

Precision thermometer Multi-channel version Model CTR2000

WIKA data sheet CT 60.10

Applications

- Precision thermometer for high-accuracy temperature measurement in the range from -200 ... +962 °C [-328 ... +1,764 °F]
- Reference instrument for factory and calibration laboratories for testing, adjusting and calibrating temperature measuring instruments
- Stand-alone complete system, also suitable for measurements or on-site calibrations

Special features

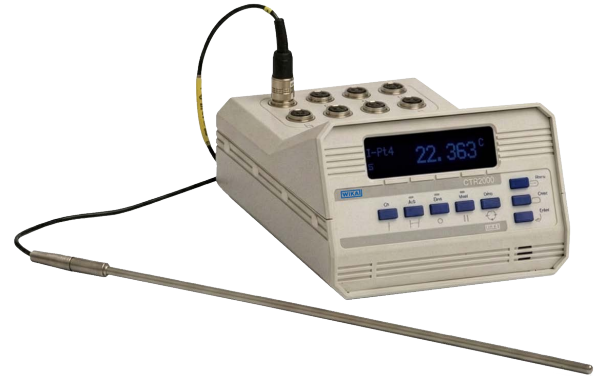
- Temperature range -200 ... +962 °C [-328 ... +1,764 °F]
- Accuracy: 0.01 °C
- 8 channels available
- 3-wire and 4-wire measurement possible
- Revision and processing of SMART probes

Description

The precision thermometer model CTR2000 accepts both 3- and 4-wire resistance thermometers. This powerful digital 8-channel precision thermometer is suitable for use with calibrated and uncalibrated Pt100 probes. The model is characterised by its advanced features for high user-friendliness and low life cycle costs.

When using calibrated probes with the CTR2000, the calibration data can be stored either in the instrument or in the probe's protected SMART connector. Calibration data stays permanently with the probe in this connector, which the CTR2000 series instantly recognises, ensuring best measurement accuracy.

A built-in calibration programme can be used to recalibrate the CTR2000 instrument series using a calibrated, traceable reference resistor. This feature is password-protected.



Precision thermometer, model CTR2000

Further functions have been integrated into the CTR2000 series for use with SMART probes, such as the temperature monitor and calibration status monitoring. The temperature monitor permanently monitors the temperature of the SMART probes and updates the probe log if they are used outside their specified operating range.

This allows you to see at a glance whether 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

Basic information		
Instrument		
Instrument version	Desktop instrument	
Dimensions (W x H x D)	168 x 108 x 215 mm [6.61 x 4.25 x 8.46 in]	
Weight	1 kg [2.21 lb]	
Warm-up time	Min. 120 minutes	
Measuring input	8 channels	
Input connections	5-pin DIN connector	
Resistance measurement	■ 3- and 4-wire measurement ■ 4-wire measurement	
Sensor currents	DC 1 mA alternating polarity	
Input impedance	> 10 MΩ	
Data entry format	■ ITS-90 and CvD for calibrated resistance thermometers ■ Standard conversion per EN 60751 for uncalibrated resistance thermometers	
Probe types	Industrial platinum resistance thermometers (PRTs)	
	Standard platinum resistance thermometers (SPRTs)	■ $R_0 = 25 \Omega$ ■ $R_0 = 100 \Omega$ ■ $R_a = 0.00392$
Measuring range		
PRT/SPRT	Resistance	0 ... 400 Ω
	ITS-90	-200 ... +962 °C [-328 ... +1,764 °F]
	EN 60751	-200 ... +850 °C [-328 ... +1,562 °F]
	CvD	-150 ... +850 °C [-238 ... +1,562 °F]
Digital display		
Display	Large graphic VFD display screen with a resolution of 128 x 18 pixels	
Resolution	0.001 °C	
Units	■ °C ■ °F ■ K ■ Ω	
Sample rate	3-wire measurement	4 seconds
	4-wire measurement	2 seconds
Functions		
Real-time clock	Integrated clock with date	

Accuracy specifications ¹⁾		
Resistance		
4-wire		±4 mΩ (at +20 °C ±5 °C [at +41 °F ±5 K])
3-wire ²⁾		±12 mΩ (at +20 °C ±5 °C [at +41 °F ±5 K])
Temperature coefficient		0.2 ppm/°C (0.05 mK/°C)
Long-term stability		±25 ppm (±2.5 mΩ) / year
Temperature probe		
4-wire		±0.01 K
3-wire ²⁾		±0.03 K

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

²⁾ Do not include uncertainties due to fluctuations in the sensor cable.

