



## 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 40 bar
- One-piece, compact measuring probe
- FDA-compliant hygienic design
- Capable of SIP (Sterilization in Place) up to 150 °C (interminable)
- Resistant to all common CIP cleaning agents
- 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
- Support for food safety
- Increased process stability by linear regulation
- High acceptance of process connections

## Application examples

- Flow control in CIP processes for optimum cleaning results
- Flow measurement of highly pure media, e. g. ultrapure water
- Dry run protection of pumps

## Technical data

<b>Housing</b>		<b>Process conditions</b>	
Style	■ Compact transmitter	Process temperature	■ -25 ... 150 °C ■ -25 ... 125 °C (Flow measurement)
Overall size	■ Refer to section "Dimensional drawings"	Process pressure	■ Refer to section "Process conditions"
Material	■ Stainless steel	<b>Power supply</b>	
<b>Electrical connection</b>		Voltage supply range	■ 12 ... 32 V DC
Connector	■ M12, 4-pin	Current consumption (no load)	■ < 40 mA typ.
<b>Ambient conditions</b>		Reverse polarity protection	■ Yes
Operating temperature range	■ -25 ... 80 °C	Power-up time	■ 10 s max.
Storage temperature range	■ -25 ... 80 °C	<b>Output signal</b>	
Humidity	■ ≤ 100% RH, condensing	Current output	■ 4 ... 20 mA
Degree of protection (EN 60529)	■ IP67 ■ IP68 (30 min., 1 mH <sub>2</sub> O) ■ IP69K (with appropriate cable)	Voltage output	■ 0 ... 10 V
Vibration (sinusoidal) (EN 60068-2-6)	■ 5 g (10 ... 2000 Hz)	Output type	■ PNP ■ NPN ■ Digital (push-pull)
Shock (EN 60068-2-27)	■ 30 g / 11 ms, 6 impulses per axis and direction	Switching logic	■ Normally open (NO) ■ Normally closed (NC) ■ Active high ■ Active low
<b>Process connection</b>		Current rating	■ 100 mA max.
Connection variants	■ Refer to section "Dimensional drawings"	Short circuit protection	■ Yes
Mounting position	■ beliebig (oben, seitlich, unten)	Voltage drop switching output	■ < 2 V
Wetted parts material	■ AISI 316L (1.4404)	Residual current	■ < 250 µA
Surface roughness wetted parts	■ Ra < 0.8 µm	Interface	■ IO-Link 1.1

# FlexFlow PF20H

Hygienic flow sensor

## Technical data

### Performance characteristics

Measuring range	■ 10 ... 400 cm/s
Max. measuring error	■ $\pm 2\%$ ( $\pm 8$ cm/s)
Response time	■ < 5 s
Down time at temperature step	■ < 10 s

### Compliance and approvals

EMC	■ 2014/30/EU
Hygiene	■ EU 1935/2004, 2023/2006
	■ FDA compliant

## Process conditions

	BCID	Ordering key	Sensor length mm	Process pressure bar
<b>Process connection</b>				
Tri-Clamp Ø 34.0	C02	C023	32	-1 ... 25
Tri-Clamp Ø 50.5	C04	C043	32	-1 ... 25
Tri-Clamp Ø 64.0	C05	C055	50	-1 ... 16
DIN 11851 (dairy pipe connection), DN 25	D01	D013	32	-1 ... 40
DIN 11851 (dairy pipe connection), DN 40	D03	D034	36	-1 ... 40
DIN 11851 (dairy pipe connection), DN 50	D04	D045	45	-1 ... 25

**Note:**

Information on product characteristics may relate to defined product options.

