microlife®

WatchBP

Office Vascular

Professional Office Blood Pressure and Cardiovascular Screening Monitor

TWIN200 VSR

Instruction Manual

EN

ESH Protocol Embedded

AHA Protocol Embedded

Indications for Use

The Microlife Upper Arm Automatic Digital Blood Pressure and Cardiovascular Screening Monitor Model WatchBP Office Vascular (TWIN200 VSR) is a non-invasive digital blood pressure device using the oscillometric technique and an upper-arm blood pressure cuff to measure systolic and diastolic blood pressures, pulse rate, mean arterial pressure (MAP) for use in adults and paediatrics (but not neonates) with arm cuff circumference sizes ranging from 14-52 cm (5.5-20.5 inches).

The device screens for the presence of atrial fibrillation during measurement.

The device can accurately measure blood pressure in patients with end-stage renal disease, diabetes, and pregnancy (including those with known or suspected pre-eclampsia).

A recommended test for diagnosing Peripheral Artery Disease (PAD) is performing ankle-arm measurements to assess the ankle-brachial index (ABI). The device has proven to be a fast, easy, and reliable alternative for PAD screening and has been clinically validated when compared against a manual Doppler device [1].

The device also provides a user-friendly and more reproducible cuff-based brachial-ankle pulse wave velocity (PWV) measurement method to evaluate arterial stiffness in clinical practice [2].

The device provides aortic blood pressure parameters, including central systolic blood pressure (cSBP), central pulse pressure (cPP) and central diastolic blood pressure (cDBP), non-invasively through the use of a brachial cuff. This was validated against invasive blood pressure measurement and showed that the device determines central blood pressure measurement with high accuracy [3].

The memory data can be transferred to the PC running the WatchBP Analyzer software by connecting the monitor via USB cable or Bluetooth.

The device is meant for use by healthcare professionals in clinical practice.

1. *Kollias, A., et al., Automated determination of the ankle-brachial index using an oscillometric blood pressure monitor: validation vs. Doppler measurement and cardiovascular risk factor profile. Hypertens Res, 2011. 34(7): p. 825-30.*
2. *Kollias, A., et al. Automated pulse wave velocity assessment using a professional oscillometric office blood pressure monitor. J Clin Hypertens. 2020;00:1–7.*
3. *Cheng, H.M., et al., Measurement accuracy of a stand-alone oscillometric central blood pressure monitor: a validation report for Microlife WatchBP Office Central. Am J Hypertens, 2013. 26(1): p. 42-50.*

Contra-indications

- The device is not intended for measuring blood pressure in patients less than 3 years of age (infant or neonates).
- The device measures brachial blood pressure using pressured cuff over upper arm. If the arm or leg to be measured have any injuries (e.g. open wounds) or conditions (e.g. intravenous drip) or has stents implanted making it unsuitable for surface contact or pressurization, do not use the device.
- The device is not intended to measure pulse rate to check the frequency of a pacemaker.
- The application of the cuff and its pressurization on any limb where intravascular access or therapy, or an arterio-venous (A-V) shunt is present because of temporary interference with blood flow could result in injury to the patient.
- Avoid taking measurements on the arm on the side of a mastectomy or lymph node clearance.
- Avoid taking measurements of patients with diseases and environmental conditions that lead to incontrollable motions (e.g. trembling or shivering), or it may cause inaccurate measurements.

Precautions

- Remove the cuff or disconnect the cuff connector to release the cuff pressure if the device is not working properly or the cuff keeps inflating.
- Avoid situations of extended cuff pressurization beyond normal measurements.
- If any serious incident occurs while using the device, please inform Microlife.
- DO NOT use this device in proximity of high frequency (HF) surgical equipment, magnetic resonance imaging (MRI) equipment, and computerized tomography (CT) scanners. This may cause malfunctioning of the device.
- DO NOT use cuffs or cuff connectors of other manufacturers devices with this device.
- DO NOT use this device on patients aged less than 3 years old.
- DO NOT use the device if you think it is damaged or if anything appears unusual. Remove the cuff or disconnect the fly connector to release the cuff pressure if the device is not working properly or responding while keeping the cuff pressure.

Side-effects

In rare cases, slight bruising may result after measurement due to pressurization of the arm and leg.

WatchBP product support: https://www.microlife.com/professional-products
WatchBP Software support: https://www.microlife.com/support/software-professional-products
Developers support: https://www.microlife.com/developers1

Table of Contents

Product description

The WatchBP Office Vascular consists of two major parts

- The device, cuffs and accessories.
- The WatchBP Analyzer Software.

With the WatchBP Analyzer Software

1) The device can be programmed for the blood pressure measurement procedure.
2) Measured blood pressure values can be downloaded to the PC.
3) A PDF report and Microsoft Excel spreadsheet for data analysis can be generated.

* *Download the latest WatchBP Analyzer software or open office from the Microlife website. https://www.microlife.com/support/software-professional-products*

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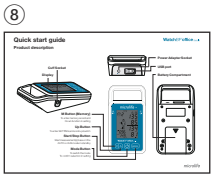
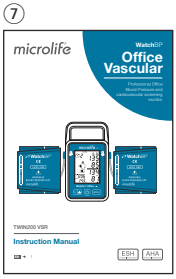
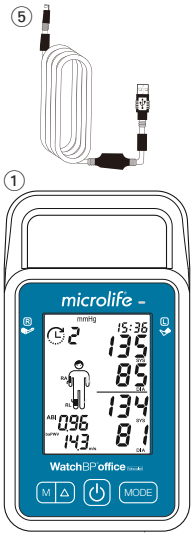
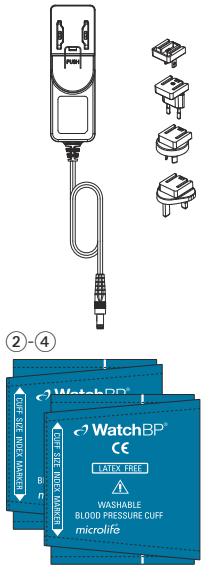
② WatchBP Office arm cuff – size M (22- 32cm)
③ WatchBP Office arm cuff – size L (32- 42cm)
④ Ankle-cuff M-size (22-32cm)
⑤ Data cable
⑥ Mains adaptor
⑦ Instruction manual
⑧ Quick start guide









