

Temperature sensor baelz 61 with questionnaire for inquiries on page 5 DS 61, 251

Pipe immersion temperature sensor baelz 61
Stainless steel screw-in protection well baelz 251-S5
Stainless steel weld-in protection well baelz 251-S6

**Application and function**

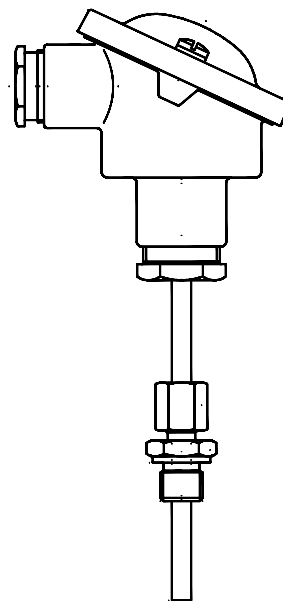
The pipe immersion temperature sensors are used for temperature measuring in gaseous and liquid fluids. The temperature of the fluid is transmitted by the sensor rod to the platinum resistance measuring element. The sensors can be used together with controllers which are provided with suitable PT-inputs for sensors, e.g. a baelz 64xx, baelz 65xx, baelz 6164, baelz 6200.

Instruction for mounting and installation

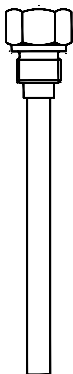
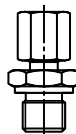
In order to assure a quick response behaviour, please mount the sensor the way that the shaft will be covered by the fluid if possible across its total length. With liquid fluids, the min. depth of immersion should be the 5...10-fold of the protection well diameter, with gaseous fluids, the 15...20-fold of the protection well diameter, and in no case it shall remain under the temperature-sensitive length of 35 mm.

Pipe immersion temperature sensor baelz 61

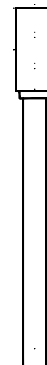
For vessel- and pipe mounting.
With movable screw connection R 1/4"
in stainless steel (VA)

**Screw-in protection well
baelz 251-S5**

internal connection : G 1/4"
external connection : G 1/2"
external Ø : 11 mm
internal Ø : 7 mm

**Compression fitting
for baelz 61
R 1/4"****Weld-in protection well
baelz 251-S6**

internal connection : G 1/4"
external Ø : 11 mm
internal Ø : 7 mm



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Text for quotations and orders	Type designation on the connection head	Suitable protection well baelz 251-S5	Suitable protection well baelz 251-S6
Pipe immersion temperature sensor baelz 61 1 x Pt 100 Connection head form B (aluminium) compression fitting in stainless steel (VA), R ¼"			
Shaft in 1.4571, 100 mm Shaft in 1.4571, 200 mm Shaft in 1.4571, 300 mm Shaft in 1.4571, 400 mm Shaft in 1.4571, 600 mm Shaft in 1.4571, 800 mm	baelz 61-1-100-VA baelz 61-1-200-VA baelz 61-1-300-VA baelz 61-1-400-VA baelz 61-1-600-VA baelz 61-1-800-VA	251-S5- 65 mm-VA 251-S5-145mm-VA 251-S5-245mm-VA 251-S5-345mm-VA 251-S5-545mm-VA	251-S6-145mm-VA 251-S6-245mm-VA 251-S6-345mm-VA 251-S6-545mm-VA
Pipe immersion temperature sensor baelz 61 2 x Pt 100 Connection head form B (aluminium) compression fitting in stainless steel (VA), R ¼"			
Shaft in 1.4571, 200 mm Shaft in 1.4571, 300 mm Shaft in 1.4571, 400 mm Shaft in 1.4571, 600 mm Shaft in 1.4571, 800 mm	baelz 61-2-200-VA baelz 61-2-300-VA baelz 61-2-400-VA baelz 61-2-600-VA baelz 61-2-800-VA	251-S5-145mm-VA 251-S5-245mm-VA 251-S5-345mm-VA 251-S5-545mm-VA	251-S6-145mm-VA 251-S6-245mm-VA 251-S6-345mm-VA 251-S6-545mm-VA

