Precision thermometer
Model CTR5000

ASL

WIKA data sheet CT 60.20

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, optional 0.005 °C
- 2 channels as standard with optional 4 or 6 channels
- Expandable up to an additional 64 channels with multiplexers
- SMART probe review and editor

Precision thermometer model CTR5000

Description

The model CTR5000 precision thermometer also comes with two channels as standard, but four and six channel variations are available with each channel able to work with up to 70 user-defined probes so providing spot on calibration. It also offers single, differential and alternative measurement modes.
It can also provide a sequential channel scan with a data logging function that can also be sent to PC or USB memory stick. The CTR5000 also offers single, differential and alternative measurement modes with the ability to provide direct comparison calibration.

Using calibrated probes with the precise thermometer choose between storing the calibration data into the memory of the instrument or if using ASL SMART probes can be entered into these.

The SMART probe data can also be reviewed and edited therefore easy calibration of ASL SMART probes. The instrument can also generate coefficients from reference temperature/resistance data pairs.

The instrument is capable of measuring temperature ranges to meet ITS 90, CVD, EN 60751 and IEC 751 standards and results are delivered via a LCD backlit display with large numeric, statistical or graphical information. It also comes with USB interface as standard, but optional RS-232, IEEE or LAN interfaces are also available.

To ensure long term reliability the precision thermometer uses surface mount technology with no mechanical relays or potentiometers.

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Specifications
Model CTR5000

Hand-held thermometer	
Probe types	Industrial platinum resistance thermometers (PRTs) and standard platinum resistance thermometers (SPRTs) with R_O = 25 Ω and 100 Ω up to an alpha of 0.00392
Measuring inputs	2 (front panel), 4 or 6 (rear panel) Expandable up to an additional 64 channels with CTS5000 multiplexers
Data entry format	ITS 90 and CVD for calibrated probes; or EN 60751 for uncalibrated probes Optional: coefficient generation from data pairs
Measuring ranges	
Probe current	1 mA (Pt100); optional auto-select 1 mA, 2 mA
Temperature range	-200 ... +962 °C, depending on thermometer probe
Accuracy	0.01 K, optional 0.005 K

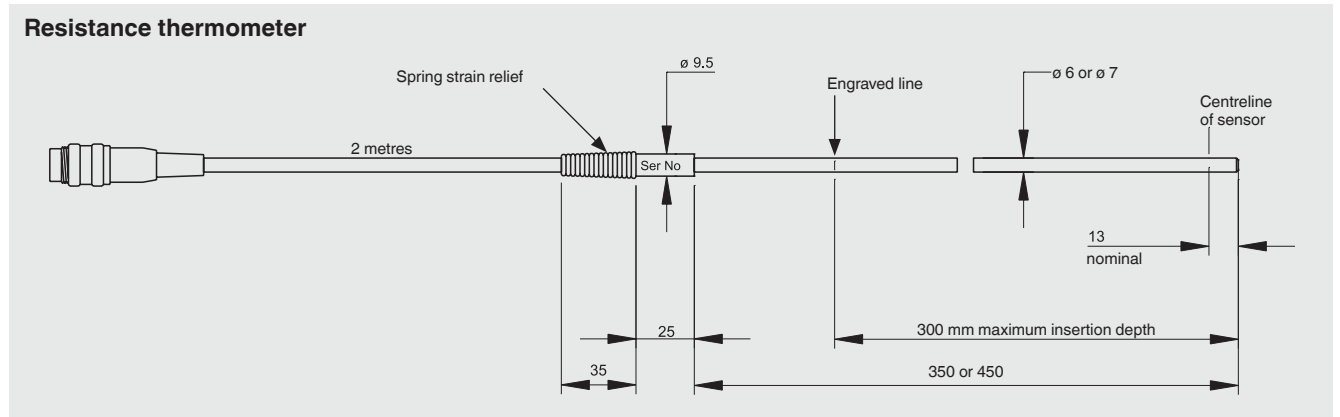| Digital indicator	
Display	
Screen	LCD screen with backlighting
Resolution	0.001 °C, 0.0001 Ω (user selectable)
Functions	
Memory (optional)	Sequential scan of all channels (only when a model CTS5000 multiplexer is used) log up to 8,000 individual readings to internal memory export logged data directly from PC or USB memory stick
Real-time clock	integrated clock with date and year
Voltage supply	
Power supply	AC 90 ... 264 V, 47 ... 63 Hz; universal rear input on rear panel
Power consumption	max. 25 VA
Fuse	AC 250 V, 1 A (anti surge)
Permissible ambient conditions	
Operating temperature	15 ... 25 °C
Storage temperature	-20 ... +50 °C
Communication	
Interface	Standard: USB Optional: RS-232, IEEE-488.2 or LAN Ethernet
Case	
Dimensions	260 x 80 x 270 mm (W x H x D)
Weight	2.7 kg

