

# Precision thermometer

## Model CTR2000



WIKA data sheet CT 60.10

### Applications

- Precision thermometer for very accurate temperature measurements in a range of -200 ... +962 °C
- Reference instrument for testing, adjusting and calibrating temperature measuring instruments in factories and calibration laboratories
- Self-contained, complete system, also suitable for on-site measurements/calibrations

### Special features

- Temperature range -200 ... +962 °C
- Accuracy: 0.01 °C
- 2 channels as standard with optional 8 channels
- 4-wire measurement, optional 3-wire
- SMART probe review and editor



Precision thermometer, model CTR2000

### Description

The model CTR2000 precision thermometer comprises two measurement versions: One version accepts only 4-wire PRTs, the other version accepts both 3- and 4-wire PRTs. The high-performance 2- or 8-channel, 3- and 4-wire precision digital thermometers is suitable for use with calibrated and uncalibrated Pt100 probes. It is characterised by its extended features for high usability and low life costs.

Using calibrated probes with the CTR2000 thermometer series choose between storing calibration data into memory in the instrument or into the probe's proprietary SMART connector. Calibration data stays permanently with the probe in this connector, which the CTR2000 series instantly recognises, ensuring best measurement accuracy.

Using a built-in calibration routine, the CTR2000 instrument range can be recalibrated using a calibrated, traceable reference resistor. This feature is password protected.

Other features have been included for CTR2000 range when using SMART probes, like the temperature watchdog and the calibration status monitor.

The temperature watchdog continuously monitors the temperature of SMART probes and, if any are used outside their specified working range, the probe history record is updated.

With this way, it can be seen at a glance if the probes have ever been used outside their calibrated range, as this may affect their calibration validity. The calibration status monitor alerts with an on-screen message when a SMART probe is due for recalibration.

# Specifications

## Model CTR2000

### Precision thermometer

Probe types	Industrial platinum resistance thermometers (PRTs) and standard platinum resistance thermometers (SPRTs) with $R_0 = 25 \Omega$ and $100 \Omega$ up to an alpha of 0.00392
Measuring inputs	2 or 8
Data entry format	ITS 90 and CVD for calibrated probes; or EN 60751 for uncalibrated probes
<b>Measuring ranges</b>	
Probe current	DC 1 mA switched polarity
Temperature range	-200 ... +962 °C, depending on thermometer probe
Accuracy 1)	0.01 K (4-wire) 0.03 K (3-wire, do not include uncertainties due to variations in sensor cables)

1) The accuracy in K defines the deviation between the measured value and the reference value. (Only valid for indicating instruments.)

### Digital indicator

#### Display

Screen	large graphic VFD display screen
Resolution	0.001 °C

#### Functions

Real-time clock	integrated clock with date
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#### Voltage supply

Power supply	AC 90 ... 264 V, 47 ... 63 Hz; universal rear input on rear panel
Power consumption	max. 30 VA

#### Permissible ambient conditions

Operating temperature	15 ... 25 °C
Storage temperature	-20 ... +50 °C

#### Communication

Interface	RS-232
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#### Case

Dimensions	168 x 108 x 215 mm (W x H x D)
Weight	1 kg

### CE conformity, certificates

#### CE conformity

EMC directive	2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (portable test and measuring equipment)
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#### Certificates

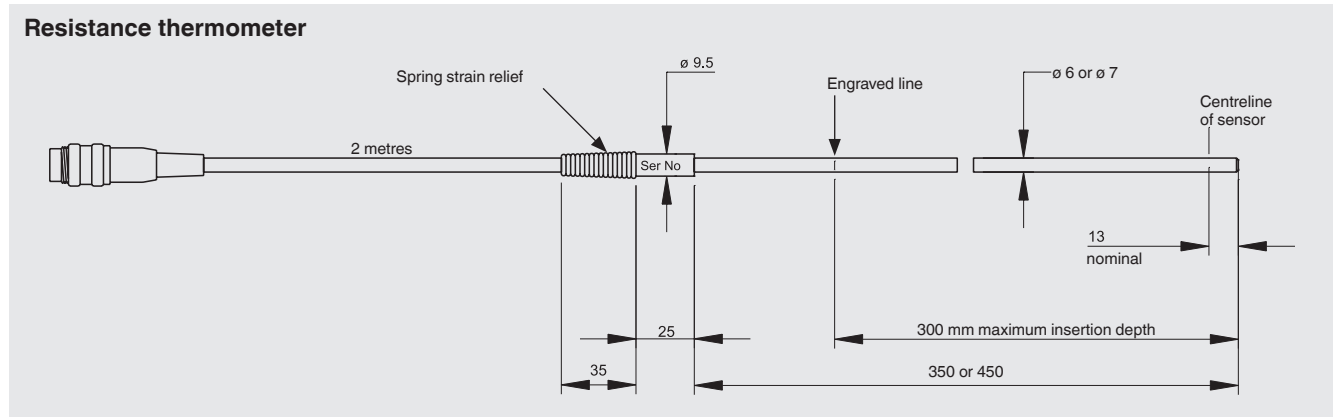
Calibration 2)	Standard: 3.1 calibration certificate per DIN EN 10204 Option: DKD/DAkkS calibration certificate
Recommended calibration interval	1 year (depending on the conditions of usage)

