HENNLICH
MERES

PRŮTOKOMĚR S LOPATKOVÝM KOLEM FLEX-RT

Flow Transmitter / Switch FLEX-RT

- **Versatile turbine flow sensor**
- **Switching output and analog output (4..20 mA / 0..10 V)**
- **Top quality materials**
- **Designed for industrial use**
- **Ingress protection IP 67**
- **Infinitely adjustably rotatable cable outlet for clean alignment**
- **Small, compact construction**
- **Very simple installation**

Characteristics

A turbine acts as the primary sensor; its rotational speed is proportional to the flow rate. The rotational speed is detected by means of a biased Hall sensors, i.e. there are no magnets in the flow space.

The FLEX transducer located on the sensor has an analog output (4..20 mA or 0..10 V) and a 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-3 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

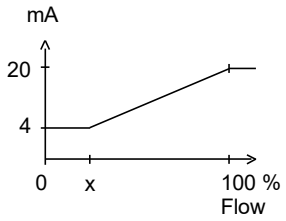
Sensor	turbine with biased Hall sensor	
Nominal width	DN 15..50 (others on request)	
Process connection	Parallel male thread to DIN/ISO 228 Tolerance class B ; G $^1/_2$ B...G 2 B	
Metering ranges	see table "Ranges"	
Measurement accuracy	±1 % of full scale value in the specified metering range including linearity and repeatability	
Medium temperature	-20..+85 °C optionally -20..+150 °C (for 8 bar min.)	
Ambient temperature	-20..+70 °C	
Storage temperature	-20..+80 °C	
Materials medium-contact	Housing Turbine Bearing	stainless steel 316 stainless steel 430 tungsten carbide
Material electronics housing	stainless steel 1.4305 adapter CW614N plated	
Max. particle size	0.5 mm	
Pressure loss (average)	0.3 bar at $Q_{max.}$	
Pressure	PN 250 bar	
Supply voltage	18..30 V DC	
Power consumption	<1 W	
Analog output	4..20 mA / load 500 Ohm max. or 0..10 V / load min. 1 kOhm	
Switching output	transistor output "push-pull" (resistant to short circuits and polarity reversal) I_{out} = 100 mA max.	
Switching hysteresis	adjustable (please state when ordering) Standard setting: 2 % F.S., for Min-switch, position of the hysteresis above the limit value, and for Max-switch, below the limit value	
Display	yellow LED (On = Normal / Off = Alarm)	
Electrical connection	for round plug connector M12x1, 4-pole	
Ingress protection	IP 67	
Weight	see table in "Dimensions"	
Conformity	CE	

PRŮTOKOMĚR S LOPATKOVÝM KOLEM FLEX-RT

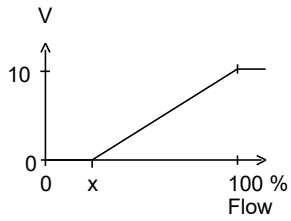
Signal output curves

Value x = Begin of the specified range

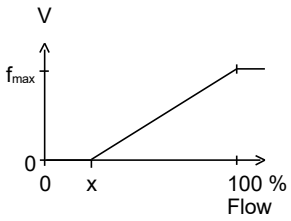
Current output



Voltage output



Frequency output



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

Other characters on request.

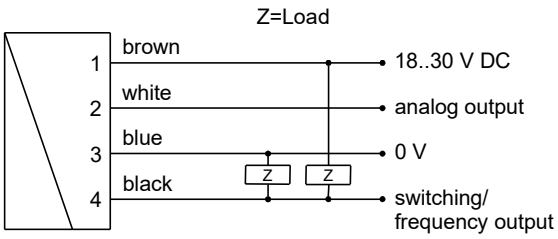
Ranges

Types	Metering range (1..5 mm²/s)	
	l/min	m³/h
RT-015AK001.	1.8.. 18	0.11.. 1.1
RT-020AK002.	3.7.. 37	0.22.. 2.2
RT-020AK004.	6.7.. 67	0.40.. 4.0
RT-020AK008.	13.3.. 133	0.80.. 8.0
RT-025AK016.	26.7.. 267	1.60..16.0
RT-040AK034.	56.7.. 567	3.40..34.0
RT-050AK068.	113.3..1133	6.80..68.0

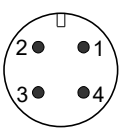
Wiring

Before the electrical installation, it must be ensured that the supply voltage corresponds with the data sheet.

