



Product highlights

- Parallel measurement of flow and temperature
- Flow measurement independent of the mounting position
- Large measuring range up to 400 cm/s
- Measurement at high media temperatures up to 125 °C
- High pressure resistance up to 100 bar
- One-piece, compact measuring probe
- Calibrated linear analog outputs for flow and temperature
- IO-Link interface combined with analogue or switching output (programmable)

User benefits

- Reduced installation effort with only one process connection
- Easy mounting without sensor alignment
- One sensor for all applications
- Less disturbance of process
- Increased process stability by linear regulation
- High acceptance of process connections

Application examples

- Monitoring of cooling circuits
- Spray jet monitoring in cleaning machines
- Dry run protection of pumps

Technical data

Housing

Style	<ul style="list-style-type: none"> Compact transmitter
Overall size	<ul style="list-style-type: none"> Refer to section "Dimensional drawings"
Material	<ul style="list-style-type: none"> Stainless steel

Electrical connection

Connector	<ul style="list-style-type: none"> M12, 4-pin
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Ambient conditions

Operating temperature range	<ul style="list-style-type: none"> -25 ... 80 °C
Storage temperature range	<ul style="list-style-type: none"> -25 ... 80 °C
Humidity	<ul style="list-style-type: none"> ≤ 100% RH, condensing
Degree of protection (EN 60529)	<ul style="list-style-type: none"> IP67 IP68 (30 min., 1 mH₂O) IP69K (with appropriate cable)
Vibration (sinusoidal) (EN 60068-2-6)	<ul style="list-style-type: none"> 5 g (10 ... 2000 Hz)
Shock (EN 60068-2-27)	<ul style="list-style-type: none"> 30 g / 11 ms, 6 impulses per axis and direction

Process connection

Connection variants	<ul style="list-style-type: none"> Refer to section "Dimensional drawings"
Mounting position	<ul style="list-style-type: none"> Any (top, bottom, side)
Wetted parts material	<ul style="list-style-type: none"> AISI 316L (1.4404)
Surface roughness wetted parts	<ul style="list-style-type: none"> Ra < 0.8 µm

Process conditions

Process temperature	<ul style="list-style-type: none"> -25 ... 150 °C -25 ... 125 °C (Flow measurement)
Process pressure	<ul style="list-style-type: none"> Refer to section "Process conditions"

Power supply

Voltage supply range	<ul style="list-style-type: none"> 12 ... 32 V DC (2 x 4 ... 20 mA) 18 ... 30 V DC (IO-Link)
Current consumption (no load)	<ul style="list-style-type: none"> < 45 mA typ.
Reverse polarity protection	<ul style="list-style-type: none"> Yes
Power-up time	<ul style="list-style-type: none"> 10 s max.

Output signal

Current output	<ul style="list-style-type: none"> 4 ... 20 mA
Voltage output	<ul style="list-style-type: none"> 0 ... 10 V
Output type	<ul style="list-style-type: none"> PNP NPN Digital (push-pull)
Switching logic	<ul style="list-style-type: none"> Normally open (NO) Normally closed (NC) Active high Active low
Current rating	<ul style="list-style-type: none"> 100 mA max.
Short circuit protection	<ul style="list-style-type: none"> Yes
Voltage drop switching output	<ul style="list-style-type: none"> < 2 V
Residual current	<ul style="list-style-type: none"> < 250 µA
Interface	<ul style="list-style-type: none"> IO-Link 1.1

FlexFlow PF20S

Flow sensor for industrial applications

Technical data

Performance characteristics

Measuring range flow	■ 10 ... 400 cm/s
Max. measuring error	■ ± 2 % (± 8 cm/s)
Down time at temperature step	■ < 10 s
Measuring range temperature	■ -25 ... 150 °C
Max. measuring error	■ ± 1 °C
Response time T90	■ < 5 s

Factory settings

Output range	■ 10 ... 400 cm/s
	■ -25 ... 150 °C

Compliance and approvals

EMC	■ 2014/30/EU
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Process conditions

Process connection	BCID	Ordering key	Sensor length mm	Process pressure bar
Sealing cone M18x1.5	T44	T445	50	-1 ... 100
Sealing cone M18x1.5	T44	T447	100	-1 ... 100
G 1/2 A ISO 228-1 with cone	G08	G081	16.4	-1 ... 100
G 1/2 A ISO 228-1 with cone	G08	G085	50	-1 ... 100

Note:

Information on product characteristics may relate to defined product options.

