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## Indoor, outdoor and duct resistance thermometers

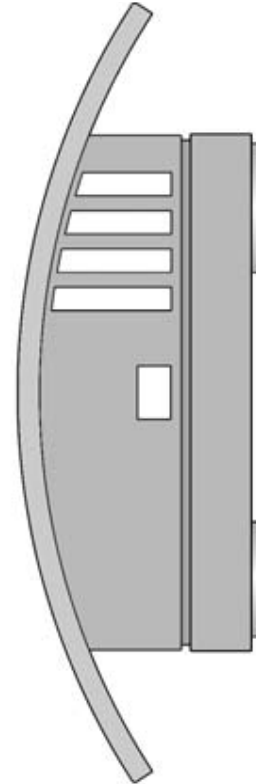
- for temperatures from -30 to +80°C (200°C)
- for use in HVAC
- IP20 to IP65 protection
- for 2-wire, 3-wire or 4-wire connections
- fitted transmitter option 4 – 20mA / 0 – 10V

Indoor, outdoor and duct resistance thermometers for HVAC applications are mainly used for temperature measurement in rooms, air ducts and outdoors.

Different instrument versions with plastic housings for different protection ratings are available to suit the particular measurement task.

The measuring insert is normally fitted with a Pt100 temperature sensor to EN 60751, Class B, in 2-wire circuit. Versions with Pt500, Pt1000 or Ni 1000 can also be supplied. An extension in 3- or 4-wire circuit, starting from the terminals, is possible.

A transmitter can optionally be integrated.



### Technical data

#### Terminal box

plastic PC housing (material PP on Type 902523/11), IP20 to IP65,  
Type 902523/25: IP54 and IP65 protection

#### Protection tube

stainless steel 1.4571; 5.4mm and 6mm dia.

#### Measuring insert

Pt100 temperature sensor, EN 60 751, Class B, 2-wire circuit

#### Transmitter

analog transmitter, output signal 4 – 20mA or 0 – 10V

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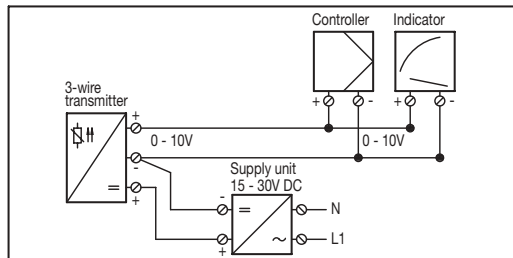
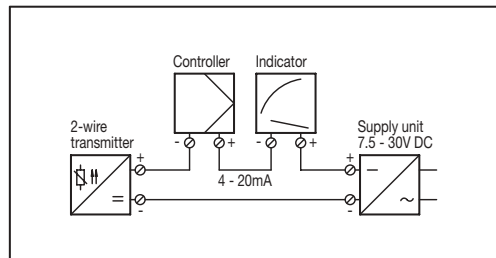


Transmitter	Output 4 – 20mA		Output 0 – 10V
	<b>Input</b>		
Measurement input	Pt100 (EN 60 751)		
Sensor current	≤ 0.5mA		
Sampling rate	continuous measurement because of analog signal path		
<b>Measurement circuit monitoring</b>			
Underrange	falling to ≤ 3.6mA	0V	
Ovrange	rising to ≥ 22mA to < 28mA (24mA typical)	rising to ≥ 11V to < 14V (12V typical)	
Probe short circuit	≤ 3.6mA	0V	
Probe and lead break	≥ 22mA to < 28mA (24mA typical)	≥ 11V to < 14V (12V typical)	
<b>Output</b>			
Output signal	proportional DC current 4 – 20mA	DC voltage 0 – 10V	
Transfer characteristic	linear with temperature		
Transfer accuracy	≤ ±0.1%	≤ ±0.2%	
Damping of ripple on 24V supply voltage, amplitude 10V/50Hz, burden 470Ω/load 10MΩ	37dB	40dB	
Burden (R <sub>b</sub> )	R <sub>b</sub> = (U <sub>b</sub> - 7.5V) / 22mA	-	
Burden error	≤ ±0.02% / 100Ω <sup>1</sup>	-	
Load/load error	-	≥ 10kΩ / ≤ ±0.1%	
Settling time on temperature change	≤ 10msec		
Calibration conditions	24V DC / approx. 22°C		
Calibration accuracy	≤ ±0.2% <sup>1,2</sup> or ≤ ±0.2°C		
Overall accuracy: sensor/calibration	±0.4°C (typical) at 20°C / 24V supply voltage		
<b>Supply</b>			
Supply voltage (U <sub>b</sub> )	7.5 – 30V DC	15 – 30V DC	
Reverse polarity protection	yes		
Supply voltage error	≤ ±0.01% per V deviation from 24V <sup>1</sup>		
<b>Ambient conditions</b>			
Operating temperature range	-40 to +85°C		
Storage temperature range	-40 to +100°C		
Temperature error	≤ ±0.01% per °C deviation from 22°C <sup>1</sup>		
Climatic conditions similar to EN 60 654, Class C1	relative humidity ≤ 95% annual mean, no condensation		
EMC interference emission/immunity	EN 61 326, Class B / to industrial requirements		

