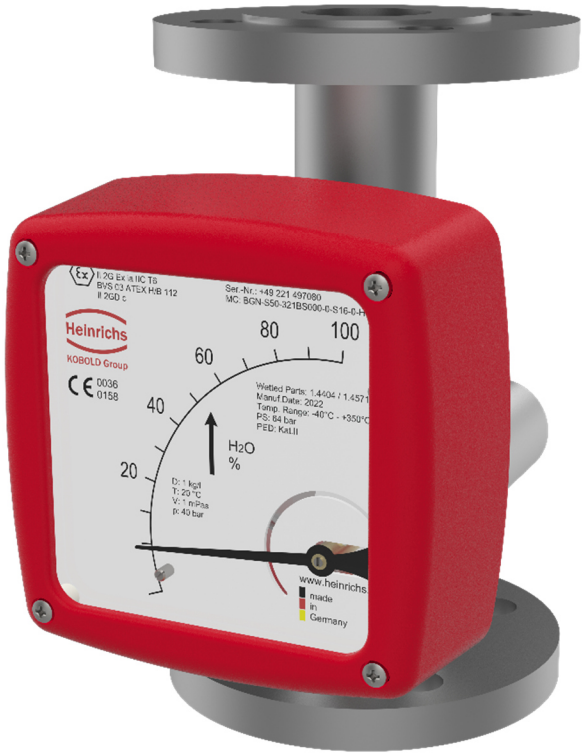
Variable Area Flow Meter

All metal

BGN

Technical Information

- 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®
- Suitable for installation in safety-related measuring systems according to SIL



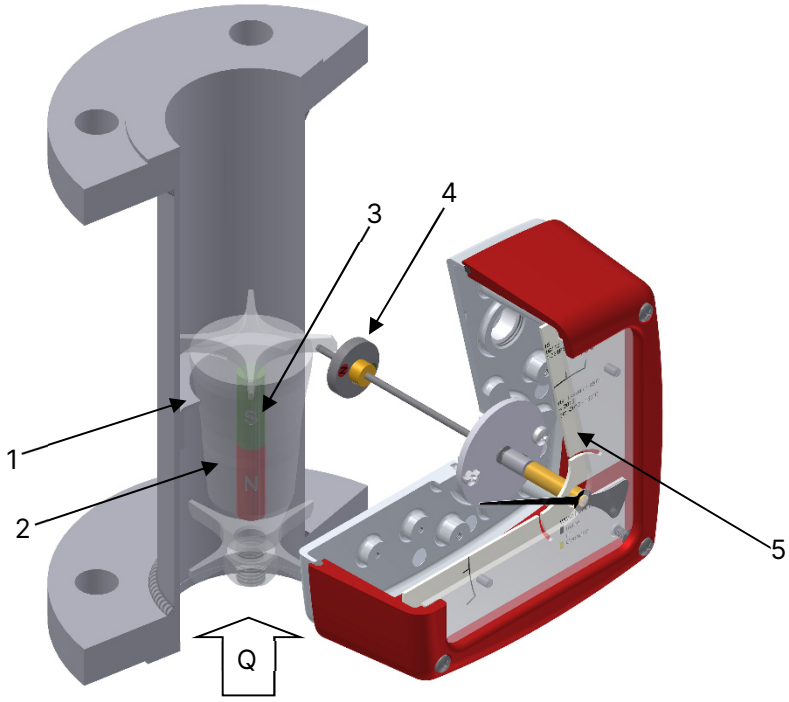
Function

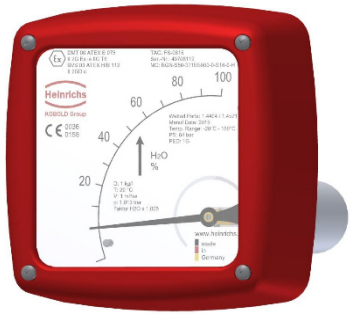
The BGN variable area flow meter consists of a meter tube with connections, a measuring ring, and a conical float.

The fluid flows from bottom to top through the meter tube of the flow meter. The float (2) is lifted until an annular gap between the measuring ring (1) and the conical-shaped float (2) is produced which corresponds to the flow. The forces acting on the float (weight force, flow force), are in equilibrium.

The position of the float is transferred via an encapsulated magnet (3) to a counter magnet (4) which is fitted at the pointer axle and thus indicated via a pointer to the scale (5).

