dust under atmospheric conditions. Such conditions are defined in ISO 80079-36:2016, Clause 1, with values $T_{atm} = -20\text{ °C}$ to $+60\text{ °C}$ and $P_{atm} = 0,8$ to $1,1$ bar. Outside this range, safety parameters for most ignition sources are not available.

Usually, variable-area flow meters operate under operating conditions outside the atmospheric conditions of $0,8$ to $1,1$ bar. Therefore, irrespective of the zone classification –safety parameters of explosion protection – are basically not applicable to the inside of the measuring tube.



Warning

The operation with combustible products is only permissible if a potentially explosive air mixture is not formed inside the flow meter. Where this condition is not met, the operator must assess the ignition hazard in each individual case and give due consideration to existing parameters (e.g. pressure, temperature, process product, materials of construction for the measuring tube).



9.4.4 Grounding

In variable-area flow meters, in principal it is possible that through the flow of non-conductive liquids a charge separation occurs inside the measuring tube. A dissipation of such charge carriers from the metal flow tube through earthing must be ensured by permanent earthing via process connections through the operator.

If grounding cannot be made via the process connections (plastic process connections or undefined connections), the flow meter must be connected to the local ground potential via the flanges. This connection only ensures electrostatic grounding of the device and does not meet the requirements for equipotential bonding.

9.5 Ambient conditions

Ambient temperature ranges

- Without electrical accessories: $-40 \dots + 80\text{ °C}$
- With limit switches: $-40 \dots + 80\text{ °C}$: Observe the type certificate of the contact manufacturer!
- With ES signal output: $-40 \dots + 70\text{ °C}$

For the hazardous area version, take note of the maximum ambient temperatures depending on the temperature class as specified on the Type Examination Certificate.

Storage temperature

The storage temperatures are identical to the ambient temperature ranges.

Climatic category

Weather-protected and/or unheated locations, class C according to IEC 654 Part 1

Degree of protection

- IP 65 Aluminium indicator unit
- IP 47 Stainless steel indicator unit

Shock resistance/vibration resistance

The meter should be protected from extreme shocks and vibrations, which could cause damage.

Electromagnetic compatibility

See 16 Certificates and approvals on page 35

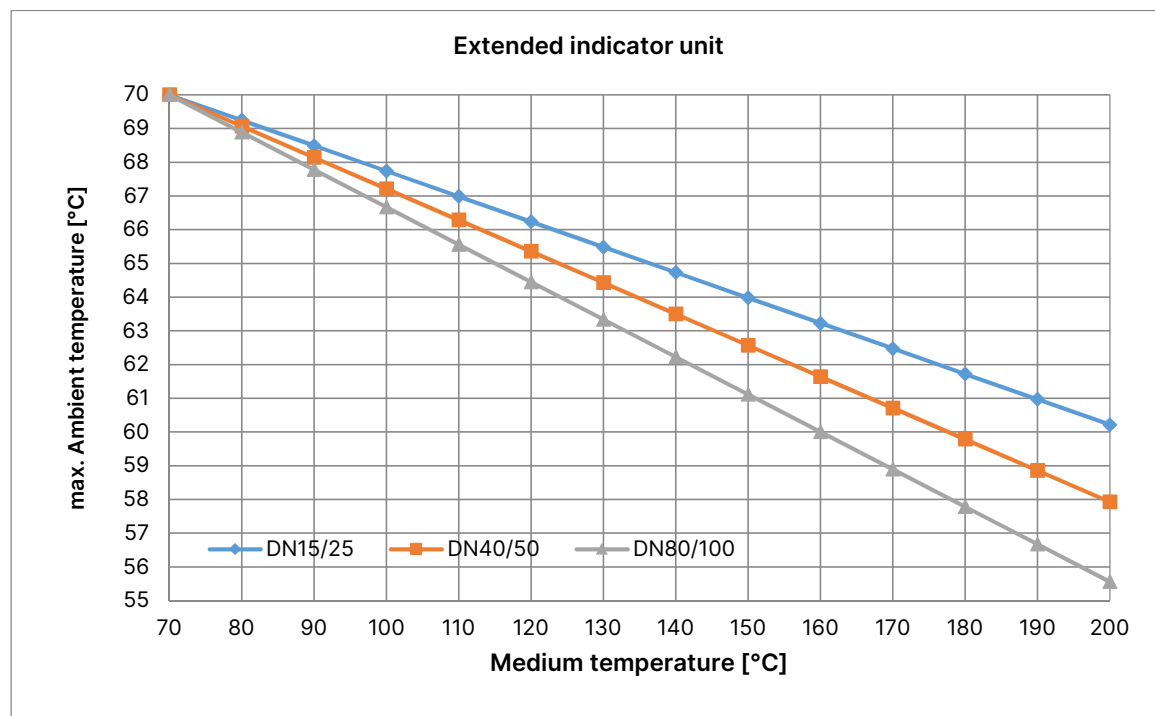
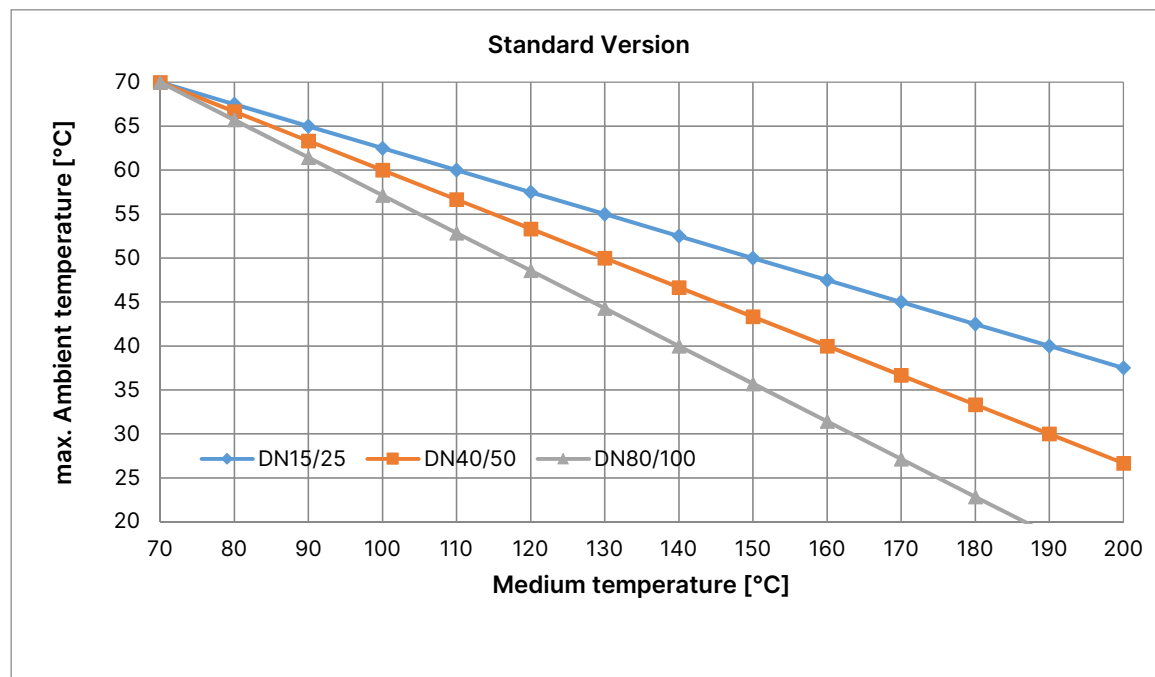
9.6 Fluid conditions

Fluid temperature ranges

- BGN-S/ H: -40 °C bis + 200 °C Special design -80°C bis +350°C
- BGN-P: -20 °C bis + 125 °C

By medium temperature below 40 °C and greater than 200 °C, an extended indicator unit is required.

Diagrams: Max. ambient temperature dependent on fluid temperature for ES transmitter



Fluid pressure limit

Standard design BGN-S/ H: DN15/25/40/50/80 - PN40

DN100 - PN16

Special design: up to PN400

BGN-P: DN15/25/50/80/100 - PN16

Inlet and outlet sections

As a rule, inlet and outlet sections in front of and behind the device are not necessary if the medium does have a linear flow profile. Avoid mounting accessories converging on one side in front of the device. However, if this is indispensable maintain a minimum 5xD as inlet and 3xD as outlet section. See also VDI/VDE 3513 Guideline.

Physical state

Liquid or gaseous

Density

Liquids: up to 2,0 kg/l

Gases: no restrictions

Viscosity

The influence of viscosity depends on various factors. Therefore, it must be calculated for each application.

Pressure (for gas measurement)

The measured values only apply to the calibrated fluid data stated on the scale. Any change or deviation in pressure will cause a display fault.

