

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
Range	Refer to section "Concentration range"
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
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Performance characteristics temperature

Thermal response time, T90	≤ 15 s
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 ... 65 °C (... 85 °C pending)
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/s² @ 15ms

Technical data
Housing

Style	Compact transmitter, Ø50 mm
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
Current consumption (no load)	12 mA , typ. 30 mA , max.
Power-up time	≤ 3 s
Reverse polarity protection	Yes

Factory settings

Output mode	Conductivity
Conductivity Range 1	0 ... 200 mS/cm
Conductivity Range 2	0 ... 20 mS/cm
Temperature output	0 ... 150 °C
Output damping	0.0 s
Temperature compensation Range 1-2	2.0 %/K
Output lower limit	3.7 mA
Output upper limit	21 mA

Compliance and approvals

EMC	EN 61326-1
Hygiene	3-A (74-07) EHEDG EL Class I FDA (21 CFR 177.2415)

Output signals
Switching output

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

4 ... 20 mA

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

IO-Link interface

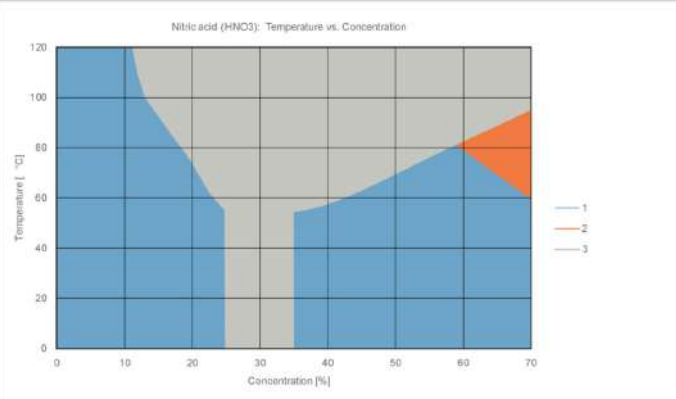
IO-Link version	1.1
Device profile	Smart Sensor Profile
IO-Link port type	Class A
Baud rate	38,4 kbaud (COM2)
Cycle time	≥ 14 ms
Process data length	128 bit
SIO-mode	Yes
Process data (cyclic)	Switch state State of alert Unit temperature Signal analog output 1 Signal analog output 2 Process temperature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

Operating conditions

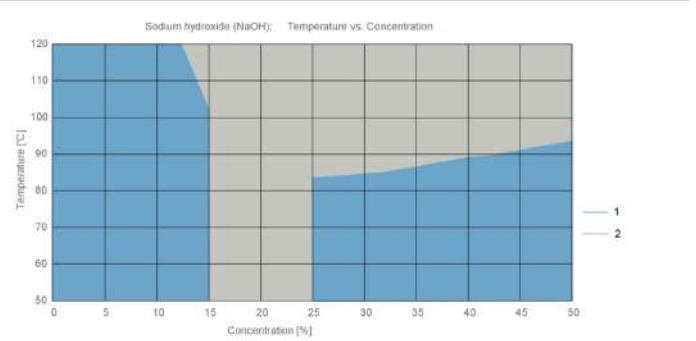
Conductivity	Media group	Media
55 nS/cm	Water	Ultra-pure water
1 µS/cm		Pure water
10 µS/cm		Process water
600 µS/cm	Food & Beverage	Drinking water
1 mS/cm		Beer
		Milk
		Orange juice
10 mS/cm	Process	Phosphoric acid
100 mS/cm		Hydrochloric acid
1000 mS/cm		Sodium hydroxide