FlexFlow PF20S

Flow sensor for industrial applications

Field of application

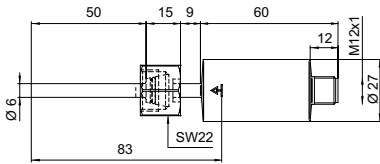
The FlexFlow sensor detects the flow rate of aqueous media (e. g. CIP cleaning agents, beverages, cooling agents without oil content, water-glycol mixtures and cooling emulsions) in contained systems. The sensor operates on the calorimetric principle and besides flow measurements will also detect the media temperature. Two variants are available, with either two analog outputs or one IO-Link interface and one configurable switching or analog output.

Measuring principle

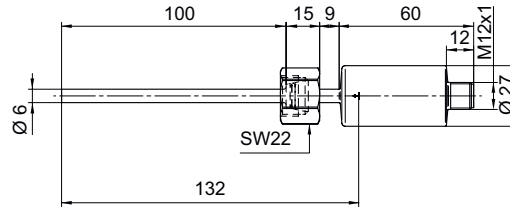
The sensor tip integrates both a temperature sensing and heating element warming up the tip at regular intervals. After the heating phase, the media-specific cooling behavior is identified under consideration of temperature drop, reference temperature and the medium's heating capacity. The measured result is proportional to the flow rate of the medium. It is either provided at the analog output or may serve as switching output trigger.

Dimensional drawings

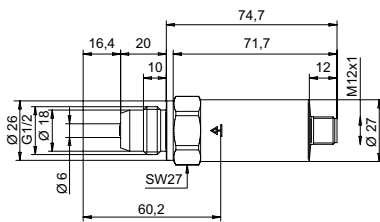
Process connection



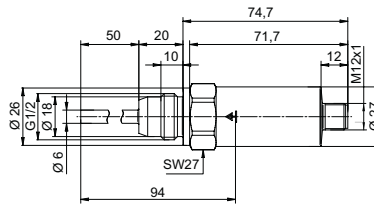
**Sealing cone M18x1.5,
Sensor length 50 mm
T44-T445**



**Sealing cone M18x1.5,
Sensor length 100 mm
T44-T447**



**G 1/2 A ISO 228-1 with cone,
Sensor length 16.4 mm
G08-G081**



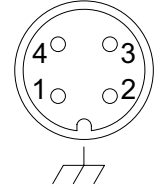
**G 1/2 A ISO 228-1 with cone,
Sensor length 50 mm
G08-G085**

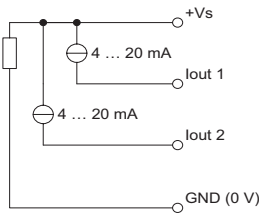
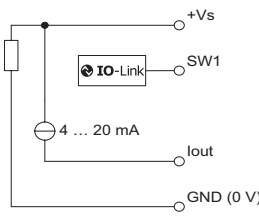
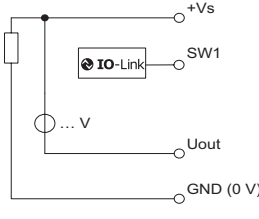
Note:

Information in format AXX-X... relates to „Baumer Connection Identifier“ (BCID) and dedicated ordering code.

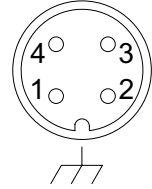
Electrical connection

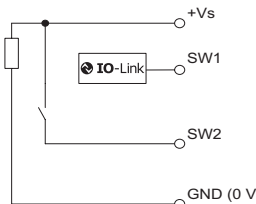
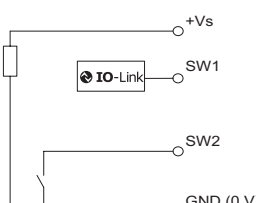
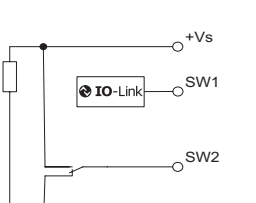
Pin assignment