Pressure loss

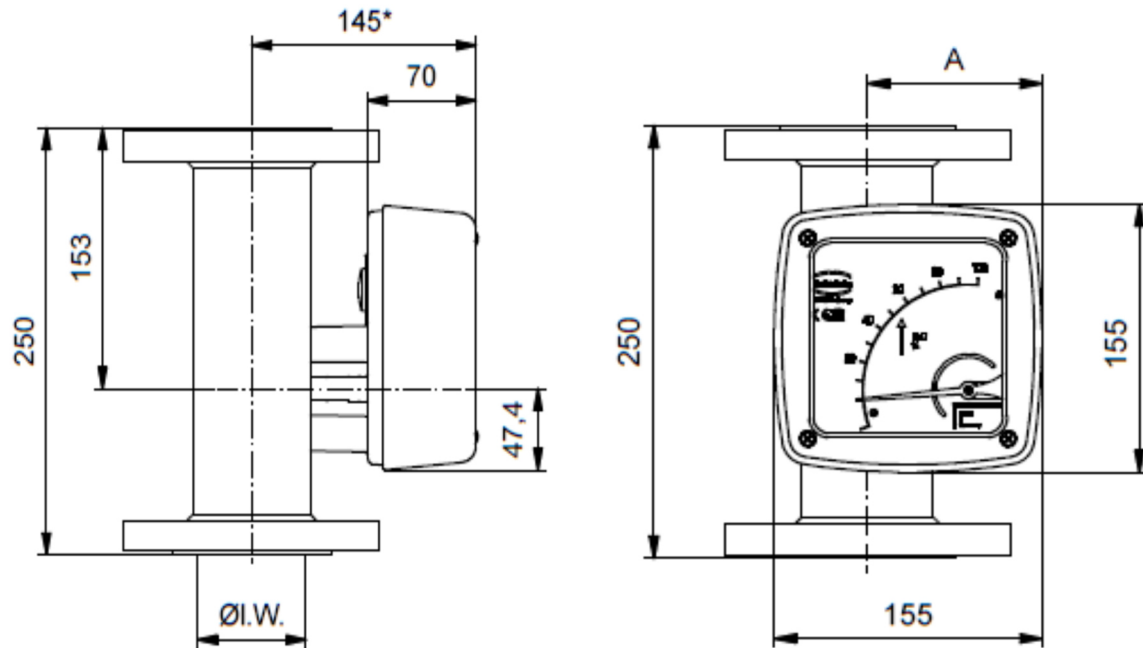
Depends on the meter size and the measuring range. See 10 Measuring ranges on the page 10.

10. Construction details

10.1 Type of construction/dimensions

10.1.1 Aluminum indicator housing

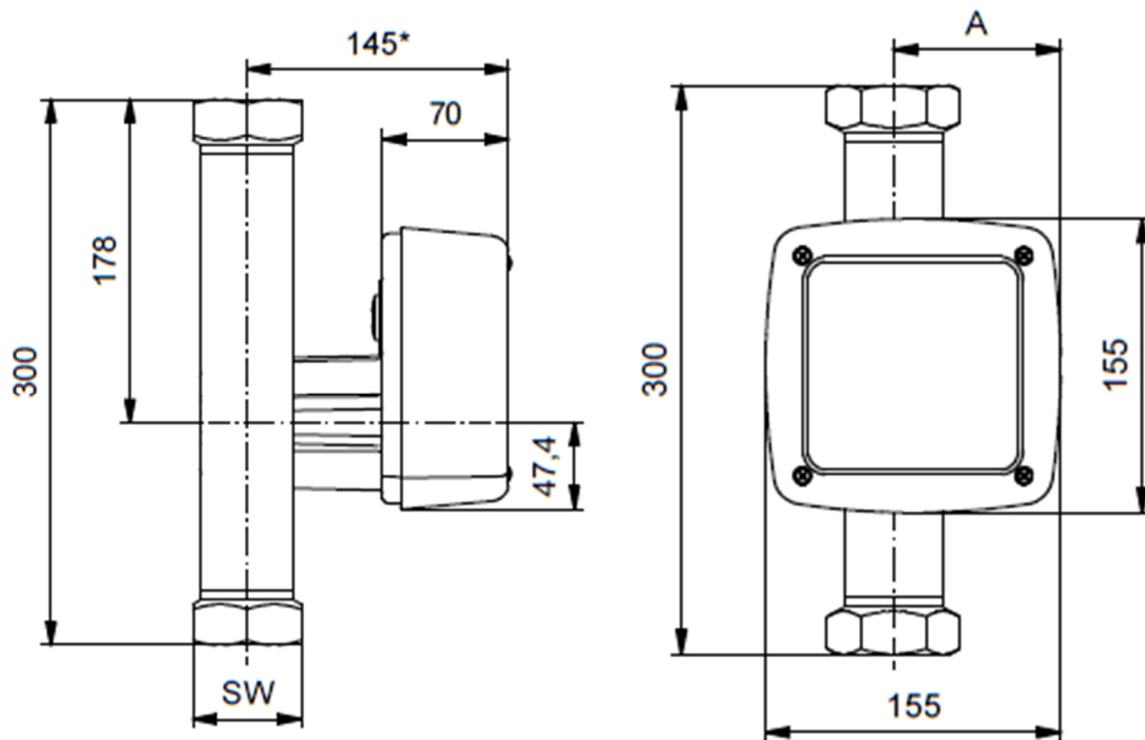
Version with flange connection



Armature	DN	PN	Ø I.W. [mm]	A [mm]
S15	15	40	26	77,0
S25	25	40	32	80,1
S40	40	40	46	87,9
S50	50	40	70	100,9
S80	80	40	102	117,4
S1H	100	16	125	130,1
SH5	150	16	158	149,6

*=+100 mm for displaced indicator

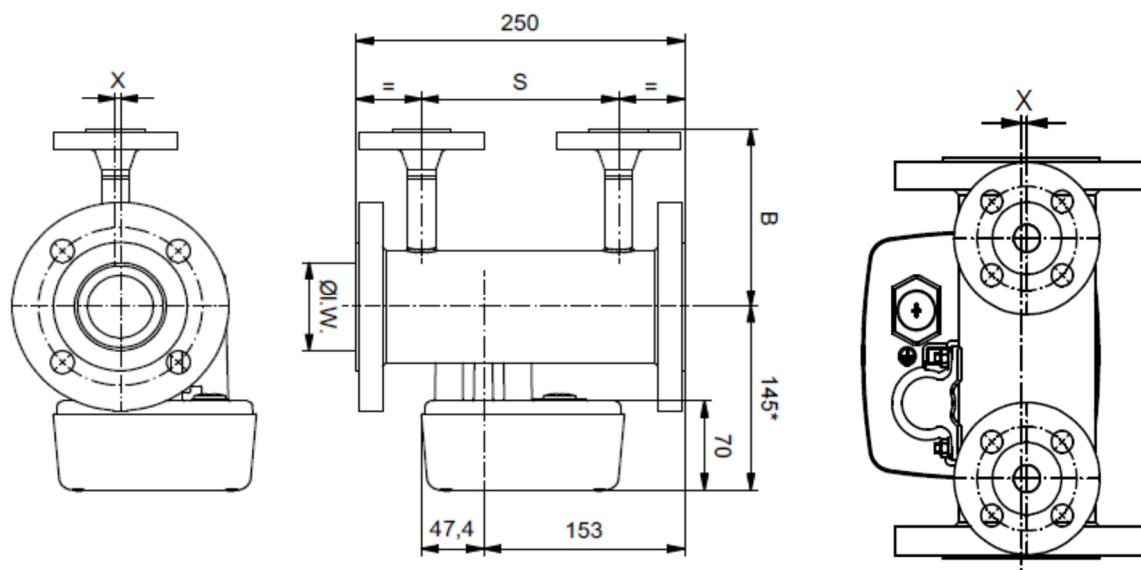
Version with threaded connection



Armature	NPT(f) / G(f) (in)	PN	SW	A (mm)
S15	1/4-3/8-1/2-3/4	40	36	77,0
S25	1/4-3/8-1/2-3/4	40	36	80,1
S40	3/4-1-1 1/4	40	60	87,9
S50	1 1/4-1 1/2-2	40	80	100,9

* = +100 mm for displaced indicator

Dimensional drawing with heating



DN / ASME	PN / Cl	B (Flange) [mm]	B (Ermeto) [mm]	S [mm]	X [mm]
15 / 1/2"	40 / (150/300)	110	53	150	3,0
25 / 1"	40 / (150/300)	110	58,5	150	4,9
40 / 1 1/2"	40 / (150/300)	130	63	150	2,65
50 2"	40 / (150/300)	140	77,5	150	3,5
80 / 3"	16 / (150/300)	160	93,5	150	4,5
100 / 4"	16 / (150/300)	175	110	120	0

