

**Overview**

- Precision measurements with 2% accuracy
- Short response time (15 s)
- Ideal for media detection and differentiation
- Wetted parts in PEEK
- IO-Link Dual Channel for easy commissioning



**Technical data**

**Performance characteristics conductivity**

Min. measurable conductivity	1 µS/cm
Max. measuring span	1000 mS/cm
Max. measuring error	≤ ± 2.0 % MV ± 15 µS/cm
Reference conditions for max. measuring error	Sensor incl. transmitter @ 25°C ambient temperature
Reference temperature	25 °C , adjustable
Repeatability	≤ ± 1.0 % MV ± 10 µS/cm
Compensated temperature range	-20 ... 150 °C
Temperature compensation	0.0 ... 5.0 %/K , adjustable
Step response time, T90	≤ 1.5 s
Sample time	≤ 0.4 s
Temperature drift (Factor of change in process temperature from 25°C)	≤ ± 0.05 % MV /K ± 0.5 µS/cm /K
Input damping	0 ... 30 s , programmable

**Performance characteristics concentration**

Concentration	Programmable with IO-Link and FlexProgram
Factory set media (available from FlexProgram)	0 ... 25 % by weight , HNO3 (nitric acid) 36 ... 82 % by weight , HNO3 (nitric acid) 0 ... 12 % by weight , NaOH (caustic soda) 25 ... 50 % by weight , NaOH (caustic soda)
Customer defined media	Customer defined (30 point lookup table)
Input damping	0 ... 30 s , programmable

**Performance characteristics temperature**

Measuring range	-25 ... 150 °C
Thermal response time, T90	≤ 15 s

**Performance characteristics temperature**

Max. measuring error	± 1.5 K ± 0.3 K , 20 ... 50 °C
Reference conditions for max. measuring error	Sensor incl. transmitter @ 25°C ambient temperature
Temperature coefficient (Factor of change in ambient temperature from 25°C)	< 0.05 K/K

**Process conditions**

Process temperature	-25 ... 140 °C , permanent 140 ... 150 °C , max. t < 1 h SIP/CIP compatibility
Process pressure	≤ 25 bar

**Process connection**

Connection variants	G 1 A hygienic
Immersion length	Refer to section "Dimensional drawings"
Wetted parts material	PEEK Natura
Surface roughness wetted parts	Ra ≤ 0.8 µm

**Ambient conditions**

Operating temperature range	-30 ... 70 °C , with display -10 ... 70 °C , optimal display readability -40 ... 70 °C , without display (... 85 °C pending)
Storage temperature range	-40 ... 85 °C
Degree of protection (EN 60529)	IP65 IP67 IP69K , with appropriate cable
Humidity	< 100 % RH , condensing
Vibration (sinusoidal) (EN 60068-2-6)	1.6 mm p-p (2 ... 25 Hz), 4 g (25 ... 100 Hz), 1 octave / min.
Shock (EN 61373:2010)	300m/s <sup>2</sup> @ 15ms

**Housing**

Style	Compact transmitter, Ø50 mm
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**Technical data**
**Housing**

Overall size	Refer to section "Dimensional drawings"
Material	AISI 316L (1.4404)

**Electrical connection**

Connector	M12-A, 5-pin, stainless steel
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**Power supply**

Voltage supply range	11 ... 35 V DC 18 ... 30 V DC , with IO-Link
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Current consumption (no load)	12 mA , typ. 30 mA , max.
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Power-up time	≤ 3 s
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Reverse polarity protection	Yes
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**Factory settings**

Output mode	Conductivity
Conductivity Range 1	0 ... 200 mS/cm

**Factory settings**

Conductivity Range 2	0 ... 2 mS/cm
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Temperature output	0 ... 150 °C
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Output damping	0.0 s
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Temperature compensation Range 1-2	2.0 %/K
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Output lower limit	3.7 mA
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Output upper limit	21 mA
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**Compliance and approvals**

EMC	EN 61326-1
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	DNV
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Hygiene	3-A (74-07) EHEDG EL Class I FDA (21 CFR 177.2415)
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**Output signals**
**Switching output**

Output signal	Definable for conductivity/concentration/temperature
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Output type	PNP NPN Digital (push-pull)
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Switching logic	High-Active Low-Active
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Voltage drop	PNP: (+Vs -1.0 V) ± 0.4 V, Rload ≥ 10 kΩ NPN: (-Vs +0.6 V) ± 0.3 V, Rload ≥ 10 kΩ
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Current rating	100 mA , max.
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Off leak current	< 100 µA , max.
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Short circuit protection	Yes
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Damping	0 ... 30 s , programmable
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**4 ... 20 mA**

