Calibration bath
Model CTB9400, heating bath
Model CTB9500, heating and cooling bath

WIKA data sheet CT 46.20

Applications

- Calibration in laboratories and in control and instrumentation workshops
- Calibration of short temperature probes, particularly in the pharmaceutical and food industries
- Simultaneous calibration of several sensors

Special features

- Controller with 5.7" colour touchscreen and menu navigation in 11 languages
- 2 x USB (host, device), Ethernet and RS-232 interface
- High-accuracy, reliable temperature control
- 5-point calibration for control sensors (optional)

Calibration bath model CTB9500

Description

Calibration in baths
WIKA calibration baths are an ideal temperature source for the calibration of temperature probes, both in the workshop and the laboratory.
For calibration, the test items and the standard thermometer are brought to the same temperature within the bath. As soon as a stable temperature has been reached, the test items are read, or their output signals measured, and compared with the standard thermometer.

In order to achieve a small measurement uncertainty within this comparison, a temperature control unit is needed which guarantees a homogeneous temperature distribution and a constant temperature over time within the calibration range. These requirements are fulfilled by these baths.

Along with the bath, the bath fluid also plays a significant role. To ensure homogeneous temperature distribution, the selected fluid should have a high thermal conductivity and low viscosity. Moreover, the fluid should be inert, have a low vapour pressure, should not decompose chemically, not

burn, and should maintain its properties over a wide temperature range.
In practice, silicone oils have proven themselves here.

Temperature ranges from -45 … +300 °C
The calibration baths are available in two different versions:
- Model CTB9400 for 28 ... 300 °C
- Model CTB9500 for -45 ... +200 °C

The instruments are typically used in calibration laboratories and in control and instrumentation workshops for the calibration of thermometers.

Easy to use
The calibration baths feature a temperature-controlled tank with a usable depth of 200 mm. The maximum immersion depth for the test items of 200 mm reduces heat dissipation errors, resulting in smaller measurement uncertainties.

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Specifications

	Model CTB9400	Model CTB9500
Temperature range	28 … 300 °C	-45 … +200 °C
Stability	0.02 K	
Display resolution	0.1 °C, (0.01 °C only on exclusive version)	
Display units	°C/°F - selectable	
Voltage supply		
Power supply	AC 230 V, 50/60 Hz AC 400 V, 50 Hz, 3~ AC 208 V, 60 Hz, 2~	AC 230 V, 50/60 Hz AC 208 V 60 Hz, 2~
Power consumption		
Current supply	max. 14 A	
Current supply with 3-phase supply	max. 11 A	
Fuse	16 A	
Fuses with 3-phase	3 x 16 A	
Heating power		
at 230 V AC	3,000 W	
Cooling power		
at 20 °C	---	800 W
at 0 °C	---	800 W
at -20 °C	---	500 W
Communication		
Interface	USB, Ethernet, RS-232	
Selectable user languages	EN, DE, FR, IT, ES, RU, CN, PT, JP, CZ, PL	
Bad dimensions		
Minimum filling volume	11.5 litres	approx. 22 litres
Bath opening, W x D	270 x 145 mm	280 x 280 mm
Bath depth	200 mm	200 mm
Dimensions, W x D x H	335 x 382 x 433 mm	420 x 565 x 719 mm
Weight (empty)	22 kg	72 kg

Accessories	Model CTB9400	Model CTB9500
Silicone oil DC 200.05 -40 ... +130 °C, FP = 133 °C	Not recommended	From -40 … +130 °C usable
Silicone oil DC 200.10 -35 ... +160 °C, FP = 163 °C	Not recommended	From -35 … +160 °C usable
Silicone oil DC 200.20 10 ... 220 °C, FP = 232 °C	From 40 … 220 °C usable	From 10 … 200 °C usable
Silicone oil DC 200.50 25 ... 250 °C, FP = 280 °C	From 40 … 250 °C usable	From 25 … 200 °C usable
Mounting fixtures	X	X
USB interface cable	X	X