Each position of the float corresponds to a flow value measured during calibration, which is transferred to a scale.





Application

The BGN meter is suitable for flow measurement of liquid or gaseous products and steam in pipelines.

Indicated is the instantaneous flow rate in volume or mass per unit time.

Applications:

- Flow measurement
- Monitoring
- Adjustment
- Control

Especially because of its design, the BGN is suitable for processes under difficult and rough operating conditions.

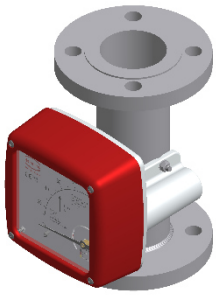
The devices are available with additional electrical equipment for process monitoring and control.

Features:

- Large selection of materials in contact with the product
- Permanent magnetic resistive signal transmission
- Gas or liquid damping (optional)
- High pressure and high fluid temperature applications
- Excellent heat tracing techniques (optional)
- Double eddy current damping (optional)
- No-load capability (optional)
- Differential pressure regulator (optional)

Versions / Variations

Aluminum display case



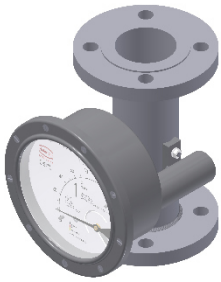
Optimized aluminum display.

Large and well-arranged scale with 90° angle for best reading

Rounded edges and rims ensure a smooth draining of liquids after wet contact. A special anodization and paint finish make the indicator housing also suitable for outdoor use.

Process connections: flange, thread, clamp, weld ends

Stainless steel indicator



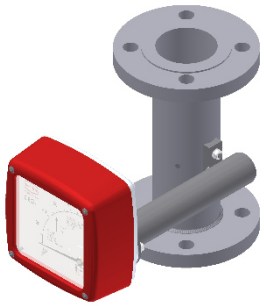
Stainless steel indicator

With IP65, IP66, IP67 protection for extreme applications

Large and well-arranged scale with 90° angle for optimal reading

Rounds design ensures a smooth draining of liquids after wet contact. Salty and rough environments such as offshore applications do not show any problem.

High-temperature version with displaced indicator

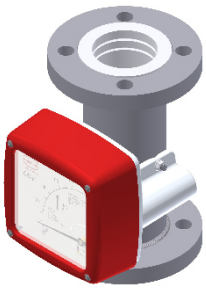


Forward advanced indicator for process temperatures up to 350 °C.

For very high or very low process temperatures the indicator will be displaced 100 mm from the measuring pipe.

The use of limit switches or transmitters are without limitations.

Linings / Special materials

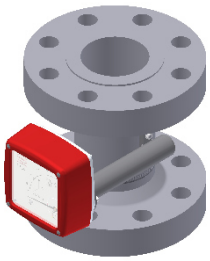


PTFE lining for highest resistance

Wetted parts PTFE and Hastelloy

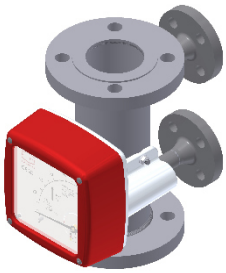
Through the unique design of the measuring pipe with a cylindrical pipe tube and a conical float, the meters can be manufactured from special materials. This allows the use in special environments and/or for highly corrosive processes applications e.g. for acids and lye.

High-pressure applications



Through the unique design of the measuring fitting with cylindrical measuring pipe and conical float, the units can be produced with thick-walled pipes. This enables the use in high-pressure applications, for which other measuring instruments are unavailable, e.g. sour gas.

Version with heating jacket

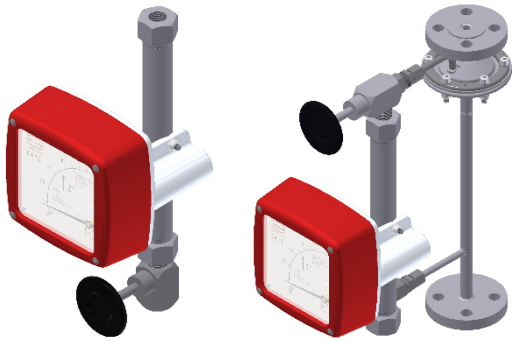


The cylindrical measuring pipe allows a double-walled construction and the connection of a medium heater, e.g. for steam, hot water or thermal oil, without difficulty.

