GHM Messtechnik GmbH – Sales Center International
Schloßstraße 6 ● 88453 Erolzheim ● Germany
Fon +49-7354-937233-0 ● Fax -88
www.ghm-messtechnik.de ● info@ghm-messtechnik.de

Flow - rotor probe form

Characteristics

System	Flow rotor Probe form
Evaluation	Display Switching Measurement
Nominal widths	DN 32 ..150
Range	15..1000 l/min
Media	Water Aqueous emulsions Aggressive media
Pressure resistance	Max. 10 bar
Medium temperature	0..+95 °C

Applications

- **Industrial metering and monitoring technology**
- **Coolant fluid monitoring in large pipes**
- **Electroplating applications**
- **Cooling of gas scrubbers**

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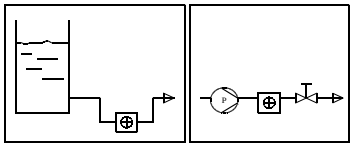
Function and benefits

- **Uncomplicated monitoring of flows**
- **No magnets with the plastic types (with inductive sensor)**
- **Modular system in mechanics and electronics**
- **Long service life due to high-quality ceramic axle and special plastic bearing**
- **Output signal PNP, NPN, push-pull or NAMUR**
- **Intrinsically safe behavior**

The sensor is comprised of an impeller, which is set in rotation by the flow speed. The rotation speed is proportional to the flow value per time. The recording of the rotation speed takes place through various sensor systems, due to the various materials of the housing.
With some sensors an LED indicator is integrated in the sensor, which primarily signals by blinking on startup of the sensor that the rotor inside is turning.

Since the sensor only detects the flow in the area of the impeller (probe), it requires a good calming section in the feed and overrun.

Installation method:



Rotor always under liquid **Rotor before valve**

All converters which accept a frequency signal as an input signal (see frequency range of the various areas) can be combined with a electronic evaluation. See also device overview.

Programmability of parameters

All RR. can be combined with the intelligent sensor families OMNI, FLEX and LABO. These sensors have a microcontroller which enables a multitude of parameter changes. By standard, all three main electronics have the capability of making local changes. In addition, a configurator interface (ECI-1) can be used to change all saved parameters of a device at any time, if desired or necessary.

LABO-RR..-
I / U / F / C /S

Pulse programming on pin 2:
Apply the supply voltage level for 1 second and save the current value as the final value (for analog outputs) or as a switching value (for limit value switches).

OMNI-RR

Programming with magnet ring:
With the aid of the display and of the movable ring, numerous parameters can be conveniently set on the spot.

ECI-1

If required, all parameters can be set at any time on all intelligent sensors, using the ECI-1 device configurator.

Universal switching outputs

The push-pull transistor outputs of the OMNI electronics enable the simplest installation. The outputs can be connected like a PNP or an NPN switch and behave accordingly, without programming or wire breaks.

You are assured of resistance to short circuits and pole reversal. Overloads or short circuits are shown in the display.

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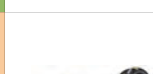
Device overview

Device		Range l/min	Pressure resistance in bar	Medium temperature	Supply voltage	Display	Output signal		Page
							Switching	Measuring	
RR.-032		30..1000	PN 10	0..60 °C	5..30 V DC 7..12 V DC 10..30 V DC	-	-	Frequency	**4**
LABO-RR-032-S		15..1000	PN 10	0..95 °C	10..30V DC 15..30 V DC	Signal LED	1 x Push-Pull	-	**7**
LABO-RR-032-..I		15..1000	PN 10	0..95 °C	10..30V DC 15..30 V DC	Signal LED	-	4..20 mA	**13**
LABO-RR-032-..U		15..1000	PN 10	0..95 °C	10..30V DC 15..30 V DC	Signal LED	-	0..10 V	**13**
LABO-RR-032-..F		15..1000	PN 10	0..95 °C	10..30V DC 15..30 V DC	Signal LED	-	Frequency 0..2 kHz	**13**
LABO-RR-032-..C		15..1000	PN 10	0..95 °C	10..30V DC 15..30 V DC	Signal LED	-	Pulse / quantity	**13**
OMNI-RR-032		15..1000	PN 10	0..95 °C	18..30 V DC	Graphics LCD illuminated transflective and signal LED	2 x Push-Pull	0/4..20 mA or 0..10 V	**17**

OMNI-Coun-teroption-C		Preset counter with external reset, complementary switching outputs and flow rate display	**22**
OMNI-Coun-teroption-C1		Flow rate display with analog output, volume pulse output and totalizer	**25**
ECI-1		All LABO, FLEX, and OMNI parameters can be set or modified using the ECI-1 configurator.	**28**
Options		● LABO transmitter – Temperature up to 150 ° ● OMNI – Tropical model	**29**
Accessories		● Type ZV / ZE (Filter) ● KB.... (Round plug connector 4/5-pin) ● OMNI-TA (Panel meter) ● OMNI-remote	**30**

GHM Messtechnik GmbH – Location Honsberg
Tenter Weg 2-8 • 42897 Remscheid • Germany
Fon +49-2191-9672-0 • Fax -40
www.ghm-messtechnik.de • info@honsberg.com

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

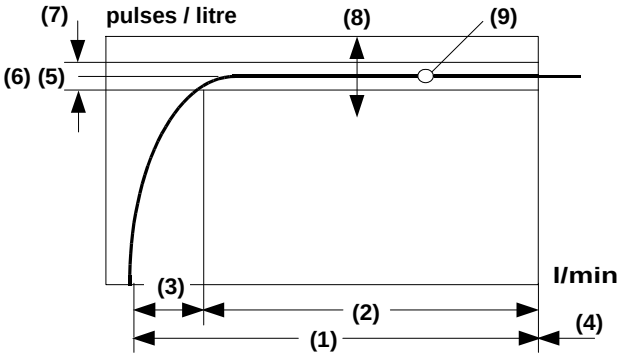
	RRI (inductive sensor)	RRH (Hall sensor)
Nominal widths	DN 32..150	
Mechanical Connection	welded-on nozzle, DN 50..150 tapping sleeve, DN 32..150 glue socket, crew-in probe	
Metering range	30..1000 l/min for details, see table "Ranges"	
Measurement accuracy	±5 % of full scale value	
Repeatability	±1 % 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

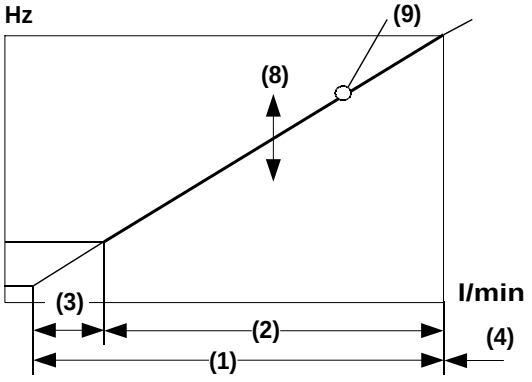
Materials, non-medium-contact	PVC cable, CW614N nickelled
Ingress protection	IP 67
Conformity	CE

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

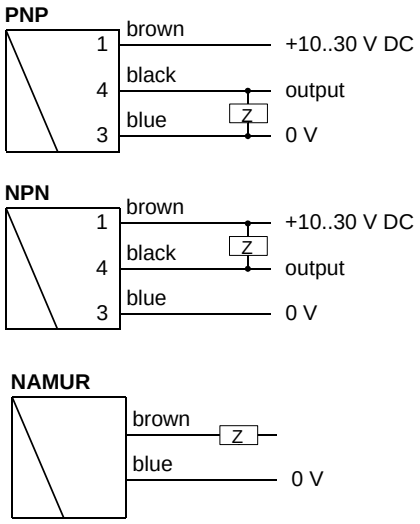
The measured values were determined using a standing sensor in a horizontal flow of water at 25 °C and with 10 x D run-in and run-out sections.





