Ankle-brachial index and simultaneous dual arm measurement function for accurate office blood pressure measurement.

Instruction Manual
WatchBP Office ABI is a professional automatic office blood pressure device which can determine the ankle brachial index (ABI) and inter arm difference (IAD) fast and accurate. The ABI is a measure for the assessment of peripheral arterial disease. The WatchBP Office can perform automated dual-arm measurements for the most reliable IAD. In addition, the WatchBP office can detect atrial fibrillation (Stergiou 2009) with high reliability. ABI, IAD and Afib are all important prognostic indicators for cardiovascular risk which make the WatchBP office an important tool in the screening for cardiovascular risks.
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Product description

Name of parts

Cuff Socket (L)
Cuff Socket (R)
I/O switch
Main Adaptor Socket
Battery Compartment
Recharge Indicator
Display
M Button (Memory)
Mode Switch
Start/Stop Button
Display

Mean Arterial Pressure (MAP)

Pulse Pressure (PP)

Mode Indication

External Power

Atrial Fibrillation Detection

Rest and Arm Position Reminder

Supine Position Reminder

Battery Symbol

Hide Display

Memory Mode

ABI indicator and Pulse Rate

Heart Beat

L/R Cuff

Value for Left Arm

Systolic Value

Diastolic Value

Inter-arm Difference

Value for Right Arm

Systolic Value

Diastolic Value
WatchBP Office ABI and components

WatchBP Office ABI
Blood Pressure Device (1 pcs.)

AC Adaptor X1
(Input: 100-240V~50/60Hz 0.48A
Output: +7.5V 2A)

Cuff for upper arm
M size (22cm~32cm) X2
L size (32cm~42cm) X2

Cuff for ankle
M size (22cm~32cm) X1

Instruction Manual X1
Quick Start Guide X1

Flipped over the quick start guide to see ‘How to take blood pressure measurement in three different modes’.

Printed 2009 August

Simultaneous dual-arm measurement and ankle-brachial index function for accurate office blood pressure measurement.
Selective Cuffs for upper arm and ankle

M (Medium size) for upper arm
22 - 32 cm (8.7 - 12.6 inches)
*With air tube 130 cm*

L (Large size) for upper arm
32 - 42 cm (12.6 - 16.5 inches)
*With air tube 130 cm*

M (Medium size) for ankle
22 - 32 cm (8.7 - 12.6 inches)
*With air tube 200 cm*

*Please contact Microlife or its distributor to purchase cuffs.*
Before using WatchBP Office ABI

Selecting the correct cuff
Two different sizes of cuff for upper arm are provided with the WatchBP Office ABI: Medium and Large. Use the cuff marker to select the cuff size that best matches the circumference of the patient’s upper arm.

**M (Medium size)**
22 - 32 cm (8.7 - 12.6 inches)
*With air tube 130 cm*

**L (Large size)**
32-42 cm (12.6 - 16.5 inches)
*With air tube 130 cm*

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

Fitting the cuff properly
1) Place the cuff over the left (or right) upper arm so that the air tube and artery mark arrow point toward the lower arm.
2) Lay the cuff on the arm. Make sure that the lower edge of the cuff lies approximately 2 to 3 cm (3/4 to 1 inch) above the elbow.
3) Wrap and tighten the cuff around the arm.
4) Leave a little free space between the arm of the patient and the cuff. It has to be able to fit with 2 fingers between the arm and the cuff. Clothing must not restrict the arm. Remove all clothing covering or constricting the measurement arm.

5) It may result in incorrect blood pressure readings if the cuffs are not fitted properly. 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.

6) Apply the same steps to the other arm if a double arm measurement is required.

* The range index of cuff should fall into this range.
Application of the ankle cuff
(in ABI mode)
1) The patient has to 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 3 cm (\(\frac{3}{4}\) 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. It has to be able to fit 2 fingers between the leg and the cuff.

posteriors tibial artery.
Three operation modes

Select an operation mode
The WatchBP Office ABI device includes three convenient operation modes: «ABI» Mode «ROUTINE», and «SCREEN» (Inter-arm difference). Use the Mode Switch to select the desired mode.