Model Type

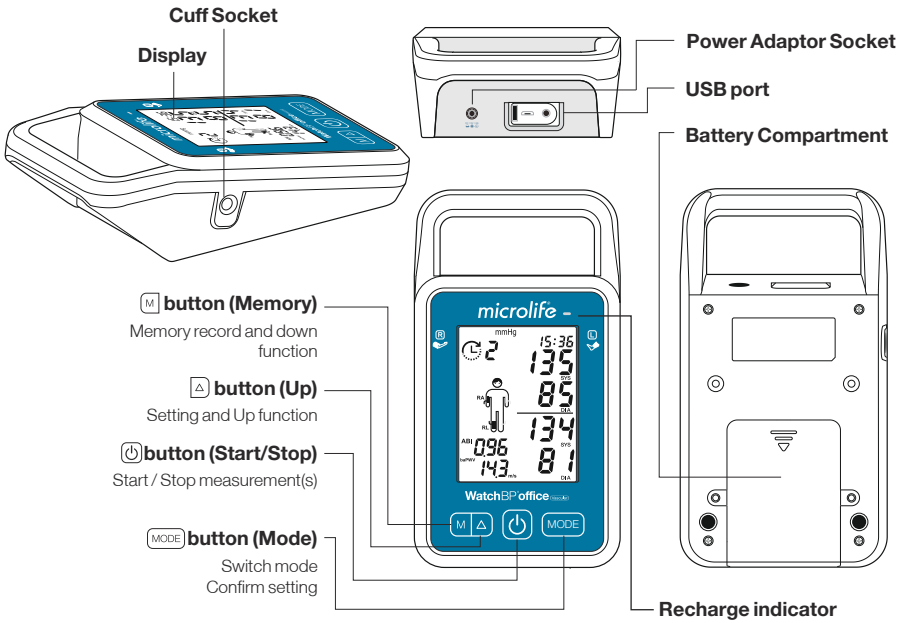
* The device can be upgraded with special features. There are three different types of the device:

- **Advanced:** WatchBP Office Vascular Cardiovascular Monitor with AFIB detector and simultaneous double arm measurement.
- **ABI:** WatchBP Office Vascular Cardiovascular Monitor with AFIB detector, simultaneous double arm measurement and ankle-brachial measurement.
- **PWV:** WatchBP Office Vascular Cardiovascular Monitor with AFIB detector, simultaneous double arm measurement, Ankle-brachial Index (ABI) measurement, brachial-ankle pulse wave velocity (baPWV) and central blood pressure indices measurement.

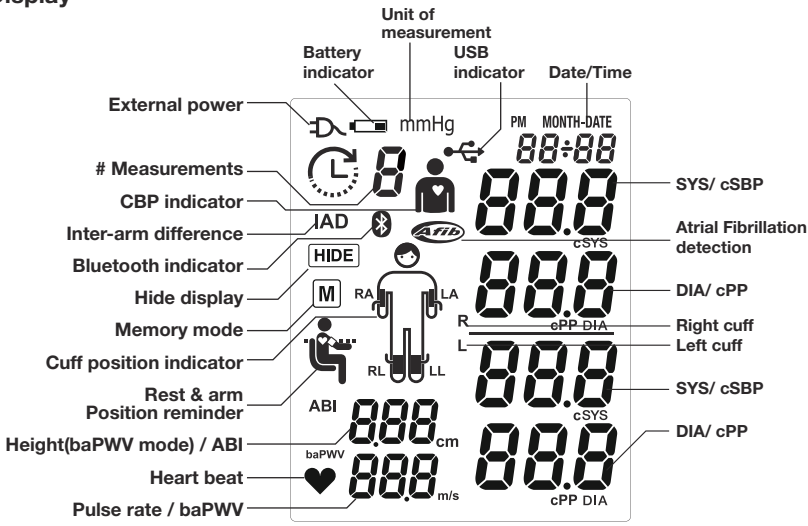
Upgrading the device

The ABI, baPWV and central blood pressure indices measurement of the device can be activated through the WatchBP Analyzer(If not available already on the device). An activation key is needed for activation, the activation key is specific for the device as it matches the ID. Please contact Microlife or the local distributor for additional information.

Product Overview



Display



Symbols & Definitions

Medical Device

Authorized representative in the European Community


Manufacturer

Manufactured Country & Date

Model Number

Catalogue Number

Serial Number

Unique Device Identifier


Caution


Type BF Applied part


Direct Current


Temperature limit


Humidity limitation


Atmospheric pressure limitation


Refer to instruction for use


WEEE symbol: Dispose or recycle this product in accordance with local laws or regulations that apply

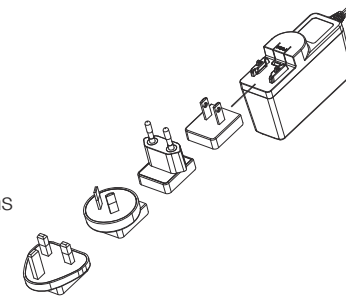

Patient Information Website


Do not immerse or spray the device


Reminder

Initial set up

Attaching the power plug to the power adaptor
Select a suitable plug attachment and attach to the power adaptor as shown here.