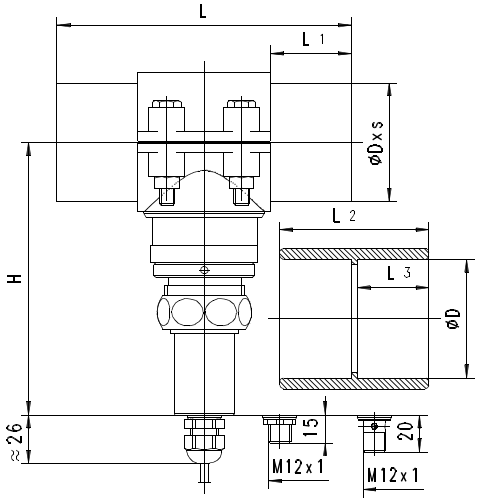
(1) Complete metering range
(2) Specific metering range
(3) Start-up range
(4) Extended operating range, increased wear, Dp > 0.5 bar
(5) pulses / litre (details on label)
(6) Average pulses / litre
(7) Tolerance ±5 % of the full scale value
(8) Scatter ±10 % of the pulses / litre value (5) in the batch
(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



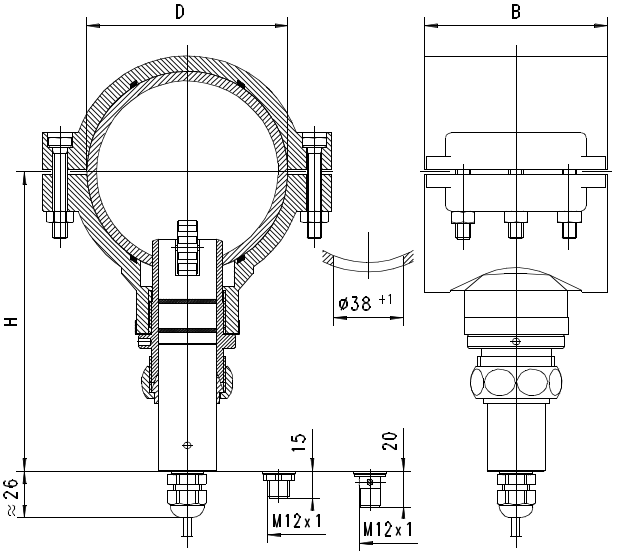
Dimensions

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



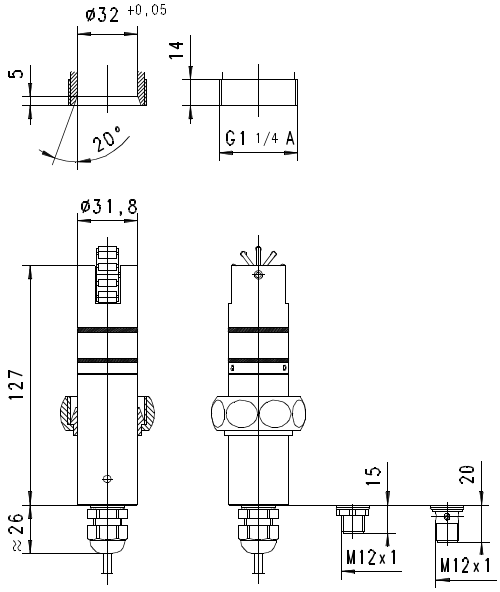
Nominal width	Type	ØD	s	H	L	L1	L2	L3
DN 32	RR.-032MH032.	40	1.9	145.0	132	31	55	26
DN 40	RR.-032MH040.	50	2.4		142	36	65	31
DN 50	RR.-032MH050.	63	3.0		156	43	79	38
DN 65	RR.-032MH065.	75	3.6	153.5	178	49	92	44
DN 80	RR.-032MH080.	90	4.3	156.0	202	56	107	51
DN 100	RR.-032MH100.	110	5.3	166.0	232	66	128	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)

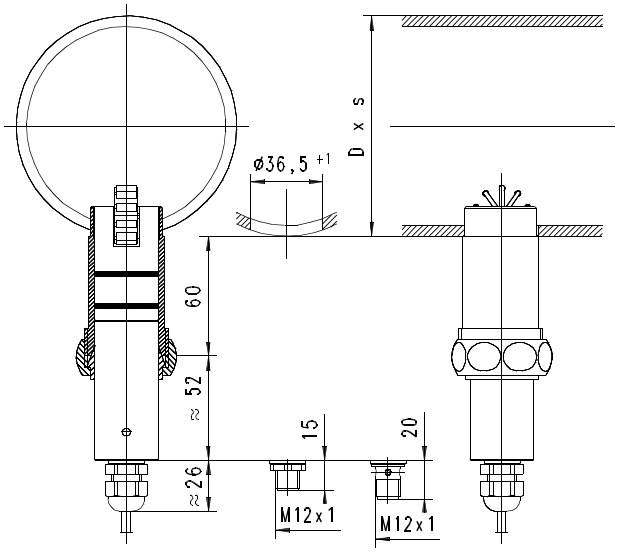


Nominal width	Type	D	B	H
DN 50	RR.-032BB050.	63	70	145.0
DN 65	RR.-032BB065.	75	80	153.5
DN 80	RR.-032BB080.	90	90	156.0
DN 100	RR.-032BB100.	110	100	166.0
DN 125	RR.-032BB125.	140	125	172.0
DN 150	RR.-032BB150.	160	130	180.0

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



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

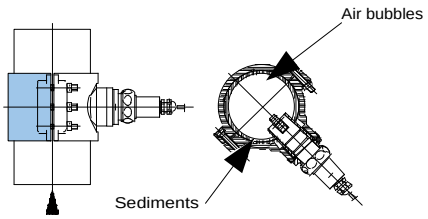


Handling and operation

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							

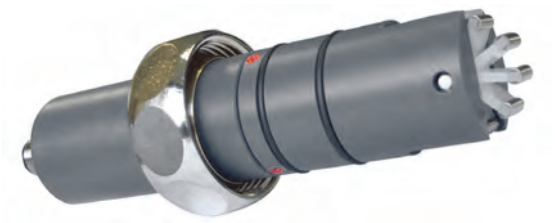
❍=Option

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

Flow Switch LABO-RR.032-S



- **Simple and economical flow meter 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**
- **0..10 V , 4..20 mA , frequency/pulse output, completely configurable**

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. With plastic housings, there are no magnets in the flow space.

The LABO electronics make available an electronic switching output (push-pull) with adjustable characteristics (minimum/maximum) and hysteresis, which responds when an adjustable limit is fallen short of or exceeded.
If desired, the switching value can be set to the currently existing flow using "teaching". Models with analog or pulse output are also available.

Technical data

Sensor	LABO-RRI LABO-RRH	inductive sensor hall sensor
Nominal widths	DN 32..150	
Mechanical Connection	welded-on nozzle, DN 50..150 tapping sleeve, DN 32..150 glue socket, screw-in probe	
Switching range	15..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	
Pressure loss	typically < 0.1 bar	

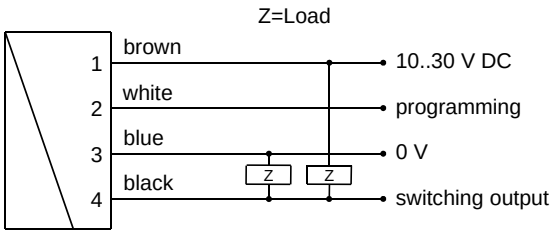
Materials medium-contact	LABO-RRI	LABO-RRH
Housing	PVC	1.4305
Tapping sleeve	PP	PP
Rotor	PVDF / 1.4310 or titanium	PVDF / Magnets
Bearing	Iglidur X	Iglidur X
Axis	Ceramic Zr02-TZP	Ceramic Zr02-TZP
Seal	FKM	FKM
Materials, non-medium-contact	Sensor tube:	CW614N nickelled
	Adhesive:	epoxy resin
	Flange bolts:	stainless steel
Supply voltage	10..30 V DC at voltage output 10 V: 15..30 V DC	
Power consumption	< 1 W (for no-load outputs)	
Output data:	all outputs are resistant to short circuits and reversal polarity protected	
Current output:	4..20 mA (0..20 mA available on request)	
Voltage output:	0..10 V (2..10 V available on request) output current max. 20 mA	
Frequency output:	transistor output "push-pull" I_{out} = 100 mA max.	
Pulse output:	transistor output "push-pull" I_{out} = 100 mA max. pulse width 50 ms pulse per volume is to be stated	
Display	yellow LCD shows operating voltage (LABO-XF-I / U) or output status (LABO-XF-F / C) or (rapid flashing = Programming)	
Electrical connection	for round plug connector M12x1, 4-pole	
Ingress protection	IP 67	
Conformity	CE	

Ranges

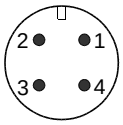
Nominal width	Switching range l/min H_2O	Q_{max} l/min
DN 32	15.. 200	220
DN 40	15.. 300	360
DN 50	25.. 400	480
DN 65	40.. 500	600
DN 80	50.. 700	840
DN 100	85..1000	1200

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

Wiring



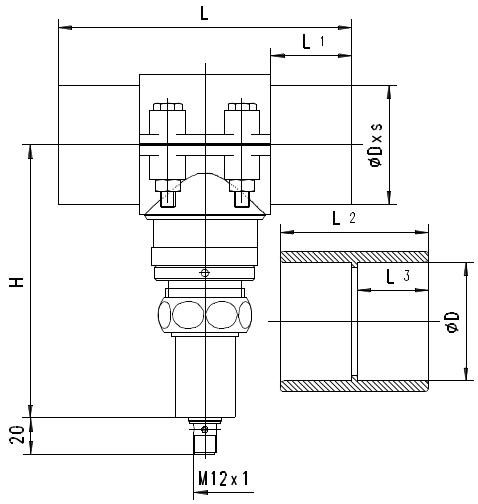
Connection example: PNP NPN



Before the electrical installation, it must be ensured that the supply voltage corresponds to the data sheet.
The use of shielded cabling is recommended.