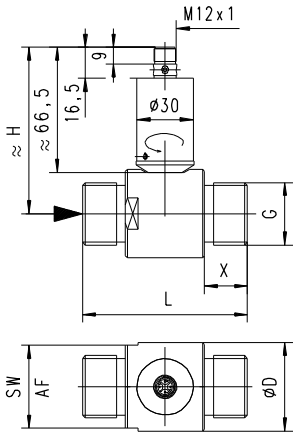
It is recommended to use shielded wiring,



Connection example: PNP NPN



Dimensions



DN	G	Ø D	SW / AF	H	L	X	Range m³/h at 1-5 mm² /s	Weight kg
15	1/2 B	38	35	81.5	64	19	0.11 – 1.1	0.44
20	3/4 B	38	35	82.5	64	19	0.22 – 2.2	0.54
20	3/4 B	38	35	82.5	64	19	0.40 – 4.0	0.54
20	3/4 B	40	38	85.5	83	22	0.80 – 8.0	0.54
25	1 B	47	44	88.5	88	23	1.60 – 16.0	0.74
40	1 1/2 B	60	52	94.5	114	28	3.40 – 34.0	1.54
50	2 B	70	64	99.5	132	29	6.80 – 68.0	2.04

Handling and operation

Installation

As with all flow meters, if possible the turbine should be installed ahead of a valve (on the pressure side). Good degassing should be ensured. 10 x D calming sections are recommended before and after the turbine in order to maintain the specified accuracies. The turbine should be filled with fluid at all times.
The electronics housing does not project into the flow space.

Programming

The electronics contain a magnetic contact, with the aid of which different parameters can be programmed. Programming takes place when a magnet clip is applied for a period between 0.5 and 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).

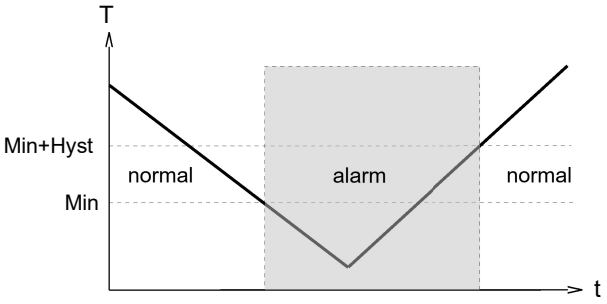
PRŮTOKOMĚR S LOPATKOVÝM KOLEM FLEX-RT

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".

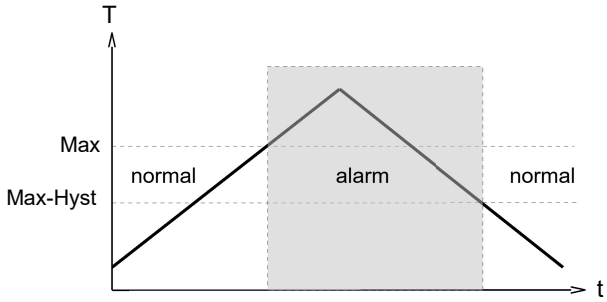
Normally, programming is used to set the limit switch. However, if desired, other parameters such as the end value of the analog or frequency output may also be set.

The limit switch can be used to monitor minimal or maximal.

