Baumer
Passion for Sensors

Temperature measurement

PT20H

Hygienic compact RTD temperature sensor

PT20H-####.####21#.2#000##.####

Overview

- Precision measurement from -50 ... 250 °C
- Integrated 4 ... 20 mA transmitter with high accuracy
- Fast power-up time < 2 s
- Short response time < 1.1 s
- All parts welded together
- Customer-specific immersion depth down to 3000 mm

Technical data

Performance characteristics	
Pt100 accuracy class (EN 60751)	Fast response tip B (± 0.3 °C at 0 °C) ± (0.3 + 0.005 × t)°C Standard response tip B (± 0.3 °C at 0 °C) ± (0.3 + 0.005 × t)°C A (± 0.15 °C at 0 °C) ± (0.15 + 0.002 × t)°C 1/3 B (± 0.1 °C at 0 °C) ± 1/3 × (0.3 + 0.005 × t)°C 1/6 B (± 0.05 °C at 0 °C) ± 1/6 × (0.3 + 0.005 × t)°C
Max. output error	≤ 0.06 % FSR @ 25 °C Including input accuracy, output accuracy and repeatability
Thermal response time, T90	RTD element and transmitter combined < 1.1 s , Ø3 mm < 8.9 s , Ø6 mm
Temperature drift (by ambient)	< 0.025 °C + 0.01 % FSR/°C
Process temperature	Refer to section "Operating conditions"
Process connection	
Connection variants	Refer to section "Dimensional drawings"
Sensor length	≤ 3000 mm
Sensor diameter outside	ø 6 mm
Mounting position	Any, top, bottom, side
Standard response tip	ø 6 mm
Fast response tip	ø 3 mm
Sensor tube material	AISI 316L (1.4404)
Surface roughness wetted parts	Ra ≤ 0.8 µm

Ambient conditions	
Operating temperature range	-40 … 85 °C
Storage temperature range	-50 … 85 °C
Degree of protection (EN 60529)	IP 65 , with DIN EN 175301-803 A (DIN 43650 A), 4-pin IP 68 , with M12-A, 4-pin IP 69K , 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. GL, test 2
Housing	
Style	Compact transmitter
Overall size	Refer to section "Dimensional drawings"
Material	AISI 304 (1.4301)
Electrical connection	
Connector	DIN EN 175301-803 A (DIN 43650 A), 4-pin M12-A, 4-pin
Power supply	
Voltage supply range	7 … 35 V DC
Power-up time	< 2 s
Reverse polarity protection	Yes
Factory settings	
Output range	0 … 150 °C
Damping	0 s
Output at sensor fault	23 mA
Compliance and approvals	
EMC	EN 61326-1
Hygiene	3-A (74-07)

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Transmitter

Input	
Min. measuring span	10 °C
Sample time	< 0.1 s
Error detection delay	< 2 s

Output	
Output signal	4 … 20 mA , 2-wire 20 … 4 mA , 2-wire
Resolution	14 bit
Effect of variations in supply voltage	< 0.001 %/V
Ripple immunity	< 1 %, FSR (1 Vrms, 50Hz...1kHz)
Shunt resistance	Rs ≤ (V DC - 7 V)/0.023 A
Damping	0.0 … 60.0 s , programmable
Up/Down scaling limits	23 mA / 3.5 mA

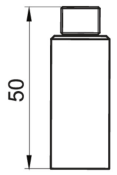
Operating conditions

Ordering key	Process connection	BCID	Process pressure (bar)	Continuous Process temperature Standard @ Tamb ≤ 20 °C (° C)	Process temperature With cooling neck, Sensor tip Ø3 mm @ Tamb ≤ 20 °C (° C)	Process temperature With cooling neck, Sensor tip Ø6 mm @ Tamb ≤ 20 °C (° C)
A020	M12 × 1.5 hygienic	A02	-1 … 40	-50 … 125	-50 … 200	-50 … 250
A030	G 1/2 A hygienic	A03	-1 … 40	-50 … 125	-50 … 200	-50 … 250
B010	BHC 3A DN 38	B01	-1 … 40	-50 … 125	-50 … 200	-50 … 250
C040	ISO 2852 (Tri-Clamp), DN 33.7; 38, Ø 50.5	C04	-1 … 40	-50 … 125	-50 … 200	-50 … 250

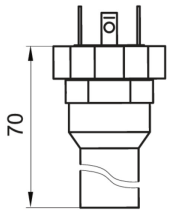
For further information on permissible process and ambient temperatures, please refer to the operating instructions.