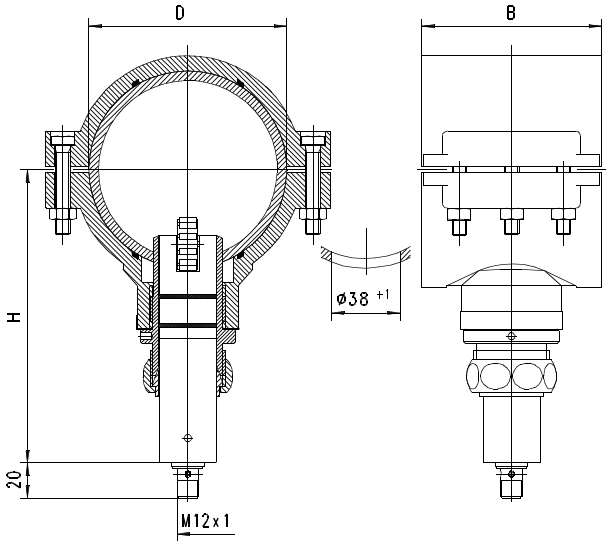
Dimensions

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



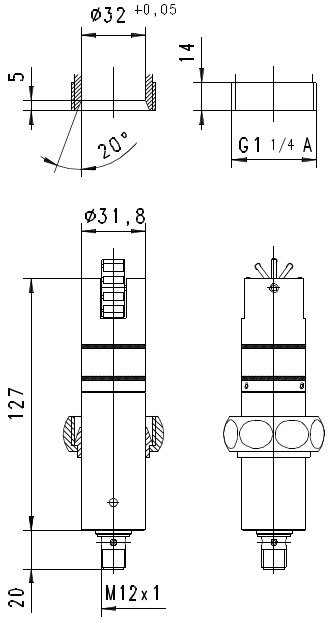
Nominal width	Type	ØD	s	H	L	L1	L2	L3
DN 32	RR.-032MH032.	40	1.9	145.0	132	31	55	26
DN 40	RR.-032MH040.	50	2.4		142	36	65	31
DN 50	RR.-032MH050.	63	3.0		156	43	79	38
DN 65	RR.-032MH065.	75	3.6	153.5	178	49	92	44
DN 80	RR.-032MH080.	90	4.3	156.0	202	56	107	51
DN 100	RR.-032MH100.	110	5.3	166.0	232	66	128	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... (optionally)

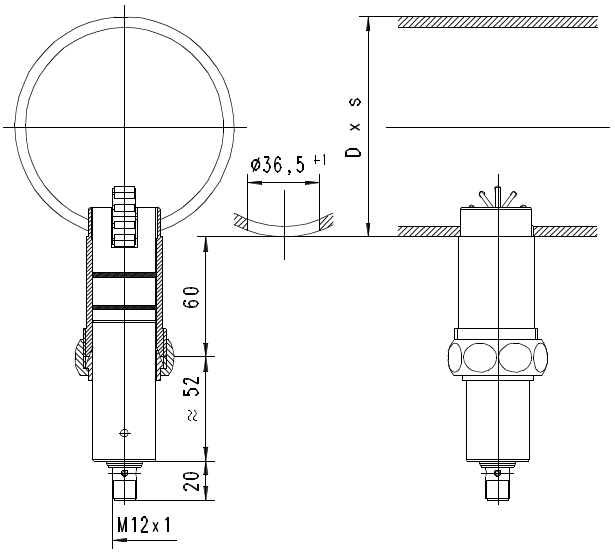


Nominal width	Type	D	B	H
DN 50	RR.-032BB050.	63	70	145.0
DN 65	RR.-032BB065.	75	80	153.5
DN 80	RR.-032BB080.	90	90	156.0
DN 100	RR.-032BB100.	110	100	166.0
DN 125	RR.-032BB125.	140	125	172.0
DN 150	RR.-032BB150.	160	130	180.0

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



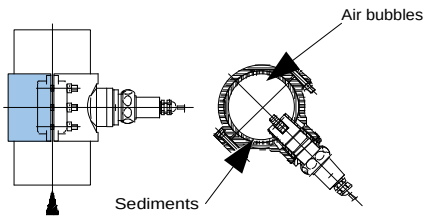
Connection: welded-on nozzle RR.-032VK000. (optionally)



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.

Note

The switching value can be programmed by the user via "teaching". If desired, programmability can be blocked by the manufacturer.
The ECI-1 device configurator with associated software is available as a convenient option for programming all parameters by PC, and for adjustment.

Operation and programming

The switching value is set as follows:

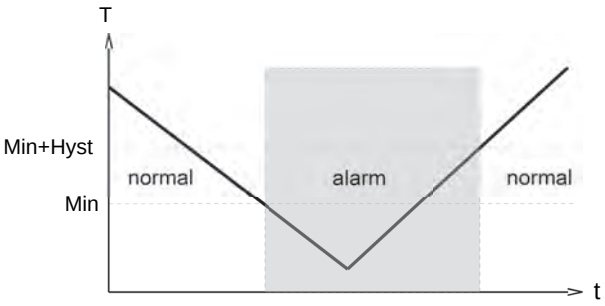
- Apply the flow rate to be set to the device.
- Apply an impulse of at least 0.5 seconds and max. 2 seconds duration to pin 2 (e.g. via a bridge to the supply voltage or a pulse from the PLC), in order to accept the measured value.
- When the teaching is complete, pin 2 should be connected to 0 V, so as to prevent unintended programming.

The device has a yellow LED which flashes during the programming pulse. During operation, the LED serves as a status display for the switching output.

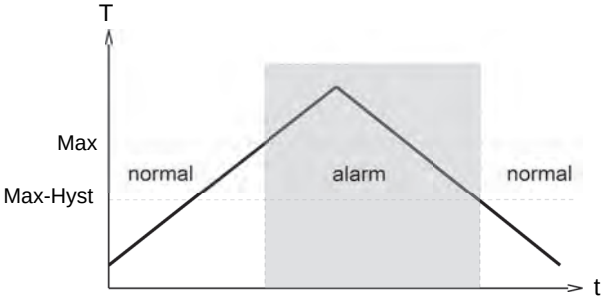
To avoid the need to transit to an undesired operating status for the purpose of teaching, the device can be provided ex-works with a teach-offset. The teach-offset point is added to the currently measured value before saving. The offset point can be positive or negative.

Example: The switching value should be set to 80 %. However, it is possible only to reach 60 % without problems. In this case, the device would be ordered with a "teach-offset" of +20 %.. At a flow rate of 60 % in the process, teaching would then store a value of 80 %.

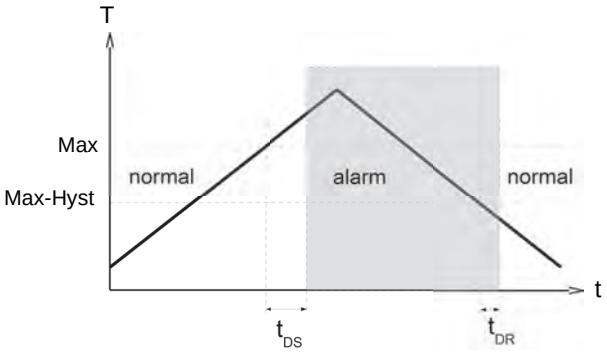
The limit switch can be used for monitoring minima or maxima. With a minimum-switch, falling below the limit value causes a switchover to the alarm state. Return to the normal state occurs when the limit value plus the set hysteresis is once more exceeded.



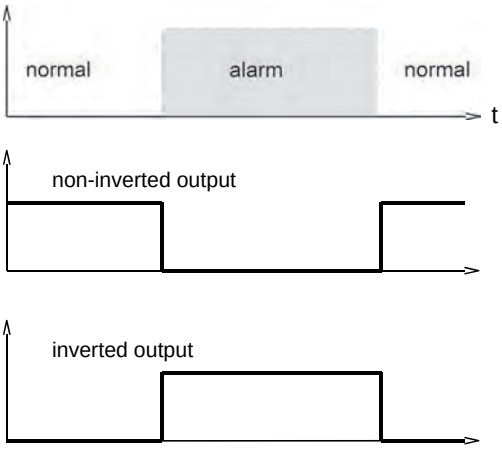
With a maximum-switch, exceeding the limit value causes a switchover to the alarm state. Return to the normal state occurs when the measured value once more falls below the limit value minus the set hysteresis.



A changeover delay time (t_{DS}) can be applied to switching to the alarm state. Equally, one switch-back delay time (t_{DR}) of several can be applied to switching back to the normal state.



In the normal state the integrated LED is on, in the alarm state it is off, and this corresponds to its status when there is no supply voltage.
In the non-inverted (standard) model, while in the normal state the switching output is at the level of the supply voltage; in the alarm state it is at 0 V, so that a wire break would also display as an alarm state at the signal receiver. Optionally, an inverted switching output can also be provided, i.e. in the normal state the output is at 0 V, and in the alarm state it is at the level of the supply voltage.



A Power-On delay function (ordered as a separate option) makes it possible to maintain the switching output in the normal state for a defined period after application of the supply voltage.

