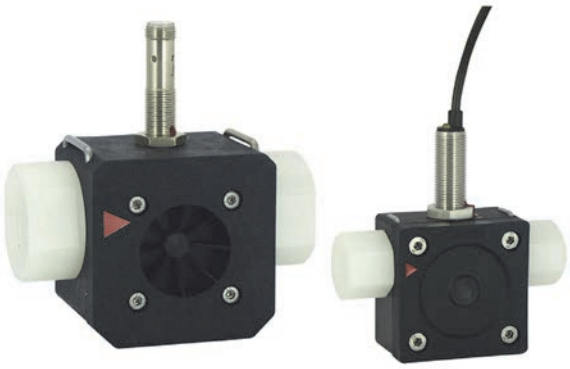
RRI, RRH, RR-032

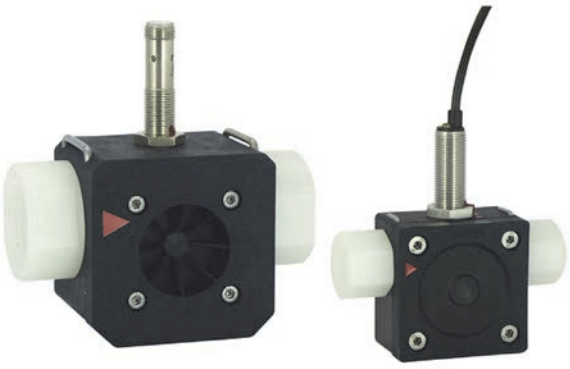
Роторные индикаторы и датчики потока с выходным сигналом

GHM MESSTECHNIK



Технические характеристики

Flow Transmitter RRI



- **Uncomplicated measurement of flow rates**
- **No magnets; uses inductive sensor**
- **Long working life thanks to high quality ceramic axis and special plastic bearing**
- **Run-in and run-out sections are not necessary.**
- **Modular construction with various connection systems**
- **Plug-in and rotatable connections**
- **Output signal PNP or NPN**
- **Intrinsically safe behaviour**
- **Optionally, non-return valve, filter, constant flow rate device in the connections**

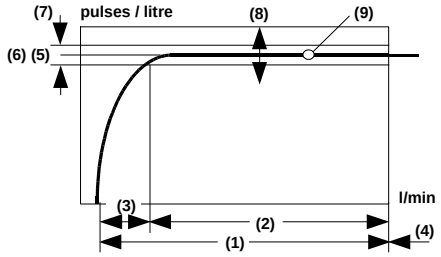
Characteristics

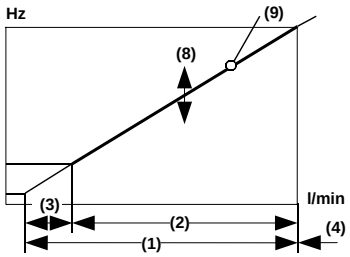
The flow meter consists of a spinner which is rotated by the flowing medium. The rotor's rotational speed is proportional to the flow volume per unit time. The rotor is fitted with stainless steel clamps (optionally titanium or Hastelloy®). An inductive proximity switch records the rotational speed, which is proportional to the flow rate.

Technical data

Sensor	inductive	
Nominal width	DN 10 (RRI-010) DN 25 (RRI-025)	
Mechanical Connection	female thread G $^3/_8$, G 1 male thread G $^3/_8$ A, G 1 A hose nozzle Ø11, Ø30 (other threaded, crimped, and plug-in connections, connections with constant flow rate device or limiters available on request)	
Pressure resistance	PN 16 bar	
Medium temperature	0..60 °C	
Materials medium-contact	Housing	PPS (Fortron 1140L4)
	Rotor	PVDF
	Clamps	1.4310 optionally: titanium or Hastelloy®
	Bearing	Iglidur X
	Axis	ceramic ZrO_2-TZP
	Seal	FKM

Materials, non-medium-contact	PVC cable, 1.4305, 1.4301, CW614N nickelled	
Current consumption at rest	10 mA / NAMUR max. 7 mA	
Output current max.	200 mA / NAMUR max. 7 mA	
Electrical connection Sensor	cable 2 m or for round plug connector M12x1, 4-pole	
Resistant to short circuits	yes	
Reversal polarity protected	yes	
Ingress protection	IP 67	
Weight	RRI-010	approx. 0.2 kg
	RRI-025	approx. 0.5 kg
Conformity	CE	



