Micro calibration bath
Portable version
Models CTB9100-165, CTB9100-225

Applications

- Calibration in the pharmaceutical industry and in the food industry
- On-site calibration of short temperature probes
- Simultaneous calibration of several probes

Special features

- Two ranges: -30 ... +165 °C [-22 ... +329 °F] and 40 ... 255 °C [104 ... 491 °F]
- Large tank of Ø 60 x 150 mm [2.36 x 5.91 in]
- Short response time of the bath temperature
- Continuously adjustable stirrer



Micro calibration baths
Fig. left: Model CTB9100-165
Fig. right: Model CTB9100-225

Description

Range of applications
The micro calibration baths from WIKA are the ideal complement to the temperature dry-well calibrators of the CTD9100 and CTD9300 series.
In dry-well temperature calibrators, as a result of their low insertion depth and the resulting heat dissipation errors, short probes lead to a significant increase in measurement uncertainty. Even if one compares the test items with an external reference thermometer, they cannot become too short. Once the stem length drops below 70 mm [2.76 in], a micro bath is definitely preferable to a temperature dry-well calibrator.

If several probes are to be calibrated at the same time, the micro calibration bath also offers advantages: Thermometers with different stem diameters can be calibrated together without having to procure exactly the right inserts.

This procedure is particularly advantageous for on-site calibrations, if the variety of test items and their stem diameters is large or not known.
The instruments are typically used in the pharmaceutical industry and in the food industry, particularly for on-site calibration.

Easy to use
The CTB9100 micro calibration baths operate with temperature-controlled liquid tanks with a usable working area of [Ø 60 x 150 mm [2.36 x 5.91 in] depth. The maximum insertion depth of the test items reduces the heat dissipation errors and thus leads to smaller measurement uncertainties. The calibration temperature, adjusted simply using two buttons on the controller, can be very quickly controlled. The actual and set temperature can be displayed simultaneously on a large 4-digit, high-contrast LED display. Thus reading errors are virtually eliminated.

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Smart in sensing

Data sheets showing similar products:
Temperature multi-function calibrator; model CTM9100-150; see data sheet CT 41.40
Calibration bath; models CTB9400 and CTB9500; see data sheet CT 46.20

Overview of versions of the models CTB9100

Two instruments for the temperature range from -30 ... +255 °C [-22 ... +491 °F]

Model CTB9100-165
Temperature range from -30 ... +165 °C [-22 ... +329 °F]

This micro calibration bath is an efficient tool for the calibration of thermometers. It works with Peltier elements and can thus reach test temperatures below ambient temperature.
New multistage Peltier elements ensure a good long-term stability and high reliability within the entire operating range.
Due to its capacity for active cooling, it is often used in biotechnology, pharmaceutical and food industries.



Model CTB9100-225
Temperature range from 40 ... 255 °C [104 ... 491 °F]

The CTB9100-225 is used in the medium temperature range to 255 °C [491 °F]. It generates its temperature with electrical resistance heating. For cooling down, the fan is run at its highest setting. Thus it is possible to achieve cooling from 255 °C to 50 °C [491 °F to 122 °F] within just 30 minutes.
In addition to short heating and cooling times, this bath is set apart by its light weight and compact design. It can be used in a wide range of industries.



Specifications

Basic information		
Model	**CTB9100-165**	**CTB9100-225**
Temperature range	-30 ... +165 °C [-22 ... +329 °F]	40 ... 255 °C [104 ... 491 °F]
Temperature stability [1]	→ See “Accuracy specifications” table	
Tank		
Dimension for calibration insert	Ø 60 x 165 mm [2.36 x 5.91 in]	
Volume	Approx. 0.6 litre	
Insertion depth	150 mm [5.91 in]	
Dimensions (W x D x H)		
Instrument without carrying handle	215 x 305 x 425 mm [8.46 x 12.00 x 16.73 in]	150 x 270 x 400 mm [5.91 x 10.63 x 15.75 in]
Height of carrying handle	50 mm [1.97 in]	
Weight	Approx. 12.5 kg [27.6 lb]	Approx. 7.5 kg [16.5 lb]

1) Maximum temperature difference at a stable temperature over 30 minutes.

