

memmert

Performance data

Waterbath

WTB



Waterbath WTB

INTUITIVE, INNOVATIVE AND INTELLIGENT - THE NEW WTB

The intelligently designed temperature control bath has been an indispensable part of the Memmert product portfolio for 50 years. In 2020, the new waterbath generation WTB was introduced with a comfortable design, modern facelift and intuitive touchscreen control. Of course, the new WTB also excels in terms of safety and regulation.

The temperature is controlled via an extremely fast-reacting silicone heating element in conjunction with a high-precision, digital temperature sensor on the bathtub. These innovative features guarantee a high level of control accuracy during the entire program runtime.

To make it easier for you to choose this high-quality branded product, please refer to the following pages of detailed information on the impressive performance of the WTB product series.

Specifications for measuring the performance data¹

Device specification: WTB waterbath with flat lid

Ambient conditions in the test room: temperature 22 °C ± 3K, humidity 40% rh ± 10% rh

Measuring equipment: PT100 in 4-wire technology, at least 1/5 DIN B

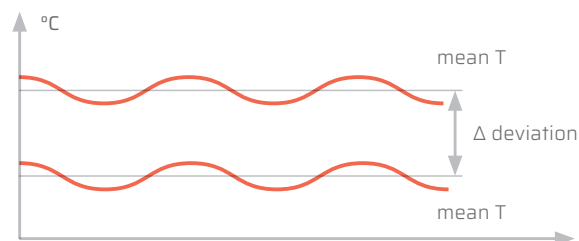
Measurements: spatial temperature deviation, temporal temperature fluctuation, heat emission, heating-up time, achievable display temperature without lid, duration of maximum emptying



Spatial temperature deviation

OBJECT OF MEASUREMENT

In a Memmert waterbath, the spatial homogeneity of the temperature, in the entire usable space of the tub, is reliably kept within the tolerance range. The values for the spatial temperature deviation are derived from the difference between the mean values of the two measuring points with the largest and smallest measured temperature.



MEASUREMENT SETUP

9 Point measurement with Pt100 measuring sensors which are distributed in the interior of the tub based on DIN 12876-1: 2001-12, as well as the standard Memmert WTB. Measurement on devices with flat lids.

Measuring points	6	11	15	24	35	50
37 °C	0,1	0,1	0,1	0,1	0,1	0,1
45 °C	0,1	0,1	0,1	0,1	0,1	0,1
70 °C	0,2	0,2	0,1	0,2	0,1	0,1
90 °C	0,3	0,2	0,3	0,2	0,1	0,2
100 °C	0,3	0,1	0,3	0,2	0,2	0,2

Temperature deviation in [± K] WTB 230 V

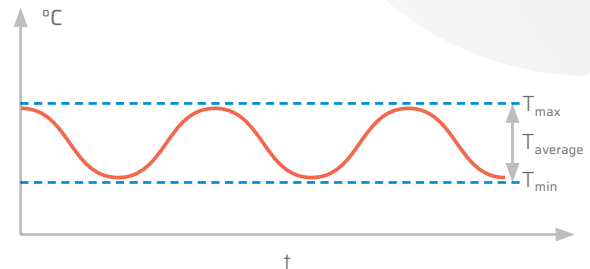
Measuring points	6	11	15	24	35	50
37 °C	0,1	0,1	0,1	0,1	0,1	0,1
45 °C	0,1	0,1	0,1	0,1	0,1	0,1
70 °C	0,2	0,2	0,1	0,2	0,2	0,1
90 °C	0,3	0,2	0,3	0,2	0,3	0,2
100 °C	0,3	0,1	0,3	0,2	0,3	0,2

Temperature deviation in [± K] WTB 115 V

Temporal temperature fluctuation

OBJECT OF MEASUREMENT

The highest possible temporal stability of the temperature is an important parameter for the performance of a Memmert waterbath WTB. The values for the temporal temperature fluctuation results from the greatest deviation from the mean value of all measured values within the measurement period.