CE conformity	
EMC directive	2004/108/EC, EN 61326 Emission (group 1, class A) and interference immunity (controlled electromagnetic environment)
Low voltage directive	2006/95/EC, EN 61010-1, EN 61010-2-010
Machinery directive	2006/42/EC, EN 378-2

Approvals and certificates, see website

Differences in the firmware

Function	Standard	Exclusive
Temperature control		
Temperature control mode (Internal, Process)	X	●
Programmer	X	3 programmes with a maximum of 15 steps
Ramp function	X	linear
Controller parameter tuning	predefined [1]	TAC (True Adaptive Control)
Calibration programme for control sensor (Internal, Process)	1 point	5 point
Monitoring (Level protection, Overtemperature protection [2])	●	●
Adjustable alarm limits	●	●
VPC (Variable Pressure Control) [3]	●	●
Venting program	●	●
Compressor automatic control	●	●
Set point limit	●	●
Display and Operation		
Temperature display	5.7" Colour touchscreen	5.7" Colour touchscreen
Display mode	graphic, numeric	graphic, numeric
Display resolution	0.1 °C	0.1 °C / 0.01 °C
Graphic display for temperature curves	Window	Window, full screen, scalable
Calendar, date, time	●	●
Languages: EN, DE, FR, IT, ES, RU, CN, PT, JP, CZ, PL	●	●
Temperature format, switchable (°C/°F)	●	●
Gesture control	●	●
Favourites menu	X	●
2nd set point	●	●
Connections		
Digital interface RS-232	●	●
USB interfaces (Host and Device)	●	●
Ethernet RJ45 interface	●	●
External control signal/ECS STANDBY [4]	●	●
Pt100 external sensor connection	●	●
Various		
Alarm signal optical/acoustic	●	●
Autostart (Mains failure automatic)	●	●
Plug-and-play	●	●
Technical glossary	●	●
Remote control via software	●	●
Saving/loading of temperature control programmes via USB	X	●

1   TAC function available as a 30-day evaluation version.
2   For temperature control devices with integrated overtemperature protection.
3   For temperature control devices with variable-speed pumps or external bypass.

X   =   not available

●   =   present

Calibration baths
Models CTB9400 and CTB9500

Functionality
Through the integrated variable-speed pump, the speed, and with that the pressure of the thermal fluid, can be controlled and matched optimally to the given application.

With the assistance of the auto-tuning cascade controller, one can achieve optimal control results in the high and low approach control behaviour, as well as with set point changes and for exothermic reactions. The temperature control can be set to be either fully damped or with slight overshoot (faster).

Operation
With cutting-edge control technology and the most up-to-date operating functions, the new generation of controllers offer numerous advantages in practise.

The extensive equipment list includes a brilliant 5.7" colour touchscreen (TFT), connections for USB and network, an integrated technical glossary and the support for a total of 11 languages (EN, DE, FR, IT, ES, RU, CN, PT, JP, CZ, PL).

To make daily tasks easier, the controller features a convenient user interface with easy-to-remember icons and colour-coded menu categories. Thanks to the favourites menu and the one-click user interface, all important information is always just a few pushes of a button away.