Ordering code

The basic device is ordered e.g. RRI-032...
with electronics e.g. LABO-RRI-032...

	1.		2.	3.	4.	5.	6.	7.	8.
RR		-	**032**						**E**

	9.		10.	11.	12.	13.	14.	15.
LABO-RR		-		**S**			**S**	

❍=Option

1.	**Sensor**								
	I		with inductive sensor						
	H		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.	**Connection for**								
	E		electronics						
9.	**Sensor**								
	I		with inductive sensor						●
	H		with Hall sensor					●	
10.	**Switching output (Limit switch)**								
	S		push-pull (compatible with PNP and NPN)						
11.	**Programming**								
	N		cannot be programmed (no teaching)						
	P	❍	programmable (teaching possible)						

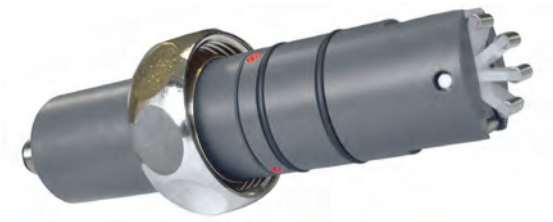
12.	**Switching function**		
	L		minimum switch
	H		maximum switch
13.	**Switching signal**		
	O		Standard
	I	❍	Inverted
14.	**Electrical connection**		
	S		For round plug connector M12x1, 4-pole
15.	**Optional**		
	H	❍	100 °C version (with 300 mm cable)

Accessories

- Cable/round plug connector (KB...)
  see additional information “Accessories”
- Device configurator ECI-1

GHM Messtechnik GmbH – Location Honsberg
Tenter Weg 2-8 • 42897 Remscheid • Germany
Fon +49-2191-9672-0 • Fax -40
www.ghm-messtechnik.de • info@honsberg.com

Flow Transmitter LABO-RR.032-I / U / F / C



- **Simple and economical flow meter 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**
- **0..10 V , 4..20 mA , frequency/pulse output, completely configurable**

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. With plastic housings, there are no magnets in the flow space.

The LABO electronics make various output signals available:

- Analog signal 0/4...20 mA (LABO-RR.-032-I)
- Analog signal 0/2..10 V (LABO-RR.-032-U)
- Frequency signal (LABO-RR.-032-F) or
- A value signal Pulse / x Litres (LABO-RR.-032-C)

A model with switching output is also available.

If desired, the range end value can be set to the currently existing flow using "teaching".

Technical data

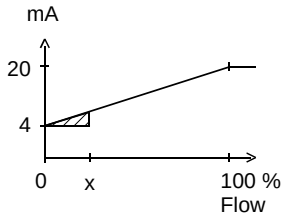
Sensor	LABO-RRI	inductive sensor
	LABO-RRH	hall sensor
Nominal widths	DN 32..150	
Mechanical Connection	welded-on nozzle, DN 50..150 tapping sleeve, DN 32..150 glue socket, screw-in probe	
Metering range	15..1000 l/min for details, see table "Ranges"	
Measurement accuracy	±5 % of full scale value	
Repeatability	±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	
Pressure loss	typically < 0.1 bar	

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	Sensor tube:	CW614N nickelled
	Adhesive:	epoxy resin
	Flange bolts:	stainless steel
Supply voltage	10..30 V DC at voltage output 10 V: 15..30 V DC	
Power consumption	< 1 W (for no-load outputs)	
Output data:	all outputs are resistant to short circuits and reversal polarity protected	
Current output:	4..20 mA (0..20 mA available on request)	
Voltage output:	0..10 V (2..10 V available on request) output current max. 20 mA	
Frequency output:	transistor output "push-pull" I_{out} = 100 mA max.	
Pulse output:	transistor output "push-pull" I_{out} = 100 mA max. Pulse width 50 ms Pulse per volume is to be stated	
Display	yellow LCD shows operating voltage (LABO-XF-I / U) or output status (LABO-XF-F / C) or (rapid flashing = Programming)	
Electrical connection	for round plug connector M12x1, 4-pole	
Ingress protection	IP 67	
Conformity	CE	

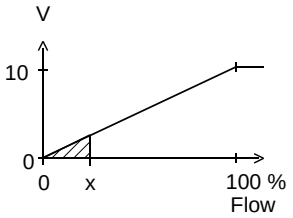
Signal output curves

Value x = Begin of the specified range
= not specified range

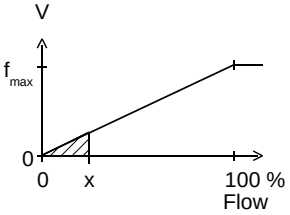
Current output



Voltage output



Frequency output



f_{max} selectable in the range of up to 2000 Hz

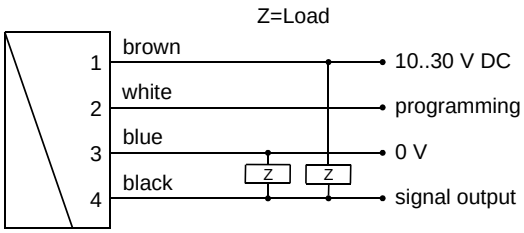
Other characters on request.

Ranges

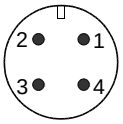
Nominal width	Metering range l/min H_2O	Q_{max} l/min
DN 32	15.. 200	220
DN 40	15.. 300	360
DN 50	25.. 400	480
DN 65	40.. 500	600
DN 80	50.. 700	840
DN 100	85..1000	1200

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

Wiring



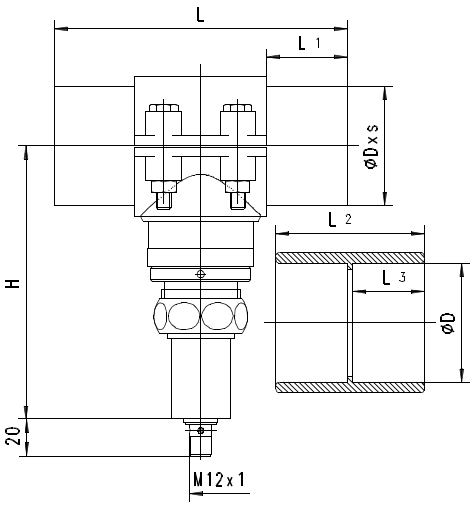
Connection example: PNP NPN



Before the electrical installation, it must be ensured that the supply voltage corresponds to the data sheet.
The use of shielded cabling is recommended.

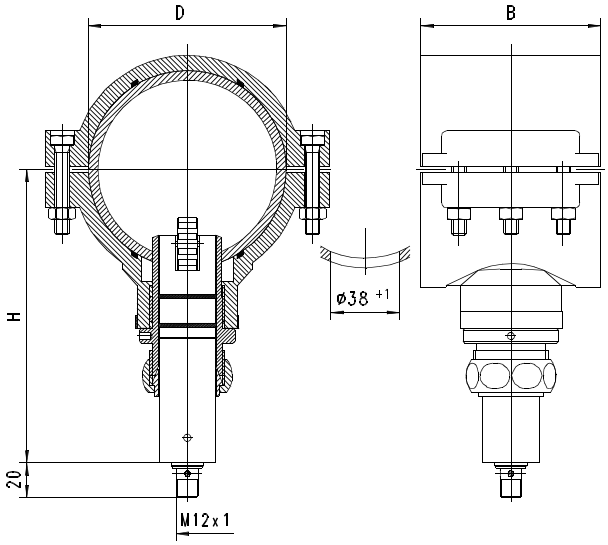
Dimensions

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



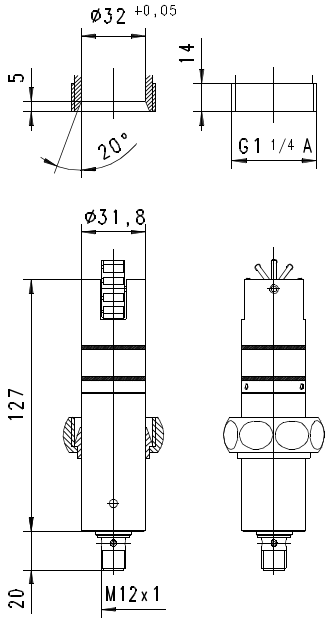
Nominal width	Type	ØD	s	H	L	L1	L2	L3
DN 32	RR.-032MH032.	40	1.9	145.0	132	31	55	26
DN 40	RR.-032MH040.	50	2.4		142	36	65	31
DN 50	RR.-032MH050.	63	3.0		156	43	79	38
DN 65	RR.-032MH065.	75	3.6	153.5	178	49	92	44
DN 80	RR.-032MH080.	90	4.3	156.0	202	56	107	51
DN 100	RR.-032MH100.	110	5.3	166.0	232	66	128	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... (optionally)