Charge the battery completely
When using the device for the first time, charge the battery until the recharge indicator on the device turns green.

Power ON/OFF

Press ⏻ button to switch on the device.

Press and hold ⏻ button for 3 seconds to switch off the device and turn off the LCD screen. The device displays 'oFF' before turning off.

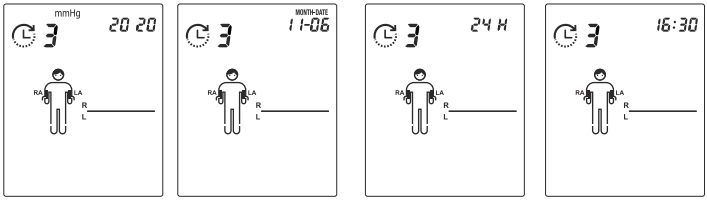
Set the date, time and the safeguard pressure

Set the year - Press and hold the MODE button for 3 seconds to enter setting mode. The year number flashes in the display. Use the △ (to go up) or M (to go down) button to select the year. Use the MODE button to confirm your selection and move on to month setting.

Set the month – Use the △ or M button to select the month. Use the MODE button to confirm your selection and move on to day setting.

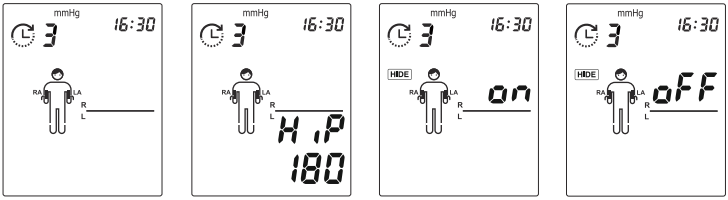
Set the day – Press the △ or M button to select the day. Use the MODE button to confirm your selection and move on to time setting.

Set the time – Once you have set the hour and minutes and pressed the MODE button, the date and time are set, and the current time is displayed.



Set the Highest inflation pressure (HiP) - Use the △ or M button to select the highest inflation pressure or "---" for automated estimated by the device. Use the MODE button to confirm and move on to the Hide function setting.

Set the Hide function - The device features a Hide function to prevent that the patient's blood pressure is affect by blood pressure values displayed on the LCD screen of the device. Press △ or M button to switch the Hide Function ON or OFF. If the Hide function is ON it means that the blood pressure values will not be displayed during the blood pressure measurement. Use the MODE button to confirm and finish the settings. Once you have finished the setting mode the current time is displayed.



* *The "highest inflation pressure" can be programmed to the device. The suggested Inflation Pressure is 30 to 40 mmHg above the expected systolic value of the patient. You can select 160, 180, 200, 220 or, 240mmHg or use the default (device displays "- - -') then the device will automatically inflate the cuff to the optimal cuff pressure. If the selected Highest Inflation Pressure selected is too low to measure a patient's blood pressure it may result in re-pumping or an error ("Err ") will be shown.*
* *The date and time on the device automatically synchronizes with the date and time on the computer when connected with the WatchBP Analyzer.*

Before using the device

Selecting the correct cuff

For upper arm

A variety of different cuff sizes are available. M and L size cuffs are provided with the device. Use the cuff marker to select the cuff size that best matches the circumference of the patient's upper arm.

Cuff Size	Circumference (cm)	Circumference (inch)
S	14-22	5.5-8.7
M	22-32	8.7-12.6
L	32-42	12.6-16.5
L-XL	32-52	12.6-20.5

* *M and L size upper arm cuffs are included as standard accessories.*

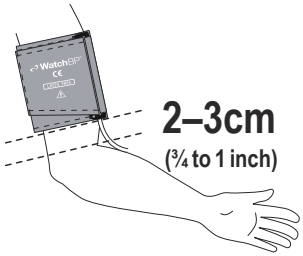
For ankle

Cuff Size	Circumference (cm)	Circumference (inch)
M	22-32	8.7-12.6
L	32-42	12.6-16.5

* *M size ankle cuff is included as standard accessories.*
* *Contact Microlife or its authorized distributor to purchase cuffs.*

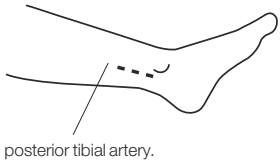
⚠ *Use only cuffs provided by Microlife! Do not alter the tube or the reading may be unreliable.*

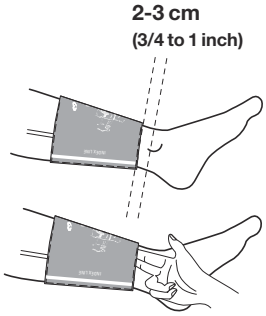
Fitting the arm cuff properly



1 Measure the patient's upper-arm circumference to select the appropriate cuff.
2 Place the cuff over the upper arm so that the air tube and artery mark arrow point towards the lower arm. The artery mark on the cuff must be placed over the brachial artery.
3 Lay the cuff on the arm. Make sure that the lower edge of the cuff lies approximately 2 to 3 cm (¾ to 1 inch) above the elbow.
4 Wrap and tighten the cuff around the arm.
5 Leave free space with the size of 2 fingers between the arm of the patient and the cuff. Excessive tightness may cause venous congestion and discoloration of the limb. If the cuff is wrapped too loosely, it cannot be inflated properly, and the measured values may be inaccurate. Remove all clothing covering or constricting the measurement arm. Clothing may interfere with measurement accuracy.
6 Cuffs that do not fit properly may lead to inaccurate readings. Use a different size cuff if the range index at the end of the cuff does not fall into the range specified by the range stripes.