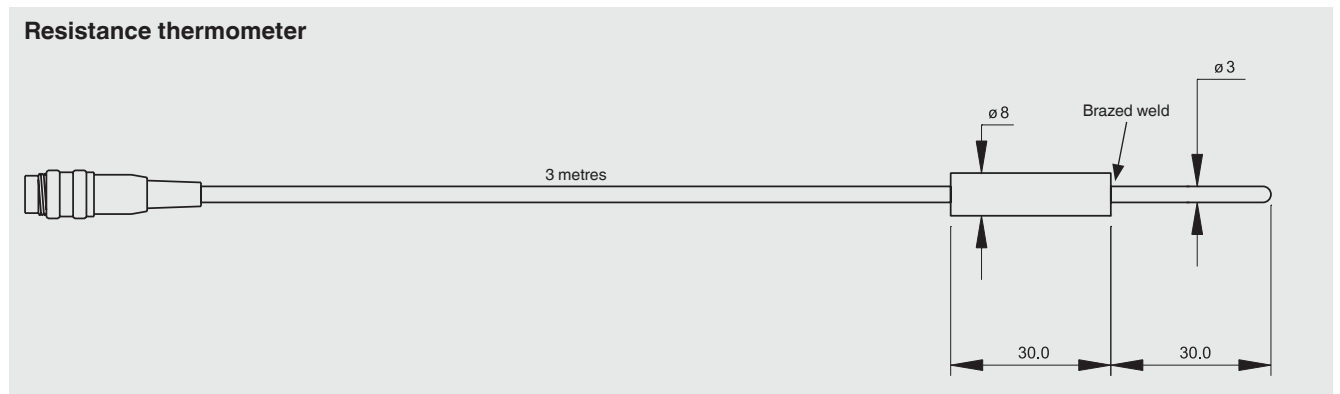| CE conformity, certificates	
CE conformity	
EMC directive	2004/108/EC, EN 61326 emission (group 1, class B) and interference immunity (portable test and measuring equipment)
Certificates	
Calibration [1]	Standard: 3.1 calibration certificate per DIN EN 10204 Option: DKD/DAkkS calibration certificate
Recommended calibration interval	1 year (depending on the conditions of usage)

1) Only system calibration

Approvals and certificates, see website
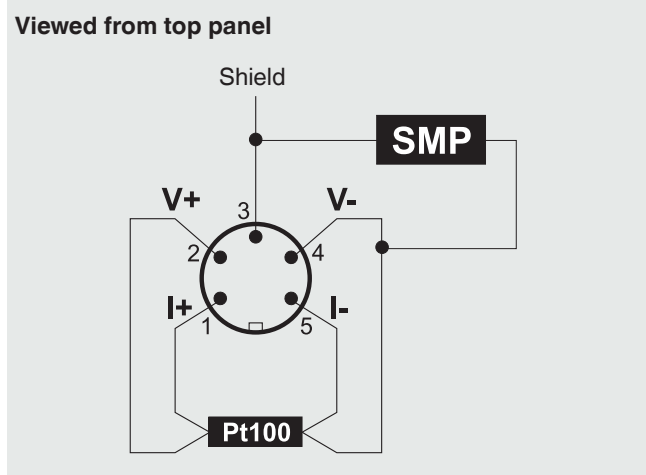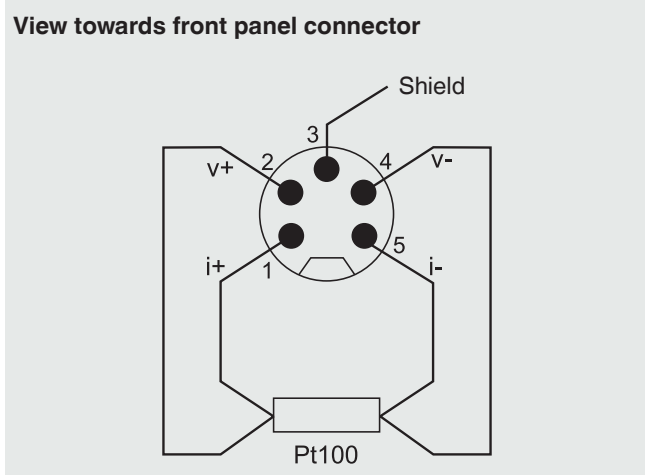
Dimensions in mm