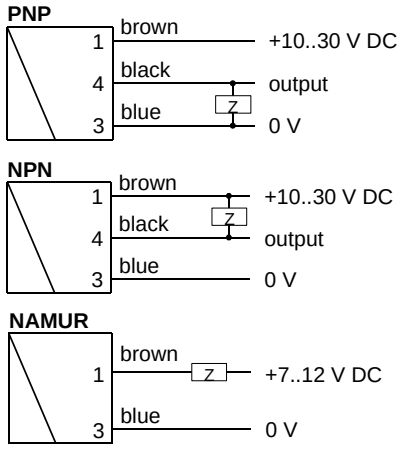


(1) Complete metering range
(2) Specific metering range
(3) Start-up range
(4) Extended operating range, increased wear, Dp > 0.5 bar
(5) Pulses / litre (details on label)
(6) Average pulses / litre
(7) Tolerance ±3 % of the measured value
(8) Scatter ±10 % of the pulses / litre value (5) in the batch
(9) Reproducibility (±1 % of the full scale value) is the repeat accuracy of a frequency, relative to l/min
(10) Max. frequency, related to the relevant metering range up to approx. 0.5 bar pressure drop across the flow meter

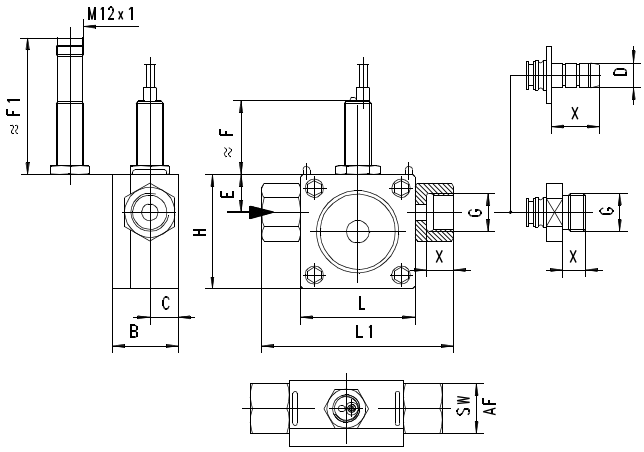
Types	Q_{max}	Metering range			pulses / litre	frequency
RRI-	l/min H_2O	l/min H_2O				Hz EW
		(1)	(2)	(3)	(6)	(10)
010...020	1.8	0.1.. 1.5	0.5.. 1.5	0.1..0.5	10200	255
010...050	12.0	0.2.. 10.0	2.0.. 10.0	0.2..2.0	3345	558
010...070	14.4	0.4.. 12.0	2.0.. 12.0	0.4..2.0	1755	351
025...080	36.0	2.0.. 30.0	3.0.. 30.0	2.0..3.0	1216	608
025...120	72.0	3.0.. 60.0	5.0.. 60.0	3.0..5.0	607	607
025...160	120.0	4.0..100.0	6.0..100.0	4.0..6.0	252	420

The measured values were determined using a standing sensor in a horizontal flow of water at 25 °C.

Wiring



Dimensions



Threaded connection

G	DN	Types	H/L	L1	B	C	E	F	F1	X	SW
G 3/8	10	RRI-010G	50	84	29	12.5	16.5	32	60	12	22
G 3/8 A		RRI-010A								14	
G 1	25	RRI-025G	70	110	53	23.0	27.5	27	55	18	38
G 1 A		RRI-025A		122							

Hose nozzle connection

D	DN	Types	H/L	L1	B	C	E	F	F1	X
Ø11	10	RRI-010T	50	96	11	12.5	16.5	32	60	21
Ø30	25	RRI-025T	70	176	30	23.0	27.5	27	55	45

Handling and operation

The Rototron device is installed in the pipework with the aid of the rotatable adapter pieces. If necessary, the adapters can be removed from the body of the housing after the stainless steel clips have been removed from the housing. Before reinstalling, it should be ensured that both the adapter with the O-ring and the sealing surface in the body are clean and undamaged. The adapters should be fitted carefully in the housing (it is best to turn them), so that the O-ring is not damaged.