This enables the use for extremely difficult media or operating conditions.

The connections for the medium heating are made according to customer requirements.

Assembly / Special solutions



In close cooperation with our customers, we develop solutions for their measuring tasks and problems.

We plan and manufacture application-based assembling acc. customer demands - e.g. with regulating valves, flow controllers, differential pressure flow regulators including piping etc..

Technical Data

Fitting

Materials:

- 1.4404 (316 L) / 1.4571 (316 Ti)
- Hastelloy C-22
- PTFE

Special materials on request

Process connection:

- Flanges according to
  - EN 1092-1
  - ASME B16.5
  - JIS B2220
- Thread
  - NPT
  - G-thread
- TriClamp

Special connections on request

Nominal pressure:

- PN 40, ASME Cl150 / 300 (Standard) (BGN-S/H)
- PN 16, ASME Cl150 (Standard) (BGN-P)

Higher pressures on request (max. 600 bar)

Process temperature:

- -40°C ... +350°C (BGN-S/H)
- -40°C ... +125°C (BGN-P)

Ambient temperature:

- -40°C ... +80°C without electric accessories
- -25°C ... +70°C / +80°C with limit switches
- -40°C ... +70°C with ES transmitter

Measurement deviation:

- BGN-S/H
  Water : ± 1.6% of the measured value
  Gas : ± 1.8% of the measured value
  qG 50% acc. to VDI/VDE 3513-2
- BGN-P
  Water :± 2% of the measured value
  Gas : ± 2,2% of the measured value
  qG 50% acc.to VDI/VDE 3513-2
- ± 0,2% of the measured value. Additional error with transmitter ES

Repeatability:

- ± 0,5 %

Optional:

- Heating/cooling
- Gas damping / spring stop or combinations
- Self-draining version

Display Unit

Protection class:

- Aluminum IP65
- Stainless steel IP65, IP66, IP67

Electrical output

Switching outputs:

- max. 2 inductive switch contacts (SJ 3,5 N)
  Ex Refer to type approval for elec. parameters
- max. 2 inductive switching contacts (SJ 3,5 SN) (safety design)
  Ex Refer to type approval for elec. parameters
- max. 2 micro changeover switches
  (Reed switch U_{max}:175V_{DC}, I_{max}:0,25A, P_{max}:5W)

Transmitter ES:

- ES with 4...20 mA (HART®)
- ES with 4...20 mA (HART®) with 2 switching contacts
- ES with 4...20 mA (HART®) with 1 switching contacts and 1 pulse out
- ES with 4...20 mA (HART®) and Counter module with 2 NPN Outputs

Power supply transmitter ES:

- 14 ... 30 V_{DC}, 2-wire (reverse polarity protected)

Outputs Transmitter ES:

passive, galvanic isolated

- Analogue: 4...20 mA with HART®
  Ex U_i=30 V, I_i=150 mA, P_i=1 W
- Binary 1 and 2: 2x Contacts
  Ex U_i=30 V, I_i=20 mA, P_i=100 mW
- FF:
  Ex Ui = 17.5 V_{DC} (FISCO), or
  U_i=32 V_{DC}, I_i=280 mA, P_i=2 W
- Counter Module (non Ex):
  - Power Supply:
    U_{max}=30 V_{DC}, I_{max}≤10 mA
  - Binary input: Reset counter reading
    U_{max}=30 V_{DC}
  - NPN Outputs
    U_{max}=30 V_{DC}, I_{max}=20 mA

Protection class transmitter ES:

- IP20 (EN60529)

ATEX and IECEx:

Refer to Certificates and Approvals
For electrical parameters refer to certificates

Measuring ranges

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/m³; 1 mPas)	Measuring range for air (1,013 bar abs., 20°C) [1),2)]	Pressure loss
				[l/h]	[m³/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.