Communication	
Interface	RS-232
Baud rate	9600
Command sets	SCPI

Voltage supply and performance data	
Operating voltage	AC 90 ... 264 V / 47 ... 63 Hz
Power consumption	Max. 30 VA
Power cord	■ Europe ■ USA/Canada ■ UK ■ China

Operating conditions	
Operating altitude	≤ 2,000 m [≤ 6,561 ft] above sea level
Place of use	Indoor Not for wet locations
Operating temperature	0 ... 40 °C [32 ... 104 °F] Maximum achievable accuracy within 15 ... 25 °C [59 ... 77 °F]
Storage temperature range	-20 ... +50 °C [-4 ... +122 °F]
Humidity	0 ... 80 % relative humidity
Condensation	Non-condensing
EMC (HF field)	EN 61326-1 emission (group 1, class B) and immunity (industrial application)

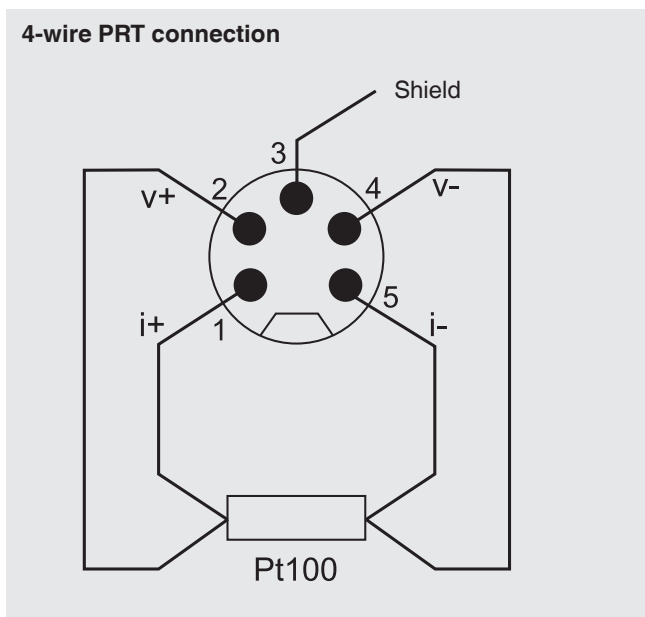
Approvals

Logo	Description	Country
	EU declaration of conformity	European Union
	EMC Directive EN 61326 emission (group 1, class B) and immunity (industrial environments)	
	Low Voltage Directive	
	RoHS directive	

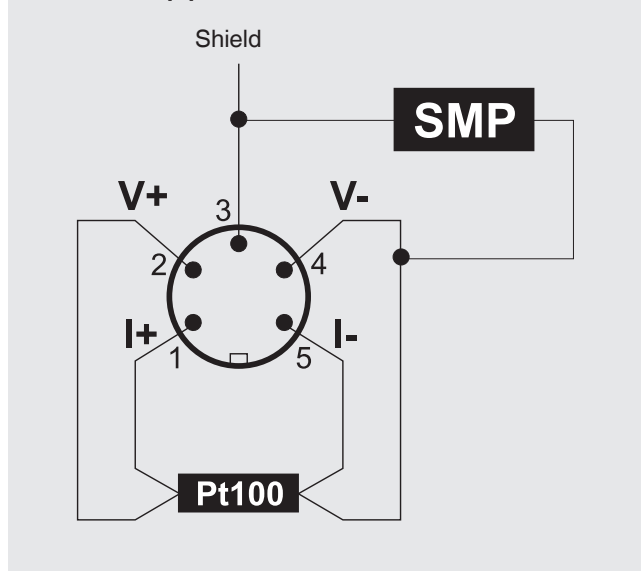
→ For approvals and certificates, see website