Output signal	Equivalent circuit	Function	M12-A, 4-pin, X04-000
Multi-parameter output			
4 ... 20 mA (3-wire) (flow)		+Vs	1
4 ... 20 mA (3-wire) (temperature)		Iout 1 (flow)	4
		Iout 2 (temperature)	2
		GND (0 V)	3
		Frame ground	Plug thread
Programmable output			
IO-Link		+Vs	1
4 ... 20 mA (3-wire) (programmable)		SW1 (IO-Link)	4
		Iout	2
		GND (0 V)	3
		Frame ground	Plug thread
Programmable output			
IO-Link		+Vs	1
0 ... 10 V (programmable)		SW1 (IO-Link)	4
		Uout	2
		GND (0 V)	3
		Frame ground	Plug thread

[3] Intern verbunden

Electrical connection
Pin assignment


Output signal	Equivalent circuit	Function	M12-A, 4-pin, X04-000
Programmable output			
IO-Link		+Vs	1
PNP (programmable)		SW1 (IO-Link)	4
		SW2	2
		GND (0 V)	3
		Frame ground	Plug thread
Programmable output			
IO-Link		+Vs	1
NPN (programmable)		SW1 (IO-Link)	4
		SW2	2
		GND (0 V)	3
		Frame ground	Plug thread
Programmable output			
IO-Link		+Vs	1
Digital (push-pull) (programmable)		SW1 (IO-Link)	4
		SW2	2
		GND (0 V)	3
		Frame ground	Plug thread

Accessories
Industrial weld-in sleeves for „Process connection“ T445, T447 (Sealing cone M18x1.5, BCID: T44)

Description

Ordering information

Universal use

Universal use, AISI 316Ti (1.4571)

ZPW1-E71


Thread adapters for „Process connection“ T445, T447 (Sealing cone M18x1.5, BCID: T44)

Description

Ordering information

Industrial interfacing

G 1/4 A ISO 228-1, AISI 316Ti (1.4571)

ZP11-E7H

G 1/2 A ISO 228-1, AISI 316Ti (1.4571)

ZP11-E7A

G 1 A ISO 228-1, AISI 316Ti (1.4571)

ZP11-E7B


Hygienic connectors with stainless steel knurl, protection up to IP69K (M12-A, 4-pin, BCID: X04)

Description

Ordering information

Female connector straight with attached cable

2 m, TPE

ESG 34AY0200

5 m, TPE

ESG 34AY0500

10 m, TPE

ESG 34AY1000

25 m, TPE

ESG 34AY2500


Female connector angular with attached cable

2 m, TPE

ESW 33AY0200

5 m, TPE

ESW 33AY0500

10 m, TPE

ESW 33AY1000

25 m, TPE

ESW 33AY2500


Industrial connectors, protection up to IP67 (M12-A, 4-pin, BCID: X04)

Description

Ordering information

Female connector straight with attached cable

2 m, PUR

ESG 34AH0200

5 m, PUR

ESG 34AH0500

10 m, PUR

ESG 34AH1000


Female connector angular with attached cable

2 m, PUR

ESW 33AH0200

5 m, PUR

ESW 33AH0500

10 m, PUR

ESW 33AH1000

15 m, PUR

ESW 33AH1500

20 m, PUR

ESW 33AH2000



Accessories

Industrial connectors, protection up to IP67 (M12-A, 4-pin, BCID: X04)		
	Description	Ordering information
	Female connector straight with attached cable, shielded	
	2 m, PUR	ESG 34AH0200G
	5 m, PUR	ESG 34AH0500G
	10 m, PUR	ESG 34AH1000G
	Female connector angular with attached cable, shielded	
	2 m, PUR	ESW 33AH0200G
	5 m, PUR	ESW 33AH0500G
	10 m, PUR	ESW 33AH1000G
Industrial connectors, protection up to IP67 (M12-A, 4-pin, BCID: X04)		
	Description	Ordering information
	Female connector straight with screw terminals	
	PG7, PBT	ES 18A PG7
	Female connector angular with screw terminals	
	PG7, PBT	ES 14A PG7
Interfaces		
	Description	Ordering information
	T-junction	
	M12-A, 4-pin with signal extraction	T-junction 4-pol M12 signal extraction
Interfaces		
	Description	Ordering information
	USB IO-Link Master	
	Kit for sensor parameterization, including programming interface with USB, connecting cables and PC software	11048016