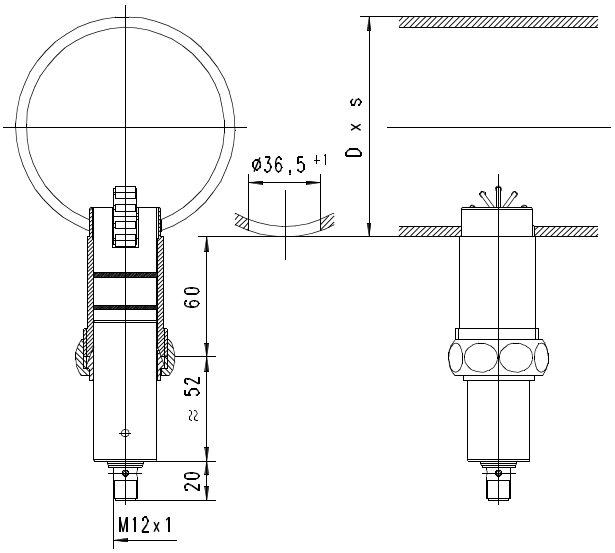


Nominal width	Type	D	B	H
DN 50	RR.-032BB050.	63	70	145.0
DN 65	RR.-032BB065.	75	80	153.5
DN 80	RR.-032BB080.	90	90	156.0
DN 100	RR.-032BB100.	110	100	166.0
DN 125	RR.-032BB125.	140	125	172.0
DN 150	RR.-032BB150.	160	130	180.0

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



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

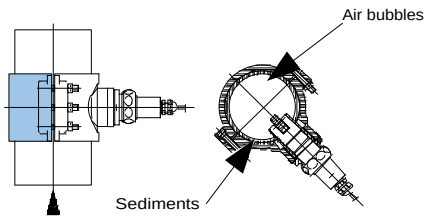


Handling and operation

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.

Note

The metering range end value can be programmed by the user via "teaching". Requirement for programmability must be stated when ordering, otherwise the device cannot be programmed.
The ECI-1 device configurator with associated software is available as a convenient option for programming all parameters by PC, and for adjustment.
The teaching option is not available for the pulse output version.

Operation and programming

The teaching process can be carried out by the user as follows:

- The flow rate to be set is applied to the device.
- Apply an impulse of at least 0.5 seconds and max. 2 seconds duration to pin 2 (e.g. via a bridge to the supply voltage or a pulse from the PLC), in order to accept the measured value.
- When the teaching is complete, pin 2 should be connected to 0 V, so as to prevent unintended programming.

The devices have a yellow LED which flashes during the programming pulse. During operation, the LED serves as an indicator of operating voltage (for analog output) or of switching status (for frequency or pulse output).

To avoid the need to transit to an undesired operating status for the purpose of teaching, the device can be provided ex-works with a teach-offset. The teach-offset point is added to the currently measured value before saving. The offset point can be positive or negative.

Example: The end of the metering range should be set to 80 %. However, only 60% can be achieved without problem. In this case, the device would be ordered with a "teach-offset" of +20°%.. At a flow rate of 60 % in the process, teaching would then store a value of 80 %.

If necessary, a far greater number of parameters can also be programmed using the ECI-1 configuration interface.

Ordering code

The basic device is ordered e.g. RRI-032...
with electronics e.g. LABO-RRI-032...

	1.		2.	3.	4.	5.	6.	7.	8.
RR		**-**	**032**						**E**

	9.		10.	11.	12.	13.
LABO-RR		**-**		**S**		

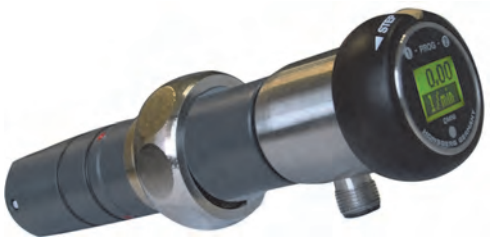
❍=Option

1.	**Sensor**						
	I	with inductive sensor					
	H	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.	**Sealing 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.	**Connection for**						
	E	electronics					
9.	**Sensor**						
	I	with inductive sensor					●
	H	with Hall sensor				●	
10.	**Signal output**						
	I	4..20 mA					
	U	0..10 V					
	F	frequency output					
	C	pulse output					
11.	**Programming**						
	N	cannot be programmed (no teaching)					
	P ❍	programmable (teaching possible)					
12.	**Electrical connection**						
	S	for round plug connector M12x1, 4-pole					
13.	**Optional**						
	H ❍	100 °C version (with 300 mm cable)					

Accessories

- Cable/round plug connector (KB...)
  see additional information “Accessories”
- Device configurator ECI-1

Flow Transmitter / Switch OMNI-RR..32



OPTION C:
Preset Counter with external reset option, complementary switching outputs and actual value display.

OPTION C1:
Instantaneous value display with analogue output, pulse-volume output and totalizer

- **Simple and economical flow meter 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**
- **Analog output 4..20 mA or 0..10 V**
- **Two programmable switches**
- **Graphical LCD display, backlit, can be read in sunlight and in the dark**
- **Selectable units in the display**
- **Programmable parameters via rotatable, removable ring (programming protection)**
- **Electronics housing with non-scratch, chemically resistant glass**
- **Rotatable electronic housing for best reading position**

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. With plastic housings, there are no magnets in the flow space.

The OMNI transducer located on the sensor has a backlit graphics LCD display which is very easy to read, both in the dark and in bright sunlight. The graphics display allows the presentation of measured values and parameters in a clearly understandable form. The measured values are displayed to 4 places, together with their physical unit, which may also be modified by the user. The electronics have an analog output (4..20 mA or 0..10 V) and two switching outputs, which can be used as limit switches for monitoring minimal or maximal, or as two-point controllers. The switching outputs are designed as push-pull drivers, and can therefore be used both as PNP and NPN outputs. Exceeding limit values is signalled by a red LED which is visible over a long distance, and by a cleartext in the display.

The stainless steel case has a hardened non-scratch mineral glass pane. It is operated by a programming ring fitted with a magnet, so there is no need to open the operating controls housing, and its leakproofness is permanently ensured.

By turning the ring to right or left, it is simple to modify the parameters (e.g. switching point, hysteresis...). To protect from unintended programming, it can be removed, turned through 180 ° and replaced, or completely removed, thus acting as a key.

Technical data

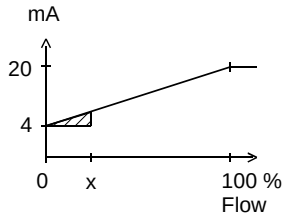
Sensor	OMNI-RRI	inductive sensor
	OMNI-RRH	hall sensor
Nominal widths	DN 32..150	
Mechanical Connection	welded-on nozzle, DN 50..150 tapping sleeve, DN 32..150 glue socket, Screw-in probe	
Metering range	15..1000 l/min for details, see table "Ranges"	
Measurement accuracy	±5 % of full scale value	
Repeatability	±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	
Pressure loss	typically < 0.1 bar	
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	Electronics housing	stainless steel 1.4305
	Glass	mineral glass hardened
	Magnet	samarium-Cobalt
	Ring	POM
Supply voltage	18..30 V DC	
Power consumption	< 1 W	
Analog output	4..20 mA / max. load 500 Ω or 0..10 V / min. load 1 kΩ	
Switching output	transistor output "push-pull" (resistant to short circuits and polarity reversal) I_{out} = 100 mA max.	
Hysteresis	adjustable, position of the hysteresis depends on minimum or maximum	

Display	backlit graphical LCD-Display (transreflective), extended temperature range -20..+70 °C, 32 x 16 pixels, background illumination, displays value and unit, flashing LED signal lamp with simultaneous message on the display.
Electrical connection	for round plug connector M12x1, 5-pole
Ingress protection	IP 67 / (IP 68 when oil-filled)
Conformity	CE

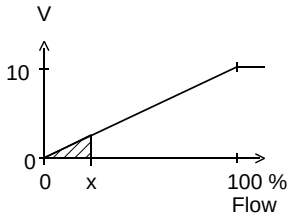
Signal output curves

Value x = Begin of the specified range
= not specified range

Current output



Voltage output



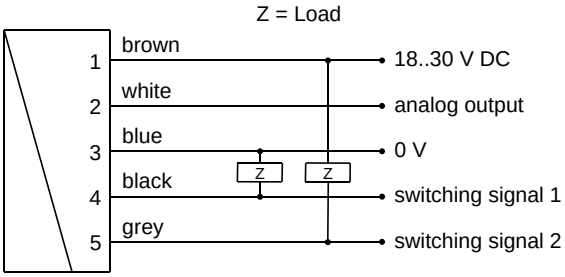
Other characters on request.