1. All data refer to the end-of-range value 20mA.

2. The larger value applies.

**Connection example with supply unit, 4 – 20mA output**      **Connection example with supply unit, 0 – 10V output**



**Connection diagram**

Output 4 - 20mA		Terminal	
Connection for	Supply voltage 7.5 - 30V DC	+ 81	81 82
	Current output 4 - 20mA	- 82	81 82
		$R_B = \frac{U_b - 7.5V}{22mA}$	+
		$R_B = \text{burden resistance}$	-
		$U_b = \text{supply voltage}$	

Output 0 - 10V		Terminal	
Connection for	Supply voltage 15 - 30V DC	+ 81	81 82 83
	Voltage output 0 - 10V	- 82	81 82 83
		Load ≥ 10kΩ	+
			-
			+

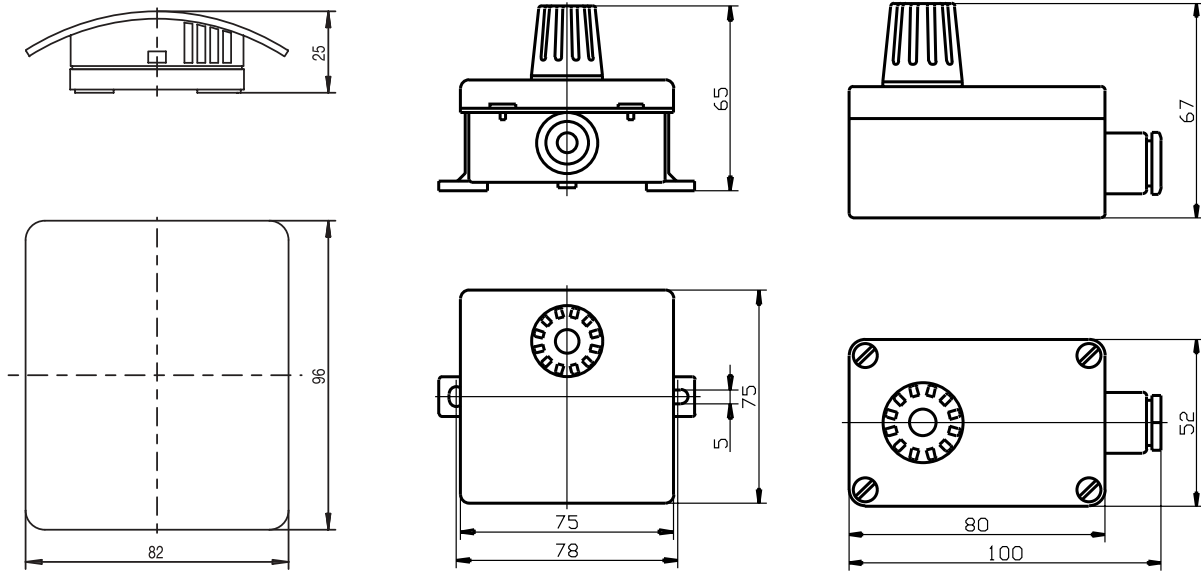
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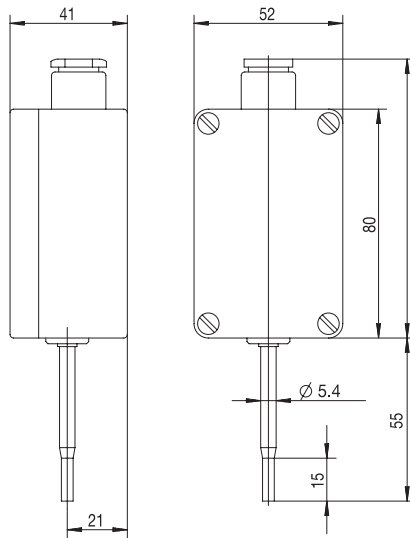
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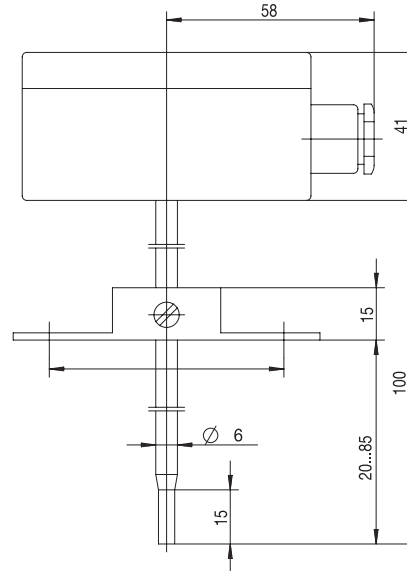
Type 902523/10