With this flow sensor, there is no need for run-in and run-out sections. However, it should be ensured that the flow sensor is at all times filled with medium. Any preferred installation position is possible, but the best possible venting position should be chosen (rotor axis horizontal, flow horizontal or from bottom to top).
Air bubbles affect the measurement results. For filling processes, the valve should be installed behind the sensor. A running up time of approx. 0.5 seconds and a running down time of approx. 3 seconds should be noted.

Ordering code

RRI- 1. 2. 3. 4. 5. 6. 7. 8. 9. 10.

❍=Option

1.	**Nominal width**			
	010	DN 10		
	025	DN 25		
2.	**Mechanical connection**			
	G	female thread		
	A	male thread		
	T	hose nozzle		
3.	**Connection material**			
	V	PVDF		
	M ❍	CW614N nickelled		
	K ❍	1.4305		
4.	**Housing material**			
	Q	PPS		
	V ❍	PVDF		
	A ❍	PPS with transparent cover PSU		
5.	**Inwards flow drilling**			
	020	Ø 2		●
	050	Ø 5		●
	070	Ø 7		●
	080	Ø 8	●	
	120	Ø12	●	
	160	Ø16	●	
6.	**Seal material**			
	V	FKM		
	E ❍	EPDM		
	N ❍	NBR		
7.	**Rotor**			
	10	with 10 clamps		
	02 ❍	with 2 clamps		
	05 ❍	with 5 clamps		
8.	**Material for clamps**			
	K	1.4310		
	T ❍	titanium		
	H ❍	Hastelloy®		
9.	**Signal output**			
	P	PNP		
	N	NPN		
	A ❍	NAMUR		
10.	**Electrical connection**			
	K	2 m cable		
	S ❍	for round plug connector M12x1, 4-pole		

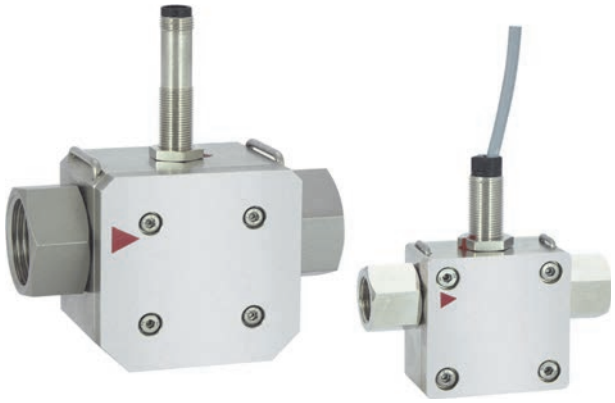
Options

- Rotor with titanium clamps

Accessories

- Cable/round plug connector (KB...)
  see additional information “Accessories”
- Evaluation electronics OMNI-TA
- Mechanical connection pieces with non-return valve, filter, constant flow device or customer-specific requirements available on request

Flow Transmitter RRH



- **Uncomplicated measurement of flow rates**
- **Metal housing with Hall sensor**
- **Working pressure up to 100 bar**
- **Long working life thanks to high quality ceramic axis and special plastic bearing**
- **Run-in and run-out sections are not necessary.**
- **Modular construction with various connection systems**
- **Plug-in and rotatable connections**
- **Output signal PNP or NPN**
- **Intrinsically safe behaviour**
- **Optionally, non-return valve, filter, constant flow rate device in the connections**

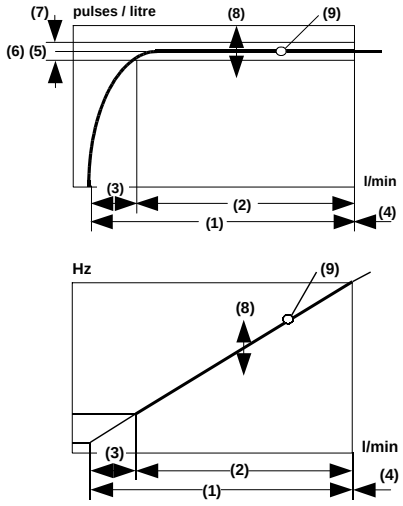
Characteristics

The flow meter consists of a spinner which is rotated by the flowing medium. The rotor's rotational speed is proportional to the flow volume per unit time. The rotor is fitted with magnets. A Hall sensor records the rotational speed, which is proportional to the flow rate.