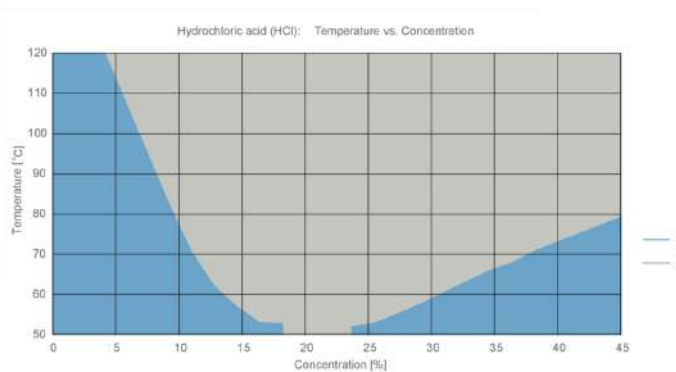
Concentration range



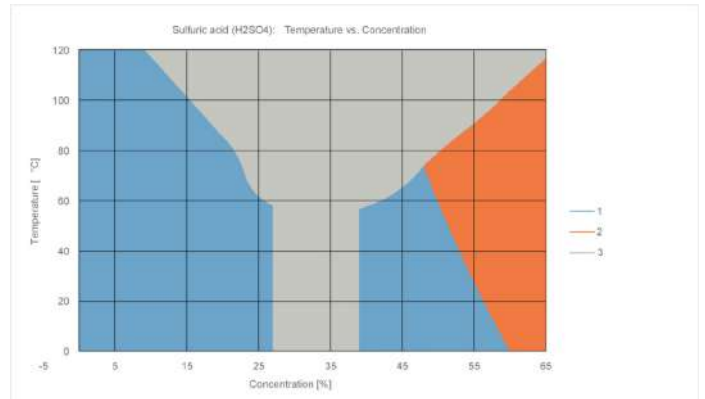
- (1) Supported concentrations and temperatures
- (2) PEEK should not be used for applications with this concentration and temperature
- (3) Not supported concentration area



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Display

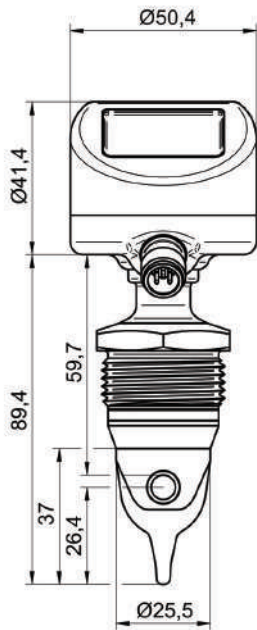
General information

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

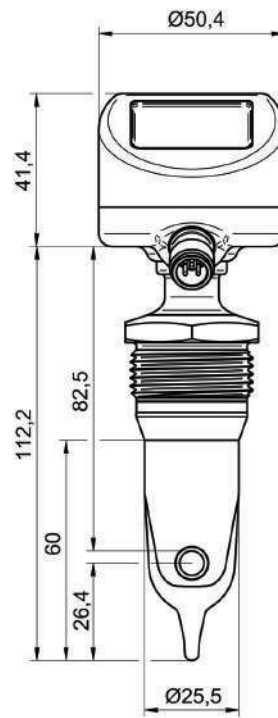
User configurable data

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)