Materials

Type	Measuring tube	Measuring tube lining	Flanges	Flange lining	Float
BGN - S	Stainless steel	None	Stainless steel	None	Stainless steel
BGN - P	Stainless steel	PTFE	Stainless steel	PTFE	PTFE
BGN - H [1)]	Hastelloy C22	None	Hastelloy C22	None	Hastelloy C22
BGN – H [2)]	Hastelloy C22	None	Stainless steel	Hastelloy C22	Hastelloy C22

1) Till flange size DN15/25 (¾ "/1"ASME)
2) From flange size DN40 (1½" ASME)

Certificates and Approvals

Explosion protection:

ATEX (IECEx) Directive	**2014/34/EU**
BGN (mechanical device): Ex-marking:	HMT21-4111X (Conformity Statement) II 2G Ex h IIC T1...T6 Gb II 2D Ex h IIIC T85°C/T350°C Db
ES: Ex-marking:	DMT 00 ATEX E 075 / IECEx BVS 16.0072 II 2G Ex ia IIC T6 Gb
SJ 3,5-N: SJ 3,5-SN: Ex-marking:	PTB 99 ATEX 2219X PTB 00 ATEX 2049X II 2G Ex ia IIC T6...T1 Gb II 1D Ex ia IIIC T_{200} 135°C Da
KCS (Korea):	
ES: Ex-Kennzeichnung:	19-KA4BO-0315 Ex ia IIC T6
NEPSI (China):	
ES: Ex-Kennzeichnung:	GYJ22.1875 Ex ia IIC T6 Gb
PESO (India):	
ES: Ex-Kennzeichnung:	P568580 Ex ia IIC T6 Gb
Standards applied (EX):	
EN 80079-36: EN 80079-37: EN 60079-0: EN 60079-11:	Non-electrical devices: for use in potentially explosive atmospheres. Non-electrical equipment: protection by Design safety. General regulations. Intrinsic safety "i".

Electromagnetic compatibility:

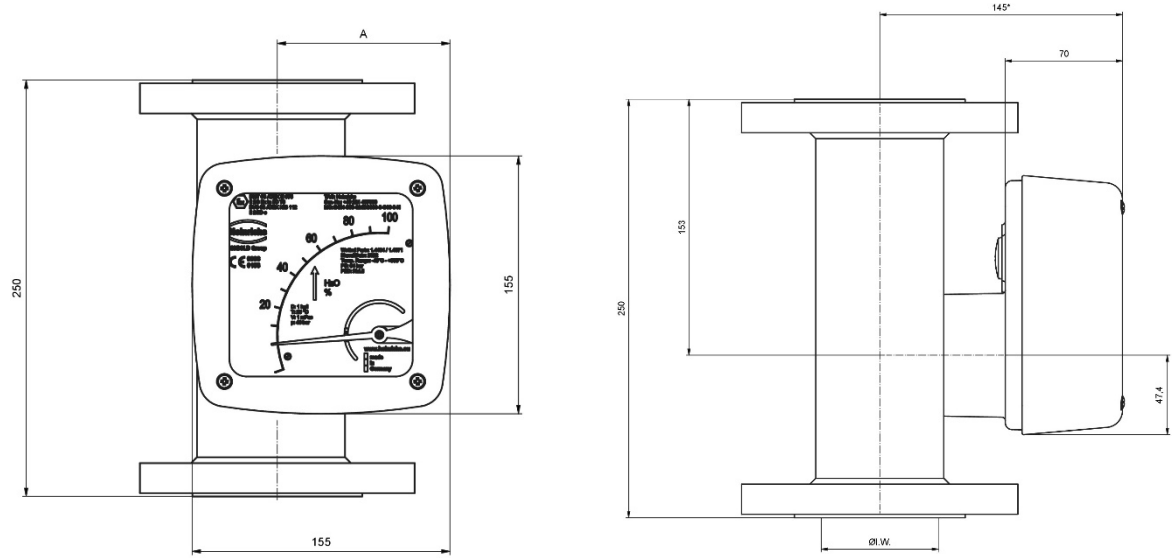
EMV Directive	**2014/30/EU**
EN 61326-1: EN 61000-6-2: EN 61000-6-3: EN 55011: NAMUR 21:	EMC requirements. Immunity industrial area. Interference emission residential area Group 1, Class B, radio interference. Process and laboratory technology.
PED Directive:	**2014/68/EU**
Modules H AD2000 Pamphlets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

