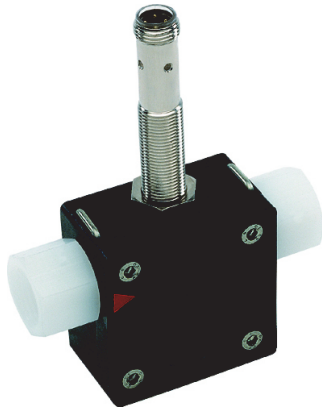**HONSBERG**
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Product Information

Flow Switch LABO-RRI-S

● **Uncomplicated monitoring 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**
● **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.

The LABO-RRI 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".
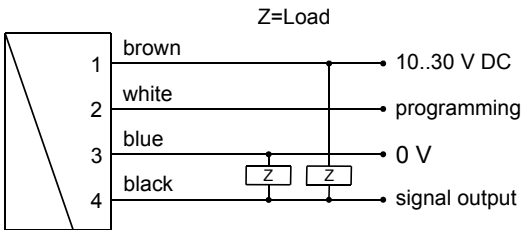Models with analog or pulse output are also available.

Technical data

Sensor	inductive
Nominal width	DN 10 (LABO-RRI-010) DN 25 (LABO-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)
Switching ranges	0.1..100 l/min for details, see table "Ranges"
Measurement accuracy	±3 % of the measured value
Repeatability	±1 % of full scale value
Pressure loss	max. 0.5 bar
Pressure resistance	PN 16 bar
Medium temperature	0..60 °C
Storage temperature	-20..+80 °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	Clamps	1.4301
	Electronic housing	CW614N nickelled

Supply voltage	10..30 V DC at voltage output 10 V: 15..30 V DC
Power consumption	< 1 W (for no-load outputs)
Switching output	transistor output "push-pull" (resistant to short circuits and polarity reversal) I_{out} = 100 mA max.
Display	yellow LED (On = Normal / Off = Alarm / rapid flashing = Programming)
Electrical connection	for round plug connector M12x1, 4-pole
Ingress protection	IP 67
Weight	LABO-RRI-010 — approx. 0.2 kg LABO-RRI-025 — approx. 0.5 kg
Conformity	CE

Ranges

Metering range l/min (H_2O)	Types	Q_{max} l/min (H_2O)
0.1.. 1.5	LABO-RRI-010...020	1.8
0.2.. 10.0	LABO-RRI-010...050	12.0
0.4.. 12.0	LABO-RRI-010...070	14.4
2.0.. 30.0	LABO-RRI-025...080	36.0
3.0.. 60.0	LABO-RRI-025...120	72.0
4.0.. 100.0	LABO-RRI-025...160	120.0

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Product Information
LABO-RRI-S

Wiring

Z=Load

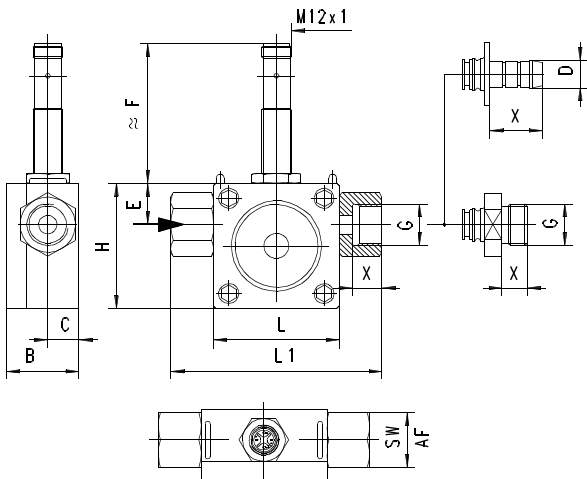| Pin	Color	
1	brown	10..30 V DC
2	white	programming
3	blue	0 V
4	black	signal output

Connection example: PNP NPN
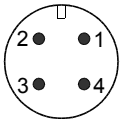
Before the electrical installation, it must be ensured that the supply voltage corresponds to the data sheet.

It is recommended to use shielded wiring.

The push-pull output) can as desired be switched as a PNP or an NPN output.

Dimensions

Threaded connection

G	DN	Types	H/L	L1	B	C	E	F	X	SW
G $^3/_8$	10	RRI-010G	50	84	29	12.5	16.5	56	12	22
G $^3/_8$ A		RRI-010A							14	
G 1	25	RRI-025G	70	110	53	23.0	27.5	51	18	38
G 1 A		RRI-025A		122						

NPT threads on request

Hose nozzle connection

D	DN	Types	H/L	L1	B	C	E	F	X
Ø11	10	RRI-010T	50	96	29	12.5	16.5	56	21
Ø30	25	RRI-025T	70	176	53	23.0	27.5	51	45

Custom specific connectors on request

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.

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 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).

In order to avoid the need to transit to an undesired operating status during the teach-in, 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 %.

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Product Information
LABO-RRI-S

Ordering code

The basic device is ordered e.g. RRI-010xxx with electronics e.g.
LABO-RRI-010xxx

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

		10.	11.	12.	13.	14.	15.
LABO-	**RRI-**		S				S

◯=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 2.0	●
	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
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.	**Connection for**		
	E	electronics	
10.	**For nominal width**		
	010	DN 10	●
	025	DN 25	●
11.	**Switching output (Limit switch)**		
	S	push-pull (compatible with PNP and NPN)	
12.	**Programming**		
	P	programmable (teaching possible)	
	N	◯	cannot be programmed (no teaching)
13.	**Switching function**		
	L	minimum-switch	
	H	maximum-switch	

14.	**Switching signal**		
	O		standard
	I	◯	inverted
15.	**Electrical connection**		
	S		for round plug connector M12x1, 4-pole

Options for LABO

Switching delay period (0.0..99.9 s)   [ ] . [ ] s
(from Normal to Alarm)

Switch-back delay period (0.0..99.9 s)   [ ] . [ ] s
(from Alarm to Normal)

Power-On delay period (0..99 s)   [ ] s
(after connecting the supply, time during
which the switching output is not activated)

Switching output fixed at   [ ] l/min

Switching hysteresis   [ ] %
standard = 2 % of the metering range

Teach-offset   [ ] %
(in percent of the metering range)
standard = 0 %

Further options available on request.

Options

● Rotor with titanium clamps

Accessories

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