Technical data

Sensor	hall element	
Nominal width	DN 10 (RRH-010) DN 25 (RRH-025)	
Mechanical Connection	female thread G $^3/_8$, G 1 male thread G $^3/_8$ A, G 1 A hose nozzle Ø11, Ø30 (other threaded, crimped, and plug-in connections, connections with constant flow rate device or limiters available on request)	
Pressure resistance	PN 100 bar	
Metering ranges	see table "Ranges"	
Medium temperature	0..100 °C	
Materials medium-contact	Housing	CW614N nickelled or 1.4305
	Rotor	PVDF with magnets, glued with epoxy resin
	Bearing	Iglidur X
	Axis	ceramic $Zr0_2$-TZP
	Seal	FKM

Materials non-medium-contact	PVC cable 1.4305, 1.4301, CW614N nickelled	
Current consumption	30 mA	
Output current	max. 100 mA	
Electrical connection	cable 2 m or for Round plug connector M12x1, 4-pole	
Resistant to short circuits	yes	
Reversal polarity protected	yes	
Ingress protection	IP 67	
Weight	RRH-010	approx. 0.6 kg
	RRH-025	approx. 1.9 kg
Conformity	CE	



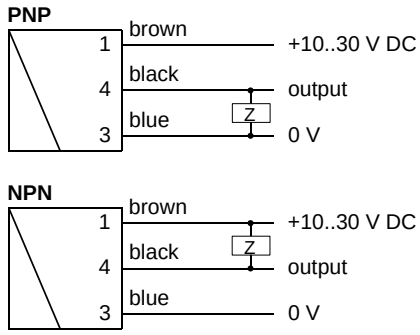
(1) Complete metering range
(2) Specific metering range
(3) Start-up range
(4) Extended operating range, increased wear, Dp > 0.5 bar
(5) Pulses / litre (details on label)
(6) Average pulses / litre
(7) Tolerance ±3 % of the measured value
(8) Scatter ±10 % of the pulses / litre value (5) in the batch
(9) Reproducibility (±1 % of the full scale value) is the repeat accuracy of a frequency, relative to l/min
(10) Max. frequency, related to the relevant metering range up to approx. 0.5 bar pressure drop across the flow meter

Ranges

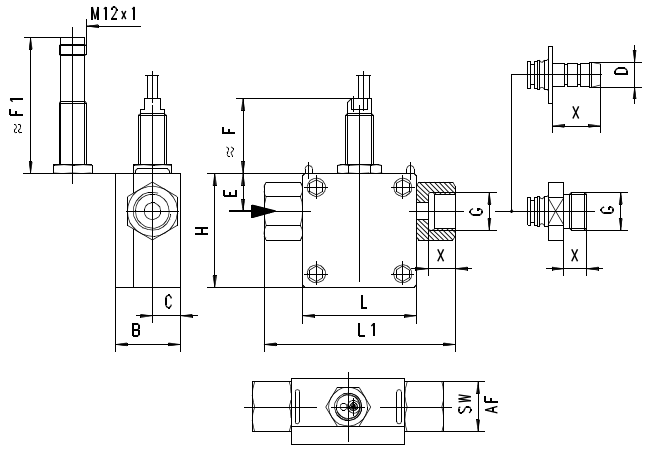
Types	Q_{max}	Metering range			Pulses / litre	frequency
RRH-	l/min H_2O	l/min H_2O				Hz EW
		(1)	(2)	(3)	(6)	(10)
010...020	1.8	0.1.. 1.5	0.5.. 1.5	0.1..0.5	4955	124
010...050	12.0	0.2..10.0	2.0.. 10	0.2..2.0	1632	272
010...070	14.4	0.4..12.0	2.0.. 12	0.4..2.0	860	172
025...080	36.0	2.0..30.0	3.0.. 30	2.0..3.0	544	272
025...120	72.0	3.0..60.0	5.0.. 60	3.0..5.0	295	295
025...160	120.0	4.0.. 100	6.0..100	4.0..6.0	126	210

The measured values were determined using a standing sensor in a horizontal flow of water at 25 °C.