«ABI» Mode
Select «ABI» Mode for Ankle-Brachial Index pressure measurement. Select the lateral with the higher blood pressure value according to the measurement result of «SCREEN» Mode.
Three operation modes (cont.)

«ROUTINE» Mode
Select «ROUTINE» Mode to perform an automated duplicate measurements on the preferred arm for prompt and accurate office measurements.

Automated duplicate measurements
In «ROUTINE» Mode, the WatchBP Office ABI device automatically takes two consecutive measurements at default 15 second intervals. The readings of these two measurements are averaged to produce the routine visit blood pressure measurement.

* The user can manually set up measurement intervals of 15, 30, 45 or 60 seconds in ROUTINE Mode. (Please refer to special functions section page 26 “Setting measuring intervals”).
Simultaneous dual-arm measurements

In «SCREEN» Mode, the WatchBP Office ABI device measures the patient’s blood pressure on both arms simultaneously, which helps to determine the arm with the highest blood pressure value and reveal other potential cardiovascular risks.
Automated triple measurements

In «SCREEN» Mode, the WatchBP Office ABI device automatically takes three consecutive measurements at fixed one minute* intervals. The results of these three measurements are then averaged to conclude the blood pressure measurement.

Determine the proper arm and to indicate inter-arm difference

If the difference of blood pressure readings between two arms is more than 20mmHg for Systolic or 10mmHg for Diastolic at all three measurements, the device indicates the arm with the higher blood pressure value by showing L or R and the “IAD” icon. The “IAD” icon and readings of the higher arm flash.

* The measuring intervals are fixed at one minute in SCREEN mode.

* The arm with the higher blood pressure value should be taken for ABI measurement or future blood pressure measurements.
Taking measurements using WatchBP Office ABI

«SCREEN» Mode

1) **Turn on the power** – Turn on the device by switching the I/O switch at the back of the device to the ON position.

![Image of I/O switch](image)

2) **Apply the cuff** – Properly fit one cuff to each of the patient’s arms.

![Image of cuff](image)

3) **Switch to «SCREEN» Mode** – Slide the Mode Switch to «SCREEN» Mode.

![Mode switch image](image)

4) **Inflation by fuzzy logic** – The device will adjust inflation pressure by fuzzy logic technology.

![Inflation image](image)

* Additional visual instruction can be found on the cuff
5) **Start measurements** – Press the Start/Stop Button to start the measurement sequence.

* A 60-second countdown will proceed the first measurement.

6) **Three consecutive measurements** – The device will take three consecutive measurements with one minute intervals in between measurements.

7) **View the average measurement** – Only the average measurement will be displayed once the triplicate measurement is completed.

* When the measurements are completed, the blood pressure measurement corresponding with the consistently higher arm will blink continuously for 5 seconds. If no significant difference (20 mmHg for systolic and/or 10 mmHg for diastolic blood pressure) exists between the two arms, neither measurement will blink.
8) **View all measurements** – Results of the three individual measurements can be accessed by pressing the M Button. Press the M Button once to review the first measurement. Continue to press the M Button to review the other measurements.

* **WatchBP Office only stores the last two measurements completed in «ROUTINE» Mode and the last three measurements completed in «SCREEN».*
«ROUTINE» Mode

1) **Turn on the power** – Turn on the device by switching the I/O switch at the back of the device to the ON position.

2) **Apply the cuff** – Properly fit one cuff to the preferred measurement arm.

3) **Switch to «ROUTINE» Mode** – Slide the Mode Switch to «ROUTINE» Mode.

4) **Select the inflation cuff** – Set the device to inflate only the measured arm cuff (left or right). Press and hold the M Button for 3 seconds.

* Additional visual instruction can be found on the cuff
5) Press the M Button to switch between the left (L) and right (R) cuff. Press the Start/Stop Button to save the setting.

6) **Start measurements** – Press the Start/Stop Button to start the measurement sequence.