Dimensional drawings (mm)

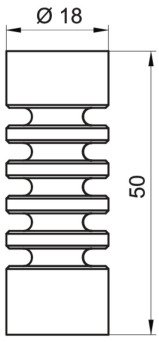
Housing



Housing with transmitter and connector M12-A, 4-pin



Housing with transmitter and connector DIN EN 175301-803 A (DIN 43650 A), 4-pin



Cooling neck

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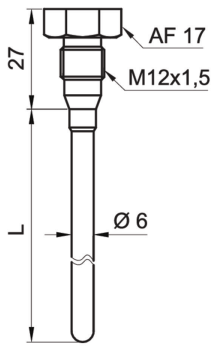
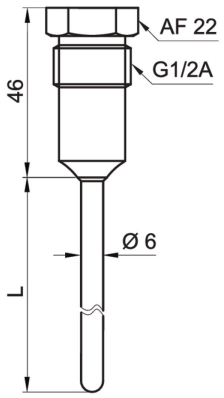
Dimensional drawings (mm)

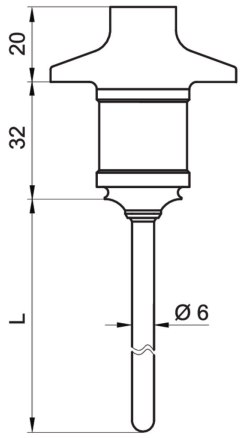
Process connection



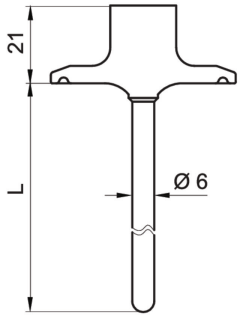
M12 × 1.5 hygienic (BCID: A02)



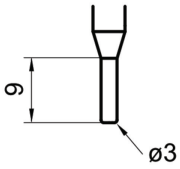
G 1/2 A hygienic (BCID: A03)



BHC 3A DN 38 (BCID: B01)



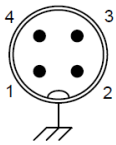
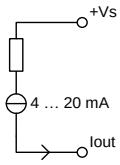
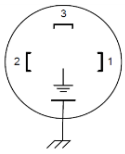
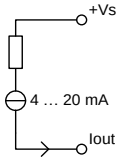
Tri-Clamp Ø 50.5 (BCID: C04)



Fast response tip

Standard response tip

Electrical connection

Output type	Electrical connection	Equivalent circuit	Function	Pin assignment
	M12-A, 4-pin, stainless steel			
4 … 20 mA, 2-wire			+Vs	1
			Iout	2, 3
			N.C.	4
			Frame ground	Plug thread
	DIN EN 175301-803 A (DIN 43650 A), 4-pin			
4 … 20 mA, 2-wire			+Vs	1
			Iout	2
			N.C.	3
			Frame ground	Grounding lug

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Ordering information

Ordering key - Configuration possibilities see website

	PT20H	-	####	.	#	#	#	#	2	1	#	.	2	#	0	0	0	#	#	.	####
Product																					
Temperature sensor PT20H	PT20H																				
Process connection																					
M12 x 1.5 hygienic (A02)			A020																		
G 1/2 A hygienic (A03)			A030																		
BHC 3A DN38 (B01)			B010																		
ISO 2852 (Tri-Clamp) DN38 (C04)			C040																		
Sensor tip																					
Standard tip (Ø6 mm)					1																
Fast response tip (Ø3 mm)					2																
Sensor element																					
Pt100 1/1 B EN 60751, single, 2-wire						1															
Pt100 1/3 B EN 60751, single, 2-wire						3															
Pt100 1/6 B EN 60751, single, 2-wire						5															
Pt100 1/1 A EN 60751, single, 2-wire						7															
Pt100 1/1 B EN 60751, single, 4-wire						A															
Pt100 1/3 B EN 60751, single, 4-wire						B															
Pt100 1/6 B EN 60751, single, 4-wire						C															
Pt100 1/1 A EN 60751, single, 4-wire						D															
Cooling neck																					
Without cooling neck							0														
With cooling neck							4														
Process temperature																					
-50...125°C								1													
-50...200°C								2													
-50...250°C								3													
Max. process pressure																					
40 bar									2												
Interface																					
4...20 mA (2-wire)										1											
Electrical connection																					
M12-A, 4 pin, stainless steel, with integrated transmitter											2										
DIN EN 175301-803 A (DIN 43650 A), 4-pin, with integrated transmitter(1)											5										
Wetted parts material																					
AISI 316L (1.4404)													2								
Surface roughness																					
Ra ≤ 0.8 µm														1							
Ra ≤ 0.4 µm														2							
Electropolished, Ra ≤ 0,8 µm														3							
Electropolished, Ra ≤ 0,4 µm														4							
Gasket material																					
Without															0						
Explosion protection																					
Without																0					
Industrial approvals																					
Standard																	0				
Special approvals																					
Standard																		0			
3-A																		1			

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Ordering information

Ordering key - Configuration possibilities see website

	PT20H	-	####	.	#	#	#	#	2	1	#	.	2	#	0	0	0	#	#	.	####
Configuration																					
Factory settings																			0		
Customer-specific																			1		
Sensor tube length (mm)																					
20 - 3000																					####

(1) Including female power connector

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