Wiring



Dimensions



Threaded connection

G	DN	Types	H/L	L1	B	C	E	F	F1	X	SW
G 3/8	10	RRH-010G	50	84	29	12.5	16.5	33	60	12	22
G 3/8 A		RRH-010A								14	
G 1	25	RRH-025G	70	110	53	23.0	27.5	28	55	18	38
G 1 A		RRH-025A		122							

Hose nozzle connection

D	DN	Types	H/L	L1	B	C	E	F	F1	X
Ø 11	10	RRH-010T	50	96	29	12.5	16.5	33	60	21
Ø30	25	RRH-025T	70	176	53	23.0	27.5	28	55	45

Handling and operation

Installation

The Rototron device is installed in the pipework with the aid of the rotatable adapter pieces. If necessary, the adapters can be removed from the body of the housing after the stainless steel clips have been removed from the housing. Before reinstalling, it should be ensured that both the adapter with the O-ring and the sealing surface in the body are clean and undamaged. The adapters should be fitted carefully in the housing (it is best to turn them), so that the O-ring is not damaged.

With this flow sensor, there is no need for run-in and run-out sections. However, it should be ensured that the flow sensor is at all times filled with medium. Any preferred installation position is possible, but the best possible venting position should be chosen (rotor axis horizontal, flow horizontal or from bottom to top).

Air bubbles affect the measurement results. For filling processes, the valve should be installed behind the sensor. A running up time of approx. 0.5 seconds and a running down time of approx. 3 seconds should be noted.

Ordering code

	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
RRH-								V		

Option = ❍

1.	**Nominal width**		
	010		DN 10
	025		DN 25
2.	**Mechanical connection**		
	G		female thread
	A		male thread
	T		hose nozzle
3.	**Connection material**		
	M		CW614N nickelled
	K		1.4305
4.	**Housing material**		
	M		CW614N
	K		1.4305
5.	**Inwards flow drilling**		
	020		Ø 2.0 ●
	050		Ø 5.0 ●
	070		Ø 7.0 ●
	080		Ø 8.0 ●
	120		Ø12.0 ●
	160		Ø16.0 ●
6.	**Seal material**		
	V		FKM
	E	❍	EPDM
	N	❍	NBR
	K	❍	Kemraz
7.	**Rotor**		
	05		with 5 magnets
	02	❍	with 2 magnets
8.	**Rotor material**		
	V		PVDF
9.	**Signal output**		
	P		PNP
	N		NPN
10.	**Electrical connection**		
	K		2 m cable
	S	❍	for round plug connector M12x1, 4-pole

Options

- Transparent cover DN 10
- Air or gas model

Accessories

- Cable/round plug connector (KB...)
  see additional information “Accessories”
- Evaluation electronics OMNI-TA
- Mechanical connection pieces with non-return valve, filter, constant flow device or customer-specific requirements available on request

Flow Transmitter RR.-032

- **Simple and economical flow transmitter for piping diameters from 32 mm to 150 mm**
- **Made from plastic (optionally stainless steel)**
- **With tapping sleeve fixing for very rapid installation Retro-fitting also easily possible**

Characteristics

The flow meter consists of a spinner which is rotated by the flow speed. The rotational speed is proportional to the flow rate. The rotational speed can be recorded using various sensor systems, depending on the different materials for the housing.