* = +100 mm for displaced indicator

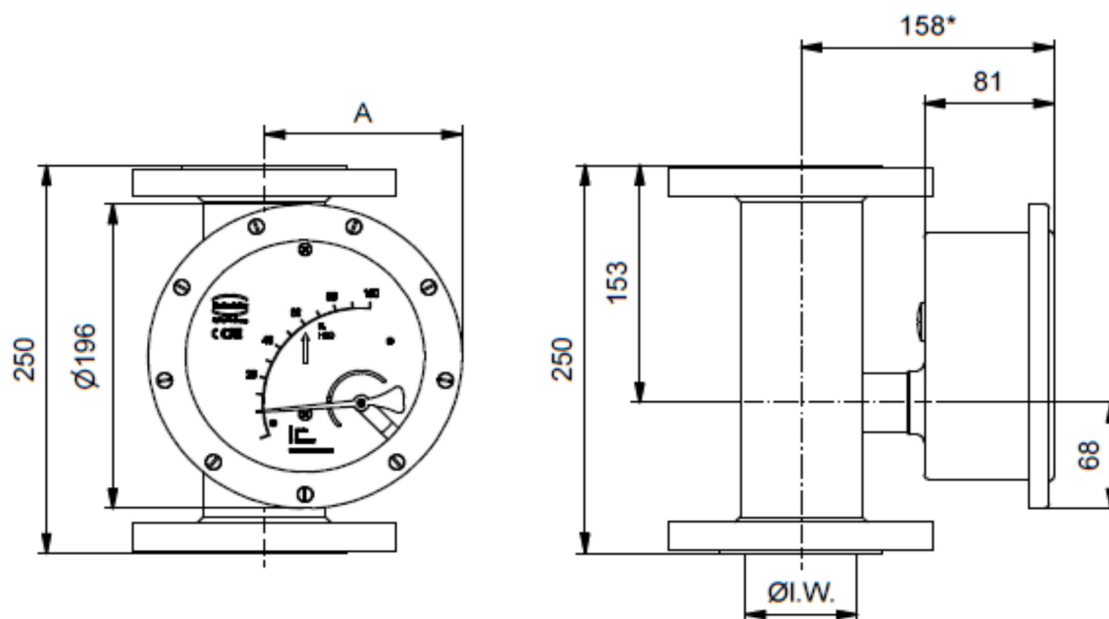
Connections for heating jacket

Pipe for	Ermeto 12 mm		
Thread	1/2" NPT(f)		
Flange in acc. with DIN/EN	DN15 (1/2") oder DN25 ¹⁾ (1")	PN40	
Flange in acc. with ASME	1/2"	150lbs	

¹⁾ DN25 flange is special version.

10.1.2 Indicator housing made of stainless steel

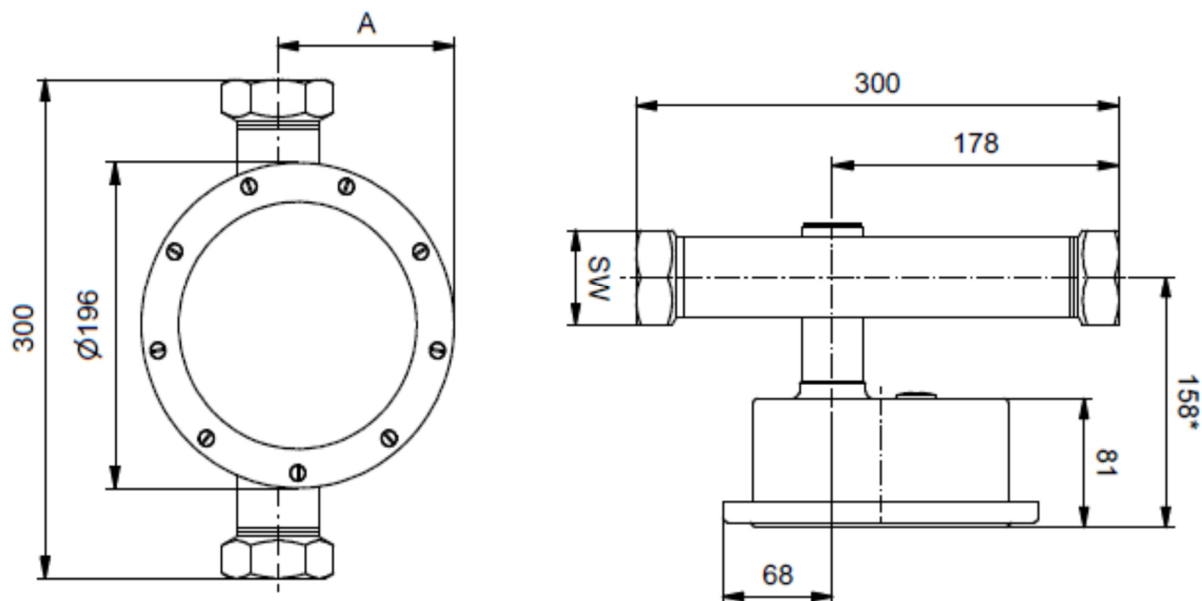
Version with flange connection



Armature	DN / ASME	PN / CL Bar / lbs	Ø I. W. (mm)	A (mm)
S15	15 / 1/2"	40 / 300	26	99,5
S25	25 / 1"	40 / 300	32	102,6
S40	40 / 1 1/2"	40 / 300	46	110,4
S50	50 / 2"	40 / 300	70	123,4
S80	80 / 3"	40 / 300	102	139,7
S1H	100 / 4"	16 / 300	125	152,4
SH5	150 / 6"	16 / 150	158	170,2

* = +100 mm for displaced indicator

Version with threaded connection



Armature	NPT (f) / G(f) [in]	PN [bar]	SW	A [mm]
S15	1/4-3/8-1/2-3/4	40 / 300	36	99,5
S25	1/4-3/8-1/2-3/4	40 / 300	36	102,6
S40	3/4-1-1 1/4	40 / 300	60	110,4
S50	1 1/4-1 1/2-2	40 / 300	80	123,4

* = +100 mm for displaced indicator

10.2 Weights

Armature	Connection	Weight with Aluminium Indicator	Weight with St.st. indicator
S15	DN 15	3,3 kg	4,0 kg
S25	DN 25	4,2 kg	4,9 kg
S40	DN 40	6,5 kg	7,2 kg
S50	DN 50	8,7 kg	9,4 kg
S80	DN 80	13,8 kg	14,5 kg
S1H	DN 100	14,5 kg	15,2 kg
SH5	DN 150	32,0 kg	32,4 kg

Armature	Connection	Weight with Aluminium Indicator	Weight with St.st. indicator
S15	3/4", 150 lbs, ASME B16.5	3,1 kg	3,8 kg
S25	1", 150 lbs, ASME B16.5	3,8 kg	4,5 kg
S40	1 1/2", 150 lbs, ASME B16.5	5,2 kg	5,8 kg
S50	2", 150 lbs, ASME B16.5	7,4 kg	8,1 kg
S80	3", 150 lbs, ASME B16.5	13,0 kg	13,7 kg
S1H	4", 150 lbs, ASME B16.5	17,2 kg	17,9 kg
SH5	6", 150 lbs, ASME B16.5	33,5 kg	34,0 kg

Armature	Connection	Weight with Aluminium Indicator	Weight with St.st. indicator
S15	¾", 300 lbs, ASME B16.5	4,0 kg	4,6 kg
S25	1", 300 lbs, ASME B16.5	4,9 kg	5,6 kg
S40	1 ½", 300 lbs, ASME B16.5	7,4 kg	8,1 kg
S50	2", 300 lbs, ASME B16.5	8,9 kg	9,6 kg
S80	3", 300 lbs, ASME B16.5	16,2 kg	16,9 kg
S1H	4", 300 lbs, ASME B16.5	24,6 kg	25,3 kg
SH5	6", 300 lbs, ASME B16.5	49,7 kg	50,2 kg

Armature	Connection	Weight with Aluminium Indicator	Weight with St.st. indicator
S15	1/4-3/8-1/2-3/4	2,3 kg	3,0 kg
S25	1/4-3/8-1/2-3/4	2,4 kg	3,1 kg
S40	3/4-1-1 1/4	3,4 kg	4,1 kg
S50	1 1/4-1 1/2-2	5,3 kg	6,0 kg

10.3 Material

Armature

Type	Measuring tube	Lining of measuring tube	Flanges	Flange lining	Float
BGN – S	1.4404 (316 L)	none	1.4404 (316 L)	none	1.4404 (316 L)
	1.4571 (316 Ti)		1.4571 (316 Ti)		1.4571 (316 Ti)
BGN – P (Q _{max} :5/10/16 l/h H ₂ O)	1.4404 (316 L)	PTFE/ Glass	1.4404 (316 L)	PTFE	PTFE / Tantalum
	1.4571 (316 Ti)		1.4571 (316 Ti)		
BGN – P	1.4404 (316 L)	PTFE	1.4404 (316 L)	PTFE	PTFE
	1.4571 (316 Ti)		1.4571 (316 Ti)		
BGN – H DN15/25 – ¾"/1" ASME	Hastelloy C22	none	Hastelloy C22	none	Hastelloy C22
BGN – H > DN40 – 1½" ASME	Hastelloy C22	none	1.4404 (316 L) 1.4571 (316 Ti)	Hastelloy C22	Hastelloy C22