Application of the ankle cuff (for measurement in the ankle)


posterior tibial artery.



1 The patient must lie down in supine position.
2 Place the ankle cuff on the leg. Make sure the edge of the ankle cuff lies approximately 2 to 3cm (¾ to 1 inch) above the ankle and notice that the artery mark is on the posterior tibial artery.
3 Wrap and tighten the cuff around the leg.
4 Leave a little free space between the leg of the patient and the cuff. Two fingers should fit between the leg and the cuff.

⚠ ***Caution:*** *Avoid rolling up long sleeves, as this may lead to constriction of blood flow to the measurement arm.*

Taking measurements using the WatchBP Office Vascular

Turn on the power

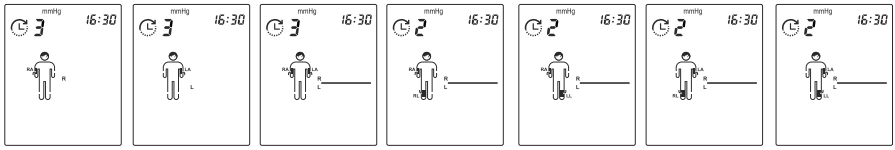
Turn on the device by pressing the ⏻ button of the device.

Connect the cuff(s) to the device

Connect the cuffs to the device by inserting the cuff connector into the cuff connector socket.

Select the measurement arm(s) and ankle

You may select the arms and ankle(s) for the measurement by pressing the MODE button. Press the MODE button to scroll among the arm(s) and ankle(s) for taking the measurement. You may select one arm, both arms (for assessing inter-arm difference) or one arm and one leg (for ABI /baPWV assessment).



Press the MODE button to switch between each Mode.

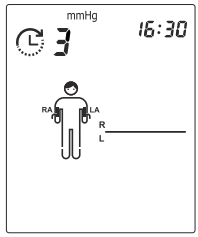
Settings of the measurement

Part A) For measurement of one arm or simultaneous both arms

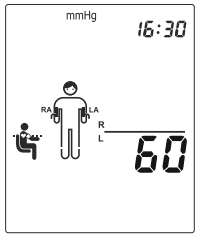
The measurement program of the device can be set when the measurement of one arm or both arms is selected, **including Number of Measurements, Resting Time (Countdown Time), Interval Time, AFIB Detector, CBP Measurement, and Average Calculation (Discard 1st measurement or not)**

This can be done as follows:

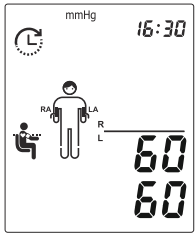
1 **Set the Number of Measurements** – Press the △ button to first enter setting of **Number of Measurements**. Use the △ button to scroll up and use M button to scroll down between one to six measurements. Press MODE button to confirm the number of measurements and enter **Resting Time** setting.



2 **Set the Resting (or countdown) Time** – Press the △ button to scroll up and use M button to scroll down between 15, 30, 60, 120, 180, 240, 300 seconds of **Resting Time**. Press MODE button to confirm and enter **Interval Time** setting.

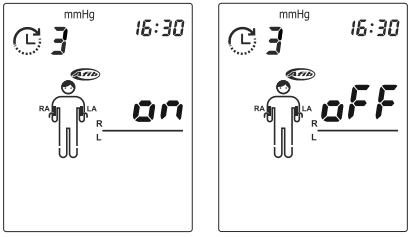


3 Set the Interval Time – between measurements - Press the △ button to scroll up and use M button to scroll down between 15, 30, 60, 120, 180, 240, 300 seconds of **Interval Time**. Press MODE button to confirm and enter **AFIB Detector** setting.



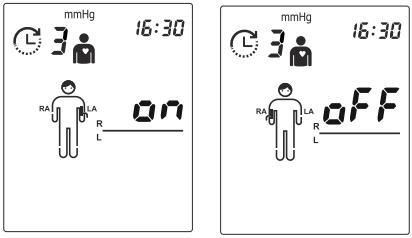
* *Set the interval time will be skipped if Number of Measurements is 1.*
* *When the **Number of Measurements** is set at 6 and CBP option is on, the max **Interval Time** is 240.*

4 Set the Atrial Fibrillation (AFIB) Detector – Press △ the M or button to switch the **AFIB Detector** ON or OFF. Press MODE button to confirm.

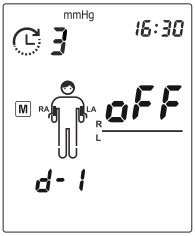


* ***Set the AFIB Detector** will be skipped if Number of Measurements is 1.*

5 Set the Central Blood Pressure (CBP) Measurement – Press △ or M button to switch ON or OFF **CBP Measurement.** Press MODE button to confirm. If the device is upgraded with CBP then it is switched on in default.



6 Average calculation – The device features allow you to discard the 1st measurement from the averaging while the selected number of measurements are 3, 4, 5, or 6. Press △ or M button to switch ON or OFF and press MODE button to finish and confirm the setting of the **Discarding 1st Measurement (d-1)** feature. Once you go through the settings, the device returns to standby.

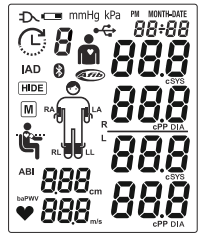


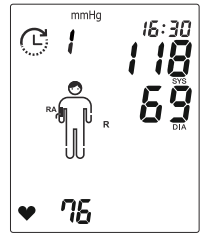
* *Average calculation will be skipped if Number of Measurements is 1 or 2.*

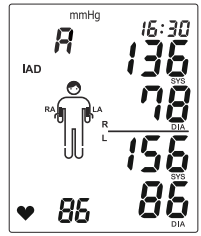
Taking measurement in Single or Both Arm(s) Mode

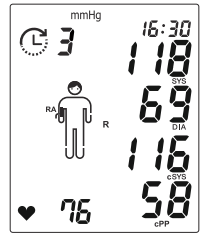
Press the ⏻ button to start the measurement when in standby mode according to the settings in **Part A)** when the measurement of one arm or both arms is selected. The device shows all the settings and then starts counting down the Resting Time before the first measurement is taken. The average measurement reading is displayed and saved after the measurements are complete.

