

Calibration Certificate

Calibration Mark	003455 IBP 2022-03
Object	Dialysis meter
Manufacturer	IBP Medical GmbH
Type	HDM97BQH
Serial Number	3909310105001832
Conductivity/Temperature Probe	P/A 733/22
Customer	IBP Medical GmbH
Order No.	new
Date of calibration	09.03.2022 18:45:02

The calibration certificate documents the traceability to national standards, which realize the physical units of measurement according to the international System of Units (SI).

IBP guarantees the keeping of the specification for the temperature- pressure- and voltage measurement to the time of calibration. Concerning the conductivity and pH-measurement, in between check-ups by the user are advisable. For the monthly conductivity measurement use fresh standard 14,00 mS/cm. The pH-measurement needs to be calibrated with two solutions before each measurement. The user is obliged to have the device recalibrated at appropriate intervals.

This calibration certificate may not be reproduced other than in full expect.

Calibration certificates without signature and seal are not valid.

Seal	Date	Head of calibration laboratory	Person in charge
	10.03.2022	Horst Müller	Andreas Schamscha

Reference device and standard solution

Channel	Reference	Serial	Calibration mark
Pressure	HDU-PRH50	3532310430500020	008685 D-K-15218-01-00 2021-12
Pressure	HDU-PRH15	3532310430150007	008684 D-K-15218-01-00 2021-12
Temperature	Fluke 1524	1610147	08-1727 D-K-15186-01-00 2021-11
Conductivity	HDU-CDTP-R	3708310100010004	CALIBP-2021-12-1

1. Calibration object

The HDM97Pocket BQH is a Reference Meter to measure Conductivity, Temperature, Pressure and Flow.

2. Calibration procedure

The calibration took place by comparison of the „Reference value“- which is being shown by reference device the respectively by the standard solution - with the notice „Measured value“ of the calibration device. If the results in the first calibration are outside the specifications, the device will be adjusted (after possibly repair) and recalibrated. Input and output calibrations are documented.

3. Environmental conditions

Temperature: (23 ± 3) °C
rel. Humidity: (50 ± 20) %

Before calibration the examinee has been acclimated more than 24h in the measuring room.

4. Measurement uncertainty

Extended measurement uncertainty has been indicated, which results from standard measurement uncertainty multiplied by the extension factor $k=2$. It has been calculated in accordance with the DKD-3. The measurement quantity value lies within the assigned value interval with a probability of 95%. The documented measurement uncertainties are based on the uncertainties in the calibration process, as well as those of the calibrated device during calibration. An allowance for long-term instability of the calibrated device is not included.

5. Measuring results

Pressure Calibration

Reference Value	Measured Value	Deviation	Allowed Deviation	Uncertainty (k=2)	Unit
1849.9	1850	0.1	±2.0	0.63	mmHg
1448.1	1448	-0.1	±2.0	0.63	mmHg
996.6	996.4	-0.2	±1.0	0.15	mmHg
502.4	502.3	-0.1	±1.0	0.15	mmHg
302.4	302.4	0.0	±0.5	0.15	mmHg
151.9	151.8	-0.1	±0.5	0.15	mmHg
0.0	-0.0	-0.0	±0.5	0.15	mmHg
-149.0	-149.0	0.0	±1.0	0.17	mmHg
-299.3	-299.3	0.0	±1.0	0.17	mmHg
-499.5	-499.5	0.0	±1.0	0.17	mmHg

Pressure Calibration passed.

Temperature Calibration

Reference Value	Measured Value	Deviation	Allowed Deviation	Uncertainty (k=2)	Unit
19.979	19.98	0.001	±0.1	0.02	°C
25.001	25.00	-0.001	±0.1	0.02	°C
34.018	34.01	-0.008	±0.1	0.02	°C
37.011	37.01	-0.001	±0.1	0.02	°C
40.019	40.01	-0.009	±0.1	0.02	°C
55.031	55.03	-0.001	±0.1	0.02	°C
80.017	80.00	-0.017	±0.1	0.02	°C

Temperature Calibration passed.

Conductivity Calibration

Reference Value	Measured Value	Deviation	Allowed Deviation	Uncertainty (k=2)	Unit
85.6	85.9	0.3	±0.6	0.2	µS/cm
166.1	166.3	0.2	±0.6	0.2	µS/cm
731.3	732.5	1.2	±6	0.4	µS/cm
1418.4	1420	1.6	±6	1.2	µS/cm
2.803	2.802	-0.001	±0.06	0.002	mS/cm
6.899	6.899	0.000	±0.06	0.004	mS/cm
14.012	14.01	-0.002	±0.03	0.01	mS/cm
15.905	15.91	0.005	±0.03	0.01	mS/cm
19.511	19.52	0.009	±0.06	0.01	mS/cm
29.997	30.00	0.003	±0.06	0.02	mS/cm

Cellparameter: 0,5392 1/cm Conductivity Calibration passed.