Indicator units

Type	Base plate	Housing
BGN – S/P/H	Aluminium	Aluminium, safety glass window
Optional	Stainless steel	Stainless steel, safety glass window

10.4 Process connection

DIN	BGN-S/H	BGN-P
DN 15	PN 40	PN 16
DN 25	PN 40	PN 16
DN 40	PN 40	PN 16
DN 50	PN 40	PN 16
DN 80	PN 40	PN 16
DN 100	PN 16	PN 16
DN 150	PN 16	-

ASME	BGN S/ H		BGN P	
ASME ¾" B16.5	150 lbs	300 lbs ¹⁾	150 lbs ²⁾	300 lbs ²⁾
ASME 1" B16.5	150 lbs	300 lbs ¹⁾	150 lbs ²⁾	300 lbs ²⁾
ASME 1 ½" B16.5	150 lbs	300 lbs ¹⁾	150 lbs ²⁾	300 lbs ²⁾
ASME 2" B16.5	150 lbs	300 lbs ¹⁾	150 lbs ²⁾	300 lbs ²⁾
ASME 3" B16.5	150 lbs	300 lbs ¹⁾	150 lbs ²⁾	300 lbs ²⁾
ASME 4" B16.5	150 lbs ²⁾	300 lbs ²⁾	150 lbs ²⁾	300 lbs ²⁾
ASME 6" B16.5	150 lbs ²⁾	300 lbs ²⁾	-	-

¹⁾ Entire device PN 40/Cl.300 ²⁾ Entire device PN16/Cl.150

Additional equipment:

special flanges (e.g. JIS), threaded connections, food connection (e.g. TriClamp), welding connection

The S/H versions in special design are available for higher pressure on request.

10.5 Magnetic filter

The BGN flow meter is sensitive to impure media. Before installing the device, clean the pipes of dirt, spatter and other foreign matter. If the medium comes with solid particles, connect a suitable filter in series. When dealing with flow media with ferrous particles, we recommend the connection of a magnetic filter.

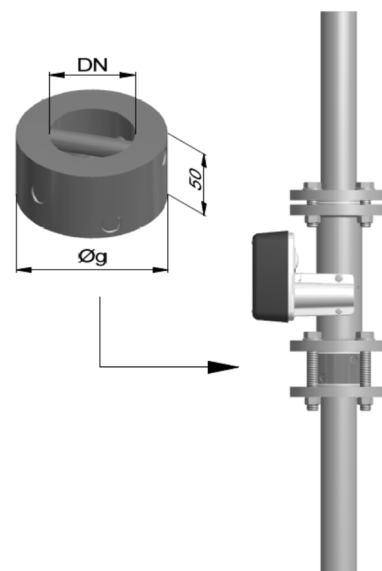
It is installed in front of the flow-meter in the direction of flow.

To protect both magnetic filter types, **MF-S (stainless steel)** and **MF-P/S (PTFE/stainless steel)**, from corrosion, encapsulated permanent magnets are laid out in spiral form. The spiral mounting produces optimum effect at small pressure loss.

The filter can be supplied with groove or tongue, projection or return, other standards or special connections according to customer demand.

Dimensions:

DN	Ø g (mm)
15 / 1/2"	45
25 / 1"	68
40 / 1 1/2"	88
50 / 2"	102
65 / 2 1/2"	122
80 / 3"	138
100 / 4"	158



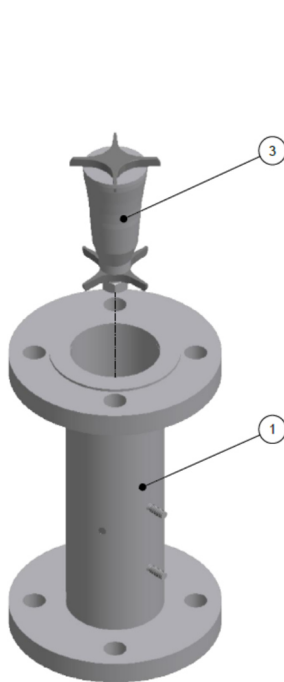
10.6 Indicator unit

- Analog indicator approx. 90° with pointer
- Customized product scale
- double scale possible (please inform of process data)
- ES transmitter with freely programmable user interface
- When installed with ES, Parameters may be changed based on the ES Operating Instructions.

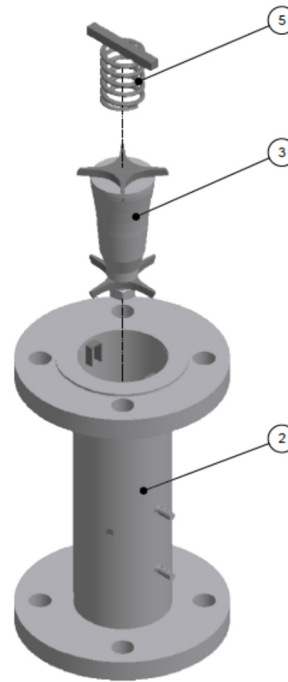
11. General Arrangements

11.1 Fitting with measuring element

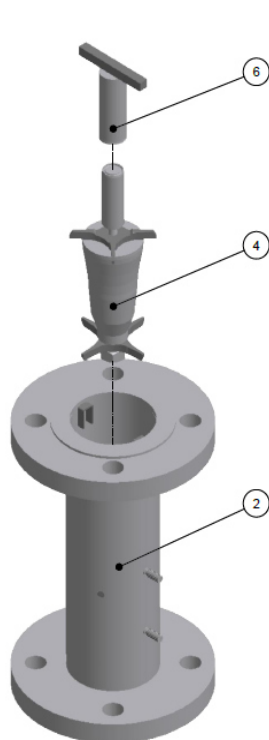
Name Figures	Part no.
BGN - Fitting	1
BGN - Fitting with Spring stop for float	2
Float	3
Float with damping piston	4
Spring stop	5
Gas damping	6
Gas damping with spring stop	7



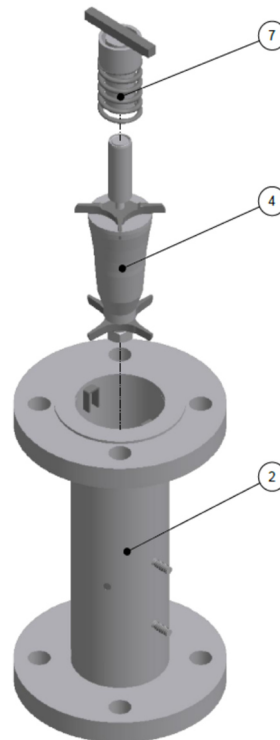
BGN-S... Standard version



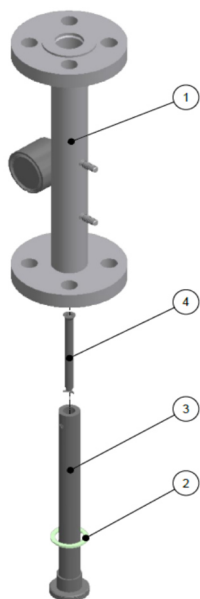
BGN-S... with spring stop



BGN-S... with damping piston



BGN-S... with damping piston and spring stop

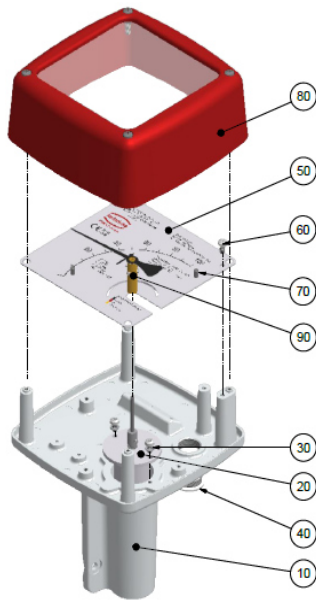


BGN-S... small measuring ranges up to 40 l/hW

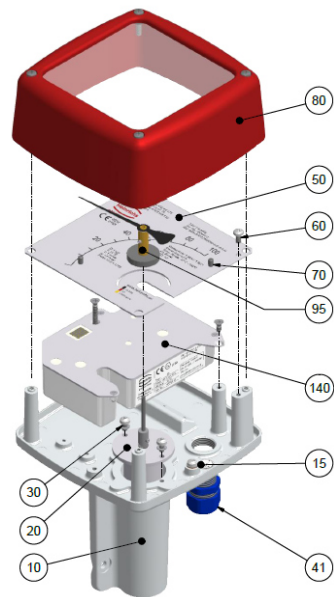
Figure description	Part no.
BGN – Fitting for small measuring range	1
gasket	2
Cone with spring stop	3
Float	4
<p>Information about replacing of measuring cones on low volume meters.</p> <p>Depending on the unit version and ranges screwed cones (changeable) or welded cones (non changeable) are used. For further information regarding replicability please contact service department.</p>	