Basic values in Ohm for platinum resistance thermometers EN 60751

°C	Ohm	Ohm/°C	°C	Ohm	Ohm/°C	°C	Ohm	Ohm/°C
-50	80.31	0.397	+170	164.77	0.371	+390	243.64	0.346
-40	84.27	0.396	+180	168.48	0.370	+400	247.09	0.345
-30	88.22	0.394	+190	172.17	0.369	+410	250.53	0.343
-20	92.16	0.393	+200	175.86	0.368	+420	253.96	0.342
-10	96.09	0.392	+210	179.53	0.367	+430	257.38	0.341
0	100.00	0.391	+220	183.19	0.365	+440	260.78	0.340
+10	103.90	0.390	+230	186.84	0.364	+450	264.18	0.339
+20	107.79	0.389	+240	190.47	0.363	+460	267.56	0.338
+30	111.67	0.387	+250	194.10	0.362	+470	270.93	0.337
+40	115.54	0.386	+260	197.71	0.361	+480	274.29	0.335
+50	119.40	0.385	+270	201.31	0.360	+490	277.64	0.334
+60	123.24	0.384	+280	204.90	0.358	+500	280.98	0.333
+70	127.08	0.383	+290	208.48	0.357	+510	284.30	0.332
+80	130.90	0.382	+300	212.05	0.356	+520	287.62	0.331
+90	134.71	0.380	+310	215.61	0.355	+530	290.92	0.330
+100	138.51	0.379	+320	219.15	0.354	+540	294.21	0.329
+110	142.29	0.378	+330	222.68	0.353	+550	297.49	0.328
+120	146.07	0.377	+340	226.21	0.352	+560	300.75	0.327
+130	149.83	0.376	+350	229.72	0.350	+570	304.01	0.326
+140	153.58	0.375	+360	233.21	0.349	+580	307.25	0.325
+150	157.33	0.374	+370	236.70	0.348	+590	310.49	0.323
+160	161.05	0.372	+380	240.18	0.347	+600	313.71	0.322

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Technical data			baelz 61 with light plastic-sheathed cable (shake-proof)
Measuring element			1 x PT 100, EN 60751 (IEC 60751), Class B or 2 x PT 100, EN 60751 (IEC 60751), Class B
- diameter			6 mm
- temperature-sensitive length			35 mm
- measuring current			max. 1 mA
Measuring range			-50...+600 °C
Limit deviation according to (IEC 60751), Class B			+/- (0.3 °C + 0,0050*[t]) [t] = absolute temperature value in °C.
Time response of the prod			
T ₀₅ in water with v = 0.2 m/s			6 seconds (16 seconds*)
T ₀₉ in water with v = 0.2 m/s			15 seconds (45 seconds*)
T ₀₅ in air with v = 2 m/s			55 seconds (160 seconds*)
T ₀₉ in air with v = 2 m/s			170 seconds (500 seconds*)
			* with protection well
Shaft in			material no.: 1.4571
- diameter			6 mm
- max. pressure			40 bar
Mounting length	Pressure	Density of fluid	Max. admissible flow velocity
200 mm	≤ 8 bar	≤ 5,5 (air, gas, steam) kg / m ³	60 m / sec.
300 mm	≤ 8 bar	≤ 5,5 (air, gas, steam) kg / m ³	30 m / sec.
400 mm	≤ 8 bar	≤ 5,5 (air, gas, steam) kg / m ³	30 m / sec.
600 mm	≤ 8 bar	≤ 5,5 (air, gas, steam) kg / m ³	30 m / sec.
Mounting length	Pressure	Density of fluid	Max. admissible flow velocity
200 mm	≤ 40 bar	≤ 109 (gas, steam) kg / m ³	8.5 m / sec.
300 mm	≤ 40 bar	≤ 109 (gas, steam) kg / m ³	5 m / sec.
400 mm	≤ 40 bar	≤ 109 (gas, steam) kg / m ³	5 m / sec.
600 mm	≤ 40 bar	≤ 109 (gas, steam) kg / m ³	5 m / sec.
Mounting length	Pressure	Density of fluid	Max. admissible flow velocity
200 mm	≤ 40 bar	≤ 800 (liquid) kg / m ³	3.2 m / sec.
300 mm	≤ 40 bar	≤ 800 (liquid) kg / m ³	2 m / sec.
400 mm	≤ 40 bar	≤ 800 (liquid) kg / m ³	2 m / sec.
600 mm	≤ 40 bar	≤ 800 (liquid) kg / m ³	2 m / sec.
Mounting length	Pressure	Density of fluid	Max. admissible flow velocity
200 mm	≤ 40 bar	≤ 1000 (liquid) kg / m ³	2.5 m / sec.
300 mm	≤ 40 bar	≤ 1000 (liquid) kg / m ³	1.8 m / sec.
400 mm	≤ 40 bar	≤ 1000 (liquid) kg / m ³	1.8 m / sec.
600 mm	≤ 40 bar	≤ 1000 (liquid) kg / m ³	1.8 m / sec.
Compression fitting			R 1/4"
- Wrench sizes			SW 14 / 19
- Material			completely in stainless steel (1.4571)
Connection head			Form B (aluminium)
- Cable entry			M 20x1,5
- max. ambient temperature			100 °C
- Protection			IP 66

