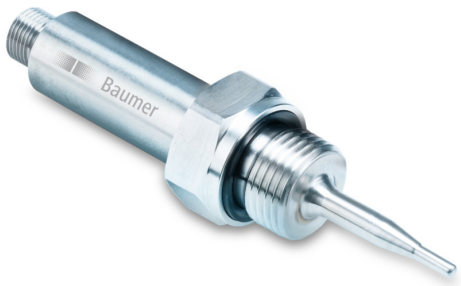
PT20S

Industrial compact RTD temperature sensor

PT20S-####.#######.2##000#.####

Overview

- Precision measurement from -50 ... 250 °C
- Integrated 4 ... 20 mA transmitter with high accuracy
- Fast power-up time < 2 s
- All parts welded together
- Customer-specific immersion depth down to 3000 mm
- IO-Link Dual Channel for easy commissioning



c UL us LISTED
Ind. Cont. Eq.
E527512

Technical data

Performance characteristics	
Pt100 accuracy class (EN 60751)	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 < 8.9 s , Ø6 mm
Temperature drift (by ambient)	< 0.025 K/K + 0.01 % FSR/K
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
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

Ambient conditions	
Degree of protection (EN 60529)	Connector DIN EN 175301-803 A (DIN 43650 A), 4-pin: IP65 Connector M12-A, 4-pin: IP68 , with appropriate cable (336 h @ 10 mH2O) 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. GL, test 2
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)
Process data length	72 bit
SIO-mode	Yes
Process data (cyclic)	Switch state State of alert Process temperature Unit temperature Signal analog output 1
Dual Channel	IO-Link / Analogue
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

Technical data

Power supply

Voltage supply range	7 … 35 V DC (Standard version) 10 … 35 V DC (Dual Channel version) 18 … 30 V DC (Dual Channel version, IO-Link communication)
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
Safety	cULus listed, E527512

Transmitter

Input

Min. measuring span	10 °C
Sample time	< 0.1 s
Accuracy	0.05 °C (-50 ... 200 °C) 0.06 °C (200 ... 250 °C)
Error detection delay	< 2 s

Output

Output type	PNP NPN Digital (push-pull) 4 ... 20 mA, 2-wire 20 ... 4 mA, 2-wire
Switching logic	Active high Active low
Voltage drop	PNP: (+Vs - 1,2 V) ± 0.5 V, Rload ≥ 10 kΩ NPN: (-Vs + 1,5 V) ± 0.5 V, Rload ≥ 10 kΩ
Resolution	14 bit
Ripple immunity	< 1 % FSR (1 Vrms, 50Hz...1kHz)
Shunt resistance	Rs ≤ (V DC - 7 V)/0.023 A (Standard version) Rs ≤ (V DC - 10 V)/0.023 A (Dual Channel version)
Current rating	100 mA , max.
Off leak current	< 100 µA
Short circuit protection	Yes
Damping	0.0 … 60.0 s , programmable
Up/Down scaling limits	23 mA / 3.5 mA

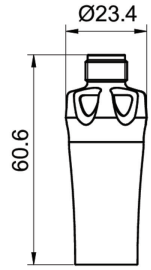
Operating conditions

Ordering key	Process connection	BCID	Process pressure	Continuous Process temperature Standard @ Tamb ≤ 20 °C	Process temperature With cooling neck, Sensor tip Ø3 mm @ Tamb ≤ 20 °C	Process temperature With cooling neck, Sensor tip Ø6 mm @ Tamb ≤ 20 °C
			(bar)	(° C)	(° C)	(° C)
T650	Sleeve Ø 6	T65	-1 … 40	-50 … 125	-50 … 200	-50 … 250
G060	G 1/2 A ISO 228-1	G06	-1 … 100	-50 … 125	-50 … 200	-50 … 250
G500	G 1/4 A DIN 3852-E	G50	-1 … 100	-50 … 125	-50 … 200	-50 … 250
G510	G 1/2 A DIN 3852-E	G51	-1 … 100	-50 … 125	-50 … 200	-50 … 250
N020	1/2-14 NPT	N02	-1 … 100	-50 … 125	-50 … 200	-50 … 250

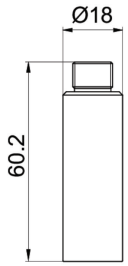
For further information on permissible process and ambient temperatures, please refer to the operating instructions.

Dimensional drawings (mm)

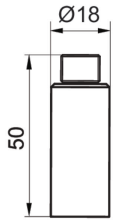
Housing



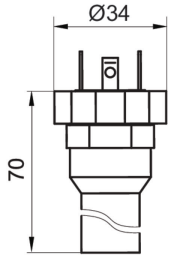
Housing with Dual Channel transmitter and KingCrown connector M12-A, 4-pin (with LED)



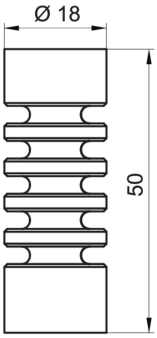
Housing with Dual Channel transmitter and connector M12-A, 4-pin



