

# Standard thermometer

## Models CTP1000, CTP2000 and CTP9000

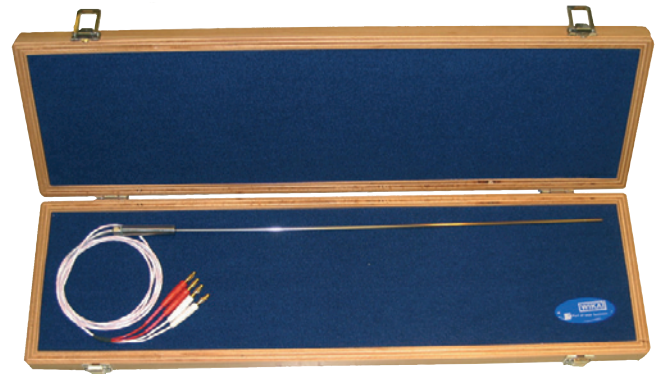
WIKA data sheet CT 61.10

### Applications

- Comparative calibration in dry well calibrators, tube furnaces and liquid baths

### Special features

- High stability
- Low drift, long service life
- Wide temperature range



Platinum resistance thermometer model CTP2000

## Description

### Calibration by means of an external standard thermometer

The WIKA standard thermometers are particularly suited for applications in industrial laboratories. They enable easy comparative calibration in our baths, in tube furnace and in dry well calibrators.

The use of an external reference thermometer is recommended, particularly for the calibration of short temperature sensors. Thus the errors due to the radial and axial temperature distribution in the temperature conditioning unit are considerably reduced.

For calibration, the test items and the standard thermometer are brought to the same temperature in a temperature conditioning unit.

As soon as a stable temperature is reached, the test items are read or their output signals are measured (resistance, thermoelectric voltage, standard signal) and compared with the standard thermometer.

Using this comparison method, the measuring uncertainty can be considerably reduced because not only the display of the temperature conditioning unit is taken into consideration.

## Models

### Platinum resistance thermometers models CTP1000 and CTP2000

#### Features

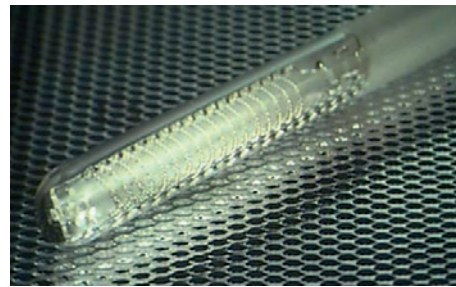
The measuring resistor consists of a platinum winding of highest purity.

All parts are pre-aged in order to remove contamination and distortions.

#### Measuring technology

The 4-wire design offers an optimum connection solution for resistance thermometers. The measuring result is affected neither by the lead resistances nor the temperature-dependant fluctuations.

The electrical connections are welded in order to minimise the transition resistance. The connecting wires are bound in a 2 m long, shielded connection cable.



Principle of a platinum winding

### Thermocouple model CTP9000

#### Features

The standard thermometer is a type S element whose nominal composition consists of Platinum Rhodium 10 % (positive leg) against Platinum (negative leg) and belongs to the group of noble thermocouples.

It is characterised by its high stability.

The quality of the thermowell used is essential for stability at high temperatures. For this reason, the high-purity aluminium oxide ceramic C 799 is used.

The type S thermocouple, besides the low ageing drift, also offers the advantage of a low basic tolerance.

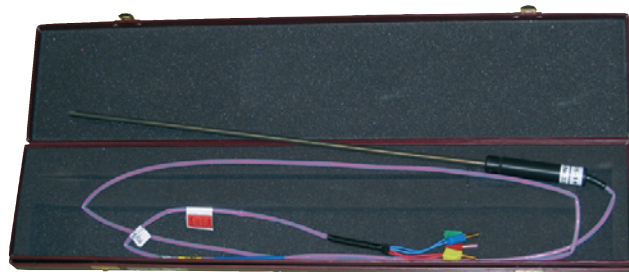
#### Measuring technology

During measurement it must be ensured that the compensating leads from the measuring point to the cold junction consist of substitute materials which have, in a limited temperature range, the same thermoelectric properties as the materials of the thermocouple. Therefore, at this transition, there is no thermoelectric voltage. This voltage is only generated at the point where the compensating leads are connected to normal copper leads.

### Calibration

Your standard thermometer should be calibrated once a year.

If it is subject to high mechanical stresses, it should be calibrated immediately to guarantee the measuring uncertainty.



Platinum resistance thermometer model CTP1000



Thermocouple model CTP9000

## Platinum resistance thermometer

Specifications		Model CTP1000	Model CTP2000
Temperature range	°C	-100 ... +670	-200 ... +450
Nominal resistance	Ω	100	100
Temperature coefficient	1/K	$\alpha = 0.003850$	$\alpha = 0.003850$
Stability		< 40 mK after 100 h at 670 °C	< 50 mK after 100 h at 450 °C < 20 mK after 100 h at 300 °C
Sensitive length	mm	25	not specified
Dimensions, d x l	mm	6 x 480	4 x 500
Immersion tube material		stainless steel	stainless steel
Sensor connection		4-wire connection	4-wire connection
Measuring line		2 m PTFE cable stripped and tin-coated	2 m cable stripped and tin-coated
Connector		on request	4 mm banana plug