Accuracy specifications		
Model	**CTB9100-165**	**CTB9100-225**
Accuracy [1]	±0.20 K	±0.30 K
Temperature stability [2]	±0.05 K	
Temperature distribution		
Axial homogeneity	Depending on temperature, temperature probes and their number	
Radial homogeneity [3]	Depending on temperature, temperature probes and their number	

1) Is defined as the measuring deviation between the measured value and the reference value.
2) Maximum temperature difference at a stable temperature over 30 minutes.
3) Maximum temperature difference between the bores (all thermometers inserted to the same depth).

The measurement uncertainty is defined as the total measurement uncertainty (k = 2), which includes the following components: Accuracy, Measurement uncertainty of reference, stability and homogeneity.

Temperature control		
Heating time		
Model CTB9100-165	From +20 °C to +160 °C [from +68 °F to +320 °F]	Approx. 45 min
Model CTB9100-225	From +20 °C to +225 °C [from +68 °F to +437 °F]	Approx. 10 min
Cooling time		
Model CTB9100-165	From +20 °C to -20 °C [from +68 °F to -4 °F]	Approx. 30 min
Model CTB9100-225	From +225 °C to +50 °C [from +437 °F to +122 °F]	Approx. 30 min
Stabilisation time [1]	Depending on temperature and temperature probe	

1) Time before reaching a stable value.

Digital display instrument	
Display	2-line, 4-digit LED display
Display range	-199.9 ... +999.9 °C [-199.9 ... +999.9 °F]
Resolution	■ 0.01 to 100 °C [212 °F] ■ 0.1 > 100 °C [> 212 °F]
Units	Adjustable via menu ■ °C ■ °F

Communication	
Interface	RS-485 to USB
Communications protocol	Modbus® RTU Details and further possibilities on request
Baud rate	9600

Voltage supply and performance data		
Model	**CTB9100-165**	**CTB9100-225**
Operating voltage	AC 100 ... 240 V, 50/60 Hz	AC 230 V, 50/60 Hz AC 100 ... 240 V, 50/60 Hz [1]
Power consumption	375 VA	1,000 VA
Fuse	6.3 A slow blow fuse	10 A slow blow fuse (at AC 100 ... 240 V) 6.3 A slow blow fuse (at AC 230 V)
Power cord	■ For Europe ■ For USA/Canada ■ For Switzerland ■ For UK	

1) The auxiliary power AC 100 ... 240 V, 50/60 Hz must be specified with the order, otherwise AC 230 V will be assumed.
This version is only available for the temperature range to +255 °C [+491 °F].

Operating conditions	
Place of use	For indoor use only
Altitude	Up to 2,000 m [6,562 ft] above sea level
Operating temperature	0 ... 50 °C [32 ... 122 °F] The ambient temperature influences the heating/cooling behaviour
Storage and transport temperature range	-10 ... +60 °C [14 ... 140 °F]
Humidity	< 80 % to 31 °C [88 °F], decreasing linearly to 50 % at 40 °C [104 °F]
Condensation	Non-condensing
Pollution degree per IEC 61010-1	2
Overvoltage category	II
Mounting position	Upright/Vertical standing

Approvals

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

Certificates

Description	
Calibration [1]	■ 3.1 inspection certificate per EN 10204 ■ DAkkS calibration certificate (traceable and accredited in accordance with ISO/IEC 17025)
Recommended calibration interval	1 year (dependent on conditions of use)

1) Calibration is carried out, as standard, at 6 temperatures evenly distributed over the temperature range. On request, special points are also possible.

→ For approvals and certificates, see website

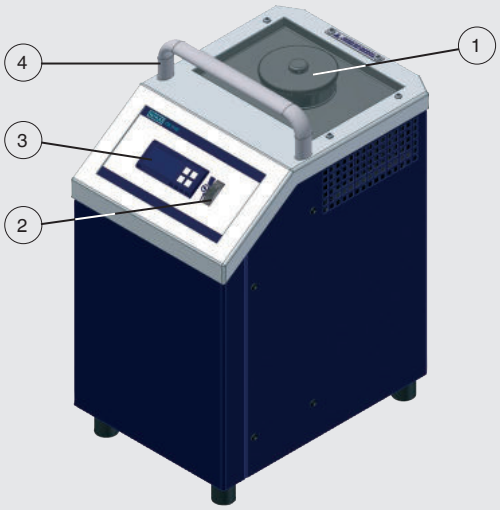
Calibration liquids [1]

