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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

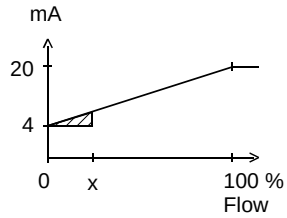
Sensor	LABO-RRI	inductive sensor
	LABO-RRH	hall sensor
Nominal widths	DN 32..150	
Mechanical Connection	welded-on nozzle, DN 50..150 tapping sleeve, DN 32..150 glue socket, screw-in probe	
Metering range	15..1000 l/min for details, see table "Ranges"	
Measurement accuracy	±5 % of full scale value	
Repeatability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

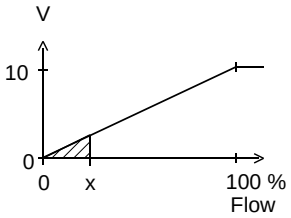
Signal output curves

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

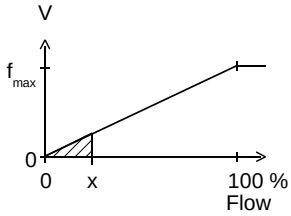
Current output



Voltage output



Frequency output



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

Other characters on request.

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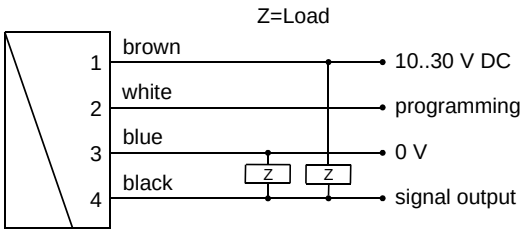
Ranges

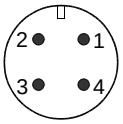
Nominal width	Metering range l/min H_2O	Q_{max} l/min
DN 32	15.. 200	220
DN 40	15.. 300	360
DN 50	25.. 400	480
DN 65	40.. 500	600
DN 80	50.. 700	840
DN 100	85..1000	1200

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



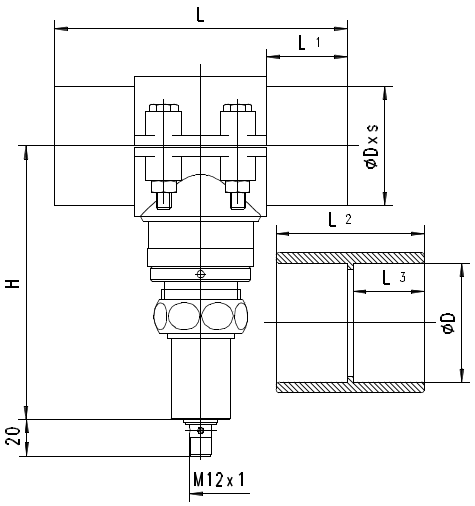
Connection example: PNP NPN



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

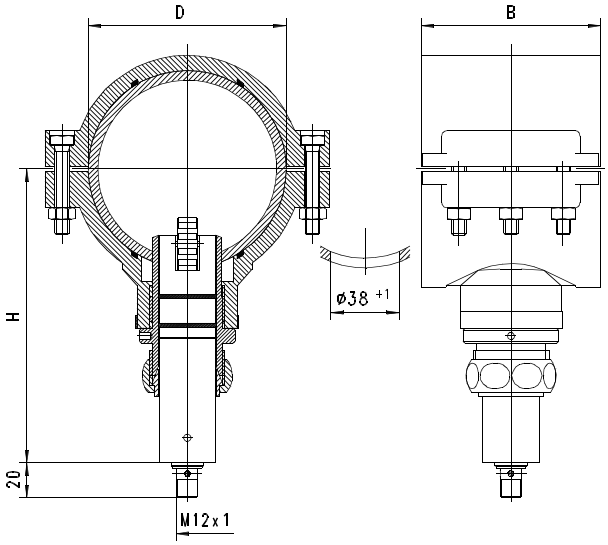
Dimensions

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



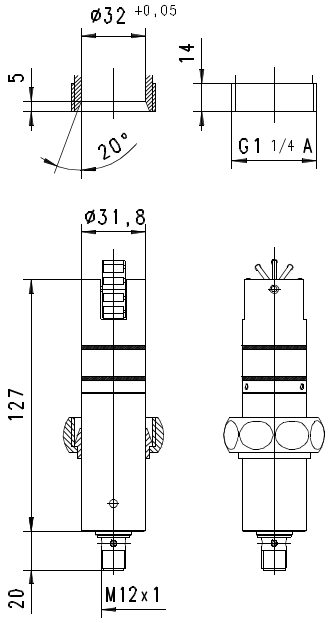
Nominal width	Type	ØD	s	H	L	L1	L2	L3
DN 32	RR.-032MH032.	40	1.9	145.0	132	31	55	26
DN 40	RR.-032MH040.	50	2.4		142	36	65	31
DN 50	RR.-032MH050.	63	3.0		156	43	79	38
DN 65	RR.-032MH065.	75	3.6	153.5	178	49	92	44
DN 80	RR.-032MH080.	90	4.3	156.0	202	56	107	51
DN 100	RR.-032MH100.	110	5.3	166.0	232	66	128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

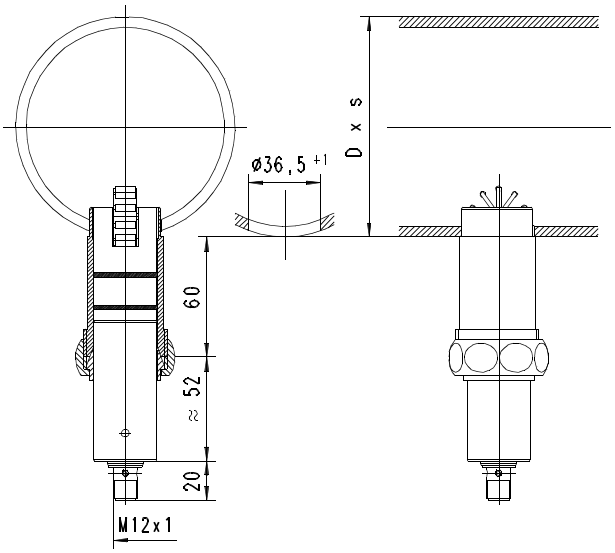


Nominal width	Type	D	B	H
DN 50	RR.-032BB050.	63	70	145.0
DN 65	RR.-032BB065.	75	80	153.5
DN 80	RR.-032BB080.	90	90	156.0
DN 100	RR.-032BB100.	110	100	166.0
DN 125	RR.-032BB125.	140	125	172.0
DN 150	RR.-032BB150.	160	130	180.0

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



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

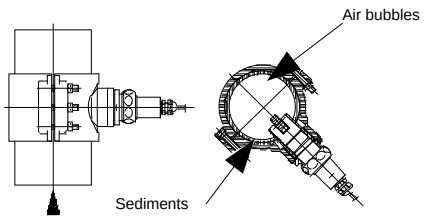


Handling and operation

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.

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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 $1^1/_4$						
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.	**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