SIL

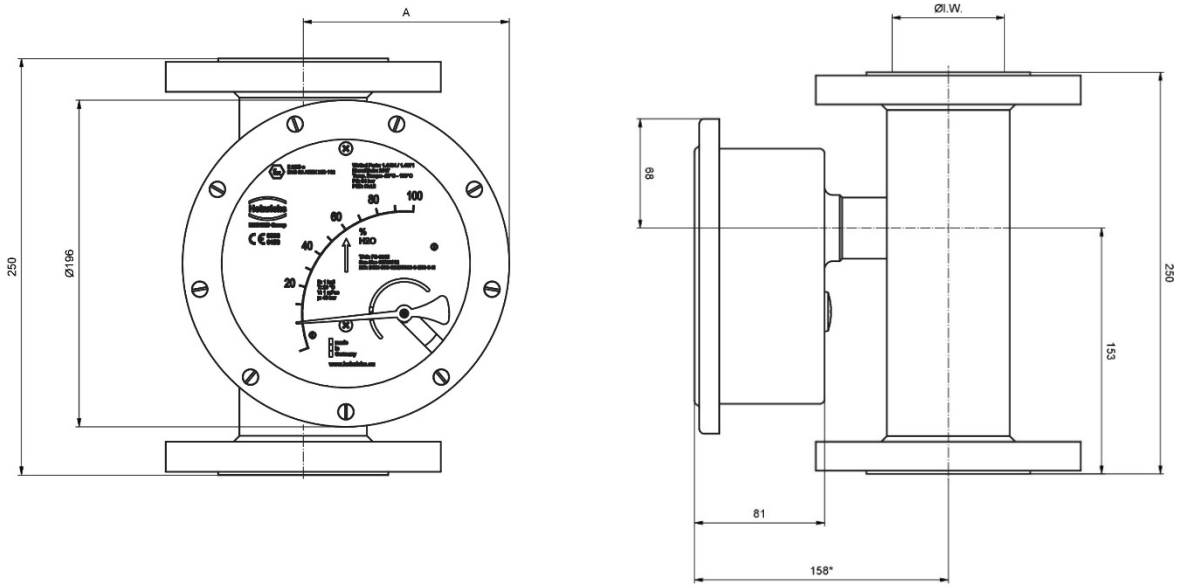
SIL 1: SIL 2**:** (only with limit-switch)**:**	EXIDA assessment acc. IEC 61508-2:2000 /:2010 (Typ B, Profil 2) EXIDA assessment acc. IEC 61508-2:2000 (Typ A, Profil 2)