Output signal	Definable for conductivity/concentration/temperature
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Accuracy	< 0.1 % FSR (± 16 µA)
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Step response time, T90	< 40 ms
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Load resistance	Refer to section "Load diagram"
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Temperature drift	< 0.01 % FSR/K (± 1.6 µA/K)
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Resolution	2 µA
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Ripple immunity	< 1 % FSR (3 Vrms, 50Hz...10kHz)
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Effect of variations in supply voltage	< 0.02 % FSR/V (± 3.2 µA/V)
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Damping	0 ... 30 s , programmable
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Interface	IO-Link 1.1 With FlexProgrammer 9701
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**IO-Link interface**

IO-Link version	1.1
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Device profile	Smart Sensor Profile
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IO-Link port type	Class A
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Baud rate	38,4 kbaud (COM2)
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Cycle time	≥ 14 ms
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Process data length	128 bit
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SIO-mode	Yes
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Process data (cyclic)	Switch state State of alert Unit temperature Signal analog output 1 Signal analog output 2 Process temperature Conductivity Concentration Actual measuring range
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Dual Channel	IO-Link / SIO Mode
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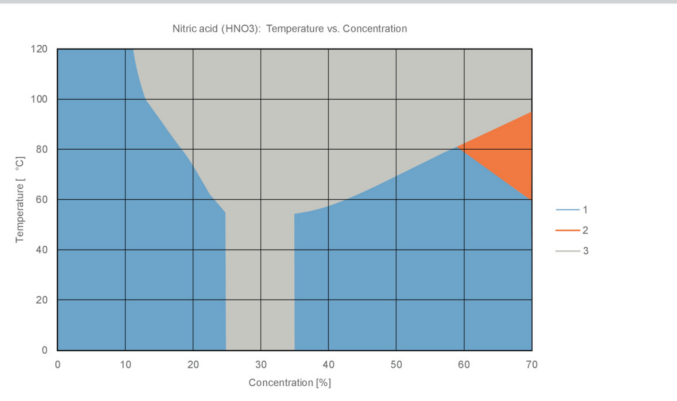
Dual Channel 2	Analogue / SIO Mode
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**Operating conditions**

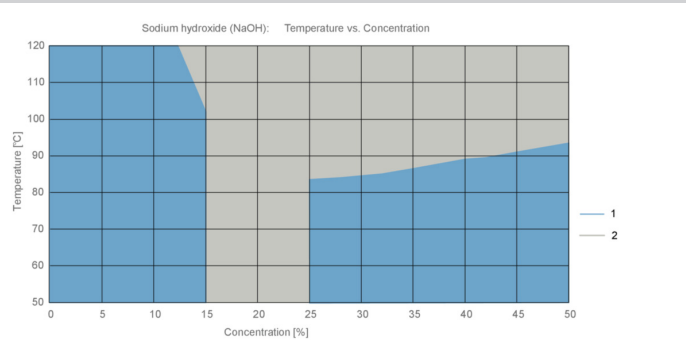
Conductivity	Media group	Media
55 nS/cm	Water	Ultra-pure water
1 µS/cm		Pure water
10 µS/cm		Process water
600 µS/cm	Food & Beverage	Drinking water
1 mS/cm		Beer
		Milk
		Orange juice
10 mS/cm	Process	Phosphoric acid
100 mS/cm		Hydrochloric acid
1000 mS/cm		Sodium hydroxide