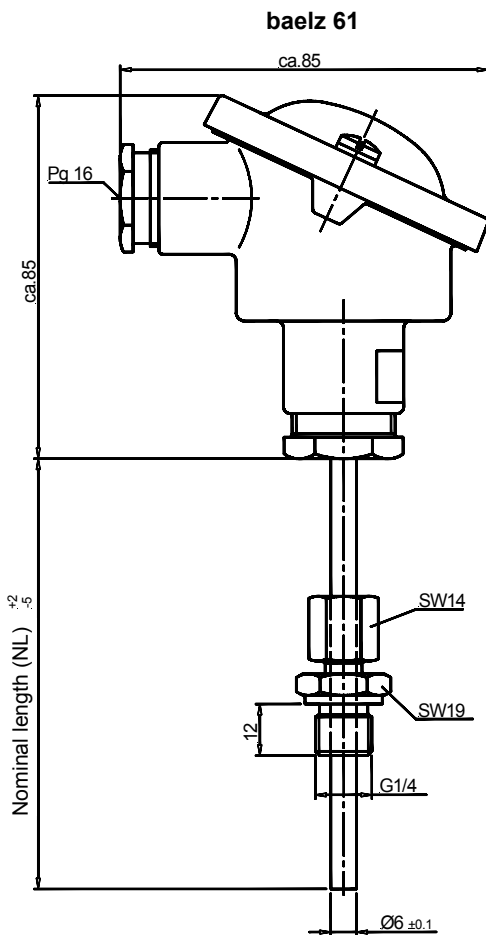
Accessories for baelz 61:

Mounting plate 60 x 60 mm with screw socket R 1/4" to mount the baelz 61 into air ducts with soft packing for max. 80°C.

Technical data of the protection wells	Protection well baelz 251-S5	Protection well baelz 251-S6
Type of mounting	screw-in	weld-in
External, internal connecting thread	R 1/2", R 1/4"	- , R 1/4"
Wrench size	SW 27	-
External diameter / mm	-	18
Material no., wall thickness	1.4571, 2 mm	1.4571, 2 mm
max. admissible flow velocity in liquids	5 m / sec.	5 m / sec.
in air, gas, steam	40 m / sec.	40 m / sec.
max. pressure at mounting length 145 mm 50°C	90 bar	90 bar
400°C	65 bar	65 bar
max. pressure at mounting length 345 mm 50°C	40 bar	40 bar
400°C	30 bar	30 bar

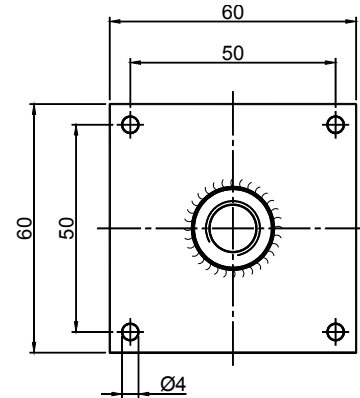
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Dimensions

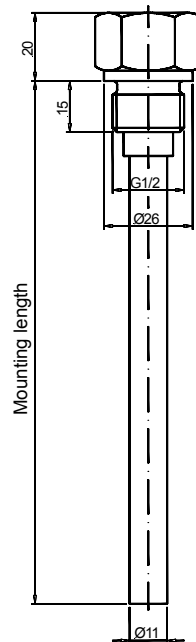


Air duct mounting

Mounting plate for baelz 61



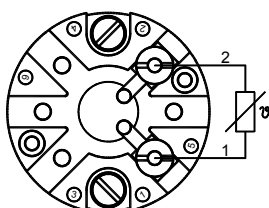
baelz 251-S5



baelz 251-S6

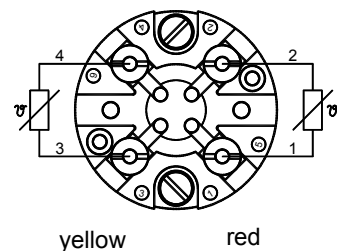


1 x Pt 100



Connecting diagrams

2 x Pt 100



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Selection

of the pipe immersion temperature sensors baelz 61
for vessel- and pipe mounting.