Ranges

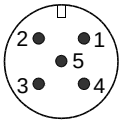
Nominal width	Metering range l/min H_2O	Q_{max} l/min
DN 32	15.. 200	220
DN 40	15.. 300	360
DN 50	25.. 400	480
DN 65	40.. 500	600
DN 80	50.. 700	840
DN 100	85..1000	1200

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

Wiring



Connection example: PNP NPN



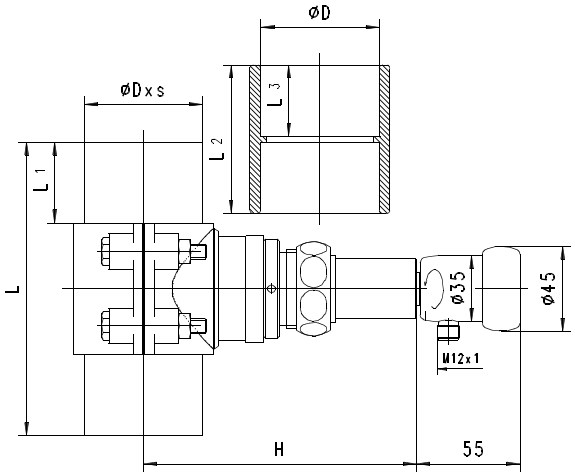
connector M12x1

See separate wiring at C and C1 option in the separate descriptions.

Before the electrical installation, it must be ensured that the supply voltage corresponds to the data sheet.
The use of shielded cabling is recommended.

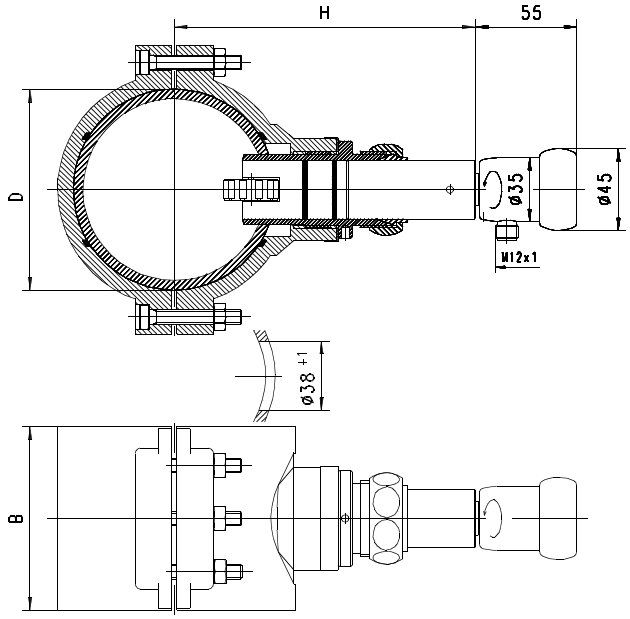
Dimensions

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



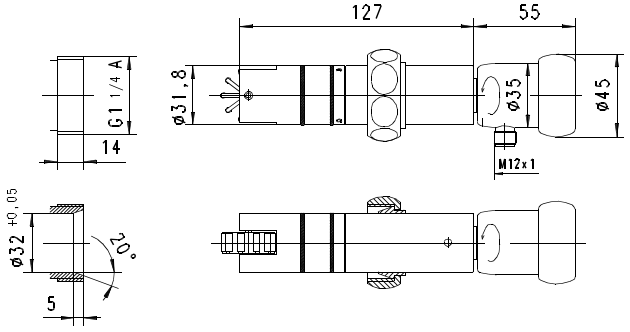
Nominal width	Type	ØD	s	H	L	L1	L2	L3
DN 32	RR.-032MH032.	40	1.9	145.0	132	31	55	26
DN 40	RR.-032MH040.	50	2.4		142	36	65	31
DN 50	RR.-032MH050.	63	3.0		156	43	79	38
DN 65	RR.-032MH065.	75	3.6	153.5	178	49	92	44
DN 80	RR.-032MH080.	90	4.3	156.0	202	56	107	51
DN 100	RR.-032MH100.	110	5.3	166.0	232	66	128	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... (optionally)

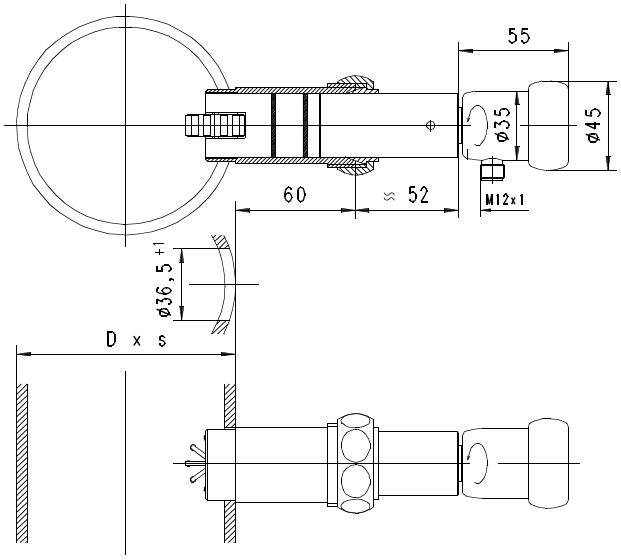


Nominal width	Type	D	B	H
DN 50	RR.-032BB050.	63	70	145.0
DN 65	RR.-032BB065.	75	80	153.5
DN 80	RR.-032BB080.	90	90	156.0
DN 100	RR.-032BB100.	110	100	166.0
DN 125	RR.-032BB125.	140	125	172.0
DN 150	RR.-032BB150.	160	130	180.0

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



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



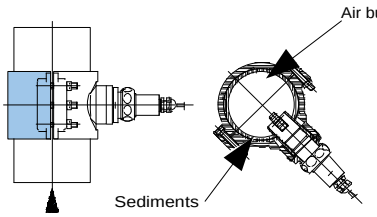
Gooseneck option

A gooseneck (optional) between the electronics head and the primary sensor provides freedom in the orientation of the sensor. This option simultaneously provides thermal decoupling between the two units.

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.

Programming

The annular gap of the programming ring can be turned to positions 1 and 2. The following actions are possible:

Set to 1 = continue (STEP)
Set to 2 = modify (PROG)

Neutral position between 1 and 2

The ring can be removed to act as a key, or turned through 180 ° and replaced to create a programming protector.
Operation is by dialog with the display messages, which makes its use very simple.
Starting from the normal display (present value and unit), if 1 (STEP) is repeatedly selected, then the display shows the following information in this order:

Display of the parameters, using position 1

- Switching value S1 (switching point 1 in the selected unit)
- Switching characteristic of S1
  MIN = Monitoring of minimum value
  MAX = Monitoring of maximum value
- Hysteresis 1 (hysteresis value of S1 in the set unit)
- Switching value S2
- Switching characteristic of S2
- Hysteresis 2
- Code
  After entering the **code 111**, further parameters can be defined:
- Filter (settling time of the display and output)
- Physical unit (Units)
- Output: 0..20 mA or 4..20 mA
- 0/4 mA (measured value corresponding to 0/4 mA)
- 20 mA (measured value corresponding to 20 mA)

For models with a voltage output, replace 20 mA accordingly with 10 V.

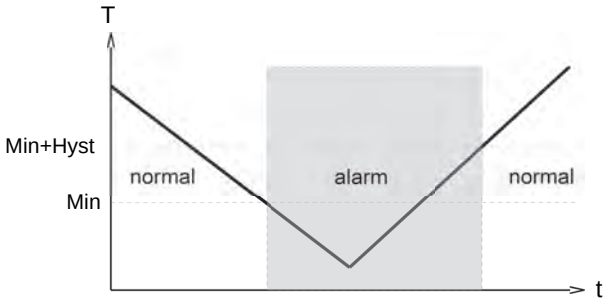
Edit, using position 2

If the currently visible parameter is to be modified:

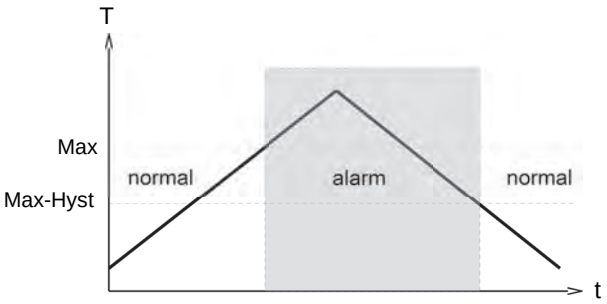
- Turn the annular gap to position 2, so that a flashing cursor appears which displays the position which can be modified.
- By repeatedly turning to position 2, values are increased; by turning to position 1, the cursor moves to the next digit.
- Leave the parameter by turning to position 1 (until the cursor leaves the row); this accepts the modification.
- If there is no action within 30 seconds, the device returns to the normal display range without accepting the modification.

The limit switches S1 and S2 can be used to monitor minimal or maximal.

With a minimum-switch, falling below the limit value causes a switchover to the alarm state. Return to the normal state occurs when the limit value plus the set hysteresis is once more exceeded.



With a maximum-switch, exceeding the limit value causes a switchover to the alarm state. Return to the normal state occurs when the measured value once more falls below the limit value minus the set hysteresis.



The change to the alarm state is indicated by the integrated red LED and a cleartext in the display.
While in the normal state the switching outputs are at the level of the supply voltage; in the alarm state they are at 0 V, so that a wire break would also display as an alarm state at the signal receiver.

Overload display
Overload of a switching output is detected and indicated on the display ("Check S 1 / S 2"), and the switching output is switched off.