11.2 Indicator unit

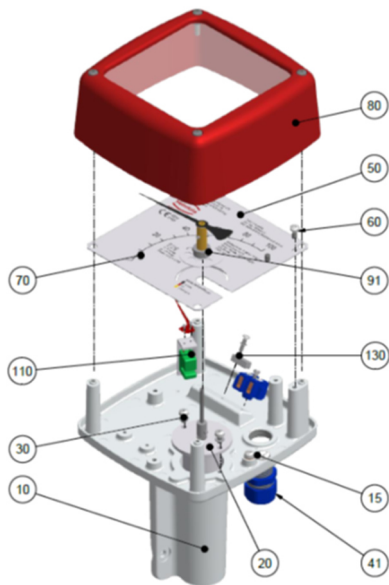
Description	Part no
Indicator base plate 1 x M 20 x 1.5	10
Inner earthing connection	15
Bearing assembly	20
Fixing screws for bearing unit	30
Dummy plug M 20 x 1.5 c/w o-ring	40
Cable gland blue (intrinsically safe) c/w o-ring M20 x 1,5	41
Cable gland grey (ATEX) c/w o-ring M20 x 1,5	42
Scale, blank	50
Fixing screw for the scale	60
Zero-point screw with nut	70
Indicator cover with glass window, gasket, screws	80
Scale pointer	90
Scale pointer c/w 1 switching disc KEI	91
Scale pointer c/w 2 switching discs KEI	92
Scale pointer c/w ES position magnet	95
1. SJ 3,5 N limit switch c/w limit value indicator incl. c/w mounting parts	110
1 SPDT micro switch KEM 1 c/w mounting parts	114
2. SJ 3,5 N limit transducer with limit value indicator	120
2 SPDT micro switches KEM 2 c/w mounting parts	124
Distortion lock c/w screw	130
ES HART® transmitter c/w fixing screws	140



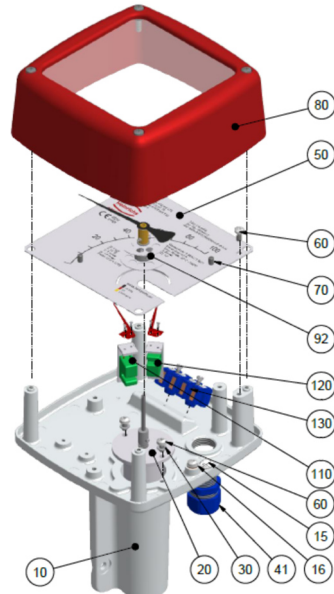
Complete indicator unit, with local scale.



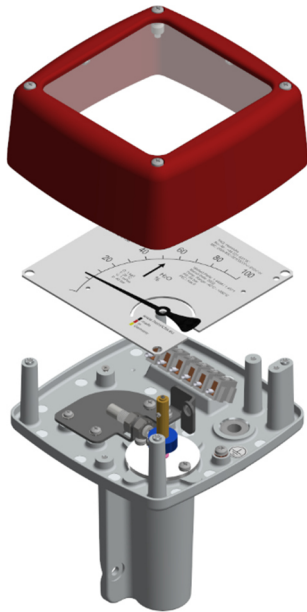
Complete indicator unit, with ES Transmitter



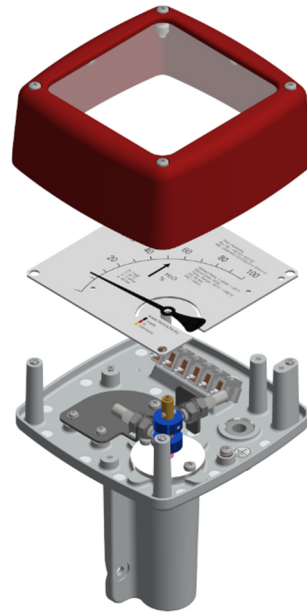
Complete indicator unit with 1x limit switch SJ 3,5-N



Complete indicator unit with 2x limit switch SJ 3,5-N



Complete indicator unit with 1x limit switch KER



Complete indicator unit with 2x limit switches KER

12. Maintenance

The device requires no maintenance if used according to its intended purpose. However, if cleaning is necessary to remove dirt from the measuring ring or the float, take note of the following aspects:

- Please take note that, with devices with built-in electrical equipment, removing the indicator cover restricts the EMC protection.
- Before removing a device, make sure that the pipeline is free from the product, is pressureless and has cooled down.
- Fittings with the insides coated may be carefully cleaned after removal with a brush and the appropriate cleansing agent. Carefully clean the float from possible coating.



Caution

Do not use hard objects on the measuring ring/cone and float. Under no circumstances should the measuring tube be handled with hammer blows (see Removing/installing the cone/float).

- The switch points of the limit switches are adjustable. To do this, remove the indicator cover, unfasten the contact point indicator located on the scale and readjust it. After the adjustment, reattach the bolts of the contact point indicator. Reinstall and tighten the indicator cover.
- The parameterization of the ES is possible and is done via HART®. Please refer to the separate Operating Instructions for the ES.
- The gas and viscous damping cylinders can be checked for dirt (see Installing/removing the damping sets).

13. Installing and removing cone, float, damping sets/spring stop

To remove the float (cone/float), remove the instrument from the pipe. Then clamp the device horizontally in a vise, making sure that fitting is not damaged.

Device with measuring ring: By using a suitable tool on secure the guiding star of the float from contortion from above in the fitting, and remove the lower guiding star's retaining screw and remove the entire float bottom up.

Device with cone: Unscrew the cone with the float using a suitable tool through the lower cone thread, and take out the float after removing the top cone stabilizer.



Caution

Avoid damaging the float/measuring ring and cone.

On some instrument versions e.g. threaded connections - a removal of the float is not possible.

From measuring range 5-50 l/h water on the float of the device can be removed. On the BGN S-type up to 40 l/h water, the float can be changed including the cone.

The gas and viscous damping cylinders as well as the spring stop for the float can be removed from the top after the device has been removed.

Proceed in reverse order when reassembling these parts.

14. Trouble shooting

Diagnosis	Possible reason	Corrective action
Indicator window steamed	Indicator cover damaged Indicator sealing damaged Cable gland not tightened high temperature differences aggressive ambient atmosphere	- change indicator cover - tighten cable gland - indicator with pressure relief - install rinsing connection for N2 gas
Indicator cover untighten	Indicator sealing damaged	- change indicator cover - fasten indicator cover screws
Indicator window icy	ambient temperature too low	- install N23 rinsing connection - change to high tem. distance housing
Instrument shows wrong measuring values	calibration does not meet process conditions pointer de-adjusted	- review operating conditions, on deviations new calibrations from manufacturer is recommended - re-adjust pointer (RP on meas. scale)
No reaction on pointer despite flow	pointer is behind the stopper (RP) float is stucked (pollution)	- remove cover, re-adjust pointer - remove instrument from process and clean float and all inner parts carefully - if sticking parts in the process use of magnet filter recommended
Float is stucked	pollution / residues in the process Measuring pipe damaged gas or liquid damping system damaged by the process	- remove instrument from the process and clean carefully - resend the instrument to the manufacturer for evaluation
Pointer indication is pulsating	inlet pressure too low	- increase inlet pressure, instrument for recalibration back to manufacturer (gases) or - use of instrument with low pressure loss - re-equip with double turbulent flow damping - locate valves, gate valves etc. after the instrument
Electrical equipment e.g. transducer, limit switches without function	wrong wiring defective el. parts	- check wiring diagram acc. instruction manual - change el. parts (e.g. limit switches) or sent the instrument back to manufacturer
Un-known		Sent the instrument back to the manufacturer and include a detailed failure description

15. Returning devices for repair and service



Note

In accordance with the applicable German waste disposal legislation, the owner/client is responsible for the disposal of special waste and hazardous materials. Consequently, all devices sent to us for repair must be free of any hazardous materials. This also applies to possible hollow spaces and fissures in the devices.

If repair is necessary, confirm the above-mentioned item in writing. See 17 Decontamination certificate for device cleaning on page 35.

If hazardous materials remain in or on the device after it has been returned, Heinrichs Messtechnik shall be authorized to remove them at the client's expense without further inquiry.