The device switches the display showing the average Systolic Blood Pressure (SYS), Diastolic Blood Pressure(DIA), central Systolic Blood Pressure (cSYS), central Diastolic Blood Pressure(cDBP), and central Pulse Pressure (cPP) automatically if the central blood pressure measurement is enabled.









- *If CBP measurement is enabled, the cuff pressure is held at around 60 mmHg for around 10 seconds to collect sufficient pulse waves.*
- *If the difference in blood pressure readings between the two arms is more than 15 mmHg for Systolic for more than three measurements, the "IAD" icon will show with the result. The "IAD" icon and readings of the higher arm flash.*
- *Press ⏻ button during countdown to skip the countdown if needed.*
- *Press ⏻ button to cancel the remaining measurements at any time during the measurement sequence. Displays the results (average) if available.*

Viewing stored values

The device stores blood pressure values of the last measurement(s) procedure.

Press the M button to reveal the average of the measurements. Continue pressing the M button to review individual measurements.

- *The device switches the display for values of the individual measurement (including SYS, DIA, cSYS, cDIA and cPP values) if central blood pressure measurement is enabled.*
- *Press ⏻ button to go back to standby mode.*

Settings of the measurement

Part B) For measurement on one arm with one leg

When assessing brachial-ankle Pulse Wave Velocity (baPWV) and Ankle Brachial Index (ABI) measurement (one arm and one ankle measurement are selected), the measurement program of the device can be set, **including Number of Measurements, Resting Time (Countdown Time), Interval Time, Average Calculation (Discard 1st measurement or not), and Body Height**

This can be done as follows:

1 **Set the Number of Measurements** – Press the △ button to first enter setting of **Number of Measurements**. Use the △ button to scroll up and use M button to scroll down between one to six measurements. Press MODE button to confirm the number of measurements and enter **Resting Time** setting.

2 **Set the Resting (or countdown) Time** – Press the △ button to scroll up and use M button to scroll down between 15, 30, 60, 120, 180, 240, 300 seconds of **Resting Time**. Press MODE button to confirm and enter **Interval Time** setting.

3 **Set the Interval Time** – between measurements - Press the △ button to scroll up and use M button to scroll down between 15, 30, 60, 120, 180, 240, 300 seconds of **Interval Time**. Press MODE button to confirm and enter **Average calculation** setting.

* *Set the interval time will be skipped if Number of Measurements is 1.*
* *When the **Number of Measurements** is set at 6 and baPWV feature is available, the max **Interval Time** is 240.*

4 **Average calculation** – The device features allow you to discard the 1st measurement from the averaging while the selected number of measurements are 3, 4, 5, or 6. Press △ or M button to switch ON or OFF and press MODE button to finish and confirm the setting of the **Discarding 1st Measurement (d-1)** feature and enter **Height of User** setting.

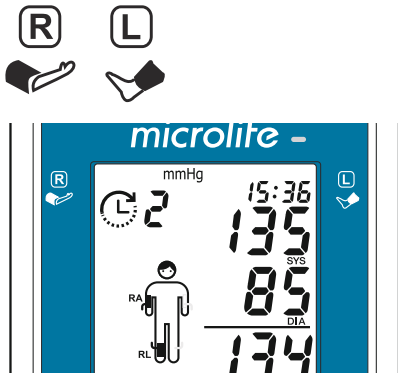
* *Average calculation will be skipped if Number of Measurements is 1 or 2.*

5. **Set the Height of User (in cm)**– Press the △ button when one arm and one ankle is selected for measurement, to enter the Height setting. Use the △ button to scroll up and use M button to scroll down the **Height** values. Press MODE button to confirm and return to standby mode.

* *Height range is between 120 and 210 cm.*
* *Only for the device version with baPWV feature.*

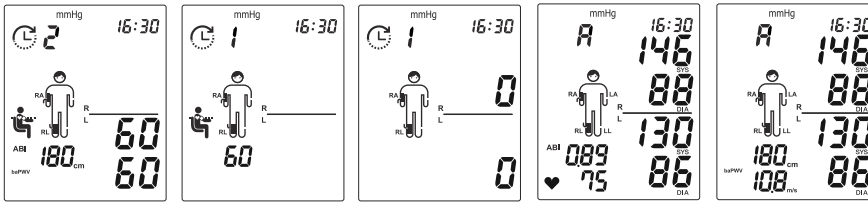
Taking measurement simultaneously in one arm and one ankle (for simultaneous ankle-arm measurement)

Press the ⏻ button to start the measurement when in standby mode according to the settings in **Part B)** when the measurement of one arm and one leg are selected. The device shows all the settings and then starts counting down the Resting Time before the first measurement is taken. During the measurements, the cuff pressure is held at around 60 mmHg for around 10 seconds to collect sufficient pulse waves. The average measurement reading is displayed and saved after the measurements are complete.



Make sure the upper arm cuff is connected to the right cuff socket and the ankle cuff is connected to the left cuff socket.

