

Produktinformation

Flow Transmitter / Switch FLEX-RR1



- Uncomplicated measurement of flow rates
- No magnets; uses inductive sensor
- Long working life thanks to 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
- Analog output and switching output
- Designed for industrial use
- Small, compact construction
- Simple installation
- Simple to use
- Cable outlet infinitely rotatable
- 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 FLEX transformer on the sensor has an analog output (4..20 mA or 0..10 V) and one switching output, which can be configured as a limit switch for monitoring minimal or maximal, or as a frequency output.

The switching output is designed as a push-pull driver, and can therefore be used both as a PNP or an NPN output. The state of the switching output is signalled with a yellow LED in the switching outlet; the LED has all-round visibility.

The sensor is configured in the factory, or alternatively this can be done with the aid of the optionally available ECI-1 device configurator (USB interface for PC). A selectable parameter can be modified on the device, with the aid of the magnet clip provided. In this case, the current measured value is saved as the parameter value. Examples of these parameters are the switching value or the metering range end value.

The stainless steel electronics housing is rotatable, so it is possible to orient the cable outlet after installation.

Technical data

Sensor	inductive
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Nominal width	DN 10 (FLEX-RR1-010) DN 25 (FLEX-RR1-025)	
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)	
Metering 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 adapter	CW614N nickelled
	Electronics housing	stainless steel 1.4305
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.	
Display	yellow warning LED in plug outlet	
Electrical connection	for round plug connector M 12x1, 4-pole	
Ingress protection	IP 67	
Weight	FLEX-RR1-010	approx. 0.4 kg
	FLEX-RR1-025	approx. 0.7 kg
Conformity	CE	

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2 seconds to the marking located on the label. If the contact time is longer or shorter than this, no programming takes place (protection against external magnetic fields).



After the programming ("teaching"), the clip can either be left on the device, or removed to protect data.

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.

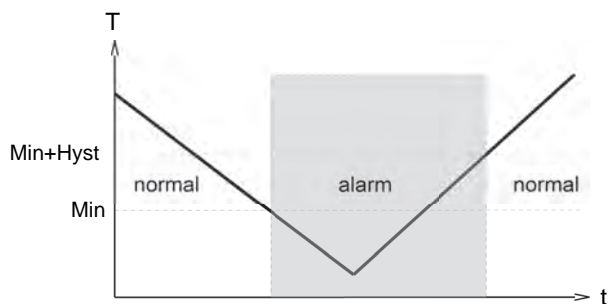
In order to avoid the need to transit to an undesired operating status during "teaching", the device can be provided ex-works with a "teach-offset". The "teach-offset" value is added to the currently measured value before saving (or is subtracted if a negative value is entered).

Example: The switching value is to be set to 70 % of the metering range, because at this flow rate a critical process status is to be notified. However, only 50% can be achieved without danger. In this case, the device would be ordered with a "teach-offset" of +20 %. At 50 % in the process, a switching value of 70 % would then be stored during "teaching".

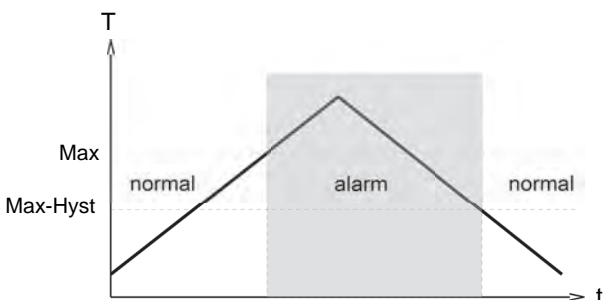
Normally, programming is used to set the limit switch. However, if desired, other parameters such as the end value of the analog or frequency output may also be set.

The limit switch 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 again exceeded.

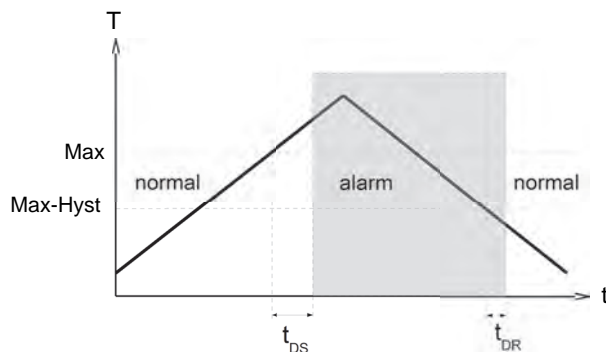


With a maximum-switch, exceeding the limit value causes a switchover to the alarm state. Return to the normal state occurs when the measured value once more falls below the limit value minus the set hysteresis.



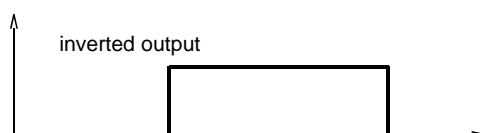
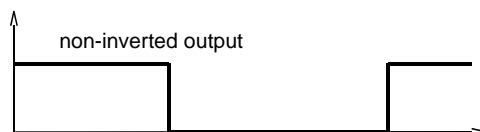
A switchover delay time (t_{DS}) can be applied to the switchover to the

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.

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Ordering code

The basic device is ordered e.g. RRI-010...
with electronics e.g. FLEX-RR1-010...

RRI- **E**

FLEX-RR1-

○=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	<input type="radio"/> CW614N nickelled	
K	<input type="radio"/> 1.4305	
4. Housing material		
Q	PPS	
V	PVDF	
A	<input type="radio"/> 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	<input type="radio"/> EPDM	
N	<input type="radio"/> NBR	
7. Rotor		
10	with 10 clamps	
02	<input type="radio"/> with 2 clamps	
05	<input type="radio"/> with 5 clamps	
8. Material for clamps		
K	1.4310	
T	<input type="radio"/> titanium	
H	<input type="radio"/> hastelloy®	
9. Connection for		
E	electronics	
10. For nominal width		
010	DN 10	•
025	DN 25	•
11. Analog output		
I	current output 4..20 mA	
U	voltage output 0..10 V	
K	no analog output	
12. Switching output		
T	push-pull	
M	<input type="radio"/> NPN (open collector)	
K	no switching output	

13. Switching function	
L	minimum-switch
H	maximum-switch
R	frequency output
K	no switching output
14. Switching signal	
O	standard
I	<input type="radio"/> inverted

Options for FLEX

Special range for analog output: l/min
<= metering range (standard = metering range)

Special range for frequency output: l/min
<= metering range (standard = metering range)

End frequency (max. 2000 Hz) Hz

Switching delay s
(from Normal to Alarm)

Switchback delay s
(from Alarm to Normal)

Power-On delay period (0..99 s) s
(time after power on, during which the outputs are not actuated)

Switching output fixed l/min

Special hysteresis %
(standard = 2 % of end value)

Options

- Rotor with titanium clamps

Accessories

- Cable/round plug connector (KB...) see additional information "Accessories"
- Device configurator ECI-1
- Mechanical connection pieces with non-return valve, filter, constant flow device or customer-specific requirements available on request