16. Certificates and approvals

Explosion protection:

ATEX (IECEx) Directive	2014/34/EU
BGN (mechanical device):	HMT21-4111X (Conformity Statement)
Ex-marking:	II 2G Ex h IIC T1...T6 Gb
II 2D Ex h IIC T85°C/T350°C Db	
ES:	DMT 00 ATEX E 075 / IECEx BVS 16.0072
Ex-marking:	II 2G Ex ia IIC T6 Gb
SJ 3,5-N:	PTB 99 ATEX 2219X
SJ 3,5-SN:	PTB 00 ATEX 2049X
Ex-marking:	II 2G Ex ia IIC T6...T1 Gb
	II 1D Ex ia IIC T200 135°C Da

KCS (Korea):

ES:	19-KA4BO-0315
Ex-Kennzeichnung:	Ex ia IIC T6

NEPSI (China):

ES:	GYJ22.1875
Ex-Kennzeichnung:	Ex ia IIC T6 Gb

PESO (India):

ES:	P568580
Ex-Kennzeichnung:	Ex ia IIC T6 Gb

Standards applied (EX):

EN 80079-36:	Non-electrical devices: for use in potentially explosive atmospheres.
EN 80079-37:	Non-electrical equipment: protection by Design safety.
EN 60079-0:	General regulations.
EN 60079-11:	Intrinsic safety "i".

Electromagnetic compatibility:

EMV Directive	2014/30/EU
EN 61326-1:	EMC requirements.
EN 61000-6-2:	Immunity industrial area.
EN 61000-6-3:	Interference emission residential area
EN 55011:	Group 1, Class B, radio interference.
NAMUR 21:	Process and laboratory technology.
PED Directive:	2014/68/EU
Modules H AD2000 Pamphlets	
CRN (Canada):	0F16542.5x (x all provinces and territories)

SIL

SIL 1:	EXIDA assessment acc. IEC 61508-2:2000 /:2010 (Typ B, Profil 2)
SIL 2: (only with limit-switch):	EXIDA assessment acc. IEC 61508-2:2000 (Typ A, Profil 2)

Measuring range calculation and calculations for other media than Air and Water in accordance with the VDE/VDI 3513 guidelines.

17. Decontamination certificate for device cleaning


Contact our service department to send your device back for repair. Before you return the device for repair or maintenance, the following steps must be carried out:

- Always enclose a complete declaration of decontamination.
You can download a template for this on our website at: www.heinrichs.eu/en/service
- Make sure that all medium residues have been removed and clean the device completely.
- Enclose a detailed report of the problem with as much information as possible. Please provide a contact person to follow up the correspondence.
- Let us know about any special handling requirements that you or your processes require.

18. Spare parts

The spare parts listed below can be ordered from our service department:

Group	Description	Best.-Nr.
Indication unit	Indicator cover aluminum c/w window/gasket/screws	30012653
	Scale, blank	30015269
	Scale incl. customer operating values	60025100
	Indicator unit-aluminum, c/w. blank-scale	60024925
	Indicator unit-aluminum, c/w. limit switch KEI1 (SJ3,5-N)	60024926
	Indicator unit-aluminum, c/w. limit switches KEI2 (SJ3,5-N)	60024927
	Switching disc for KEI	30006626
	ES Transmitter, 4-20mA, Hart®	30015182
	Indicator unit-aluminum, c/w. el. transmitter ES	60024930
	Bearing unit c/w -standard c/w. axle, bearings and magnets	30015321
	Bearing unit for indicator on distance	30012672
	Pointer unit complete. (standard)	30006282
	Pointer unit complete for el. transducer ES	30006580
	Base plate-aluminum, c/w cover screw for cable entry (standard)	30012658
	Base plate(B)-aluminum, c/w cover screw for cable entry for indicator on distance	30012663
	Cable gland M20x1,5, grey, Polyamid	30013428
	Cable gland M20x1,5, blue, Polyamid	30001255
Armature	Float st.st. c/w guiding star	on request
	Float st.st. c/w guiding star, and liquid or gas damping system	on request
Mounting sets	Retrofit set for KEI1 (SJ3,5-N)	60025377
	Retrofit set for KEI2 (SJ3,5-N)	60025378
	Retrofit set for KER1	60028140
	Retrofit set for KER2	60028141

	Note
	<p>When ordering spare parts please always mention the serial number of the instrument.</p> <p>If the float is being removed we recommend a new calibration of the instrument always. Without new calibration additional measuring errors must be considered.</p>

For further instruction on spare parts please contact the Heinrichs Messtechnik GmbH service department.

19. Order Information

Please include the following information in your order:

- Product data:
 - Liquids:
 - Density and Viscosity for operating conditions
 - Gases:
 - Normal Density or specific weight and viscosity
- Operating temperature
- Operation pressure
- Material design
- Process connection size
- Measuring range
- Desired accessories
- required approvals and material certificates.

Model code example: BGN-S50-321BQ0G0-0-S20-0-H

Model code				
BGN				
-	Wetted parts		Process temperature	Process pressure
S	Stainless steel (1.4404 / 1.4571)		max. ≤ 350 °C	
P	PTFE		max. ≤ 125 °C	max. ≤ 16 Bar
H	Hastelloy C-22 (2.4602)		max. ≤ 350 °C	
Nominal device size			Measuring range code	
10	Measuring ranges See 6 Measuring ranges on page 10		A, B, C, D, E	
15			F, G, H, I, J, K, L	
25			M, N, P, Q	
40			P, Q, R	
50			Q, R, S, T, U	
80			T, U, V	
1H			V, W, X, 2	
H5			2, 4	
-	Process connection			
For Device size 10 ^{6) 7)}	Flange ¹⁾			
	305B	DN15 PN40 Form B1 DIN EN 1092-1	201R	1/2" Class 150 RF ASME B16.5-2003 ³⁾
	305D	DN15 PN40 Form D DIN EN 1092-1	221R	1/2" Class 300 RF ASME B16.5-2003 ³⁾
	309B	DN25 PN40 Form B1 DIN EN 1092-1	202R	3/4" Class 150 RF ASME B16.5-2003
	309D	DN25 PN40 Form D DIN EN 1092-1	222R	3/4" Class 300 RF ASME B16.5-2003
			203R	1" Class 150 RF ASME B16.5-2003
			223R	1" Class 300 RF ASME B16.5-2003
	Thread ^{2) 4)}			
4020	G 1/2" (f)	6030	NPT 1/2" (f)	
4000	G 1/4" (f)	6010	NPT 1/4" (f)	
For Device size 15	Flange ¹⁾			
	305B	DN15 PN40 Form B1 DIN EN 1092-1 ⁵⁾	201R	1/2" Class 150 RF ASME B16.5-2003 ⁶⁾
	3A5B	DN20 PN40 Form B1 DIN EN 1092-1 ⁵⁾	221R	1/2" Class 300 RF ASME B16.5-2003 ^{5) 6)}
	309B	DN25 PN40 Form B1 DIN EN 1092-1 ⁵⁾	202R	3/4" Class 150 RF ASME B16.5-2003
	309D	DN25 PN40 Form D DIN EN 1092-1 ^{5) 6)}	222R	3/4" Class 300 RF ASME B16.5-2003 ⁵⁾
	313B	DN32 PN40 Form B1 DIN EN 1092-1 ^{5) 6)}	203R	1" Class 150 RF ASME B16.5-2003
	313D	DN32 PN40 Form D DIN EN 1092-1 ^{5) 6)}	223R	1" Class 300 RF ASME B16.5-2003 ⁵⁾
	406R	15A 10K RF JIS B2220 ^{6) 7)}	204R	1 1/4" Class 150 RF ASME B16.5-2003 ⁶⁾
	407R	15A 16K RF JIS B2220 ^{6) 7)}	224R	1 1/4" Class 300 RF ASME B16.5-2003 ^{5) 6)}
	Thread ^{2) 4) 6) 7)}			
	4000	G 1/4" (f)	6010	NPT 1/4" (f)
	4010	G 3/8" (f)	6020	NPT 3/8" (f)
	4020	G 1/2" (f)	6030	NPT 1/2" (f)
	4030	G 3/4" (f)	6040	NPT 3/4" (f)
For Device size 25	Flange ¹⁾			
	305B	DN15 PN40 Form B1 DIN EN 1092-1 ^{3) 5) 6)}	202R	3/4" Class 150 RF ASME B16.5-2003 ^{3) 6)}
	3A5B	DN20 PN40 Form B1 DIN EN 1092-1 ^{3) 5) 6)}	222R	3/4" Class 300 RF ASME B16.5-2003 ^{3) 5) 6)}
	309B	DN25 PN40 Form B1 DIN EN 1092-1 ⁵⁾	203R	1" Class 150 RF ASME B16.5-2003
	309D	DN25 PN40 Form D DIN EN 1092-1 ^{5) 6)}	223R	1" Class 300 RF ASME B16.5-2003 ⁵⁾
	313B	DN32 PN40 Form B1 DIN EN 1092-1 ^{5) 6)}	416R	25A 10K RF JIS B2220 ^{6) 7)}
	313D	DN32 PN40 Form D DIN EN 1092-1 ⁵⁾	417R	25A 10K RF JIS B2220 ^{6) 7)}
	Thread ^{2) 4) 6) 7)}			
	4000	G 1/4" (f)	6010	NPT 1/4" (f)
	4010	G 3/8" (f)	6020	NPT 3/8" (f)
	4020	G 1/2" (f)	6030	NPT 1/2" (f)
	4030	G 3/4" (f)	6040	NPT 3/4" (f)
For Device size 40 ⁶⁾	Flange ¹⁾			
	317B	DN40 PN40 Form B1 DIN EN 1092-1 ⁵⁾	205R	1 1/2" Class 150 RF ASME B16.5-2003
	317D	DN40 PN40 Form D DIN EN 1092-1 ⁵⁾	225R	1 1/2" Class 300 RF ASME B16.5-2003 ⁵⁾
			426R	40A 10K RF JIS B2220
			427R	40A 16K RF JIS B2220
	Thread ^{2) 4) 7)}			
	4030	G 3/4" (f)	6040	NPT 3/4" (f)
	4040	G 1" (f)	6050	NPT 1" (f)
4050	G 1 1/4" (f)	6060	NPT 1 1/4" (f)	