Calibration liquid	Calibration range	Flash point [2]	Use in calibration bath	
			Model CTB9100-165	Model CTB9100-225
DC 200.05 silicone oil	-40 ... +130 °C [-40 ... +266 °F]	133 °C [271.4 °F]	From -35 ... +130 °C [-31 ... +266 °F] very well usable	Not recommended
DC 200.10 silicone oil	-35 ... +160 °C [-31 ... +320 °F]	163 °C [325.4 °F]	From -35 ... +160 °C [-31 ... +320 °F] well usable	Not recommended
DC 200.20 silicone oil	7 ... 220 °C [45 ... 428 °F]	232 °C [450 °F]	Not recommended	From +40 ... +225 °C [+104 ... +437 °F] well usable
DC 200.50 silicone oil	25 ... 270 °C [77 ... 518 °F]	280 °C [536 °F]	Not recommended	From +80 ... +255 °C [+176 ... +491 °F] well usable

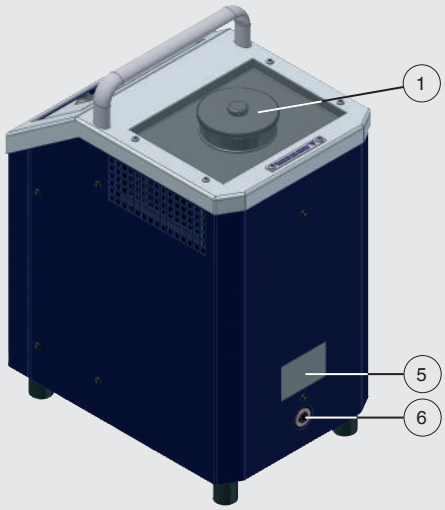
1) Other liquids could be used as agreed, provided that the temperature range and viscosity are suitable for the application.
2) Flash point (FP) with open cup

Isometric views

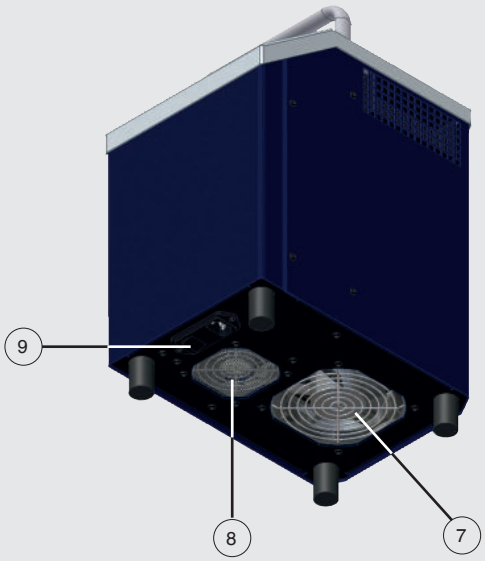
View from the front



View from the rear



View from below



1. Temperature dry well
2. Controller for the stirrer
3. Digital display with controller/display with touchscreen
4. Carrying handle
5. Product label
6. RS-485 interfaces
7. Fan 1: ventilation for tank or temperature dry well cooling
8. Fan 2: ventilation for case cooling
9. Mains connection socket with main switch and microfuse