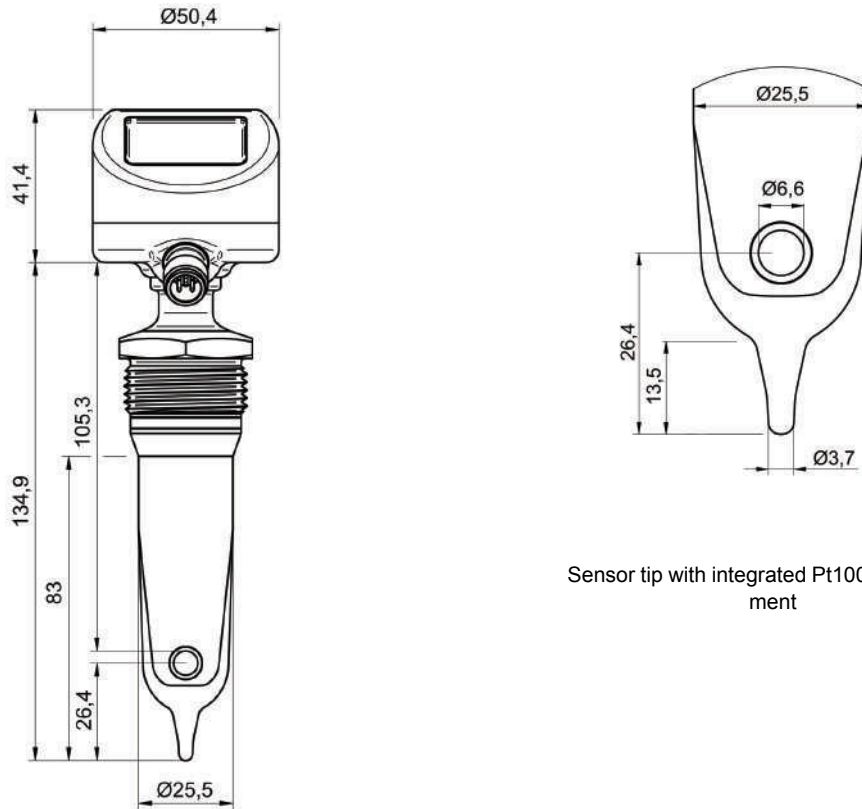


G 1 A hygienic (BCID: A04), PEEK, 37 mm



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

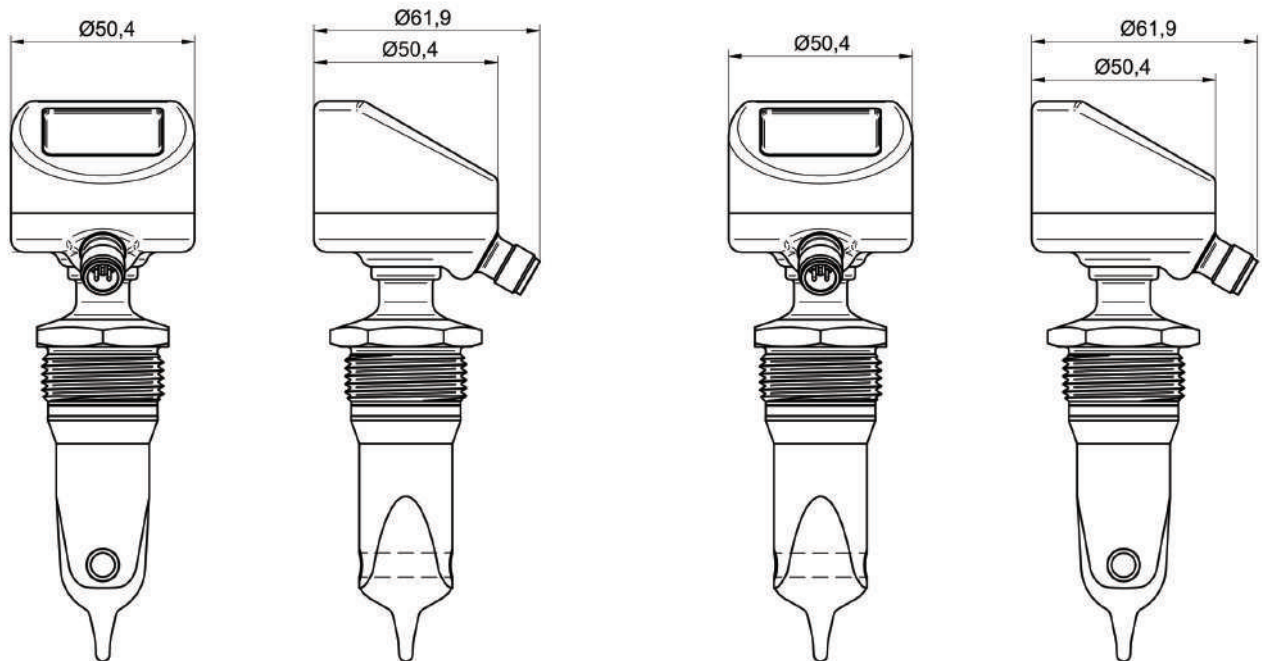
Dimensional drawings (mm)