Technical data

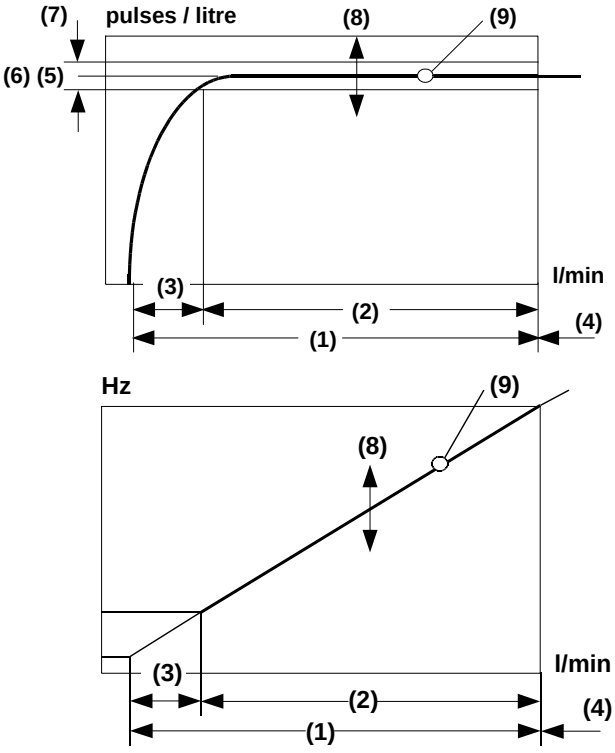
	RRI (inductive sensor)	RRH (Hall sensor)
Nominal widths	DN 32..150	
Mechanical Connection	welded-on nozzle, DN 50..150 tapping sleeve, DN 32..150 glue socket, crew-in probe	
Metering range	30..1000 l/min for details, see table "Ranges"	
Measurement accuracy	±5 % of full scale value	
Repeatability	±1 % measured value	
Medium temperature	0..60 °C, type RRH as screw-in probe or with welded-on nozzle 0..95 °C	
Pressure resistance	PN 10 bar	
Supply voltage	PNP / NPN 5..30 V DC NAMUR 7..12 V DC	PNP / NPN 10..30 V DC
Current consumption at rest	10 mA / NAMUR max. 7 mA	30 mA
Output current max.	200 mA / NAMUR max. 7 mA	100 mA
Electrical connection	cable 2 m or for round plug connector M12x1, 4-pole	
Resistant to short circuits	yes	
Reversal polarity protected	yes	
Materials medium-contact		
Housing	PVC	1.4305
Tapping sleeve	PP	PP
Rotor	PVDF / 1.4310 or Titanium	PVDF / Magnets
Bearing	Iglidur X	Iglidur X
Axis	Ceramic Zr02-TZP	Ceramic Zr02-TZP
Seal	FKM	FKM

Materials, non-medium-contact	PVC cable, CW614N nickelled
Ingress protection	IP 67
Conformity	CE

Ranges

DN	Q_{max} recommended	Metering range l/min H2O			pulses/ litre	frequency Hz at full scale value
	l/min	(1)	(2)	(3)	(6)	(10)
32	220	15.. 200	30.. 200	15.. 30	90.0	300
40	360	15.. 300	60.. 300	15.. 60	48.0	240
50	480	25.. 400	80.. 400	25.. 80	34.0	227
65	600	40.. 500	100.. 500	40..100	24.0	200
80	840	50.. 700	100.. 700	50..100	17.5	204
100	1200	85..1000	100..1000	85..100	10.5	175

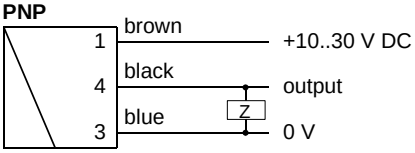
The measured values were determined using a standing sensor in a horizontal flow of water at 25 °C and with 10 x D run-in and run-out sections.



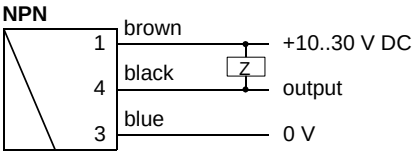
(1) Complete metering range
(2) Specific metering range
(3) Start-up range
(4) Extended operating range, increased wear, Dp > 0.5 bar
(5) pulses / litre (details on label)
(6) Average pulses / litre
(7) Tolerance ±5 % of the full scale value
(8) Scatter ±10 % of the pulses / litre value (5) in the batch
(9) Reproducibility (±1 % of the measured value) is the repeat accuracy of a frequency, relative to l/min
(10) Max. frequency, related to the relevant metering range up to approx. 0.5 bar pressure drop across the flow meter