Accessories and spare parts

Accessories for model CTB9100-165 [1]		Order code
Description		CTX-A-B1
	**DC 200.05 silicone oil** In 1-litre plastic bottle For temperature range -40 ... +130 °C [-40 ... +266 °F]; FP = 133 °C [271.4 °F]	-05-
	DC 200.10 silicone oil In 1-litre plastic bottle For temperature range -35 ... +160 °C [-31 ... +320 °F]; FP = 163 °C [325.4 °F]	-10-
	DC 200.20 silicone oil In 1-litre plastic bottle For temperature range 10 ... 220 °C [50 ... 428 °F]; FP = 230 °C [446 °F]	-20-
	DC 200.50 silicone oil In 1-litre plastic bottle For temperature range 25 ... 250 °C [77 ... 482 °F]; FP = 280 °C [536 °F]	-50-
	**Transport case**	-TB-
	**Castors for transport case**	-CC-
	**Calibration software** Software package to operate the calibrator	-CS-
-	**Operating instructions English-German**	ML
	**Insert for liquids without filling** Consisting of: Insert with leak-proof cover, probe basket, magnetic stirrer and lifter, replacement tool ⚠ **New adjustment required!**	-BE-
	**Probe basket** Height-adjustable	-SK-
-	**Probe holder** For cooling instruments of the CTD9xxx series	-FL-
	**Screw-on lid** Material: stainless steel	-LM-
	**Screw-on lid** Material: plastic	-LP-

Accessories for model CTB9100-165 [1]		Order code
Description		**CTX-A-B1**
	**Screw-on lid** Material: plastic With bore 1 x G ½	-L1-
	**Screw-on lid** Material: plastic With 6 x G 1⁄4 bores	-L6-
	Magnetic stirrer ⚠ **Not suitable for insert for liquids!**	-MS-
-	**Interface cable** With integrated RS-485 to USB 2.0 converter	-RC-
	**Power cord** EU	-EU-
	Switzerland	-CH-
	UK	-UK-
	USA/Canada	-US-
Ordering information for your enquiry:		
	1. Order code: CTX-A-B1 **2. Option:**	⇓ **[ ]**

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

Accessories for model CTB9100-225 [1]		Order code
Description		**CTX-A-B2**
	**DC 200.05 silicone oil** In 1-litre plastic bottle For temperature range -40 ... +130 °C [-40 ... +266 °F]; FP = 133 °C [271.4 °F]	-05-
	DC 200.10 silicone oil In 1-litre plastic bottle For temperature range -35 ... +160 °C [-31 ... +320 °F]; FP = 163 °C [325.4 °F]	-10-
	DC 200.20 silicone oil In 1-litre plastic bottle For temperature range 10 ... 220 °C [50 ... 428 °F]; FP = 230 °C [446 °F]	-20-
	DC 200.50 silicone oil In 1-litre plastic bottle For temperature range 25 ... 250 °C [77 ... 482 °F]; FP = 280 °C [536 °F]	-50-
	**Transport case**	-TB-
	**Castors for transport case**	-CC-
	**Calibration software** Software package to operate the calibrator	-CS-
-	**Operating instructions English-German**	ML

Accessories for model CTB9100-225 [1]		Order code
Description		CTX-A-B2
	**Insert for liquids without filling** Consisting of: Insert with leak-proof cover, probe basket, magnetic stirrer and lifter, replacement tool ⚠ **New adjustment required!**	-BE-
	**Probe basket** Height-adjustable	-SK-
-	**Probe holder** For CTD9xxx series heating instruments	-FH-
	**Screw-on lid** Material: stainless steel	-LM-
	**Screw-on lid** Material: plastic	-LP-
	**Screw-on lid** Material: plastic With bore 1 x G ½	-L1-
	**Screw-on lid** Material: plastic With 6 x G 1⁄4 bores	-L6-
-	**Magnetic stirrer** ⚠ **Not suitable for insert for liquids!**	-MS-
	Interface cable With integrated RS-485 to USB 2.0 converter	-RC-
	**Power cord** Europe	-EU-
	Switzerland	-CH-
	UK	-UK-
	USA/Canada	-US-
Ordering information for your enquiry:		
	1. Order code: CTX-A-B2 **2. Option:**	⇓ **[ ]**

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

- Micro calibration bath model CTB9100-165 or CTB9100-225
- Power cord 1.5 m [5 ft]
- Screw-on lid, stainless steel
- Operating instructions
- Calibration certificate

Ordering information

Calibrator CTB9100-165
CTB9100-165 / Unit / Software / Insert for liquids / Calibration / Transport case / Interface converter / Power cord / Further approvals / Additional ordering information

Calibrator CTB9100-225
CTB9100-225 / Temperature range / Auxiliary power / Unit / Software / Insert for liquids / Calibration / Transport case / Interface converter / Power cord / Further approvals / Additional ordering information

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

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