Temperature sensors

Resistance thermometer

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

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

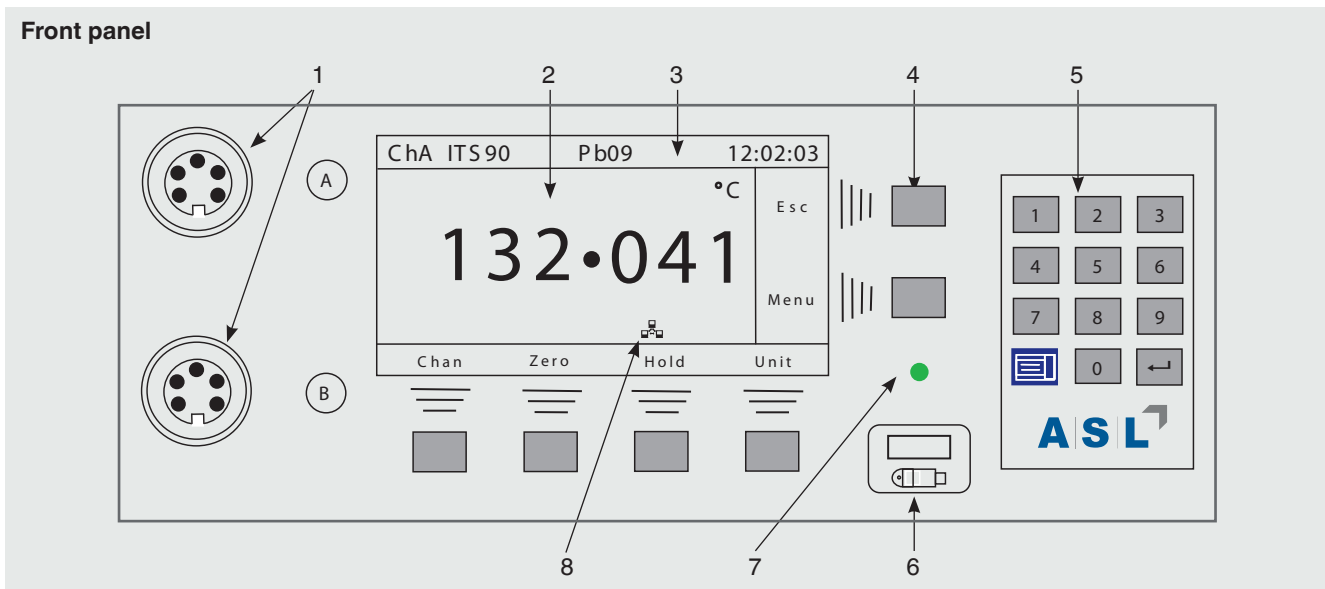**Viewed from top panel**

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, CTR5000 automatically registers if a probe is SMART or normal.

Features of the precision thermometer

- Simple handling
- Graphical LCD for excellent viewing of results and instrument settings
- AC technology: Immunity to most sources of errors present in DC bridges
- Statistical, graphical and large display modes

- Expandable multi-channel input multiplexing (up to 64 additional channels)
- USB communication interface as standard for automated monitoring and calibration
- Applications

Front panel

1. Inputs
2. LCD
3. Status line
4. 6 soft keys
5. Numeric keypad

6. USB stick
7. Status LED
8. Status icons

Operation

The instrument's keys are grouped by type and consist of six soft-keys and a twelve-key numerical keypad. The soft keys are used to access data and/or functions within the instrument.
The CTR5000 keypad is shown in detail below. The keys are used to select the various functions and menu options and to control the instrument. Generally, all commonly used functions are available at the top level and no more than one or two menu levels are below the other commonly used settings. A few (infrequently used options) require three or four menu levels.

Operation is very simple and straightforward, once familiar with the instrument.

The soft-keys are used to select common functions, **Chan**, **Zero**, **Hold** and **Unit**. The blue display key is used to select other display modes. All other settings and functions are accessed via the menu key. The numeric keypad is used to enter numerical values or to directly select a measurement channel 10 or menu.

Instrument functions keys

Key symbol	Description	Function
Chan	Select input channel	Displays the channel select options
Zero	Zero display measurement	Toggles the display zero (null) function
Hold	Hold display measurement	Toggles the display hold (measurement continues)
Unit	Select display units	Rotates through the display units (W, °C, °F or K)
Esc	Escape	Returns without action. The LCD is redrawn
Menu	Display menu	Used to select all other options and functions

Numeric keypad

Key symbol	Description	Function
0 ... 9	Numerical data entry	Enters a numerical digit, selects a numeric menu or selects a channel
Enter	Enter data	Used to select a measurement channel or after numerical data entry
Disp	Display mode	Changes the LCD between the 4 display modes in normal, large, statistical and graph

Scope of delivery

- Model CTR5000 precision thermometer incl. power cord and USB cable
- Choice of model CTP5000 temperature probes
- Choice of model CTS5000 multiplexer

Option

- DKD/DAkkS calibration certificate [1]
- UKAS calibration certificate [1]

1) Only system calibration

Accessories

Expansion model CTR5000
- 2 Channels expansion card (Maximum of 2 expansion card per CTR5000)

Temperature probes model CTP5000
- Immersion probe
- Customer-specific probes are available on request

Multiplexer model CTS5000
- 8-Channel multiplexer (Maximum of 4 multiplexer per CTR5000)
- 16-Channel multiplexer (Maximum of 4 multiplexer per CTR5000)

Test case
- Transport case, robust

Interface
- Interface card RS-232
- Interface card IEEE
- Interface card LAN (Ethernet)

Software
- ULog

Ordering information

CTR5000 / Number of channels / Accuracy / Interface / Numbers of multiplexer CTS5000 / Number of channels per multiplexer CTS5000 / Transport case / Additional order information

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