Wiring

PNP



NPN



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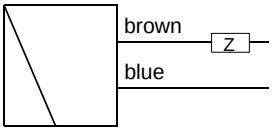
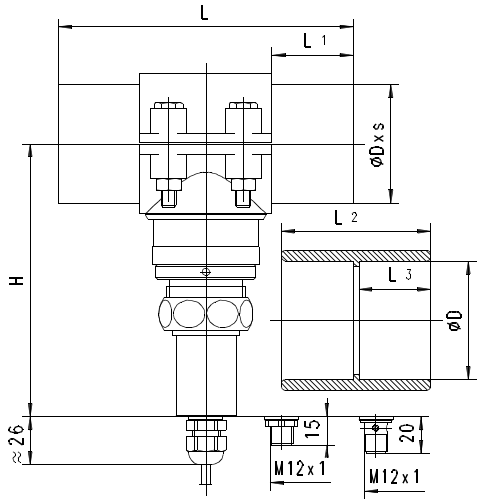


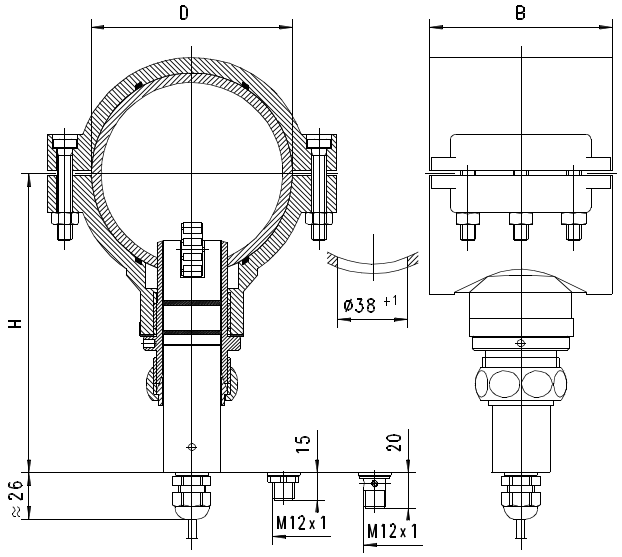
Dimensions

Connection: tapping sleeve with piping section and glue socket(s) RR.-032MH...



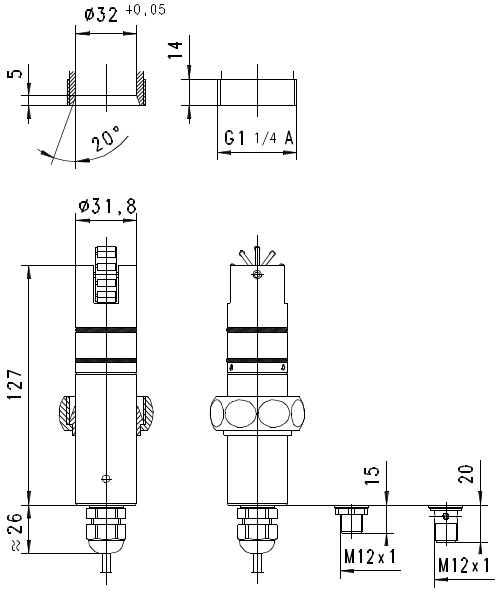
Nominal width	Type	ØD	s	H	L	L1	L2	L3
DN 32	RR.-032MH032.	40	1.9	145.0	132	31	55	26
DN 40	RR.-032MH040.	50	2.4		142	36	65	31
DN 50	RR.-032MH050.	63	3.0		156	43	79	38
DN 65	RR.-032MH065.	75	3.6	153.5	178	49	92	44
DN 80	RR.-032MH080.	90	4.3	156.0	202	56	107	51
DN 100	RR.-032MH100.	110	5.3	166.0	232	66	128	61
DN 125	RR.-032MH125.	140	6.7	172.0	287	81	159	76
DN 150	RR.-032MH150.	160	7.7	180.0	312	91	180	86

Connection: tapping sleeve RR.-032BB...(optional)