For Device size 50	Flange ¹⁾			
	321B	DN50 PN40 Form B1 DIN EN 1092-1 ⁵⁾	206R	2" Class 150 RF ASME B16.5-2003
	321D	DN50 PN40 Form D DIN EN 1092-1 ^{5) 6)}	226R	2" Class 300 RF ASME B16.5-2003 ⁵⁾
	325B	DN65 PN16 Form B1 DIN EN 1092-1	207R	2 1/2" Class 150 RF ASME B16.5-2003
	325D	DN65 PN16 Form D DIN EN 1092-1 ⁶⁾	227R	2 1/2" Class 300 RF ASME B16.5-2003 ⁵⁾
	326B	DN65 PN40 Form B1 DIN EN 1092-1 ⁵⁾	431R	50A 10K RF JIS B2220 ^{6) 7)}
	326D	DN65 PN40 Form D DIN EN 1092-1 ^{5) 6)}	432R	50A 16K RF JIS B2220 ^{6) 7)}
	Thread ^{2) 4) 6) 7)}			
	4050	G 1 1/4" (f)	6060	NPT 1 1/4" (f)
	4060	G 1 1/2" (f)	6070	NPT 1 1/2" (f)
4070	G 2" (f)	6080	NPT 2" (f)	
For Device size 80	Flange ¹⁾			
	330B	DN80 PN16 Form B1 DIN EN 1092-1	208R	3" Class 150 RF ASME B16.5-2003
	330D	DN80 PN16 Form D DIN EN 1092-1 ⁶⁾	228R	3" Class 300 RF ASME B16.5-2003 ^{5) 8)}
	331B	DN80 PN40 Form B1 DIN EN 1092-1 ⁵⁾	209R	3 1/2" Class 150 RF ASME B16.5-2003
	331D	DN80 PN40 Form D DIN EN 1092-1 ^{5) 6)}	229R	3 1/2" Class 300 RF ASME B16.5-2003 ^{5) 8)}
			441R	80A 10K RF JIS B2220
	442R	80A 16K RF JIS B2220		
For Device size 100	Flange ¹⁾			
	335B	DN100 PN16 Form B1 DIN EN 1092-1	210R	4" Class 150 RF ASME B16.5-2003
	335D	DN100 PN16 Form D DIN EN 1092-1 ⁶⁾	230R	4" Class 300 RF ASME B16.5-2003 ^{5) 8)}
	336B	DN100 PN40 Form B1 DIN EN 1092-1 ⁵⁾	211R	5" Class 150 RF ASME B16.5-2003 ⁶⁾
	336D	DN100 PN40 Form D DIN EN 1092-1 ^{5) 6)}	231R	5" Class 300 RF ASME B16.5-2003 ^{5) 6) 8)}
	340B	DN125 PN16 Form B1 DIN EN 1092-1 ⁶⁾		
	340D	DN125 PN16 Form D DIN EN 1092-1 ⁶⁾		
	341B	DN125 PN40 Form B1 DIN EN 1092-1 ^{5) 6)}		
341D	DN125 PN40 Form D DIN EN 1092-1 ^{5) 6)}			
Device size 150 ⁶⁾ ⁸⁾	Flange ¹⁾			
	345B	DN150 PN16 Form B1 DIN EN 1092-1	212R	6" Class 150 RF ASME B16.5-2003
	345D	DN150 PN16 Form D DIN EN 1092-1	232R	6" Class 300 RF ASME B16.5-2003 ⁵⁾
	346B	DN150 PN40 Form B1 DIN EN 1092-1 ⁵⁾		
	346D	DN150 PN40 Form D DIN EN 1092-1 ⁵⁾		
Measuring range (Water 20°C, 1000kg/m³, 1mPas)				
A	0,5 ... 5 l/h			
B	1 ... 10 l/h			
C	1,6 ... 16 l/h			
D	2,5 ... 25 l/h			
E	4 ... 40 l/h			
F	5 ... 50 l/h			
G	7 ... 70 l/h			
H	10 ... 100 l/h			
I	16 ... 160 l/h			
J	25 ... 250 l/h			
K	40 ... 400 l/h			
L	60 ... 600 l/h			
M	100 ... 1 000 l/h			
N	160 ... 1 600 l/h			
P	250 ... 2 500 l/h			
Q	400 ... 4 000 l/h ⁹⁾			
R	600 ... 6 000 l/h			
S	1 000 ... 10 000 l/h			
T	1 600 ... 16 000 l/h			
U	2 500 ... 25 000 l/h ⁹⁾			
V	4 000 ... 40 000 l/h ¹¹⁾			
W	Modell S/H: 6 000 ... 60 000 l/h Modell P 5 500 ... 55 000 l/h			
X	8 000 ... 80 000 l/h ^{6) 9)}			
2	10 000 ... 100 000 l/h ^{6) 9) 10)}			
4	13 000 ... 130 000 l/h ^{9) 10)}			
Heating/Cooling ⁶⁾		Connection	Wetted parts	
0	Without	-	-	
1	With heating/cooling	EO12	Stainless steel	
2	With heating/cooling	DN15 PN40 Form B1 DIN EN 1092-1	Stainless steel	
3	With heating/cooling	1/2" Class 150 RF ASME B16.5-2003	Stainless steel	
4	With heating/cooling	NPT 1/2" (f)	Stainless steel	
Damping/Spring stop ⁶⁾				
0	Without			
R	Flow restrictor for gas measurement	required for gas measurement		^{14) 18)}
F	With liquid damping			
G	With gas damping	required for gas measurement		¹⁸⁾
A	With spring stop			
S	With gas damping and spring stop			

Self-draining				
0	Without			
L	with self-draining body			
- Certificate				
0	Without			
1	Certificate of compliance with the order 2.1			
2	Certificate of work 2.2			
B	Inspection certificate 3.1 with material analysis (DIN EN 10204:2004)			
C	Inspection certificate 3.2 with material analysis (DIN EN 10204:2004)			
N	Material certificate NACE			
-	Display	Process temperature		
S	Standard display part	For electrical output:	≤ 150 °C	IP65
		For local indication:	≤ 200 °C	IP65
V	Standard display part, forward advanced		≤ 350 °C	IP65
E	Stainless steel display part	For electrical output:	≤ 150 °C	IP47
		For local indication:	≤ 200 °C	IP47
H	Stainless steel display part, forward advanced		≤ 350 °C	IP47
T	Standard display part with pressure compensation	For electrical output:	≤ 150 °C	IP65
		For local indication:	≤ 200 °C	IP65
W	Standard display part with pressure compensation, forward advanced		≤ 350 °C	IP65
Scale				
1	% -Scale (Water)			
2	Measuring range-Scale (Water)			
F	Double-Scale (acc customer preference)			
4	% -Scale (Media)			
5	Measuring range-Scale (Media)			
Electrical Output			Ambient temperature	
0	Without			-40 ... +80 °C
1	1 x inductive switch, Type SJ 3,5 N			-25 ... +80 °C
2	2 x inductive switch, Type SJ 3,5 N			-25 ... +80 °C
3	1 x inductive switch, Type SJ 3,5 SN (safety design)			-40 ... +80 °C
4	2 x inductive switch, Type SJ 3,5 SN (safety design)			-40 ... +80 °C
6	Transmitter ES with HART-protocol, 4-20 mA, Ex ia			-40 ... +70 °C
7	Transmitter ES with HART-protocol, 4-20 mA, Ex ia / 2x NAMUR-switch			-40 ... +70 °C
8	Transmitter ES with HART-protocol, 4-20 mA, Ex ia / 1x NAMUR-switch, 1x pulse output			-40 ... +70 °C
9	Transmitter ES with Profibus PA, Ex ia			-40 ... +70 °C
L	1 x micro switch	w/o ATEX	-25 ... +70 °C	
M	2 x micro switch	w/o ATEX	-25 ... +70 °C	
E	1 x inductive switch, Type SB 3,5-E2, three wire	w/o ATEX	-25 ... +70 °C	
F	2 x inductive switch, Type SB 3,5-E2, three wire	w/o ATEX	-25 ... +70 °C	
G	1 x inductive switch, Type NCB2-12GM40-Z0	w/o ATEX	-25 ... +70 °C	
I	Transmitter ES with HART-protocol and counter module ¹²⁾		w/o ATEX	-20 ... +70 °C
K	Transmitter ES with Foundation Fieldbus			-40 ... +70 °C
- Accessories				
0	Without			
S	SIL Conformity assessment by EXIDA			
X	Special, customer-specified			
- Design				
H	Heinrichs			
K	Kobold			

