



**GÜNTHER** GmbH  
Temperaturmesstechnik



**Product category 50-WMS  
Resistance Thermometers with  
Metal Protection Tube**



**Due to their structure, protected resistance thermometers offer a number of advantages when compared to regular thermocouple assemblies:**

- Small physical dimensions with maximum flexibility for temperature measurement at sites with difficult accessibility (diameter 1,5 – 6,0 mm).
- Short response time for exact measurements of temperature variations
- Optimal protection for the sensor system by the enclosed structure

**Application Examples for Resistance Thermometers with Metal Protection Tube:**



Plant and Machine Construction



Automobile Industry



Chemical Industry



Energy Production

## 50-WMS

### Resistance Thermometers with Metal Protection Tube

Sensors of this type are used for general temperature measurement, mostly in liquid and gaseous media at temperatures up to 600°C, on rare occasions up to 800°C. Typical applications include refrigeration and air conditioning technology, heating, oven and apparatus construction, as well as chemical industry.

Protective fittings in this product line consist of seam welded or seamlessly drawn metal tubes. Depending on the application, GÜNTHER GmbH has over 40 different, partly high-alloyed materials in a large array of measurements in stock. The tips for the protective tubes are either closed through hot forming or welded shut with a bottom blank.

Tapered measuring tips may be used in this product line in order to shorten the reaction time. For prolonging the holding time, strengthening the wall thickness and utilization of ceramic inner tubing are possible.

All internationally prevalent precision resistors, detachable process connectors (for example mobile flanges or threaded sleeves) and connection heads are used.

Depending on the connection type (2-wire, 3-wire or 4-wire – in turn depending on the required measurement precision and connector length), resistance thermometers consist of 2, 4 or 6 feed lines (inner conductors), surrounded by a thin metallic protective mantle, usually made of high-grade steel. The inner conductors are firmly press-fitted and insulated in ceramic powder. The precision resistor inside the sensor tip is connected through the inner conductors. The gauge slide in serial-production is fitted with a Pt 100 temperature sensor pursuant to DIN 60751, however versions with Pt 500 or Pt 1000 sensors are possible. The gauge slide is hermetically sealed.

For specialised applications (precision, long-term stability, etc.) we recommend the application of precision resistors with narrowed tolerance.

The resistance values and tolerances of our resistance thermometers are pursuant to DIN EN 60751.





① Connection Head

A	B
AUS	BUS
AUZ	BUZ
AUZH	BUZH
AUSH	BBK

② Process Connector (Detachable)

Flange
Threaded Socket
Flange / Counter Flange

③ Outer Protective Tube

Materials:	
St. 35.8	Mat. No. 1.0305
Stainless Steel	Mat. No. 1.4571
X10Cr Al 24	Mat. No. 1.4762
X15CrNi Si 25 20	Mat. No. 1.4841
Heat-Resistant Steel	Mat. No. 1.4893

④ Sensor Tip

Straight
or Tapered to 6 - 15 mm

⑤ Mineral-Insulated Gauge Slide

Mantle Diameter:	1,5 - 8,0 mm
Tip Diameter:	2,0 - 10,0 mm
Connection:	
1 x Pt100 up to 3 x Pt100 Ohm	
2-Wire up to 4-Wire	

Our resistance thermometers are also available in explosion protected ATEX models.

Further technical information for this product line is available on our website:

<http://www.guenther.eu/en/products/resistance-thermometers/50-wms/resistance-thermometer-with-metallic-protection-tube>

Example of a common implementation in this product line



Individual Solutions such as, for example materials, process connectors, accessories, etc. not listed here, are often viable.

Please contact us for further information!