MEASUREMENT SETUP

9 Point measurement with Pt100 measuring sensors which are distributed in the interior of the tub based on DIN 12876 1: 2001-12, as well as the standard Memmert WTB. Measurement on devices with flat lids.

Measuring points	6	11	15	24	35	50
37 °C	0,1	0,1	0,1	0,1	0,1	0,1
45 °C	0,1	0,1	0,1	0,1	0,1	0,1
70 °C	0,1	0,1	0,1	0,1	0,1	0,1
90 °C	0,2	0,2	0,2	0,2	0,1	0,2
100 °C	0,3	0,2	0,2	0,2	0,2	0,2

Temperature deviation in [$\pm$ K] WTB 230 V

Measuring points	6	11	15	24	35	50
37 °C	0,1	0,1	0,1	0,1	0,1	0,1
45 °C	0,1	0,1	0,1	0,1	0,1	0,1
70 °C	0,1	0,1	0,1	0,1	0,1	0,1
90 °C	0,2	0,2	0,2	0,2	0,2	0,2
100 °C	0,3	0,2	0,2	0,2	0,2	0,1

Temperature deviation in [$\pm$ K] WTB 115 V

Heat emission / Energy consumption

OBJECT OF MEASUREMENT

The heat output, of a Waterbath, to the environment corresponds to the necessary electrical power for operation in a steady state in order to maintain a constant actual value.

MEASUREMENT SETUP

The device's power plug is connected to an energy meter. The calculation is carried out using the following formula:

$$\frac{\text{Supplied energy [W]}}{\text{Measuring time [h]}} = \frac{W}{h}$$

Measuring points	6	11	15	24	35	50
37 °C	9	11	12	19	30	39
45 °C	15	17	25	30	52	61
70 °C	43	47	60	78	146	153
90 °C	88	89	136	159	243	258
100 °C	163	806	606	815	705	1853

Specifications in watts [W] WTB 230 V

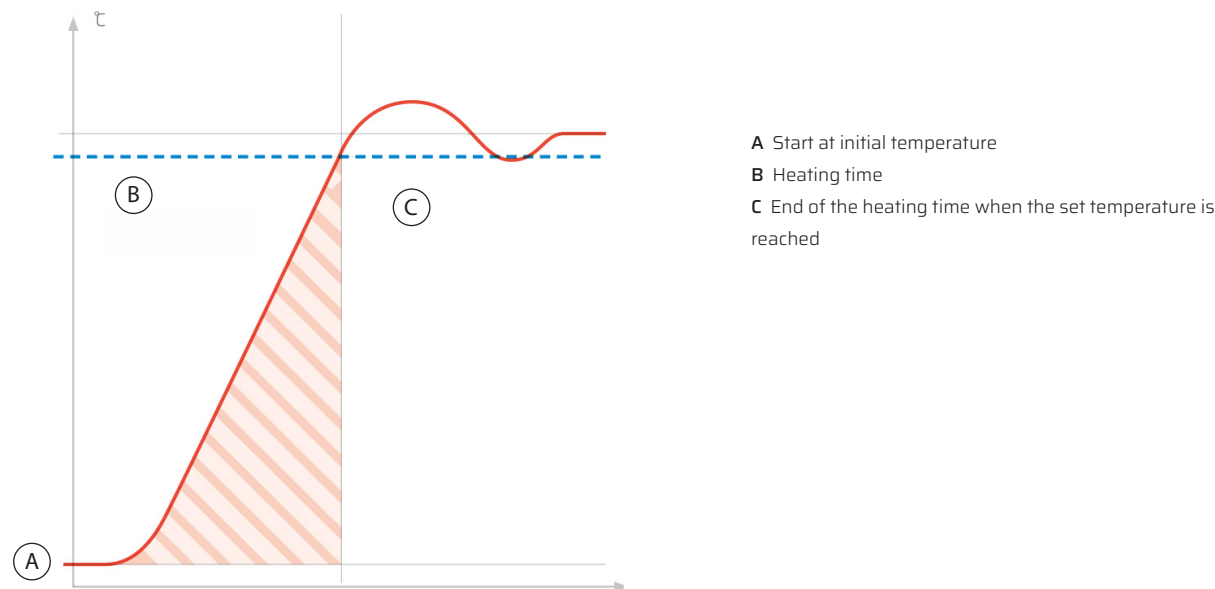
Measuring points	6	11	15	24	35	50
37 °C	9	11	12	19	30	32
45 °C	15	17	25	30	49	62
70 °C	43	47	60	78	147	162
90 °C	88	89	136	159	242	266
100 °C	163	806	606	815	1208	1605