## Field of application

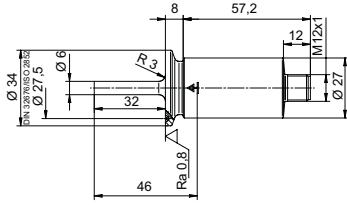
The FlexFlow sensor detects the flow rate of aqueous media (e. g. CIP cleaning agents, beverages, cooling agents without oil content, water-glycol mixtures and cooling emulsions) in contained systems. The sensor operates on the calorimetric principle and besides flow measurements will also detect the 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

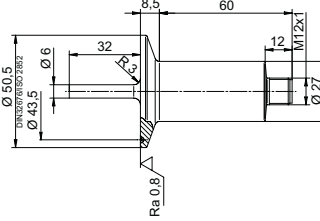
The sensor tip integrates both a temperature sensing and heating element warming up the tip at regular intervals. After the heating phase, the media-specific cooling behavior is identified under consideration of temperature drop, reference temperature and the medium's heating capacity. The measured result 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

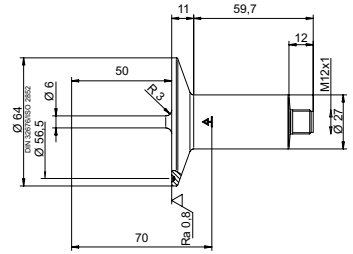
### Process connection



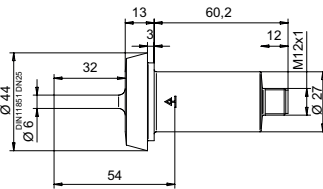
**Tri-Clamp Ø 34.0,**  
**Sensor length 32 mm**  
 C02-C023



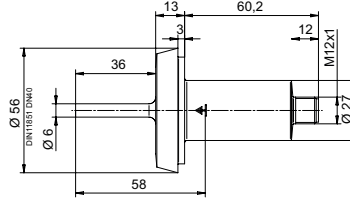
**Tri-Clamp Ø 50.5,**  
**Sensor length 32 mm**  
 C04-C043



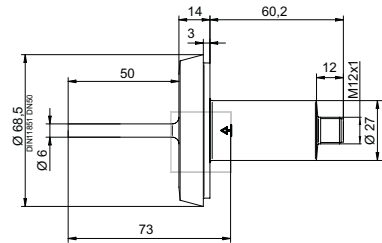
**Tri-Clamp Ø 64.0,**  
**Sensor length 50 mm**  
 C05-C055



**DIN 11851 (dairy pipe connection), DN 25,**  
**Sensor length 32 mm**  
 D01-D013



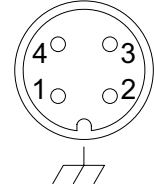
**DIN 11851 (dairy pipe connection), DN 40,**  
**Sensor length 36 mm**  
 D03-D034

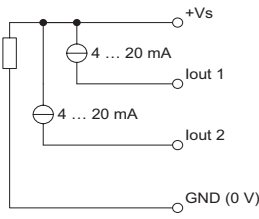
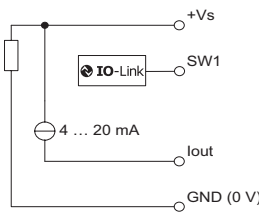
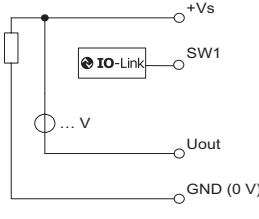


**DIN 11851 (dairy pipe connection), DN 65,**  
**Sensor length 50 mm**  
 D04-D045

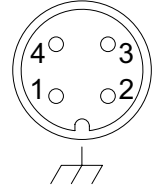
**Note:**

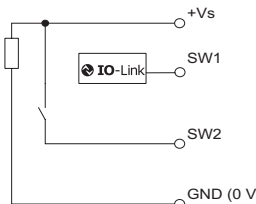
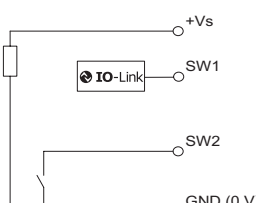
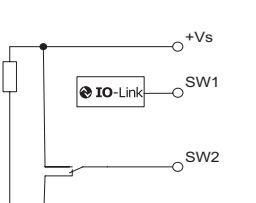
Information in format AXX-X... relates to „Baumer Connection Identifier“ (BCID) and dedicated ordering code.