7) **Two consecutive measurements** – The device will take two consecutive measurements with default 15 second intervals in between.

8) **Inflation by fuzzy logic** – The device will adjust inflation pressure by fuzzy logic technology.

※ The user can manually set up the measurement intervals of 15, 30, 45 or 60 seconds in ROUTINE Mode. (Please refer to special functions section page 26 “Setting up measuring intervals”).

Taking measurements using WatchBP Office (cont.)
8) **Display of the measurement values**—The average measurement will be displayed when the two consecutive measurements are completed. The MAP and PP will be displayed 10 seconds after the averaged value displayed.

![Display of measurement values](image)

10) **View all measurements**—Results of the two individual measurements can be accessed by pressing the M Button. Press the M Button once to review the first measurement. Continue to press the M Button to review the other measurements.

![View all measurements](image)

*WatchBP Office ABI stores only the last two measurements completed in «ROUTINE» Mode and the last three measurements completed in «SCREEN» Mode.*

*WatchBP Office ABI is turn off, the values will be gone.*
«ABI» Mode

1) **Turn on the power** – Turn on the device by switching the I/O switch at the back of the device into the ON position.

2) **Switch to «ABI» Mode** – Slide the Mode Switch to «ABI» Mode. The supine position reminder will display.

3) The patient has to lie down in supine position.

4) **Apply the cuff** – Properly fit arm cuff to upper arm and ankle cuff to the leg of the preferred measurement side of the body properly. The preferred side is determined in «SCREEN» Mode.

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

* Additional visual instruction can be found on the cuff.
4) **Start measurements** – Press the Start/Stop Button to start the measurement.

5) **Inflation by fuzzy logic** – The device will adjust inflation pressure automatically by fuzzy logic technology.

6) **Display of the measurement values** – The measurement value will be displayed when the measurement is completed. The Ankle-brachial index and the blood pressure value display first; then the brachial index value is replaced by the pulse value for 3 seconds.
Special Functions

Hiding measurement values
The WatchBP Office ABI device features a Hide function in order to prevent unnecessary elevated blood pressure in patients due to nervousness triggered by visible blood pressure measurements.

1) **Activate the «Hide» Function** – Press M button; L or R flashes; keep pressing and holding the M Button for 7 more seconds until On or Off flashes.

2) **Select ON or OFF** – Press the M Button again to turn the “Hide” function ON or OFF.

3) **Confirm** – Press Start/Stop to confirm the setting.

* This feature is only available in ROUTINE mode
* When the «Hide» function is ON, the countdown between each measurement and the Hide icon will display.

* The default setting of “Hide” in «SCREEN» Mode is set to “ON” and cannot be set to “OFF”.

Press and hold for 7 seconds...
MAP (Mean Arterial Pressure)
The WatchBP Office ABI device measures the true mean arterial pressured (MAP) of the patient. Each measurement includes a single MAP value. The average measurement will display the average MAP value. When viewing in Memory mode, the MAP value will be displayed with the systolic and diastolic pressure once every 5 seconds.

PP (Pulse Pressure)
The WatchBP Office ABI device provides the pulse pressure (PP) of the patient: pulse pressure = systolic - diastolic pressure. Each measurement includes the calculation of a single PP value. The average measurement will display the average PP value. When viewing in Memory mode, the PP value will be displayed with the systolic/diastolic pressure once every 5 seconds.

* The Mean Arterial Pressure MAP in this device is determined from the maximum peak of the oscillometric envelope curve.
Appearance of the atrial fibrillation indicator for early detection

The WatchBP Office ABI is designed to detect asymptomatic atrial fibrillation during blood pressure measurements in the «SCREEN» Mode. If two out of three measurements in the «SCREEN» Mode detect atrial fibrillation, the Afib icon is displayed. This device is able to detect atrial fibrillation with high sensitivity of 97% and specificity of 89%. If the atrial fibrillation icon is displayed after the measurement, it is recommended to visit a doctor.


* This device detects atrial fibrillation, a major cause of stroke. Not all risk factors for stroke, including atrial flutter, may be detected by this device.