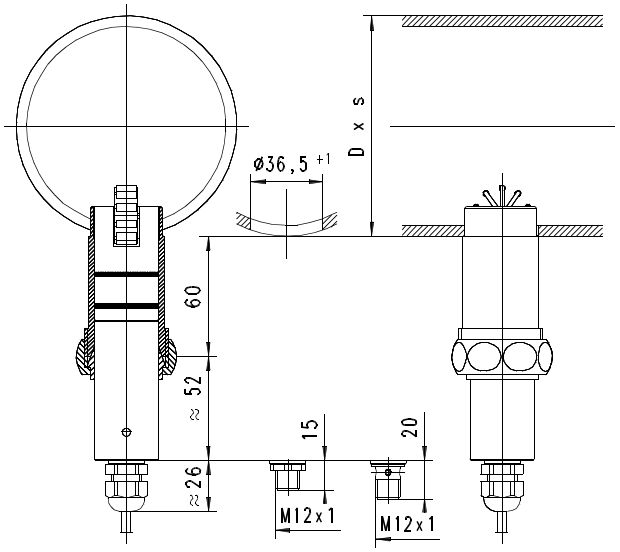


Nominal width	Type	D	B	H
DN 50	RR.-032BB050.	63	70	145.0
DN 65	RR.-032BB065.	75	80	153.5
DN 80	RR.-032BB080.	90	90	156.0
DN 100	RR.-032BB100.	110	100	166.0
DN 125	RR.-032BB125.	140	125	172.0
DN 150	RR.-032BB150.	160	130	180.0

Connection: screw-in probe RR.-032RM000.
Provided by customer



Connection: welded-on nozzle RR.-032VK000. (optionally)

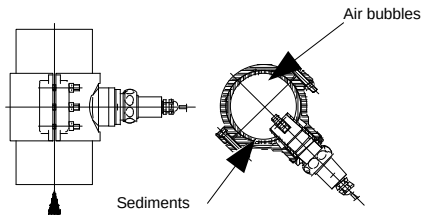


Handling and operation

Installation

The flow meters are inserted in probe form in a tapping sleeve, and are marked with the correct insertion depth. The installation direction of the probe is lengthways to the spinner, and is indicated with arrows on the front of the flow meter. An angular deviation of ±3 ° has no effect on the measurement.

The sensor must be installed with run-in and run-out sections of 10 x D of the pipe diameter, in order to prevent vortices and turbulence.



The best installation position (low contamination, good venting) is with the direction of flow from bottom to top, or in horizontal piping with the sensor at an angle of 45 ° downwards.
The union nut must be tightened to a torque of 30 Nm.

Ordering code

1.	2.	3.	4.	5.	6.	7.	8.	9.
	- 032							

❍=Option

1.	**Flow meter**								
	RRI	with inductive sensor							
	RRH	with Hall sensor							
2.	**Union nut**								
	032	G 1¼							
3.	**Mechanical connection**								
	MH	tapping sleeve with piping section and PVC glue sockets							
	BB ❍	PP tapping sleeve							
	RM	screw-in probe G 1¼ with clamping ring and union nut							
	VK ❍	welded-on nozzle 1.4305							
4.	**Material for probe**								
	H	PVC							●
	K	stainless steel 1.4305						●	
5.	**Nominal width**								
	000	screw-in probe / welded-on nozzle	●	●					
	032	DN 32				●			
	040	DN 40				●			
	050	DN 50			●	●			
	065	DN 65			●	●			
	080	DN 80			●	●			
	100	DN 100			●	●			
	125	DN 125			●	●			
	150	DN 150			●	●			
6.	**Seal material**								
	V	FKM							
	E ❍	EPDM							
	N ❍	NBR							
7.	**Rotor**								
	10K	with 10 stainless steel clamps (RRI)							●
	10T ❍	with 10 titanium clamps (RRI)							●
	05M	with 5 magnets (RRH)						●	
8.	**Switching output**								
	P	PNP							
	N	NPN							
	A ❍	NAMUR							
9.	**Electrical connection**								
	K	2 m cable							
	S ❍	for round plug connector M12x1, 4-pole							

Accessories

- Cable/round plug connector (KB...)
  see additional information “Accessories”
- Evaluation electronics OMNI-TA