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

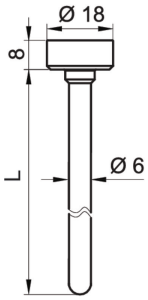


Housing with transmitter and connector DIN EN 175301-803 A (DIN 43650 A), 4-pin

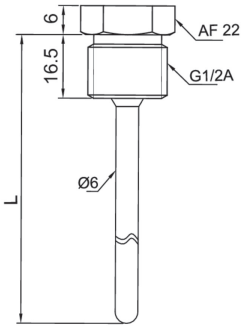


Cooling neck

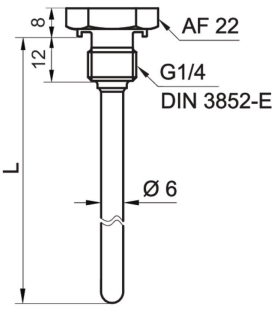
Process connection



Without thread (BCID: T65)



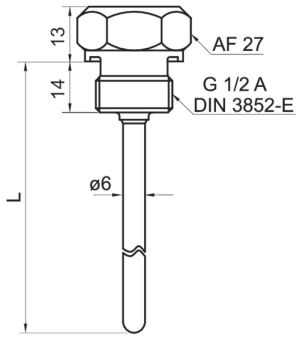
G 1/2 A ISO 228-1 (BCID: G06)



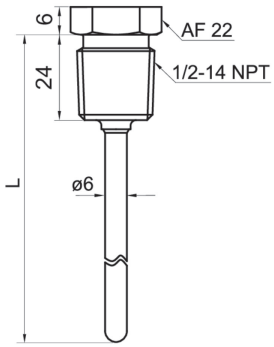
G 1/4 A DIN 3852-E (BCID: G50)

Dimensional drawings (mm)

Process connection



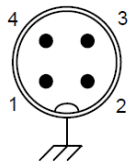
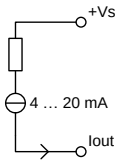
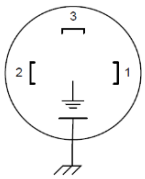
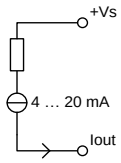
G 1/2 A DIN 3852-E (BCID: G51)



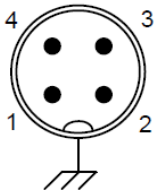
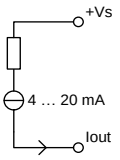
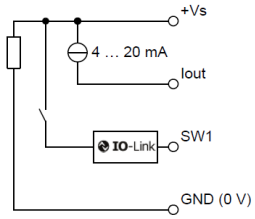
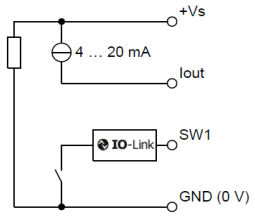
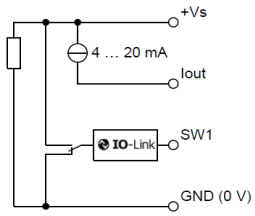
1/2-14 NPT (BCID: N02)

Standard response tip

Electrical connection

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

Electrical connection

Output type	Electrical connection	Equivalent circuit	Function	Pin assignment
	M12-A, 4-pin, stainless steel			
Dual Channel version 4 … 20 mA, 2-wire			+Vs Iout N.C. Frame ground	1 2 3, 4 Plug thread
Dual Channel version IO-Link + 4 … 20 mA PNP			+Vs SW1 (IO-Link) Iout GND (0 V) Frame ground	1 4 2 3 Plug thread
Dual Channel version IO-Link + 4 … 20 mA NPN			+Vs SW1 (IO-Link) Iout GND (0 V) Frame ground	1 4 2 3 Plug thread
Dual Channel version IO-Link + 4 … 20 mA Digital (push-pull)			+Vs SW1 (IO-Link) Iout GND (0 V) Frame ground	1 4 2 3 Plug thread

Ordering information

Ordering key - Configuration possibilities see website

	PT20S	-	####	.	1	#	#	#	#	#	#	.	2	#	#	0	0	0	#	.	####
Product																					
PT20S	PT20S																				
Process connection																					
Sleeve Ø 6 (T65)			T650																		
G 1/2 A ISO 228-1 (G06)			G060																		
G 1/4 A DIN 3852-E (G50)			G500																		
G 1/2 A DIN 3852-E (G51)			G510																		
1/2-14 NPT (N02)			N020																		
Sensor tip																					
Standard tip (Ø6 mm)					1																
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												
100 bar									3												
Interface																					
4...20 mA										1											
IO-Link Dual Channel, 4…20 mA										2											
Electrical connection																					
M12-A, 4 pin, stainless steel, with integrated transmitter											2										
M12-A, 4 pin, stainless steel KingCrown, with integrated transmitter (with LED)											3										
DIN EN 175301-803 A (DIN 43650 A), 4-pin, with integrated transmitter											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						
NBR															1						
FKM															2						
EPDM															3						

PT20S

Industrial compact RTD temperature sensor

PT20S-####.#######.2##000#.####

Ordering information

Ordering key - Configuration possibilities see website

	PT20S	-	####	.	1	#	#	#	#	#	.	2	#	#	0	0	0	#	.	####
Explosion protection																				
Without															0					
Industrial approvals																				
Standard																0				
Special approvals																				
Standard																	0			
Configuration																				
Factory settings																		0		
Customer-specific																		1		
Sensor tube length (mm)																				
20 - 3000																				####

(1) Including female power connector

ООО “РусАвтоматизация”

454010 г. Челябинск, ул. Гагарина 5, оф. 507

тел. 8-800-775-09-57 (звонок бесплатный), +7(351)799-54-26, тел./факс +7(351)211-64-57

info@rusautomation.ru; русавтоматизация.рф; www.rusautomation.ru