* *The value in left lower corner will switch between ABI/ Pulse Rate and Height/ baPWV.*
* *The patient has to lie down in supine position.*



During blood pressure measurements

Blood pressure is a dynamic vital sign and its level is influenced by many factors. Individual blood pressure reading can be affected by measurement site, patient's body position, and patient's physiological conditions (e.g. exercise). The patient should be reminded to remain still, refrain from talking, and to breathe normally during the measurement. If the patient is occupied at the start of a measurement, the patient should, where possible, try to relax the measurement arm and leg.

⚠ ***Caution:*** *At any time, a single measurement can be stopped by pressing ⏻ button. (e.g. if you feel uneasy or an unpleasant pressure sensation.)*

Using WatchBP Analyzer

The memory data can be transferred to your PC (personal computer) running the WatchBP Analyzer by connecting the monitor via USB cable or Bluetooth.

System Requirements for Software

1GHz CPU. 512MB Memory, 4.5GB free hard disk space, Microsoft Windows 10/ 11.

Installing the Software Program

The latest WatchBP Analyzer is available from the Microlife website.

https://www.microlife.com/support/software-professional-products

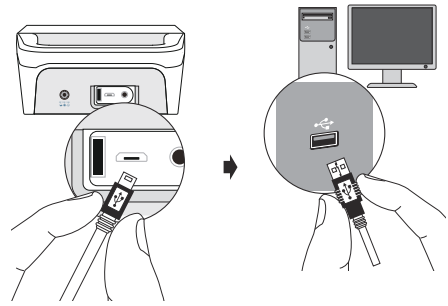
Double click the download installer and simply follow the instructions provided in the installation window on the computer screen.

Connecting the Device to a Computer

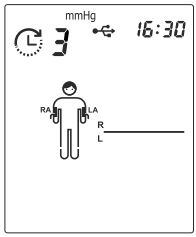
It is important to only use the USB cable provided.

Start the Software Program

Start the software program. The date and time on the device automatically synchronize with the date and time on the computer when successfully connected to the WatchBP Analyzer PC software.



If the device and WatchBP Analyzer software is connected successfully, the device ID, model, version of the device, and battery condition are all displayed on the WatchBP Analyzer software.



Transferring measurement data

Connect the device to the PC. Start the WatchBP Analyzer software program.

Click <**Download**> button of the WatchBP Analyzer to transfer the measurement data from the device to the computer.

Starting measurement(s) by the WatchBP Analyzer

Create a new patient if needed or select a patient in the WatchBP Analyzer. Click <Measure> and select the settings in the pop up screen for the measurements. Click <Measure> in the pop up screen to start the measurement(s).

* *The measurement data on the device will be automatically deleted after clicking <Measure> in the WatchBP Analyzer software to start the measurement.*
* *Press and hold [M] button of the device for 7 seconds displays CL, presses [M] button again to clear the memory*

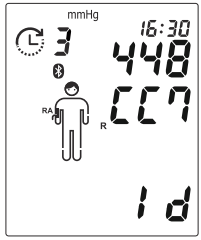
☞ *See instruction manual of WatchBP Analyzer for details.*

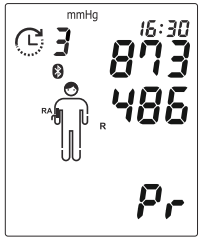
Bluetooth connectivity

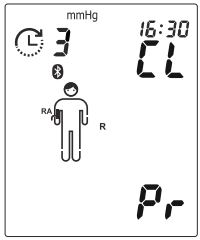
Pairing the device

Press and hold the [MODE] button for around 7 seconds, until the Bluetooth icon flashes and starts the pairing mode. The unique 6-digit device ID of the unit is displayed. Connect the device and confirm pairing. The Bluetooth icon is displayed on the LCD screen of the device to show the presence of a Bluetooth connection.

Whilst Bluetooth is connected, it allows the use of the WatchBP Analyzer to program the device and/or start the measurements. When the measurements are finished the data is automatically uploaded to the App.







☞ *Press and hold the [⏻] button for 5 seconds displays CL, then press [MODE] button again to clear the connection.*

☞ *After the finish of a blood pressure measurement, the Bluetooth also turns on.*

Rechargeable battery and power adaptor

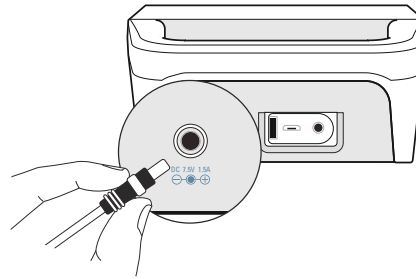
Rechargeable Battery

The device has a built-in, rechargeable Ni-MH battery pack that can perform up to 400 measurement cycles on a full charge. The battery can be recharged using the power adaptor provided with the device. The empty battery indicator is displayed when the battery is low.

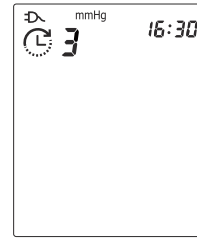
- When using the device for the first time, charge the battery until the recharge indicator is off.
- The orange recharge indicator indicates that the recharge is in progress.
- The green recharge indicator means recharge is completed.
- When the green and orange recharge indicators flash alternately, it means that there is a charging error. Make sure that the correct Mains Adaptor is used. If the condition persists, contact Microlife or the local distributor.

Using a power adaptor

Only use the Mains Adaptor supplied with the device to recharge the device.



1) Plug the adaptor cable into the power socket of the device.
2) Plug the adaptor plug into the wall socket. The battery will be recharged if the device is attached to an AC power source. After the battery is fully recharged, the charging will stop. No battery power will be used if the adaptor is plugged in. The battery must always remain within the device even when using AC power.
3) If the battery starts losing capacity, contact your local dealer for battery replacement. The battery can be replaced.