Type 902523/11

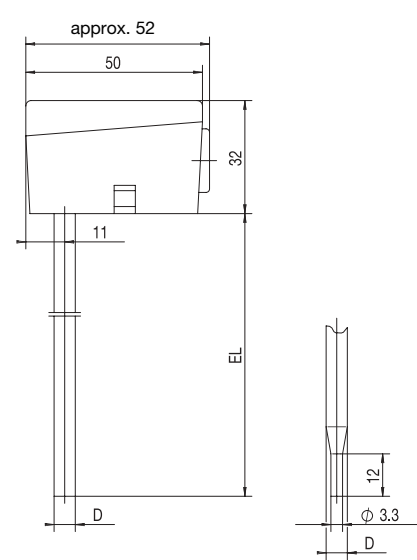
Type 902523/12



Type 902523/13



Type 902523/20



Type 902523/25

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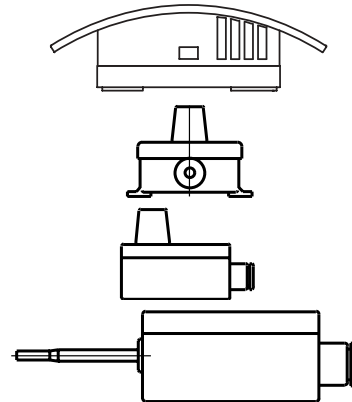
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**Order details: Indoor, outdoor and duct resistance thermometers**

**(1) Basic version**

	902523/10	Indoor resistance thermometer, Protection IP20
	902523/11	Indoor and outdoor resistance thermometer, Protection IP54
	902523/12	Indoor and outdoor resistance thermometer, Protection IP65
	902523/13	Indoor and outdoor resistance thermometer with stepped protection tube, Protection IP65



**(2) Operating temperature in °C**

	x	x	x	568	-30 to +60°C (range only in conjunction with extra code 330 or 333)
x	x	x	x	572	-30 to +80°C (standard)
x	x	x	x	803	0 to 40°C (range only in conjunction with extra code 330 or 333)
x	x	x	x	807	0 to 60°C (range only in conjunction with extra code 330 or 333)

**(3) Measuring insert**

	x	x	1001	1 x Pt100 in 3-wire circuit
x	x	x	1003	1 x Pt100 in 2-wire circuit
x	x	x	1005	1 x Pt1000 in 2-wire circuit
x	x	x	1009	1 x Ni 1000 in 2-wire circuit
x			2001	2 x Pt100 in 3-wire circuit
	x	x	2003	2 x Pt100 in 2-wire circuit