* This device may not detect atrial fibrillation in people with pacemakers or defibrillators. People with pacemakers or defibrillators should not use this device to detect atrial fibrillation.
About Atrial Fibrillation

Atrial fibrillation is a common heart rhythm problem. It affects more than 2 million people in North America. It is more common in older age and it is found in 10% of people over 80 years old. It is a common cause of major strokes. About 15% of all strokes are caused by atrial fibrillation.

The elderly, or those with high blood pressure, diabetes or heart disease are more likely to get a stroke if they have atrial fibrillation.

Atrial fibrillation is a rhythm problem that can last from a few minutes, too days or weeks and even years. Atrial fibrillation can cause blood clots in the upper chambers of the heart (the atria). These clots can break off and flow to the brain causing a stroke.

The use of blood thinners, such as warfarin, can lower the risk of a stroke in patients with atrial fibrillation.

A doctor can confirm the presence of Afib by using an ECG. Sometimes Afib is present incidentally. Therefore, a doctor may not see it on regularly scheduled visits.

One method of detecting Afib is by mean of palpations. This method is not very reliable. Failure of detecting Afib may lead to the occurrence of a stroke in the end; whereas early detection may lead to early treatment that can significantly reduce the chances of a stroke.
ABI (Ankle Brachial Index)

The systolic blood pressure values of a person’s arm and leg need to be measured in order to determine ABI (Ankle Brachial Index).

The ankle-brachial index (ABI) is then calculated using the quotient of the systolic pressure from the leg measurement and the systolic pressure from the arm measurements.

A low ankle-brachial index (ABI) is indicative of systemic vascular disease, and should place a patient in the high-risk category.
Taking fewer than two measurements

In «ROUTINE» Mode only, the measurement sequence can be stopped at anytime by pushing the Start/Stop Button. The device enters stand-by and remaining measurements are cancelled. Data from the measured blood pressure can be by viewed by pushing the M Button.

Skipping the countdown time

The 60 seconds countdown before measurement in «SCREEN» Mode and 15 seconds in «ROUTINE» Mode can be skipped by pushing the Start/Stop Button. While the Start/Stop Button is pushed, the device will immediately begin the next measurement.

Cancel remaining measurements at anytime during the measurement sequence.

☆ The device can be set into Stand by Mode by pressing the Start/Stop Button after the completion of measurements. The device will automatically switch to Stand by Mode if left unattended for five minutes.

Skip the countdown time and begin measurement.

Stand by mode
Setting measuring intervals in «ROUTINE» Mode

The default measuring intervals are 15 seconds. The interval can be set as 15, 30, 45 or 60 seconds.

1) Pressing and holding the Start/Stop Button for 3 seconds.

2) Press the M Button to adjust the measurement interval, then press the Start/Stop Button to confirm, the meter will go back to stand by Mode.
Viewing Measurements

«ROUTINE» and «SCREEN» Mode

1) **Switch the mode switch** – The M Button can be pressed in either the «ROUTINE» or «SCREEN» mode to retrieve the last set of readings from the measurements.

2) **Viewing the average of all measurements** – At first an “A” will be displayed, followed by an average of all measurements taken in the last sequence of measurements.

3) **Viewing MAP and PP values** – Ten seconds after the display of the average blood pressure, the device will display values for Pulse Pressure (PP) and Mean Arterial Pressure (MAP).

4) **Viewing individual measurements** – Press the M Button once again to view individual measurements. The display will flash a number “3” indicating the third measurement.
5) Values for the third measurement (including PP and MAP values) will be shown on the display in the order listed in step 3.

6) Press the M Button to retrieve values for second and first measurements from the last completed set of measurements.

«ABI» Mode

1) **Switch the mode switch** – Select the slide switch to «ABI» Mode then press M button to retrieve the last sets readings of the measurements.

2) **Viewing the Ankle-brachial index (ABI)**
At first the INDEX icon, the ABI and the blood pressure values will be displayed.