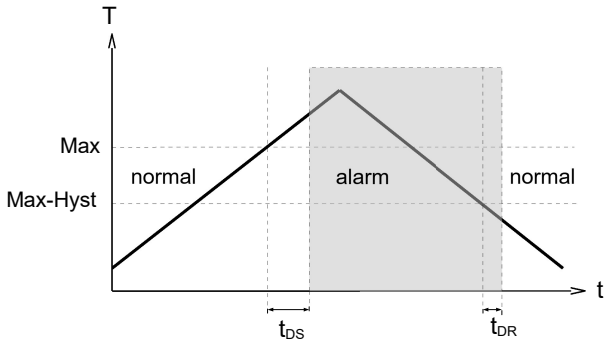
With a minimum-switch, falling below the limit value causes a switchover to the alarm state. Return to the normal state occurs when the limit value plus the set hysteresis is again exceeded.



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.

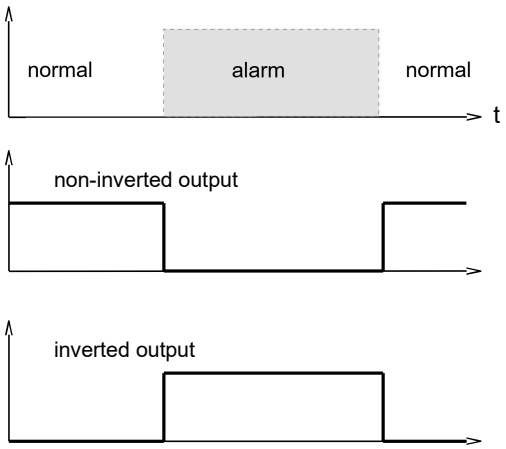


A switchover delay time (t_{DS}) can be applied to the switchover to the alarm state. Equally, one switch-back delay time (t_{DR}) of several can be applied to switching back to the normal state.



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.

PRŮTOKOMĚR S LOPATKOVÝM KOLEM FLEX-RT

Ordering code

The base device RT-XXX is ordered with FLEX-RT-XXX electronics.

	1.	2.	3.	4.	5.
RT-		**A**	**K**		**E**

	6.	7.	8.	9.	10.
FLEX-RT-					

❍=Option

1.	**Nominal width**							
	015	DN 15 - G 1/2 B						●
	020	DN 20 - G 3/4 B					●	
	025	DN 25 - G 1 B				●		
	040	DN 40 - G 1 1/2 B			●			
	050	DN 50 - G 2 B		●				
2.	**Mechanical connection**							
	A	male thread						
3.	**Housing material**							
	K	stainless steel						
4.	**Metering range**							
	001	0.11.. 1.1 m³/h						●
	002	0.22.. 2.2 m³/h					●	
	004	0.40.. 4.0 m³/h					●	
	008	0.80.. 8.0 m³/h					●	
	016	1.60..16.0 m³/h				●		
	034	3.40..34.0 m³/h			●			
	068	6.80..68.0 m³/h		●				
5.	**Connection for**							
	E	electronics						

6.	**For nominal width**							
	015	DN 15 - G 1/2 B						●
	020	DN 20 - G 3/4 B					●	
	025	DN 25 - G 1 B				●		
	040	DN 40 - G 1 1/2 B			●			
	050	DN 50 - G 2 B		●				
7.	**Analog output**							
	I	current output 4..20 mA						
	U	voltage output 0..10 V						
8.	**Switching function**							
	L	minimum-switch						
	H	maximum-switch						
9.	**Switching signal**							
	O	standard						
	I ❍	inverted						
10.	**Option**							
	H ❍	150 °C Version (with spacer)						

Options for FLEX

Special range for analog output: ___ l/min
(not greater than the sensor's working range)

Special range for frequency output: ___ l/min
(not greater than the sensor's working range)

End frequency (max. 2000 Hz) ____ Hz

Switching delay ___.___ s
(from Normal to Alarm)

Switchback delay ___.___ s
(from Alarm to Normal)

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

Switching output fixed ___ l/min

Special hysteresis (standard = 2 % EW) ___ %

Gooseneck ☐
(recommended at operating temperatures above 70 °C)

If the field is not completed, the standard setting is selected automatically.

Options

- Flanged model,
- max. temperature 150 °C
- DN 80-300 PN 16

Accessories

- Cable/round plug connector (K04PU…; KB...) see additional information “Accessories”
- Device configurator ECI-3