* *The External Power icon always shows on LCD display when the adapter is used.*

Safety, care, accuracy test and disposal

Safety and protection

This device may only be used for the purposes as described in these instructions. The device comprises of sensitive components and must be treated with caution. The manufacturer cannot be held liable for damage caused by incorrect application.

Carefully read the information in this section, and additional safety information marked by ⚠ with “Warning” and “Caution” in other sections of this Instructions for Use.

Usage and storage of the device in conditions outside ranges given in the Technical Description may affect device functionalities and produce inaccurate results.

Follow the Instructions for Use. This document provides important product operation and safety information regarding this Blood Pressure Monitor. Please read this document thoroughly before using the device and keep for future reference.

⚠ Warnings

- Avoid kinking, compression, and moving of the cuff tube during device operation to ensure the safety of the patient and reliability of the device performance. If the connected tube is kinking, it may cause continuously elevation of the cuff pressure and interference of the blood flow, then might result in harmful injury to the PATIENT.
- Overly frequent measurement within a short time (e.g. 5 – 10 minutes) may reduce peripheral perfusion and cause injury. After a measurement is completed, loosen the cuff and rest the arm for a few minutes to restore limb perfusion, before taking another measurement.
- Interruption of blood flow during measurement may temporarily affect the operations of other medical equipment used on the same limb (e.g. pulse oximeter).
- Blood flow of the arm is temporarily interrupted during measurement. Extended interruption of blood flow reduces peripheral circulation and may cause tissue injury. Beware of signs (e.g. tissue discoloration) of impeded peripheral circulation if taking measurements continuously or for an extended period of time.
- Ensure that children do not use the device unsupervised; some parts are small enough to be swallowed.
- Beware the risk of strangulation by the supplied cable and tubes of the device.
- Use of this equipment adjacent to or stacked with other equipment should be avoided because it could result in improper operation.
- Only activate the pump when the cuff is connected to the device.

Observe the storage and operating conditions as described in the “Technical Specifications” section of this manual.

Protect the device from water and moisture

Protect the device from direct sunlight

Protect the device from extreme heat and cold

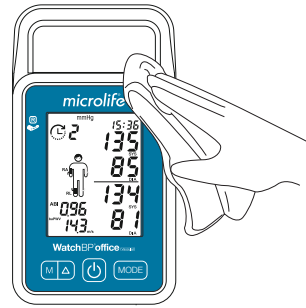
Do not immerse or spray the device

Avoid proximity to electromagnetic fields, such as those produced by mobile phones, and keep a minimum distance of 3.3 m from those equipments when using our device.

Never open the device

Protect the device from impact and drops

Device cleaning and disinfecting



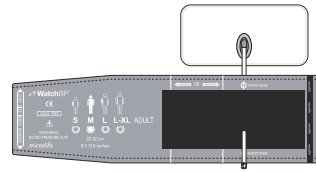
Use a soft cloth with one of the following recommended cleaning solutions to wipe the exterior of the device:

- Ethyl or isopropyl alcohol (70% solution).
- Hydrogen peroxide 7.5% solution.
- Sodium hypochlorite solution (5.25-6.15% household bleach diluted 1:500 provides >100 ppm available chlorine)

Then wipe the exterior of the device with a soft, dry cloth.

* *Do not immerse or spray the device.*

Cuff cleaning and disinfecting



Take out the bladder. Fold and place the cuff cover inside a washing bag. Wash the cuff cover with warm water (43°C; 110°F) and a mild detergent in the washing machine.

Pasteurization: wash the cuff cover in 75°C(167°F) hot water for 30 minutes.

⚠ ***Warning:***
- *Under no circumstances may you wash the cuff bladder.*
- *The bladder must lay flat inside the cuff cover without folding.*

⚠ ***Caution:***
- *Do not iron the cuff.*
- *Please disinfect before the next person uses it.*

Accuracy test

We recommend the device to be tested for accuracy every 2 years or after mechanical impact (e.g. Being dropped). Please contact Microlife to arrange an accuracy test.

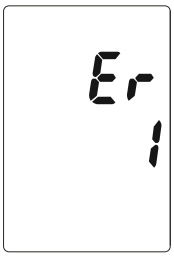
⚠ ***Warning:*** *The device and accessories are only serviced (tested & calibrated) by trained personnel of the Microlife distributor or manufacturer. Do not attempt to service or calibrate the device and accessories yourself.*

Disposal

Batteries and electronic instruments must be disposed of in accordance with the locally applicable regulations, and not as domestic waste.

Error messages and Troubleshooting

If an error occurs during measurement, the measurement is interrupted and an error message «**Er**» is displayed.



Error	Description	Potential cause and remedy
"Er 1"	**Signal too weak**	The pulse signals on the cuff are too weak. Reposition the cuff and repeat the measurement.
"Er 2"	**Error signal**	During the measurement, error signals were detected by the cuff, caused for instance by movement or muscle tension. Repeat the measurement, keeping your arm still.
“Er 3”	**No pressure in the cuff**	An adequate pressure cannot be generated in the cuff. A leak may have occurred. Replace the blood pressure cuff if necessary. If the time of measurement is more than 180 seconds, the buzzer keeps beeping until the user presses a button to reset it.
“Er 5”	**No valid results**	The measuring signals are inaccurate, and no result can therefore be displayed. Read through the checklist for performing reliable measurements and then repeat the measurement.
"Er 11"	**Signal too weak during central blood pressure measurement**	The pulse signals on the cuff are too weak. Re-position the cuff and repeat the measurement.
"Er 12"	**Error signal during central blood pressure measurement**	During the measurement, error signals were detected by the cuff, caused, for instance, by movement or muscle tension. Keep the arm still and repeat the measurement.
“Er 13”	**Cuff pressure errors during central blood pressure measurement**	An adequate pressure cannot be generated in the cuff. A leak may have occurred. Check if the cuff is correctly connected and is not too loose. Replace the blood pressure cuff if necessary. Repeat the measurement.
"Er 15"	**Abnormal result of central blood pressure reading**	The measuring signals are inaccurate so that no result can be displayed. Read through the checklist for performing reliable measurements and then repeat the measurement.