Simulation mode
To simplify commissioning, the sensor provides a simulation mode for the analog output. It is possible to create a programmable value in the range 0..26.0 mA at the output (without modifying the process variable). This allows the wiring run between the sensor and the downstream electronics to be tested during commissioning. This mode is accessed by means of **Code 311**.

Factory settings
After modifying the configuration parameters, it is possible to reset them to the factory settings at any time using **Code 989**.

GHM Messtechnik GmbH – Location Honsberg
Tenter Weg 2-8 • 42897 Remscheid • Germany
Fon +49-2191-9672-0 • Fax -40
www.ghm-messtechnik.de • info@honsberg.com

Ordering code

The basic device is ordered e.g. RRI-032...
with electronics e.g. OMNI-RRI-032...

	1.		2.	3.	4.	5.	6.	7.	8.
RR		-	032						E

	9.		10.	11.	12.	13.
OMNI-RR		-		S		

❍=Option

1.	**Sensor**								
	I	with inductive sensor							
	H	with Hall sensor							
2.	**Union nut**								
	032	G $1^1/_4$							
3.	**Mechanical connection**								
	MH	tapping sleeve with piping section and PVC glue sockets							
	BB ❍	PP tapping sleeve							
	RM	screw-in probe G $1^1/_4$ 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.	**Connection for**								
	E	electronics							
9.	**Sensor**								
	I	with inductive sensor							●
	H	with Hall sensor						●	

10.	**Analog output**			
	I	current output 0/4..20 mA		●
	U ❍	voltage output 0/2..10 V		●
	K	without	●	
11.	**Electrical connection**			
	S	for round plug connector M12x1, 5-pole		
12.	**Option 1**			
	H ❍	gooseneck model		
	O ❍	tropical model oil-filled version for heavy duty or external use		
13.	**Option 2**			
	C ❍	Counter C		
	C1 ❍	Counter C1		

Options

Counter C (hardware and software option):
Preset Counter with external reset option, complementary switching outputs and actual value display
(modified wiring diagram!)

Counter C1 (software option):
Instantaneous value display with analogue output, pulse-volume output and totalizer

Accessories

- Cable/round plug connector (KB...)
  see additional information “Accessories”
- Device configurator ECI-1

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OMNI-C Counter

Counter for flow transmitters:

- Dynamic diaphragm
- Rotor
- Turbine
- Gear
- Screw
- Calorimetry
- MID
- Vortex

- **Simple totalisation**
- **Simple filling counter with programmable end signal**
- **Control switchover at present value**
- **Automatic, dynamic change of display unit and decimal places in the graphics display**
- **Antivalent outputs**
- **Simple guided menu via graphics display**

Characteristics

The totaliser of the OMNI flow rate system enables a totalisation or measurement of consumption for all HONSBERG device families (for fluids and gases) with which the OMNI system is compatible; this is independent of the input signal, pulse or analogue input, and of the measurement process.

Simple filling control is also possible. Here, the counter can be set to count upwards or downwards.
When the preset point is reached, a switching signal is emitted which is available in antivalent form to two outputs.
Resetting can be carried out by means of a signal input or also by a programming ring.

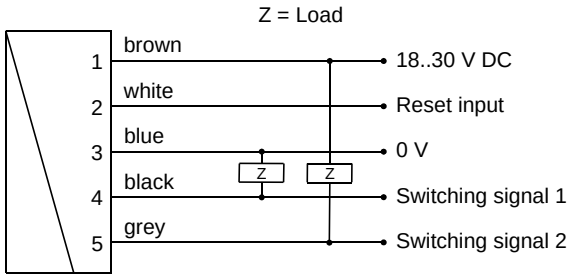
The state of the counter is indicated in an LCD display with only four digits. Here, the number of decimal places and the unit displayed is continuously matched to the current state of the counter. In this case, the smallest value which can be displayed is 0.001 ml (= 1 µl), and the largest is 9999 m³. The counter therefore has 13 places, of which the four most significant are displayed at any one time. The display resolution at all times is therefore at least 1 per thousand of the displayed value, or better, and this generally exceeds the accuracy of the connected flow transmitter. The non-displayed digits of the counter are in that case irrelevant to the accuracy of the measurement.
The automatic dynamic changeover of units in the display in relation to the state of the counter makes the value easy to read in spite of a display with only four digits. In addition, user configuration of the counter is unnecessary.

In addition to the totalised value, the present flow rate can be displayed.

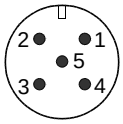
Technical data

Counter range	0.000 ml to 9999 m³ with automatic setting of the decimal places and of the applicable unit.
Switching signal outputs (Pin 4 + 5)	2 x pushpull output, max. 100 mA, resistant to short circuits and polarity reversal, antivalent states, configurable on the device as a wipe or edge signal
Counter reset signal (Pin 2)	Input 18..30 V resistant to short circuits and reversed polarity PIN 2, wiper signal, positive or negative edge can be selected locally

Wiring



Connection example: PNP NPN



Before the connecting the supply voltage, it must be ensured that this corresponds with the data sheet! The use of shielded cabling is recommended

Sensor connection to OMNI-C-TA, see dimensions.

Handling and operation

Installation

For assembly, please observe the handling instructions for the different device versions.

After assembly, it is possible to move the sensor head to the most optimal reading position opposite the sensor part using its rotating function.

Programming

On the display, the counter indicates the state of the totaliser as a value and unit. The units ml, L, m³ are set automatically.

For operation as a totaliser, no configuration by the user is necessary.

To use the other functions, configuration may be required. This is carried out using the programming ring located on the device.

The annular gap of the programming ring can be turned to positions 1 and 2. The following actions are possible:

Set to 1 = continue (STEP)
Set to 2 = modify (PROG)

Neutral position between 1 and 2

The ring can be removed to act as a key, or turned through 180 ° and replaced to create a programming protector.

Operation is by dialogue with the display messages, which makes its use very simple.

The control display of the present flow rate depends on the metering range of the selected flow transmitter, and has already been set appropriately in the factory (ml/min, l/min, l/h, m³/h).
It is activated by turning the ring to position 1
After 10 seconds, the display automatically returns to the totaliser mode.

For operation as a preset counter, the following must be set:

1. The preset point
2. The type of output signal ("Preset has been reached"):
   Signal edge / wiper pulse
   width of the wiper pulse, if required
3. The unit of the preset point:
   (ml, litre, m³).

Starting from the normal display (total and unit), if 1 (Step) is selected repeatedly, then the counter shows the following information:

- Normal display is total and unit (e.g. litre)
- Display of present value (e.g. l/min)
- Preset point incl. type of switching output.
- Code

The code gives access to various input levels into which parameters can be entered (so that this does not occur inadvertently, the code must be entered!).

Code 111:

- Gate time (available only for sensors which transmit frequency)
- Filter time
- Direction of count (pos / neg)
- Unit for switching value reset point
- Decimal place for switching value / reset point
- Switching type for switching value (edge / wiper signal)
- Pulse duration (for wiper signal)
- Reset method (manual / via signal)

Code 100:

- Manual reset for totaliser

The detailed flow chart for operation is available in the "Operating instructions for OMNI-C".

Combination examples

Vortex CF..	
Calorimetric F.. (separate data sheet)	
Calorimetric FG.. (separate data sheet)	
Calorimetric FIN..	
Magnetic inductive FIS.. (separate data sheet)	
Piston HD.. HR.. MR..	
Magnetic inductive MID1..	
Panel mounting **OMNI-TA** (separate data sheet)	
Rotor RR..	
Turbine RT..	
Screw VHS..	

Gear VHZ..	
Dynamic diaphragm XF..	

Momentary value indicator, transmitter and meter OMNI-C1 electronics

Counter for flow transmitters:

- Dynamic diaphragm
- Rotor
- Turbine
- Gear
- Screw
- MID
- Vortex

- **Momentary value indicator and totalisation**
- **Pulse output with adjustable pulse per volume**
- **Antivalent outputs**
- **Analogue output of the momentary value**
- **Simple guided menu via graphics display**

Characteristics

The local OMNI-C1 electronics offers a momentary value indicator and a totalisation of the flow rate quantity.

The momentary value is output at the analogue output as a 4..20 mA signal (or optionally as a 0..10 V signal).
In addition, the electronics has a pulse output, which outputs a pulse after a preset quantity with a duration of 36 ms. The pulse is available at two switching outputs in anitvalent form.

The primary displayed value is the flow rate. Using the programming ring, you can temporarily switch to the totalisation.