**Electrical connection**
**Pin assignment**


Output signal	Equivalent circuit	Function	M12-A, 4-Pin, X04-000
<b>Multi-parameter output</b>			
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
<b>Programmable output</b>			
IO-Link		+Vs	1
4 ... 20 mA (3-wire) (programmable)		SW1 (IO-Link)	4
		Iout	2
		GND (0 V)	3
		Frame ground	Plug thread
<b>Programmable output</b>			
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
<b>Programmable output</b>			
IO-Link		+Vs	1
PNP (programmable)		SW1 (IO-Link)	4
		SW2	2
		GND (0 V)	3
		Frame ground	Plug thread
<b>Programmable output</b>			
IO-Link		+Vs	1
NPN (programmable)		SW1 (IO-Link)	4
		SW2	2
		GND (0 V)	3
		Frame ground	Plug thread
<b>Programmable output</b>			
IO-Link		+Vs	1
Digital (push-pull) (programmable)		SW1 (IO-Link)	4
		SW2	2
		GND (0 V)	3
		Frame ground	Plug thread

**Ordering information**
**Ordering key**

PF20H	-	1	1	.	010	.	xxxx	2	0	.	x	.	0	00	0	.	x
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**Product line**

Hygienic flow sensor

PF20H

**Process connection**

 ISO 2852 (Tri-Clamp), DN 21.3, Ø 34.0  
 DIN 32676-A (Tri-Clamp), DN 20, Ø 34.0  
 ISO 2852 (Tri-Clamp), DN 25; 33.7; 38, Ø 50.5  
 DIN 32676-A (Tri-Clamp), DN 25; 32; 40, Ø 50.5

**Sensor length**

32

**BCID**

C02

C023

 DIN 32676-B (Tri-Clamp), DN33.7, Ø 50.5  
 DIN 32676-C (Tri-Clamp), DN 1"; 1 1/2", Ø 50.5  
 ISO 2852 (Tri-Clamp), DN 40; 51, Ø 64.0  
 DIN 32676-A (Tri-Clamp), DN 50, Ø 64.0

32

C04

C043

 DIN 32676-B (Tri-Clamp), DN 42.4; 48.3, Ø 64.0  
 DIN 32676-C (Tri-Clamp), DN 2", Ø 64.0

50

C05

C055

DIN 11851 (dairy pipe connection), DN 25

32

D01

D013

DIN 11851 (dairy pipe connection), DN 40

36

D03

D034

DIN 11851 (dairy pipe connection), DN 50

50

D04

D045

**Output signal**

Multi-parameter output, 2 x 4 ... 20 mA (3-wire)

0

Programmable output, IO-Link

1

**Configuration**

Factory settings

0

Customer-specific

1

**Accessories**

<b>Hygienic connectors with stainless steel knurl, protection up to IP69K (M12-A, 4-pin, BCID: X04)</b>		
	Description	Ordering information
	<b>Female connector straight with attached cable</b> 2 m, TPE 5 m, TPE 10 m, TPE 25 m, TPE	ESG 34AY0200 ESG 34AY0500 ESG 34AY1000 ESG 34AY2500
	<b>Female connector angular with attached cable</b> 2 m, TPE 5 m, TPE 10 m, TPE 25 m, TPE	ESW 33AY0200 ESW 33AY0500 ESW 33AY1000 ESW 33AY2500
<b>Industrial connectors, protection up to IP67 (M12-A, 4-pin, BCID: X04)</b>		
	Description	Ordering information
	<b>Female connector straight with attached cable</b> 2 m, PUR 5 m, PUR 10 m, PUR	ESG 34AH0200 ESG 34AH0500 ESG 34AH1000
	<b>Female connector angular with attached cable</b> 2 m, PUR 5 m, PUR 10 m, PUR 15 m, PUR 20 m, PUR	ESW 33AH0200 ESW 33AH0500 ESW 33AH1000 ESW 33AH1500 ESW 33AH2000
	<b>Female connector straight with attached cable, shielded</b> 2 m, PUR 5 m, PUR 10 m, PUR	ESG 34AH0200G ESG 34AH0500G ESG 34AH1000G
	<b>Female connector angular with attached cable, shielded</b> 2 m, PUR 5 m, PUR 10 m, PUR	ESW 33AH0200G ESW 33AH0500G ESW 33AH1000G
	<b>Female connector straight with screw terminals</b> PG7, PBT	ES 18A PG7
		<b>Female connector angular with screw terminals</b> PG7, PBT



## Accessories

### 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

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