Calibration bath model CTB9400

Calibration bath model CTB9500

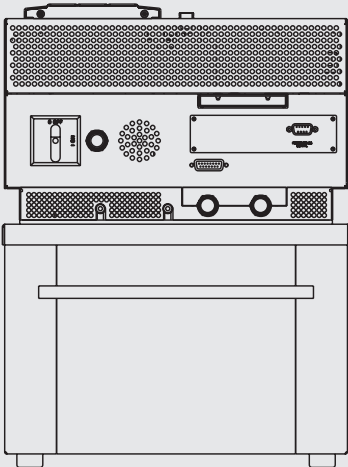# Dimensions in mm

Calibration bath model CTB9400

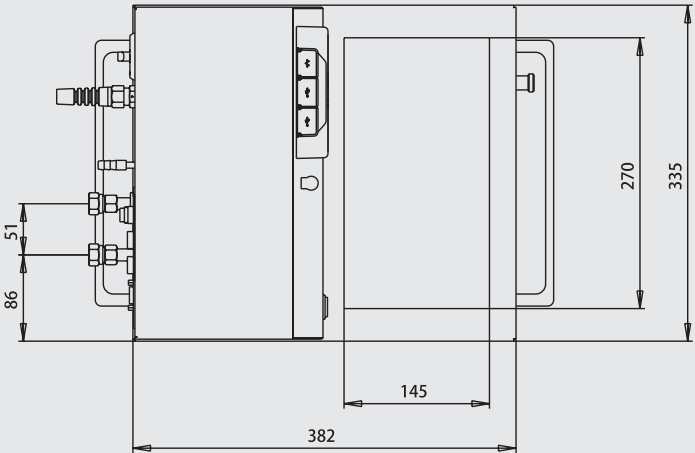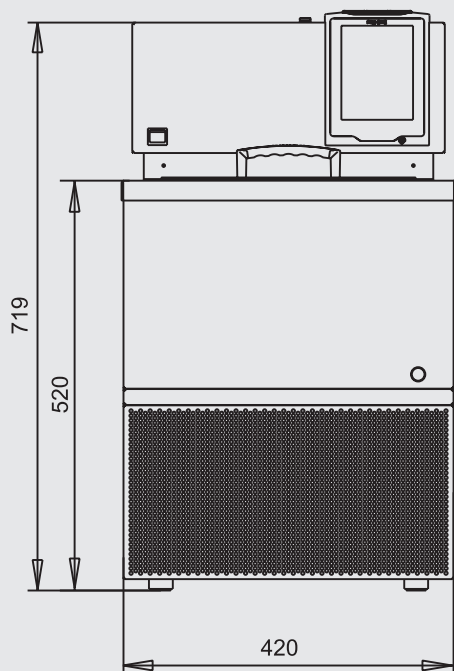### Front view
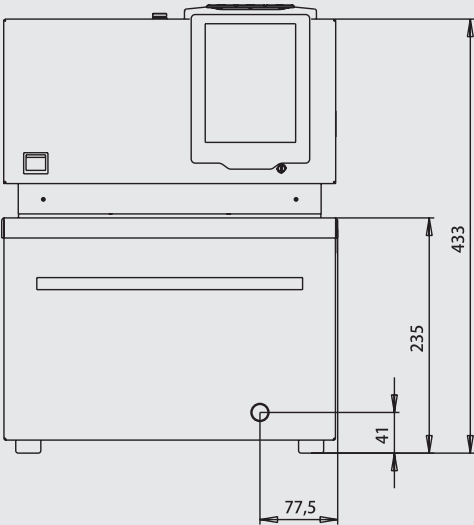
Side view
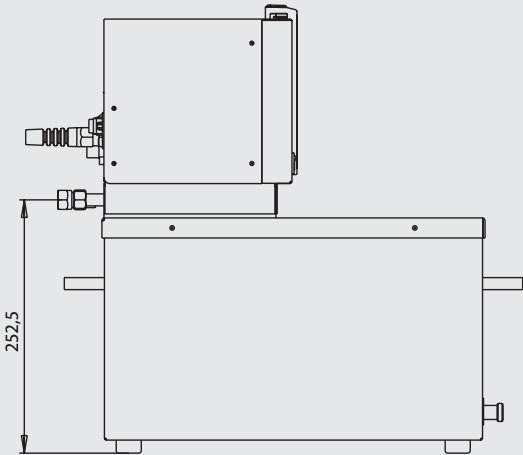
Rear view

