

# 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                | 0.01 K (4-wire)<br>0.03 K (3-wire, do not include uncertainties due to variations in sensor cables)  |

### Digital indicator

#### Display

|            |                                  |
|------------|----------------------------------|
| Screen     | large graphic VFD display screen |
| Resolution | 0.001 °C                         |

#### Functions

|                 |                            |
|-----------------|----------------------------|
| Real-time clock | integrated clock with date |
|-----------------|----------------------------|

#### 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 |
|-----------|--------|

#### 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) |
|---------------|---|

#### Certificates

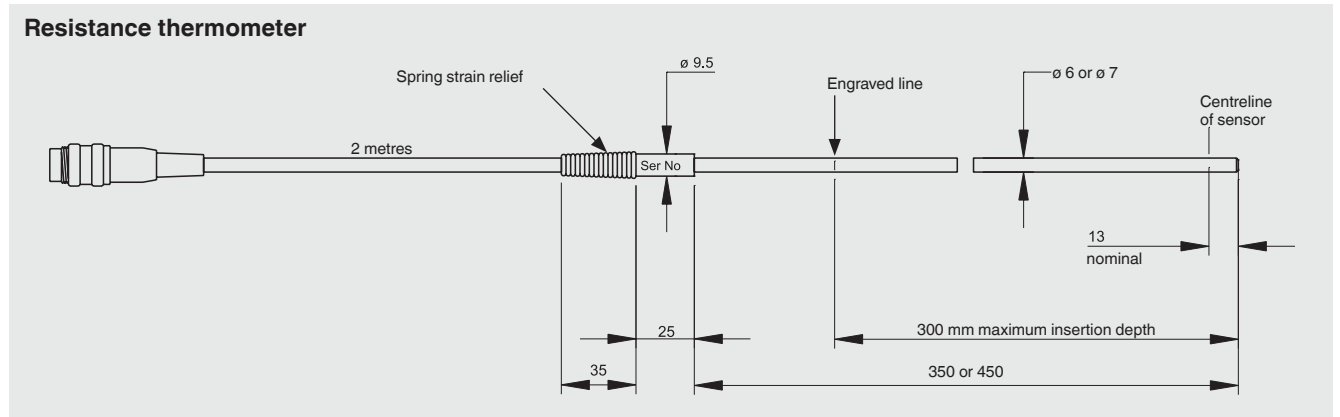
|                                  |   |
|----------------------------------|---|
| Calibration <sup>1)</sup>        | Standard: 3.1 calibration certificate per DIN EN 10204<br>Option: DKD/DAkkS calibration certificate |
| Recommended calibration interval | 1 year (depending on the conditions of usage)   |

1) Only system calibration

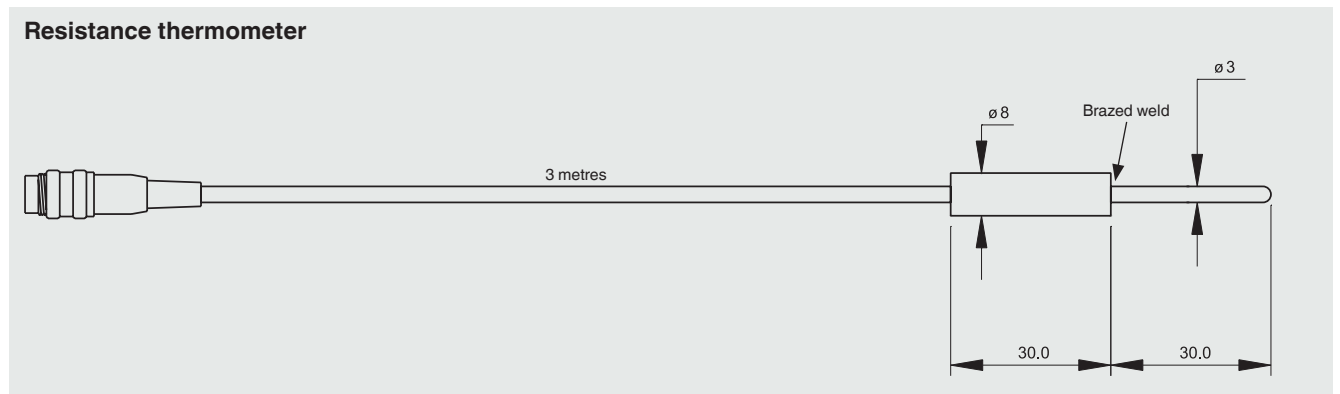
Approvals and certificates, see website

## Recommended temperature probes

### Temperature probe

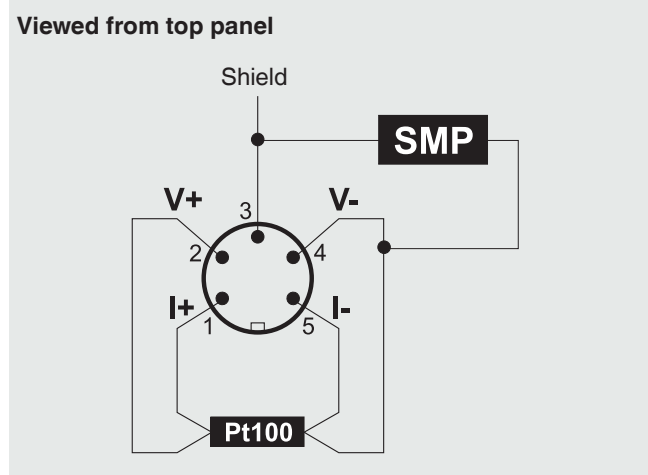
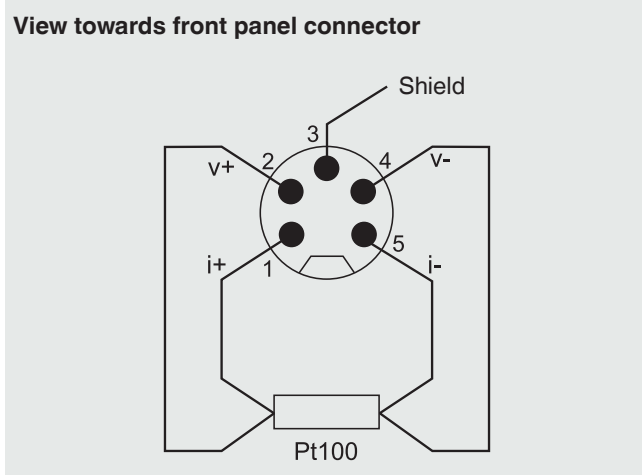


| Resistance thermometer (immersion probe) | Temperature range |
|--|-------------------|
| Pt100, d = 6 mm, l = 350 mm              | -50 ... +250 °C   |
| Pt100, d = 6 mm, l = 350 mm              | -70 ... +450 °C   |
| Pt100, d = 6 mm, l = 450 mm              | -70 ... +650 °C   |



| 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)



## 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<br>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

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