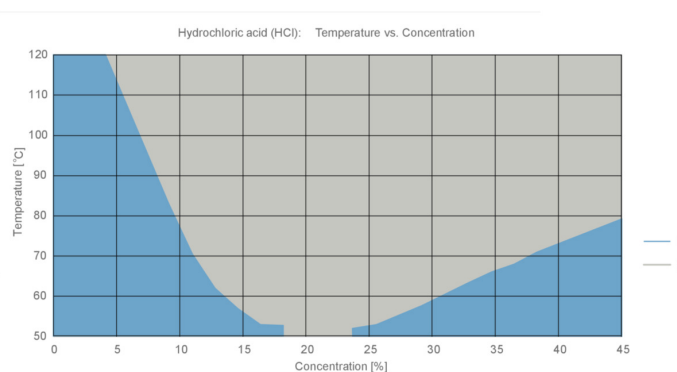
**Concentration range**



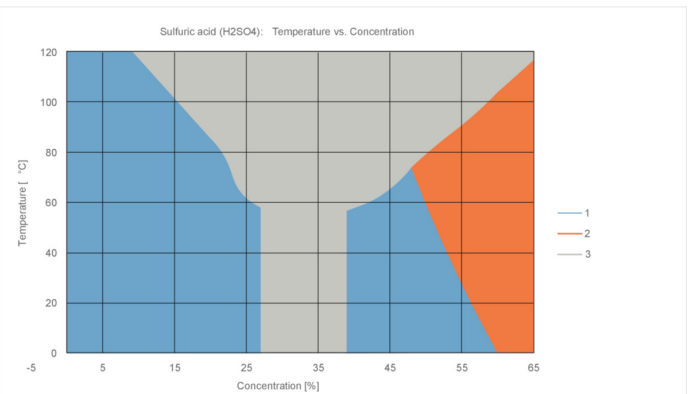
- (1) Supported concentrations and temperatures
- (2) PEEK should not be used for applications with this concentration and temperature
- (3) Not supported concentration area



- (1) Supported concentrations and temperatures
- (2) Not supported concentration area



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The product features and technical data specified do not express or imply any warranty. Technical modifications subject to change.

**Display**

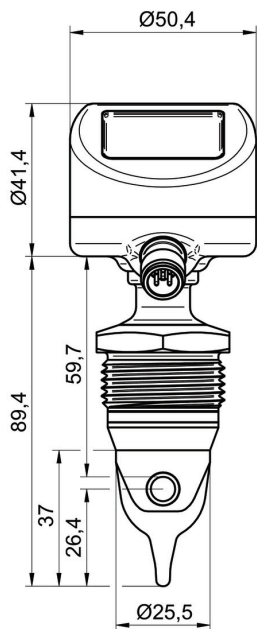
**General information**

Panel type	FSTN Graphical LCD
Display range	-9999 ... 99999
Max. digit height	21.8 mm
Material	Polycarbonate

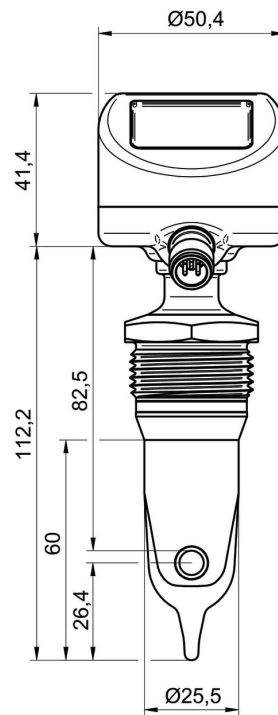
**User configurable data**

Error- / Warning-indication	Individually configurable display and backlight indication in white, green or red colour, steady or flashing light. Configurable limits over the range
Media description	Customer programmable e.g. "MILK", "Water", "NaOH"
Measuring unit	mS/cm % °C °F