With movable screw connection R 1/4" in stainless steel (VA)

Type of sensor: 1x Pt 100 Ω ☐ 2x Pt 100 Ω ☐

Shaft length:
baelz 61 100 mm ☐ 200 mm ☐ 300 mm ☐
400 mm ☐ 600 mm ☐ 800 mm ☐

Number of units: pieces

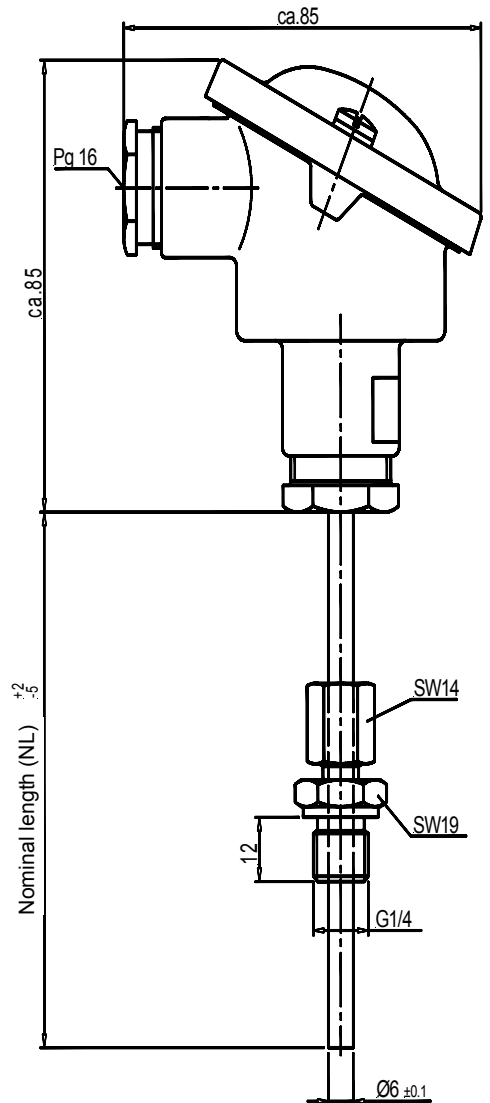
Measuring fluid: air ☐ steam ☐ water ☐

Neck tube: yes ☐ no ☐

Measuring temperature: °C

Pressure at the measuring point: bar(g)

Suitable
protection well:
(see *) no ☐ yes 251- S5 ☐ yes 251- S6 ☐



baelz 61

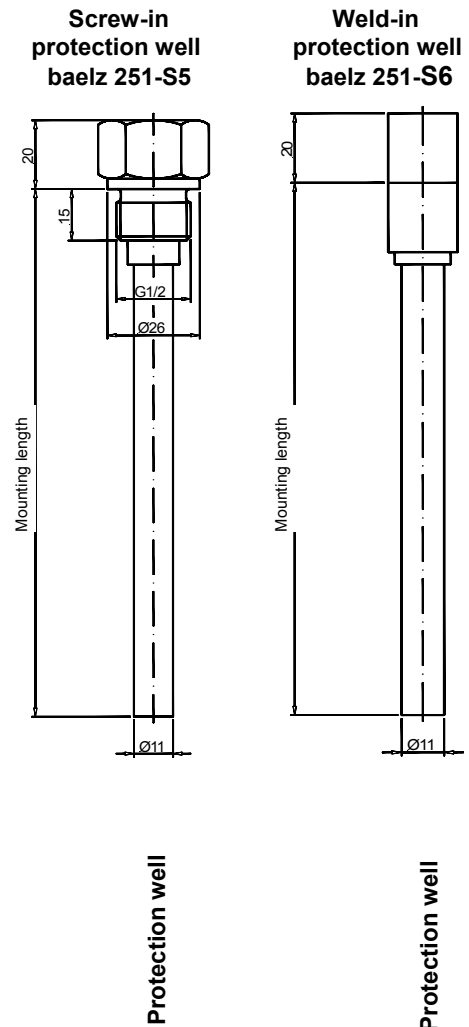
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Selection of the protection well

Remark: The length of the protection well depends on the shaft length.

Shaft length: baelz 61	100 mm	☐ A	200 mm	☐ B	300 mm	☐ C
	400 mm	☐ D	600 mm	☐ E	800 mm	☐ F
*Suitable protection well: 251-S5 (if needed)	65 mm	☐ A	145 mm	☐ B	245 mm	☐ C
	345 mm	☐ D	545 mm	☐ E		
*Suitable protection well: 251-S6 (if needed)			145 mm	☐ B	245 mm	☐ C
	345 mm	☐ D	545 mm	☐ E		

When selecting a protection well, please respect the allocation:

Example: Suitable protection well baelz 251-S5 245 mm (C) for baelz 61 with shaft length 300 mm (C).



Please respect the pressures and the flow velocities on page 3!!!!

Address

Company name

Department Att. to

Street ZIP code/Location

Country

☎ Fax