Sensor tip with integrated Pt100 sensor element

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

Housing

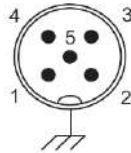


Standard probe orientation

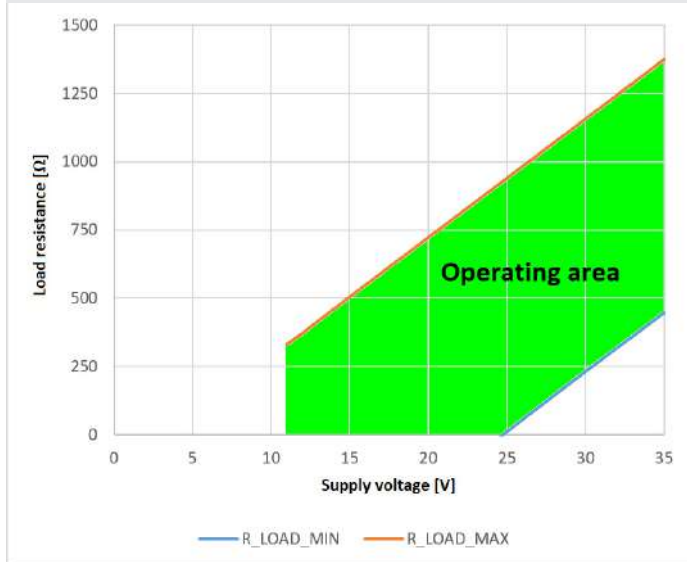
90° rotated probe orientation

Electrical connection

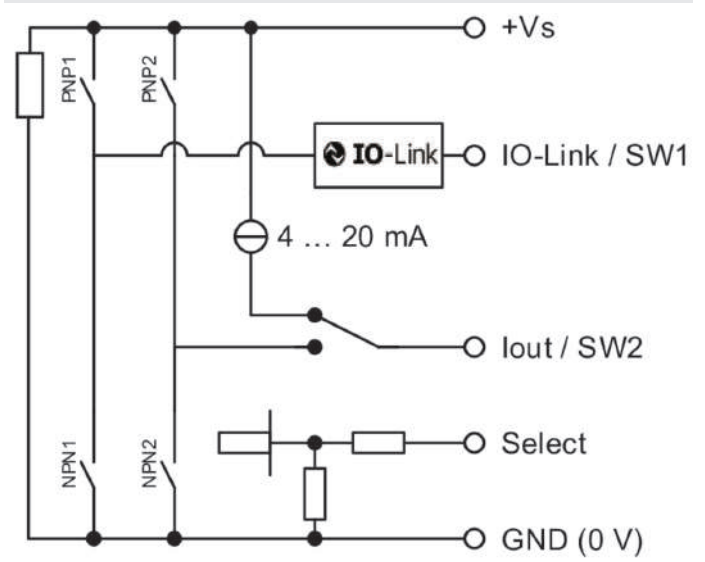
Output type	Electrical connection	Function	Description	Pin assignment
Dual channel IO-Link + analog 4...20 mA	M12-A, 5-pin, stainless steel	+Vs	Power supply +	1
		GND (0V)	Power supply -	3
		Select	Selection of Iout source / Selection of range	5
		Iout / SW2	Conductivity / Temperature / SW	2
		IO-Link / 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	#	
Product	PAC50H																							
Version																								
Standard			1																					
Type																								
Standard				4																				
Housing																								
Stainless steel					3																			
Cable length (cm)																								
No cable						0																		
Accuracy																								
2%							A																	
Electrical connection																								
M12-A, 5-pin										3														
Protection class																								
IP65, IP67, IP69K											2													
Interface																								
IO-Link Dual Ch., 4 ... 20 mA												D1												
Display																								
Without display																							0	
With display																								1
Tip length																								
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
Process connection																								
G 1 A hygienic																								A04
Process connection material																								
Stainless steel																								3
Seal																								
Without																								0
Wetted parts material																								
PEEK, hygienic																								4
Surface roughness																								
Ra ≤ 0.8 µm																								1
Explosion protection																								
Without																								0
Special approvals																								
3-A / EHEDG																								3
Configuration																								
Factory settings																								0
Customer-specific																								1