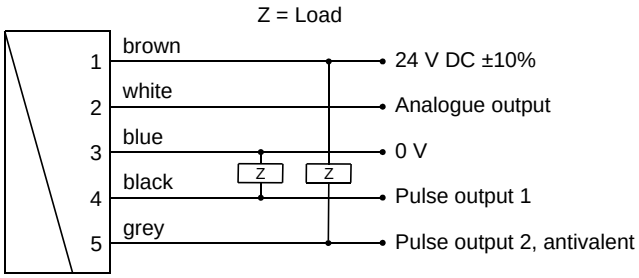
The state of the totalisation is indicated in an LCD display with only four digits. Here, the number of decimal places and the unit displayed is continuously matched to the current state of the counter. In this case, the smallest value which can be displayed is 0.001 ml (= 1 µl), and the largest is 9999 m³. The counter therefore has 13 places, of which the four most significant are displayed at any one time. The display resolution at all times is therefore at least 1 per thousand of the displayed value, or better, and this generally exceeds the accuracy of the connected flow transmitter. The non-displayed digits of the counter are in that case irrelevant to the accuracy of the measurement.
The automatic dynamic changeover of units in the display in relation to the state of the counter makes the value easy to read in spite of a display with only four digits. In addition, user configuration of the counter is unnecessary.

Counter C:
Instead of the counter option C1 the counter option C is available (see corresponding datasheet). It offers a totalizer with adjustable preset value and external reset. This allows to realize a filling control application for example. Additionally the actual flow rate value can be displayed, however without an analog output.

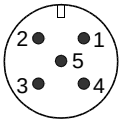
Technical data

Counter range	0.000 ml to 9999 m³ with automatic setting of the decimal places and of the applicable unit
Pulse outputs (Pin 4 + 5)	2 x pushpull output, max. 100 mA, resistant to short circuits and polarity reversal, antivalent statuses, pulse width 36 ms

Wiring



Connection example: PNP NPN



Plug connector M12x1

Before the electrical installation, it must be ensured that the supply voltage corresponds to the data sheet.
The use of shielded cabling is recommended.

Handling and operation

Installation

For assembly, please observe the handling instructions for the different device versions.

After assembly, it is possible to move the sensor head to the most optimal reading position opposite the sensor part using its rotating function.

Programming

The resetting of the meter to zero takes place through the programming.

The stainless steel case has a hardened non-scratch mineral glass pane. It is operated by a programming ring fitted with a magnet, so there is no need to open the operating controls housing, and its leakproofness is permanently ensured.

By turning the ring to right or left, it is simple to modify the parameters (e.g. switching point, hysteresis...). To protect from unintended programming, it can be removed, turned through 180 ° and replaced, or completely removed, thus acting as a key.

On the display, the meter indicates the current flow rate as a value and unit. For this purpose, no adjustments by the user are necessary.

To use the other functions, configuration may be required. This is carried out using the programming ring located on the device.

The annular gap of the programming ring can be turned to positions 1 and 2. The following actions are possible:

Set to 1 = continue (STEP)
Set to 2 = modify (PROG)

Neutral position between 1 and 2

The ring can be removed to act as a key, or turned through 180 ° and replaced to create a programming protector.
Operation is by dialogue with the display messages, which makes its use very simple.

Rotating the ring once to Pos. 1 displays the totaliser status. In the process, the unit is automatically set to the quantity already counted.
After 10 seconds, the display automatically returns to the momentary value mode.
If the ring is turned to position 1 again while the totaliser status is shown, the code input is reached.
The code gives access to various input levels into which parameters can be changed (so that this does not occur inadvertently, the code must be entered!).

Code 100:

Reset for totaliser

Code 111:

Filter	Enables the input of a filter time in multiple levels The filter time describes the time after which a volatile change in flow occurs until the display value has adopted the new value
PlsUnit	Enables the input of the unit of the pulse volume (pulse per volume), e.g. cm³, Litre, m³
PlsVal	Enables the input of the meter value of the pulse flow (0..9999)
Output	Enables switching of the analogue output between 0..20 mA and 4..20 mA (optionally (0..10 V and 2..10 V)
4 mA	Defines the momentary value at which 4 mA should be output
20 mA	Defines the momentary value at which 20 mA should be output

Combination examples

Vortex CF..	
Calorimetric F.. (separate data sheet)	
Calorimetric FG.. (separate data sheet)	
Calorimetric FIN..	
Magnetic inductive FIS.. (separate data sheet)	
Piston HD.. HR.. MR..	
Magnetic inductive MID1..	
Panel mounting **OMNI-TA** (separate data sheet)	
Rotor RR..	
Turbine RT..	
Screw VHS..	

Gear VHZ..	
Dynamic diaphragm XF..	

Device Configurator ECI-1

- **Can be used on site for:**
  - **parameter modification**
  - **firmware update**
  - **adjustment of inputs and outputs**
- **Can be connected via USB**

Characteristics

The device configurator ECI-1 is an interface which allows the connection of microcontroller-managed HONSBERG sensors to the USB port of a computer.
Together with the Windows software "HONSBERG Device Configurator" it enables

- the modification of all the sensor's configuration settings
- the reading of measured values
- the adjustment of inputs and outputs
- firmware updates

Technical data

Supply voltage	12..30 V DC (depending on the connected sensor) and via USB
Power consumption	< 1 W
Connection	
Sensor	cable bushing M12x1, 5-pole, straight length approx. 50 cm
Lead	device connector M12x1, 5-pole
USB	USB bushing type B
Operating temperature	0..50 °C
Storage temperature	-20..+80 °C
Dimensions of housing	98 mm (L) x 64 mm (W) x 38 mm (H)
Housing material	ABS
Ingress protection	IP 40

Handling and operation

Connection

The device configurator is intended for temporary connection to the application. It is connected between the the existing sensor lead and the sensor. Power supply is via the supply to the sensor and the computer's USB port. When inactive (no communication), the configurator behaves completely neutrally; all signals from the sensor remain available to the application. During communication between computer and sensor, the signal wirings are separated in the configurator, so that in this state the sensor's output signals are not available.

To connect 4-pole leads without a middle hole to the installed 5-pole device connector, adapter K04-05 is included. 4-pole leads with a middle hole can be used without an adapter.

Ordering code

Device configurator (for scope of delivery, see the diagram below)	**ECI-1**

Scope of delivery

1. Device configurator ECI-1
2. USB cable
3. Adapter K04-05
4. Plug KB05G
5. Cable K05PU-02SG
6. Carrying case

Incl. software

Accessories:

Mains connector 24 V DC (with fitted round plug connector, 5-pole, incl. international plug set)		**EPWR24-1**

Replacement parts:

M12x1 adapter 4- / 5-pole	**K04-05**
PUR cable, 5-pole, shielded with round plug connector M12x1	**K05PU-02SG**
Round plug connector M12x1, 5-pole (without cable)	**KB05G**

Options

LABO transmitter - Temperature up to 150 °C

All LABO transmitters can be used with electronics positioned in a separate area with media temperatures up to 150 °C.

OMNI - Tropical model

This OMNI electronic option should be used where temperatures change quickly, or for external installations (the device is filled with oil, and thus prevents condensate formation in the electronics housing, even under adverse circumstances)

GHM Messtechnik GmbH – Sales Center International
Schloßstraße 6 ● 88453 Erolzheim ● Germany
Fon +49-7354-937233-0 ● Fax -88
www.ghm-messtechnik.de ● info@ghm-messtechnik.de

Accessories

Filter

Type ZV

Type ZE

The HONSBERG filters are offered for the protection of the devices from dirt or as independent components for coarse and fine filtration of liquids.

For more information, see additional product information.

Round plug connector 4 / 5-pin

1 brown
2 white
3 blue
4 black

1 brown
2 white
3 blue
4 black
5 grey

Ordering code

Self-assembly

	1.	2.
KB		

1.	**Number of pins**	
	04	4-pin
	05	5-pin
2.	**Connector output**	
	G	straight
	W	elbow 90 °

Packaged

1.	2.		3.	4.	5.	6.
	PU	-				

1.	**Number of pins**	
	K	4-pin
	K05	5-pin
2.	**Cable material**	
	PU	PUR
3.	**Cable length**	
	02	2 m
	05	5 m
	10	10 m
4.	**Shielding**	
	N	shielding not applied to coupling
	S	shielding applied to coupling
5.	**Connector output**	
	G	straight
	W	elbow 90 °
6.	**Shielding**	
	A	shielded

Panel meter OMNI-TA

Primary Sensors
0..10 V
4..20 mA
Frequency

Converter with the same data as the OMNI in situ electronics; but as an external panel-mounting variant with IP 67 housing.

OMNI - Remote

Primary Sensors
0/2..10 V
4/0..20 mA
Frequency

Function is identical to OMNI-in situ. Connection to the sensor is, however, made by wire, and so the measurement point and display location can be apart

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Fon +49-7354-937233-0 ● Fax -88
www.ghm-messtechnik.de ● info@ghm-messtechnik.de

Product Overview

„Industrial Sensors and Instrumentation“

Temperature
Flow
Level / Filling Height
Analysis
Humidity
Pressure
Weighing Instruments

„Process Instrumentation “Hygienic Design“

GHM*adapt*
Temperature
Flow
Level / Filling Height
Analysis

“Laboratory Instrumentation“

„Industrial Electronics“

Displays / Controller
Transmitter / Signal conditioning
Isolating converters
Safety and Monitoring Devices
Power Electronics
Calibration and Testing

“Measuring Data Acquisition“

Data Logging and Monitoring
Test Bench Measurement Technology
Renewable Energies