**Dimensional drawings (mm)**

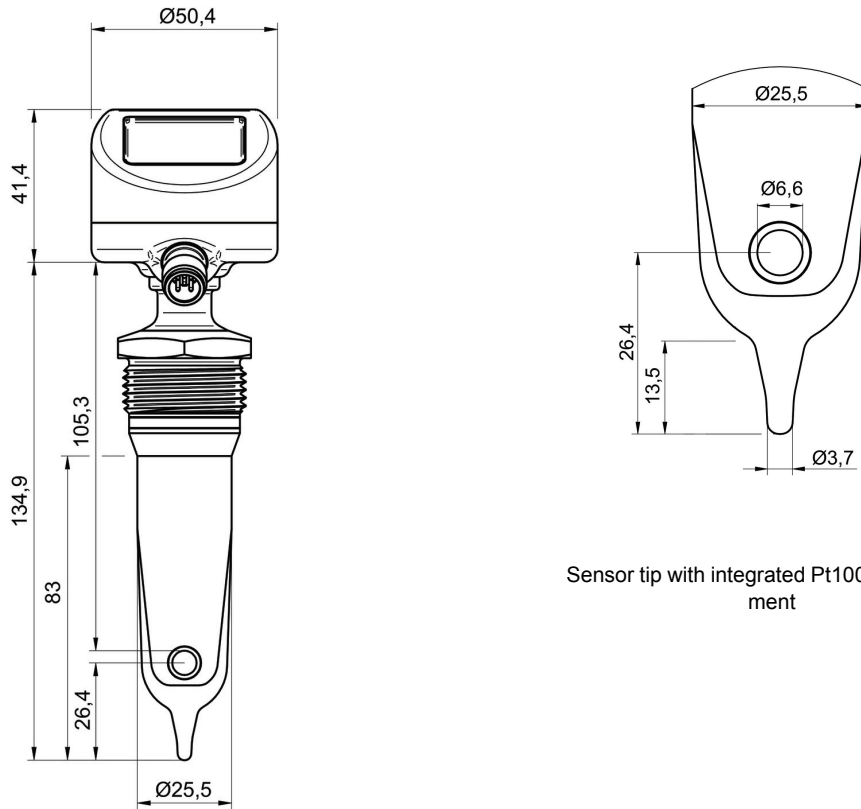


G 1 A hygienic (BCID: A04), PEEK, 37 mm



G 1 A hygienic (BCID: A04), PEEK, 60 mm

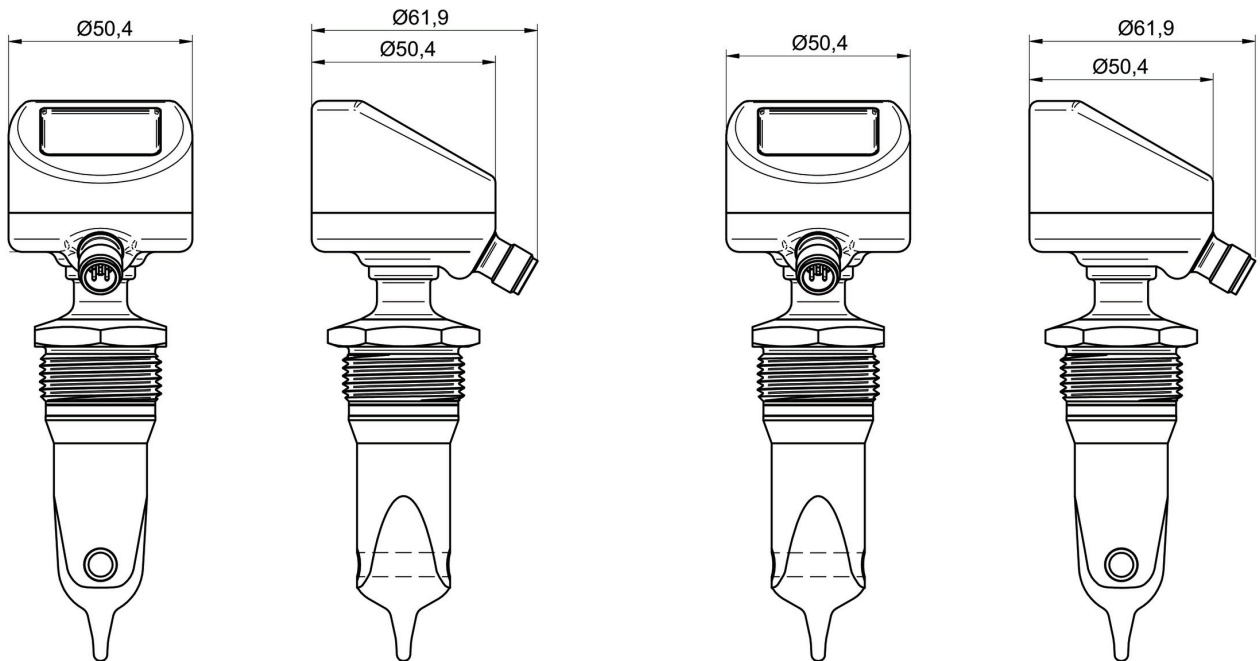
**Dimensional drawings (mm)**



Sensor tip with integrated Pt100 sensor element

G 1 A hygienic (BCID: A04), PEEK, 83 mm

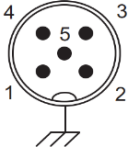
**Housing**



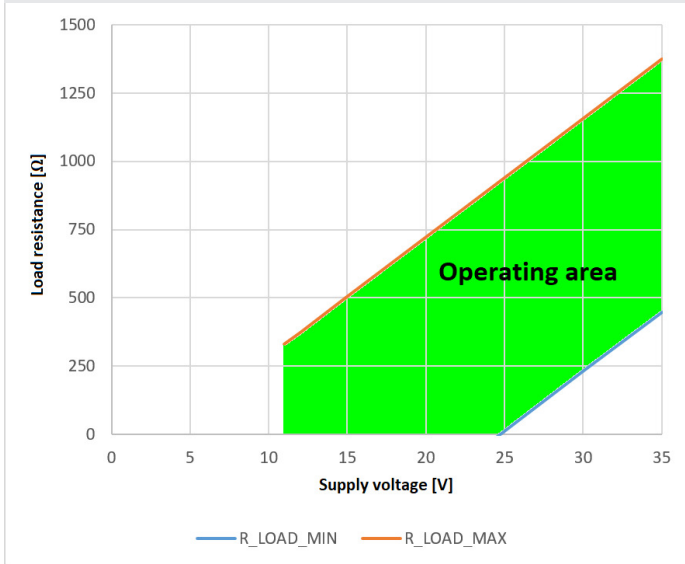
Standard probe orientation

90° rotated probe orientation

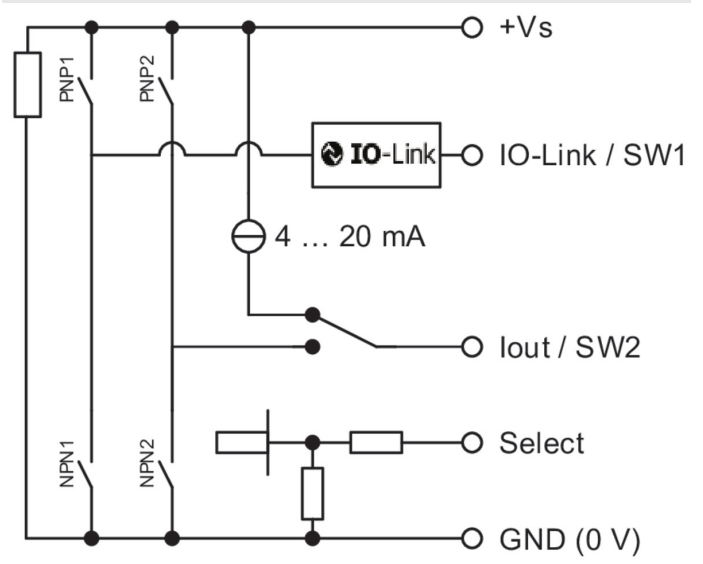
**Electrical connection**

Output type	Electrical connection	Function	Description	Pin assignment
Dual channel IO-Link + analog 4...20 mA	M12-A, 5-pin, stainless steel 	+Vs	Power supply +	1
		GND (0V)	Power supply -	3
		Select	Selection of Iout source / Selection of range	5
		Iout / SW2	Conductivity / Temperature / SW	2
		IO-Link / SW1	IO-Link / SW	4

**Load diagram**



**Equivalent circuit diagram**



**Ordering information**

Ordering key - Configuration possibilities see website

	PAC50H	-	1	4	3	0	A	.	3	2	D1	#	#	.	A04	3	0	4	.	1	0	3	#	
<b>Product</b>	PAC50H																							
<b>Version</b>																								
Standard			1																					
<b>Type</b>																								
Standard				4																				
<b>Housing</b>																								
Stainless steel					3																			
<b>Cable length (cm)</b>																								
No cable						0																		
<b>Accuracy</b>																								
2%							A																	
<b>Electrical connection</b>																								
M12-A, 5-pin										3														
<b>Protection class</b>																								
IP65, IP67, IP69K											2													
<b>Interface</b>																								
IO-Link Dual Ch., 4 ... 20 mA												D1												
<b>Display</b>																								
Without display													0											
With display													1											
<b>Tip length</b>																								
37 mm, standard probe orientation																							A	
60 mm, standard probe orientation																								B
83 mm, standard probe orientation																								C
37 mm, 90° rotated probe orientation																								D
60 mm, 90° rotated probe orientation																								E
83 mm, 90° rotated probe orientation																								F
<b>Process connection</b>																								
G 1 A hygienic																A04								
<b>Process connection material</b>																								
Stainless steel																								3
<b>Seal</b>																								
Without																								0
<b>Wetted parts material</b>																								
PEEK, hygienic																								4
<b>Surface roughness</b>																								
Ra ≤ 0.8 µm																								1
<b>Explosion protection</b>																								
Without																								0
<b>Special approvals</b>																								
3-A / EHEDG																								3
<b>Configuration</b>																								
Factory settings																								0
Customer-specific																								1