## Thermocouple

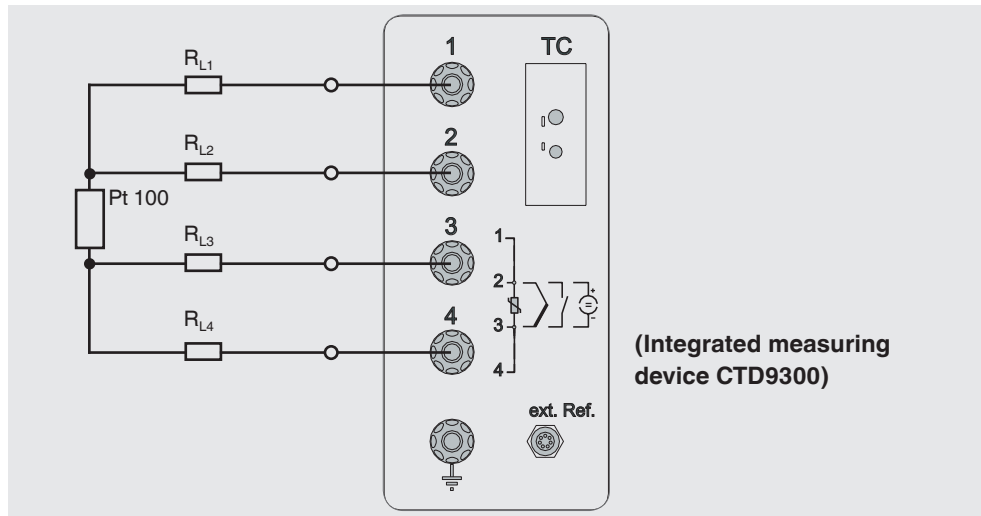
Specifications		Model CTP9000
Temperature range	°C	0 ... 1,300
Thermocouple		Type S per IEC 584, PtRh 10 % Pt
Tolerance		Class 1
Stability		< 0.5 after 250 h at 1,300 °C
Wire size, d x l	mm	0.5 x 1,500
Outer dimensions, d x l	mm	7 x 600
Immersion tube material		Ceramic C 799
Measuring line		800 mm with 4 mm banana plug

## Scope of delivery

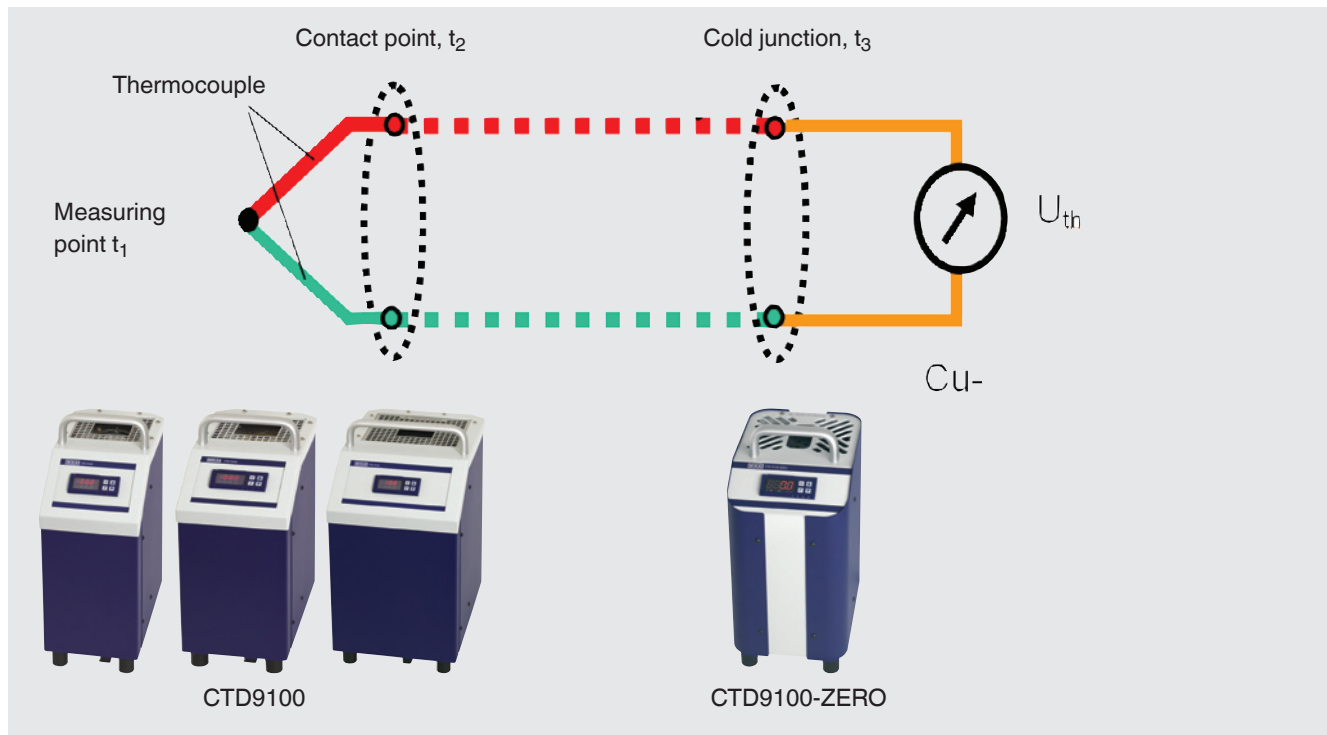
- Thermometer
- Transport case
- Optional: DKD/DAkkS calibration for 6 temperatures
- Calculation of the characteristic constant and table R(t<sub>90</sub>) degree by degree
- Cold junction in the metal tube, outer dimensions: d x l = 6 mm x 250 mm, measuring line: 2 m PVC cable, with 4 mm banana plug
- Optional: banana plug for model CTP1000

## Schematic representation of the connections

### Resistance thermometer



### Thermocouples



### Ordering information

Model / calibration / calculation of constant / transport case / cold junction / additional order details

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