Specifications in watts [W] WTB 115 V

Heating-up time

OBJECT OF MEASUREMENT

The heating time is defined as time until the constant actual value permanently reaches the tolerance band (blue dotted line) near the temperature setpoint.



MEASUREMENT SETUP

Single point measurement with Pt100 sensors, distributed in the interior of the tank, based on DIN 12876-1:200112 and the Memmert WTB factory standard. Measurement on appliances with flat cover.

Measuring points	6	11	15	24	35	50
20 °C → 37 °C	34	41	40	47	51	53
20 °C → 45 °C	37	38	45	54	49	53
20 °C → 70 °C	44	52	57	81	66	86
20 °C → 90 °C	47	64	76	107	82	117
20 °C → 100 °C	53	76	82	119	90	131

Specifications in minutes [min] WTB 230 V

Measuring points	6	11	15	24	35	50
20 °C → 37 °C	34	41	40	47	48	51
20 °C → 45 °C	37	38	45	54	56	70
20 °C → 70 °C	44	52	57	81	98	125
20 °C → 90 °C	47	64	76	107	132	175
20 °C → 100 °C	53	76	82	119	156	206

Specifications in minutes [min] WTB 115 V

Duration of maximum emptying

OBJECT OF MEASUREMENT

Complete emptying of a filled water bath.

MEASUREMENT SETUP

The water bath is filled to its maximum level. During the measurement, the time and the weight loss are recorded by means of a data logger. The drain tap is completely opened during the measurement. The recording stops as soon as no more liquid comes out of the drain tap.

Measuring points	6	11	15	24	35	50
Maximum emptying	01:56	01:58	03:50	04:55	11:18	12:34

Specifications in minutes: seconds [mm:ss]

Achievable display temperature without cover

OBJECT OF MEASUREMENT

The following measured values provide information about the real achievable temperature values at a set value of 100 °C in operation without a lid.

MEASUREMENT SETUP

1 point measurement with Pt100 measuring sensors, positioned in the middle of the tub based on DIN 128761: 2001-12, as well as the standard Memmert WTB.

Measurement of the real actual temperature without lid at a set value of 100° C.

Measuring points	6	11	15	24	35	50
115V-device	96,9	95,8	84,4	83,8	73,7	75,6
230V-device	96,9	95,8	84,4	83,8	81,3	82,2

Specifications in degree Celsius [°C]

Maximum load capacity

OBJECT OF MEASUREMENT

The maximum load capacity is the maximum filling value, which is made up of the weight of the water filled in and the charging material in it.

Measuring points	6	11	15	24	35	50
Maximum load capacity	14	14	29	29	56	56

Specifications in kilograms [kg]

Applied test standards and guidelines

Directive, standard	Title	Use
DIN 12876-1:2001-12	Electrical laboratory equipment - laboratory thermostats and laboratory baths - Part 1: Terms and classifications	Establishing exams for the usability
Company standard	Waterbath WTB series	Internal test and measurement specifications of the company Memmert GmbH + Co. KG

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1	S. 2	The performance data in this document were determined using standard series devices. Performance data from an individual device validation can deviate from these.
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We reserve the right to make technical changes in the interest of further development and progress.

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