Dimensions

Flange connection – Indicator aluminum

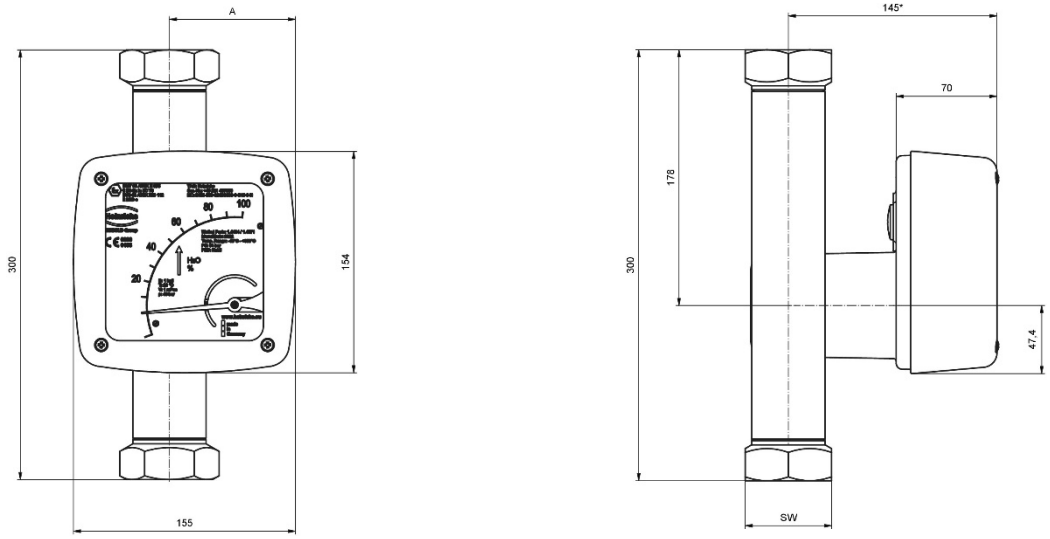


Flange connection - Indicator stainless steel

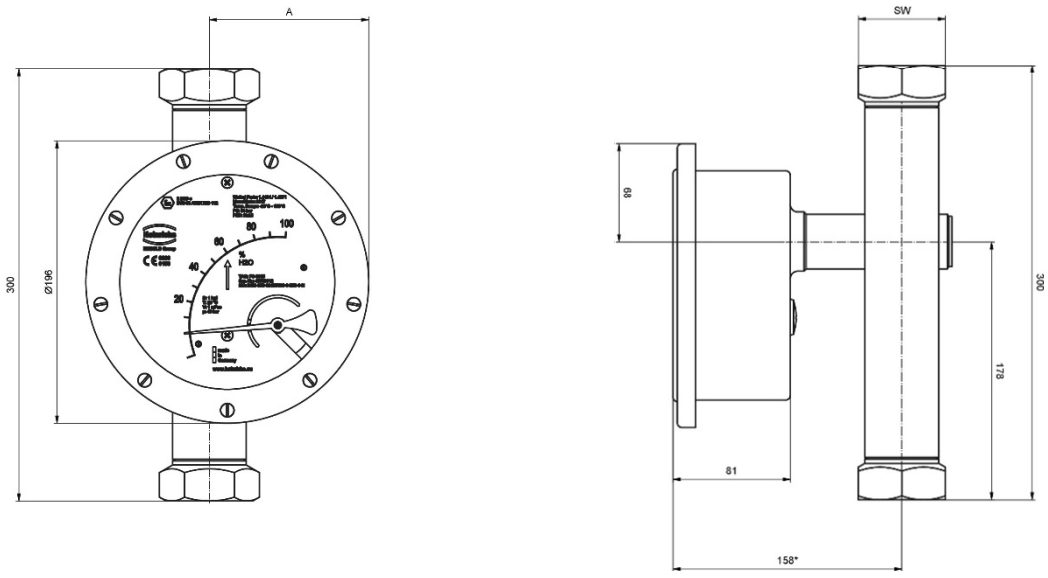


Fitting	DN / ASME	PN / CL	Ø I. W. [mm]	Stainless steel - Display A [mm]	Aluminum - Display A [mm]
S15	15, ½"	40 / (150/300)	26	99,5	77,0
S25	25, 1"	40 / (150/300)	32	102,6	80,1
S40	40, 1½"	40 / (150/300)	46	110,4	87,9
S50	50, 2"	40 / (150/300)	70	123,4	100,9
S80	80, 3"	40 / (150/300)	102	139,7	117,4
S1H	100, 4"	16 / (150)	125	152,4	130,1
SH5	150, 6"	16 / (150)	158	170,2	149,6

Threaded connection - display part aluminium



Threaded connection - indicator part stainless steel



Fitting	NPT(f) / G(f) (in)	PN (bar)	SW	Stainless steel - Display A [mm]	Aluminum - Display A [mm]
S15	¼; ⅜; ½; ¾	40	36	99,5	77,0
S25	¼; ⅜; ½; ¾	40	36	102,6	80,1
S40	¾; 1; 1¼	40	60	110,4	87,9
S50	1¼; 1½; 2	40	80	123,4	100,9

Order 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 the measuring ranges table on page 6	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	[13]

	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: For local indication:	≤ 150 °C ≤ 200 °C	IP65	
V	Standard display part, forward advanced		≤ 350 °C	IP65	
E	Stainless steel display part	For electrical output: For local indication:	≤ 150 °C ≤ 200 °C	IP65, IP66, IP67	12)
H	Stainless steel display part, forward advanced		≤ 350 °C	IP65, IP66, IP67	12)
T	Standard display part with pressure compensation	For electrical output: For local indication:	≤ 150 °C ≤ 200 °C	IP65 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	15) 17) 18)
4	2 x inductive switch, Type SJ 3,5 SN (safety design)			-40 ... +80 °C	15) 17) 18)
6	Transmitter ES with HART-protocol, 4-20 mA, Ex ia			-40 ... +70 °C	15) 16) 18)
7	Transmitter ES with HART-protocol, 4-20 mA, Ex ia / 2x NAMUR-switch			-40 ... +70 °C	15) 16) 18)
8	Transmitter ES with HART-protocol, 4-20 mA, Ex ia / 1x NAMUR-switch, 1x pulse output			-40 ... +70 °C	15) 16) 18)
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	
-	**Accessories**				
0	Without				
S	SIL Conformity assessment by EXIDA				19)
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"