Top view

Dimensions in mm

Calibration bath model CTB9500

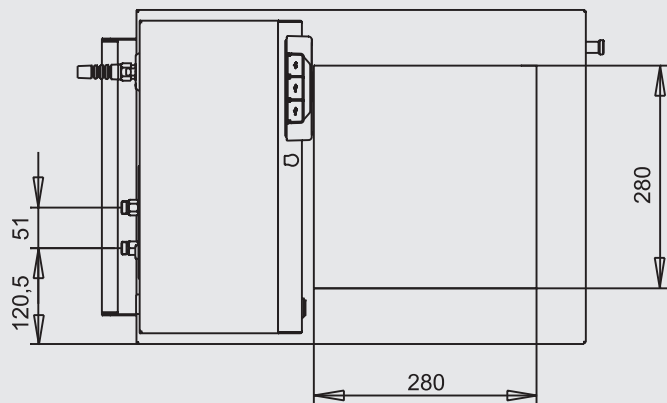**Front view**

719
520
420

Side view

565

Rear view

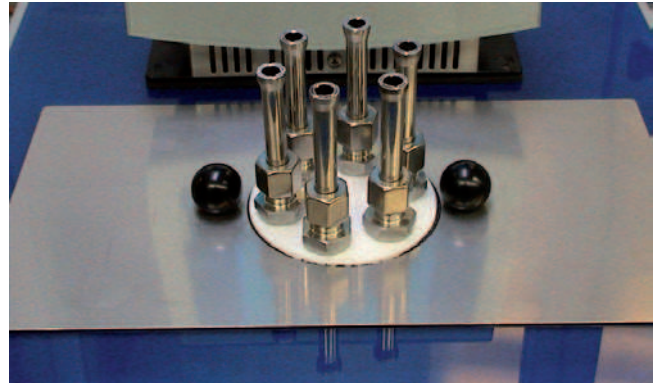533

Top view

51
120,5
280
280
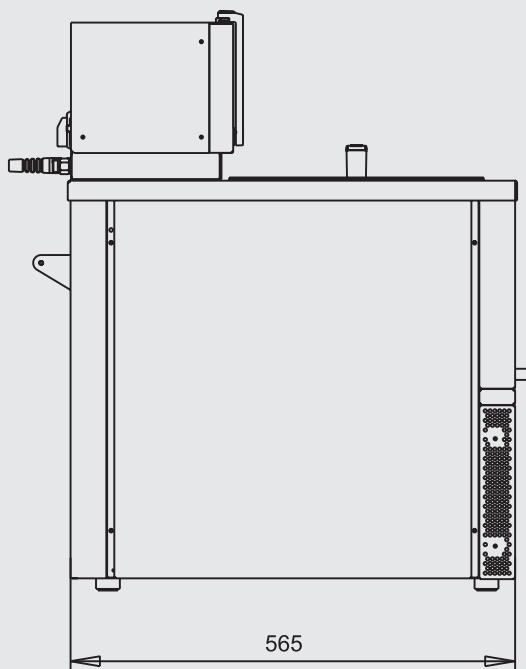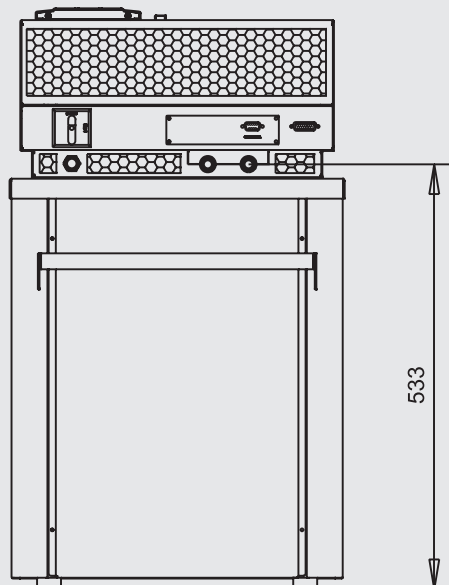
Scope of delivery

■ Calibration bath model CTB9400 or calibration bath model CTB9500
■ Power cord
■ Operating instructions

Accessories

■ Silicone oil in 10 litre plastic container
■ Cover with mounting fixtures
■ USB interface cable
■ Touchpen
■ Trolley for model CTB9500 calibration bath

Options

■ Cover with mounting fixtures
■ CTB9400 power supply: AC 400 V, 50 Hz, 3~ or AC 208 V, 60 Hz, 2~
■ CTB9500 power supply: AC 208 V, 60 Hz, 2~
■ Power cord for Switzerland
■ Power cord for UK
■ Power cord for USA/Canada

Cover with mounting fixtures

Ordering information

Model / Power supply / Firmware option / Mounting fixtures / Power cord / Additional order information