Connection for resistance thermometer; 4-wire (5-pin DIN connector)

View towards front panel connector



View from top panel



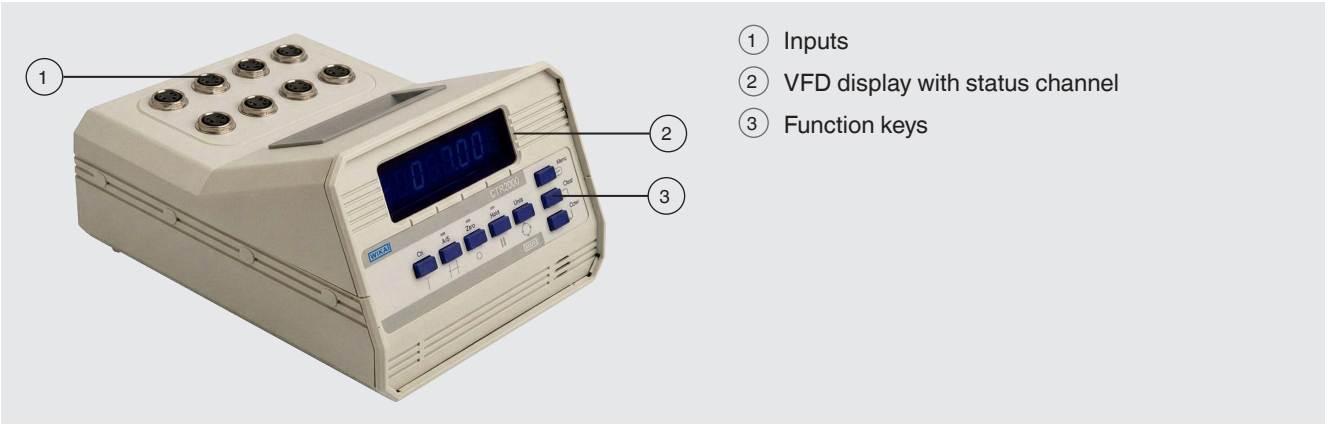
DIN connector or SMART connector

If the probes are connected to a SMART connector from ASL, the data only needs to be stored once in the connector. The probe can easily be used with another instrument.

The SMART connector saves time and reduces error. If calibrated and non-calibrated probes are present at the same time, the CTR2000 automatically recognises whether it is a SMART or normal probe.

Features of the precision thermometer

- Easy to use
- Large graphic VFD display screen
- 8 channels available
- 4-wire measurement, alternatively 3-wire measurement also possible
- Revision and processing of SMART probes



Operation

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

In temperature measurement mode, the function keys are used for direct control of the instrument’s measurement process.

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



Function keys of the instrument

Key symbol	Description	Function
Selecting input channels		
Ch	Select input channel 1 to 8	Selects and displays measuring channel 1 to 8
A-B	Select differential measurement ChA - ChB	Relative measurement function displays the difference between selected ChA and ChB inputs.
Setting up measuring options		
Zero	Zero measurement display	Deactivates zero function display
Hold	Stop measurement display	Deactivates “Stop measurement” display (measurement continues)
Units	Select units	Cyclical switching of the units (Ω, °C, °F or K)
Menu functions		
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

Accessories and spare parts

Description		Order code
		CTX-A-A6
-	Case Transport case, robust Suitable for one CTR2000 and two temperature probes model CTPxxxx of your choice	-C5-
Ordering information for your enquiry:		
1. Order code: CTX-A-A6 2. Option:		↓ []

Description ¹⁾		Order code
	Temperature probe model CTP5000 Immersion probe	CTP5000
	Temperature probe model CTP5000-R25 Immersion probe	CTP5000-R25
	Temperature probe model CTP6000 Immersion probe	CTP6000

1) The figures are an example and may change in design, material composition and representation depending on the state of the art.

Scope of delivery

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

Ordering information

Model / Number of channels / Resistance measurement / Number of resistance thermometers model CTP5000 / Number of resistance thermometers model CTP5000-R25 / Number of resistance thermometers model CTP6000 / Power cord / Transport case / Further approvals / Additional ordering information

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We reserve the right to make modifications to the specifications and materials.