“Er 21”	**Error signal during collecting pulse wave signals**	Check if the cuff is correctly connected and is not too loose. Replace the blood pressure cuff if necessary. Repeat the measurement.
“Er 23”	**Cuff pressure errors during collecting pulse wave signals**	Check if the cuff is correctly connected and is not too loose. Replace the blood pressure cuff if necessary. Repeat the measurement.
"Er 25"	**Abnormal result of baPWV reading**	Check if the cuff is correctly connected and is not too loose. Replace the blood pressure cuff if necessary. Repeat the measurement.
"Er F"	**The device has gone into “single fault condition”**	Single fault condition means that the measurement is aborted to protect the patient from being harmed or the device from being damaged. Press a button to reset the buzzer, re-position the cuff, restart the device, and then repeat the measurement. Turn off and turn on the device and repeat the measurement. If the error persists, contact Microlife or the local distributor.
“Er A”	**Flash memory error**	Possible hardware fault. Try again. If the error persists, contact Microlife or the local distributor.
"HI"	**Pulse or cuff pressure too high**	The pressure in the cuff is too high (over 299 mmHg) OR the pulse is too high (over 239 beats per minute). Relax for 5 minutes and repeat the measurement. Press any button to stop beeping, let the patient relax for 5 minutes, and repeat the measurement.
"LO"	**Pulse too low**	Not all pulse signals could be detected properly (less than 30 beats per minute). Repeat the measurement.

Troubleshooting

Problem	Possible cause	Solutions
No power (No LCD display)	**Power supply is not properly plugged in**	Plug the power supply into the wall socket.
	Battery is fully discharged	Recharge the rechargeable battery by plugging in the power supply.
Cuff does not inflate properly	**Loose connection of the tube**	Make sure the tube of the cuff is securely connected to the device.
	Leakage of the tube / bladder	Check for cracks on the tube or the bladder. Replace the blood pressure cuff if necessary.

Technical specifications

Operation conditions:	• 10 to 40 °C (50 to 104 °F)/ 15 - 90 % relative maximum humidity / 80 kPa to 106 kPa
Storage conditions:	• -20 to 55 °C (-4 to 131 °F)/ 15 - 90 % relative maximum humidity
Weight:	• 815g (including rechargeable battery pack)
Dimensions:	• 220.4 x 132.7 x 69.9 mm
Measuring method:	• Oscillometric, Systolic blood pressure = K1; Diastolic blood pressure = K5
Measurement range:	• 60 - 255mmHg - systolic blood pressure; 30 - 200mmHg - diastolic blood pressure; 30 - 239 beats per minute - pulse
Cuff pressure display:	• Range: 0 - 299 mmHg; Resolution: 1 mmHg; Static accuracy: pressure within ± 3 mmHg;
Pulse accuracy:	• ±5 % of the readout value
Power source:	• Rechargeable battery pack; 4.8V 2400 mAh; Mains power supply DC 7.5V, 2.0A
Expected service life:	• Device: 100,000 measurements or 2 years, whichever earlier • Cuff: 5,000 measurements or 1 year, whichever earlier • Battery: 90,000 measurements
Reference to Standards:	• Device corresponds to the requirements of the standard for non-invasive blood pressure monitor. EN 60601-1 EN 60601-1-2 EN ISO 81060-2 EN IEC 80601-2-30
Electromagnetic Compatibility:	• Device fulfills the stipulations of the standard EN 60601-1-2.
CE 0044	The stipulations of the EU Directive 94/42/EEC for Medical Devices Class IIa have been fulfilled.
	Type BF applied part
	Microlife reserves the right to alter technical specifications without prior written notice.

⚠ ***Warning:*** *No modification of this device is allowed.*

Guarantee Card

This device is covered by a **2 year guarantee** from the date of purchase. During this guarantee period, at our discretion, Microlife will repair or replace the defective product free of charge. Opening or altering the device invalidates the guarantee. The following items are excluded from the guarantee:

- Transport costs and risks of transport.
- Damage caused by incorrect application or non-compliance with the instructions for use.
- Damage caused by accident or misuse.
- Packing/storage material and instructions for use.
- Regular checks and maintenance (calibration).
- Accessories and wear parts: batteries, data cable, mains adapter.

The cuff is covered by a functional guarantee (bladder tightness) for 1 year.

Should guarantee service be required, please contact the dealer from where the product was purchased, or your local Microlife service.

You may contact your Microlife service through our website:

www.microlife.com/support

Compensation is limited to the value of the product. The guarantee will be granted if the complete product is returned with the original invoice. Repair or replacement within guarantee does not prolong or renew the guarantee period. The legal claims and rights of consumers are not limited by this guarantee.

Name: _____

Address: _____

_____

Date: _____

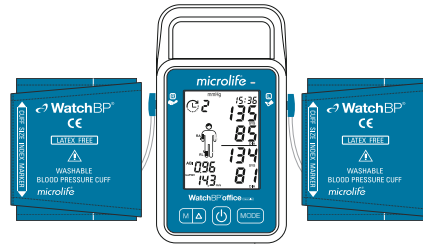
Telephone: _____

Email: _____

Model number: **WatchBP Office Vascular**

Catalogue number: **TWIN200 VSR**

Date:



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