2) Only system calibration

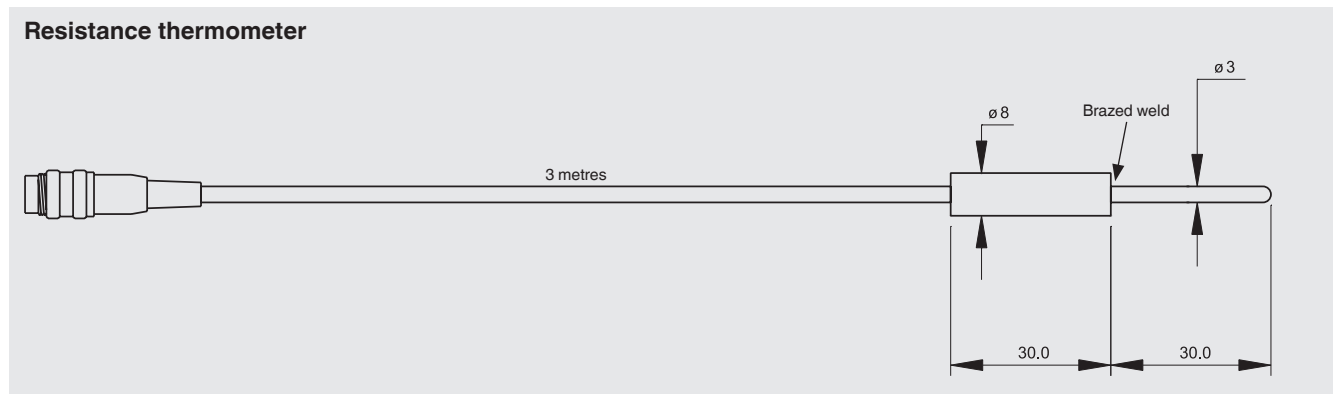
Approvals and certificates, see website

## Recommended temperature probes

### Temperature probe



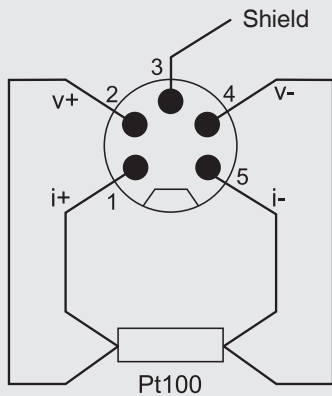
Resistance thermometer (immersion probe)	Temperature range
Pt100, d = 6 mm, l = 350 mm	-50 ... +250 °C
Pt100, d = 6 mm, l = 350 mm	-70 ... +450 °C
Pt100, d = 6 mm, l = 450 mm	-70 ... +650 °C



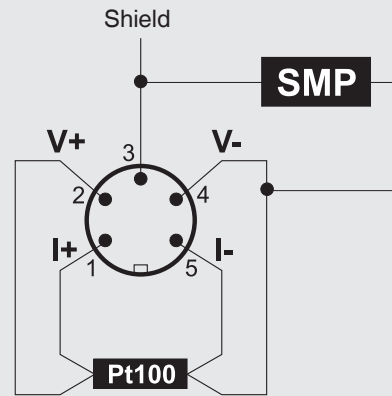
Resistance thermometer (immersion probe)	Temperature range
Pt100, d = 3 mm, l = 30 mm	-50 ... +200 °C

## Resistance thermometer connection, 4-wire (5-pin DIN connector)

View towards front panel connector



Viewed from top panel



## Options

### With DIN plug or SMART plug

With ASL's SMART connector on the probes, storing the data is needed only once - in the connector! The calibration data stays with the probe - permanently. It can even be used on another instrument without any further action.

The SMART connector saves time and reduces error. If there are existing calibrated or uncalibrated probes, no problem, CTR2000 automatically registers if a probe is SMART or normal.

## Features of the precision thermometer

- Easy to use
- Large graphic VFD display screen
- 2 channels as standard with optional 8 channels
- 4-wire measurement, optional 3-wire
- SMART probe review and editor



8-Channel precision thermometer, model CTR2000

- 1 Inputs
- 2 VFD display with status channel
- 3 Soft keys

## Operation

The instrument keypad consists of five function keys and three menu keys.

In temperature measurement mode the function keys are used to directly control the measurement operation of the instrument.

In instrument configuration mode the function keys operate as soft keys along with the menu keys to enable the operator to configure the instrument.



### Instrument function keys

Key symbol	Description	Function
<b>Selecting input channels</b>		
Ch	Select input channel 1 to 8	Selects and displays measurement channel 1 to 8
A-B	Select differential measurement ChA - ChB	Relative measurement function displays the difference between selected ChA and ChB inputs
<b>Setting up measurement options</b>		
Zero	Zero display measurement	Toggles the display zero (null) function
Hold	Hold display measurement	Toggles the display hold (measurement continues)
Units	Select display units	Rotates through the display units ( $\Omega$ , °C, °F or K)
<b>Menu functions</b>		
Menu	Select menu options	Cycles through the main menu functions of the instrument
Clear	Clear data entry	Clears any data entry errors or min/max statistics
Enter	Save entry	Saves data entry and returns to previous menu

## Scope of delivery

- Model CTR2000 precision thermometer incl. power cord
- Choice of model CTP5000 temperature probes

## Option

- DKD/DAkkS calibration certificate <sup>1)</sup>
- UKAS calibration certificate <sup>1)</sup>

1) Only system calibration

## Accessories

### Expansion

- Upgrade from 2 to 8 channels

### Temperature probe model CTP5000

- Immersion probe
- Customer-specific probes are available on request



2-Channel precision thermometer, model CTR2000

## Ordering information

CTR2000 / Number of channels / Resistance measurement / Additional order information

The specifications given in this document represent the state of engineering at the time of publishing.  
We reserve the right to make modifications to the specifications and materials.