**(4) Tolerance class to EN 60 751**

	x	x	x	1	Class B (standard)
x	x	x	x	2	Class A (not for Type 902523/10 and transmitter)
x	x	x	x	3	Class 1/3 DIN (not for Type 902523/10 and transmitter)

**(5) Extra codes**

	x	x	x	x	000	no extra code
x	x	x	x	x	330	analog transmitter, 4 – 20mA output (in conjunction with 1 x Pt100)*
x	x	x	x	x	333	analog transmitter, 0 – 10V output (in conjunction with 1 x Pt100)*

**Order code**                    (1) - (2) - (3) - (4) / (5) ,...

**Order example**            902523/10 - 572 - 1001 - 1 / 000<sup>1</sup>

\* Please specify range in plain text.  
1. List extra codes in sequence, separated by commas.

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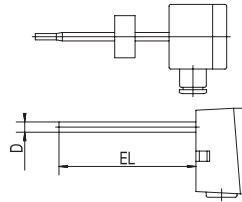
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**Order details: Indoor, outdoor and duct resistance thermometers**

**(1) Basic version**

	902523/20	Duct resistance thermometer with stepped protection tube, Protection IP65
	902523/25	Duct resistance thermometer with plain protection tube, Protection IP54
	<b>(2) Operating temperature in °C</b>	
x	380	-50 to +200°C (standard)
x	568	-30 to +60°C (range only in conjunction with extra code 330 or 333)
x	572	-30 to +80°C (standard)
x	807	0 to 60°C (range only in conjunction with extra code 330 or 333)
	<b>(3) Measuring insert</b>	
x	1003	1 x Pt100 in 2-wire circuit
x	1005	1 x Pt1000 in 2-wire circuit
x	1009	1 x Ni 1000 in 2-wire circuit
x	2003	2 x Pt100 in 2-wire circuit
	<b>(4) Tolerance class to EN 60 751</b>	
x	1	Class B (standard)
x	2	Class A
x	3	Class 1/3 DIN
	<b>(5) Protection tube diameter D in mm</b>	
x	6	6mm (Type 902523/20: stepped down from 6mm dia. to 3.3mm dia.)
	<b>(6) Fitting length EL in mm (50 ≤ EL ≤ 500)</b>	
x	100	100mm
x	150	150mm
x	200	200mm
x	...	please specify in plain text (in 50mm steps)
	<b>(7) Process connection</b>	
x	000	no process connection
x	252	screwed pipe joint G 1/4 (1/4" pipe)
x	254	screwed pipe joint G 1/2 (1/2" pipe)
x	662	stop flange 6mm dia.
	<b>(8) Extra codes</b>	
x	000	no extra code
x	310	protection tube stepped down from 6mm dia. to 3.3mm dia.
x	330	analog transmitter, 4 – 20mA output (in conjunction with 1 x Pt100)*
x	333	analog transmitter, 0 – 10V output (in conjunction with 1 x Pt100)*
x	404	Protection IP65



<b>Order code</b>	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	....
<b>Order example</b>	902523/20	- 572	- 1003	- 1	- 6	- 100	- 252	/ 000 <sup>1</sup>	

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Stock versions:

(1)	(2)	(3)	(4)	(5)	Sales No.
902523/10	572	1001	1	000	90/00065671
902523/10	572	2001	1	000	90/00065672
902523/10	803	1003	1	330 (0 to 40°C)	90/00064003
902523/10	807	1003	1	330 (0 to 60°C)	90/00065717
902523/11	572	1003	1	000	90/00055723
902523/11	572	2003	1	000	90/00055724
902523/12	572	1003	1	000	90/00064881
902523/12	572	2003	1	000	90/00064882
902523/12	807	1003	1	330 (0 to 60°C)	90/00064883
902523/13	572	1003	1	000	90/00064852
902523/13	572	2003	1	000	90/00064853
902523/13	568	1003	1	330 (-30 to +60°C)	90/00065073

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	Sales No.
902523/20	572	1003	1	6	100	662	000	90/00064894
902523/20	568	1003	1	6	100	662	330 (-30 to +60°C)	90/00065087
902523/20	807	1003	1	6	100	662	330 (0 to 60°C)	90/00064896