**50 - WMS // Straight resistance thermometers with a metal protection tube and a built-in measurement insert**

Pt 100 ohm, metal + sheath 

5	0
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**Outer protection tube material / dimensions**

		Material number				
ø [mm]		1.0305	1.4571	1.4893	1.4762	1.4841
9 x 1	<b>01</b>	<b>11</b>	<b>21</b>	<b>31</b>	<b>41</b>	<b>41</b>
9 x 1.5	<b>02</b>	<b>12</b>	<b>22</b>	<b>32</b>	<b>42</b>	<b>42</b>
10 x 1	<b>03</b>	<b>13</b>	<b>23</b>	<b>33</b>	<b>43</b>	<b>43</b>
10 x 1.5	<b>04</b>	<b>14</b>	<b>24</b>	<b>34</b>	<b>44</b>	<b>44</b>
11 x 1	<b>05</b>	<b>15</b>	<b>25</b>	<b>35</b>	<b>45</b>	<b>45</b>
11 x 1.5	<b>06</b>	<b>16</b>	<b>26</b>	<b>36</b>	<b>46</b>	<b>46</b>
12 x 1	<b>07</b>	<b>17</b>	<b>27</b>	<b>37</b>	<b>47</b>	<b>47</b>
12 x 2.5	<b>08</b>	<b>18</b>	<b>28</b>	<b>38</b>	<b>48</b>	<b>48</b>
15 x 2	<b>09</b>	<b>19</b>	<b>39</b>	<b>39</b>	<b>49</b>	<b>49</b>
22 x 2	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>50</b>
15 x 3	<b>91</b>	<b>92</b>	<b>94</b>	<b>95</b>	<b>96</b>	<b>96</b>

Nominal length / mm

<b>Inner tube</b>	None	<b>0</b>
	C530 ceramic material	<b>1</b>
	C610 gastight ceramic	<b>2</b>
	C799 Aluminium oxide	<b>3</b>

**Sensor point**

Not tapered	<b>0</b>	Tapered to 10 mm	<b>5</b>
Tapered to 15 mm	<b>1</b>	Tapered to 8 mm	<b>6</b>
Tapered to 12 mm	<b>2</b>		
Tapered to 9 mm	<b>3</b>		
Tapered to 6 mm	<b>4</b>	Tapered other	<b>9</b>

**Head**

A	<b>1</b>	B	<b>6</b>
AUS	<b>2</b>	BUS	<b>7</b>
AUZ	<b>3</b>	BUZ	<b>8</b>
AUZH	<b>4</b>	BUZH	<b>9</b>
AUSH	<b>5</b>	BBK	<b>0</b>

**Sheath measurement insert**

**Rigid model**

Sheath ø [mm]	2,0	3,0	4,5	6,0	6,0	6,0	8,0	8,0	
Point ø [mm]	2,0	3,0	4,5	6,0	8,0	10,0	8,0	10,0	
<b>Circuit</b>									
1xPt100 Ohm 2-wire	<b>00</b>	<b>10</b>	<b>20</b>	<b>30</b>	<b>40</b>	<b>50</b>	<b>60</b>	<b>70</b>	<b>80</b>
1xPt100 Ohm 3-wire	<b>01</b>	<b>11</b>	<b>21</b>	<b>31</b>	<b>41</b>	<b>51</b>	<b>61</b>	<b>71</b>	<b>81</b>
1xPt100 Ohm 4-wire	<b>02</b>	<b>12</b>	<b>22</b>	<b>32</b>	<b>42</b>	<b>52</b>	<b>62</b>	<b>72</b>	<b>82</b>
2xPt100 Ohm 2-wire	<b>03</b>	<b>13</b>	<b>23</b>	<b>33</b>	<b>43</b>	<b>53</b>	<b>63</b>	<b>73</b>	<b>83</b>
2xPt100 Ohm 3-wire	<b>04</b>	<b>14</b>	<b>24</b>	<b>34</b>	<b>44</b>	<b>54</b>	<b>64</b>	<b>74</b>	<b>84</b>
3xPt100 Ohm 2-wire	<b>05</b>	<b>15</b>	<b>25</b>	<b>35</b>	<b>45</b>	<b>55</b>	<b>65</b>	<b>75</b>	<b>85</b>
2xPt100 Ohm 4-wire	<b>06</b>	<b>16</b>	<b>26</b>	<b>36</b>	<b>46</b>	<b>56</b>	<b>66</b>	<b>76</b>	<b>86</b>

**Fastening**

Stop flange	<b>1</b>
Mounting thread	<b>2</b>
Stop flange/counter flange	<b>3</b>
None	<b>0</b>

Custom designs:

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9	9	5	0	x	x	x	x
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Consecutive no.

Nominal length / mm



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