References:

- 1) Installation length 250mm.
- 2) Installation length 300mm.
- 3) Reduced sealing strip.
- 4) Float not removable.
- 5) Pressure stage for model "S" and "H".
- 6) Not for model "P".
- 7) Not for model "H".
- 8) Only possible with advanced display part.
- 9) Conversion is not possible taking into consideration the viscosity.
- 10) Gas damping, liquid damping or spring stop are not possible.
- 11) Not for Model "P" in device size 80.
- 12) Combination of stainless-steel display part with ES and counter module not possible.
- 13) Not for device size 10
- 14) Only for device size 10
- 15) SIL 1 - IEC 61508-2:2010 Conformity confirmed by EXIDA
- 16) SIL 1 - IEC 61508-2:2000 Conformity confirmed by EXIDA
- 17) SIL 2 - IEC 61508-2:2000 Conformity confirmed by EXIDA
- 18) SIL conformity only with "Accessories" option "S"
- 19) Only in combination with "electrical output" for options "3", "4", "6", "7", "8"

20. EU-Declaration of Conformity

CE EU-Konformitätserklärung EU-Declaration of Conformity



Nº. 23-4111-02

Hersteller:
Manufacturer: Heinrichs Messtechnik GmbH
Robert-Perthel-Strasse 9
50739 Cologne
Germany

Produktbeschreibung:
Product description: **Schwebekörper-Durchflussmessgerät vom Typ BG***
Variable Area Flowmeter Model BG*

Hiermit erklären wir, in alleiniger Verantwortung, dass das oben genannte Messsystem den Anforderungen der folgenden EU-Richtlinien, einschließlich allen bis heute veröffentlichten Änderungen bzw. Nachträgen entspricht.
We declare herewith, in sole responsibility, that the product described above is conform with the provisions of the following EU-directives, including all published changes and amendments as of today:

2014/30/EU (EMC) EU-Richtlinie über die Elektromagnetische Verträglichkeit
EU-Directive relating to electromagnetic compatibility

2014/35/EU (LVD) EU-Richtlinie zur Verwendung innerhalb bestimmter Spannungsgrenzen
EU-Directive for electrical equipment designed for use within certain voltage limits

2011/65/EU (RoHS 2)
2015/863/EU (RoHS 3) EU-Richtlinien zur Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten
EU-Directives on the restriction of the use of certain hazardous substances in electrical and electronic equipment

Zusätzlich für Geräte mit ATEX Kennzeichnung / additional for equipment with ATEX markings:

2014/34/EU (ATEX) EU-Richtlinie zur Verwendung in explosionsgefährdeten Bereichen.
EU-Directive for use in potentially explosive atmospheres

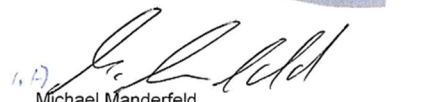
Zusätzlich für Druckgeräte \geq Kategorie 1 / additional for PED equipment \geq Category 1:

2014/68/EU (PED) EU-Richtlinie über die Bereitstellung von Druckgeräten auf dem Markt
EU-Directive on the making available on the market of pressure equipment

Anhang N ist ein integraler Bestandteil dieser Erklärung / Anhang X ist nur bei ATEX Geräte relevant
Annex N is an integral part of this declaration / Annex X is relevant only for ATEX equipment

Köln, den 12.11.2023


Joseph Burke
(Ex-schutzbeauftragter / ATEX Representative)


Michael Manderfeld
(Druckgerätebeauftragter / PED Representative)


Dr. Sebastian Wenzel
(Geschäftsführung / Managing Director)

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Anhang N zur EU-Konformitätserklärung Annex N of the EU-Declaration of Conformity



Nº. 23-4111-02

Produktbeschreibung: **Schwebekörper-Durchflussmessgerät vom Typ BG***
 Product description: **Variable Area Flowmeter Model BG***

Durch diese Erklärung wird die Konformität mit den auf Seite 1 genannten Richtlinien sowie die Einhaltung der folgenden Normen bestätigt (gegebenenfalls abhängig von Gerätevariante):
 Conformity to the Directives referred to on Page 1 of this Declaration is assured through the application of the following standards (possibly dependent on version of device):

Richtlinie Directive	Norm – Ref. Nr. Standard / Ref. Nº.	Ausgabe Edition	Norm Beschreibung Standard Description	ES	BGN	BGF
	DIN EN -					
2014/30/EU	61000-6-2	2019	Immunity Industrial environment	X		
	61000-6-3	2012	Emission residential environment	X		
	55011	2019	Radio frequency disturbance	X		
	61326-1	2013	EMC requirements	X		
2014/35/EU	61010-1	2010	Safety requirements	X		
2011/65/EU	63000	2018	Technical Documentation	X		

**Sowie für ATEX gekennzeichnete Geräte und Drückgeräte ≥ Kategorie 1
 as well as for ATEX marked devices and PED Equipment ≥ Category 1:**

2014/34/EU	60079-0	2018	General requirements	X		
	60079-11	2012	Intrinsic Safety „i“	X		
	80079-36	2016	General requirements non electrical devices		X	X
	80079-37	2016	Protection by constructional safety „c“		X	X
2014/68/EU	AD 2000-Merkblätter		Module H		X	X

X: Zutreffende Norm / Applicable Standard

Name und Anschrift der Notifizierte Stelle / Name and Address of the Notified Body

TÜV SÜD Industrie Service GmbH
 Westendstraße 199
 D-80686 München
 Germany



ID-Nr. / ID-Nº.: L 2014/68/EU: 0036

DEKRA Testing and Certification GmbH
 Carl-Beyling-Haus
 Dinnendahlstraße 9
 D-44809 Bochum
 Germany



ID-Nr. / ID-Nº.: RL 2014/34/EU: 0158

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Anhang X zur EU-Konformitätserklärung Annex X of the EU-Declaration of Conformity



N°. 23-4111-02

Produktbeschreibung: **Schwebekörper-Durchflussmessgerät vom Typ BG***
Product description: **Variable Area Flowmeter Model BG***

ATEX Gerät Zulassungen / ATEX Device certification

EU-Baumusterprüfbescheinigung EU-type examination certificate	Notifizierte Stelle ID Nr. Notified Body ID Nr.	Nachtrag / Edition	Kennzeichnung / Hinterlegungsnummer Marking Deposit Number	ES	BGN	BGF
2014/34/EU						
DMT 00 ATEX E 075	0158	3	II 2G	X		
Dokument Hinterlegung Document Deposit						
HMT21.4111X	0158	2	II 2G II 2D		X	X
Tech. File Ref.		2	EE0086-3001X		X	X

X: Zutreffende Norm / Applicable Standard

Konformitätserklärungen für die als Option verwendeten Schalter werden vom Hersteller auf deren Homepage bereitgestellt.

For proximity switches offered as an option in conjunction with the above-mentioned products, the Declarations of Conformity are provided by the switch manufacturer on their homepage.

Die oben genannten Produkte entsprechen der Richtlinie 2014/34/EU. Neue Editionen können bereits eine oder mehrere der in den jeweiligen EU-Baumusterprüfbescheinigungen genannten Normen ersetzt haben. Der Hersteller erklärt, dass alle in dieser Konformitätserklärung erwähnten Produkte auch die Anforderungen der neuen Ausgaben einhalten, da die veränderten Anforderungen der neuen Ausgaben entweder keinen Einfluss auf das Produkt haben, oder das Produkt die Anforderungen erfüllt.

The above-mentioned products comply with the Directive 2014/34/EU. New editions may have already replaced one or more of the Standards stated in the respective EU-Type-examination certificates. The manufacturer declares that all products mentioned in this Declaration of Conformity also comply with the requirements of the new editions since either the changed requirements of the new editions do not affect the product, or the product also fulfils the requirements.

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Köln
Amtsgericht Köln HRA 37040
Ust. IDNr.: DE813416533
Steuer-Nr.: 217/5743/0386

Geschäftsführer
Dr. Sebastian Wenzel

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