3) **Viewing MAP and PP values** –
Ten seconds after the display of the ABI, the values of Pulse Pressure (PP) and Mean Arterial Pressure (MAP) will be displayed.
Rechargeable battery and power adaptor

Rechargeable Battery
WatchBP Office ABI features a built-in, rechargeable Ni-MH battery pack that delivers up to 400~500 measurement cycles. The battery can be recharged between use with the power adaptor provided.

Using a power adaptor
Please only use the Microlife adaptor supplied with the WatchBP Office ABI to recharge the device.

1) Plug the adapter cable into the Power Plug of the WatchBP Office ABI device.
2) Plug the adaptor plug into the wall socket. When the power adaptor is connected, no battery power is consumed.

* An orange recharge indicator means recharge in progress.
* A green recharge indicator means recharge is completed.
## Troubleshooting

<table>
<thead>
<tr>
<th>Problem</th>
<th>Possible cause</th>
<th>How to make correction</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>No power (No LCD display)</strong></td>
<td>Power supply is not properly plugged in</td>
<td>Plug power supply into wall socket.</td>
</tr>
<tr>
<td></td>
<td>Battery is fully discharged</td>
<td>Recharge the rechargeable battery by plugging in the power supply.</td>
</tr>
<tr>
<td><strong>Cuff does not inflate properly</strong></td>
<td>Loose connection of the tube</td>
<td>Make sure the tube of the cuff is securely connected to the device.</td>
</tr>
<tr>
<td></td>
<td>Leakage of the tube / bladder</td>
<td>Check for cracks on the tube or the bladder. Please contact Microlife customer service for this issue.</td>
</tr>
<tr>
<td><strong>No result displayed between measurements</strong></td>
<td>The Hide function is activated</td>
<td>Disable “hide” function, or use «ROUTINE» mode to measure the blood pressure.</td>
</tr>
</tbody>
</table>
Error messages

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

- Please contact your local Microlife service center if the error persists.
- If you think the results are unusual, please read through the information in this instruction manual carefully.

<table>
<thead>
<tr>
<th>Error</th>
<th>Description</th>
<th>Potential cause and remedy</th>
</tr>
</thead>
<tbody>
<tr>
<td>«Err 1»</td>
<td>Signal too weak</td>
<td>The pulse signals on the cuff are too weak. Re-position the cuff and repeat the measurement.</td>
</tr>
<tr>
<td>«Err 2»</td>
<td>Error signal</td>
<td>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.</td>
</tr>
<tr>
<td>«Err 3»</td>
<td><strong>No pressure in the cuff</strong></td>
<td>An adequate pressure cannot be generated in the cuff. A leak may have occurred. Replace the batteries if necessary. Repeat the measurement.</td>
</tr>
<tr>
<td>«Err 5»</td>
<td><strong>Abnormal result</strong></td>
<td>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.</td>
</tr>
<tr>
<td>«HI»</td>
<td><strong>Pulse or cuff pressure too high</strong></td>
<td>The pressure in the cuff is too high (over 300 mmHg) OR the pulse is too high (over 200 beats per minute). Relax for 5 minutes and repeat the measurement.</td>
</tr>
<tr>
<td>«LO»</td>
<td><strong>Pulse too low</strong></td>
<td>The pulse is too low (less than 40 beats per minute). Repeat the measurement.</td>
</tr>
</tbody>
</table>
Safety, care, accuracy test and disposal

Safety and protection
This device may be used only for the purpose described in this booklet. The device comprises of sensitive components and must be treated with caution. The manufacturer cannot be held liable for damage caused by incorrect application.

- Ensure that children do not use the device unsupervised; some parts are small enough to be swallowed.
  - Only activate the pump when cuff is installed.
  - Do not use the device if you think it is damaged or if anything appears unusual.
  - Read the further safety instructions in the individual sections of the instruction manual.
  - Do not connect the device to a computer until prompted to do so by the computer software.

Observe the storage and operating conditions 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
- Avoid proximity to electromagnetic fields, such as those produced by mobile phones
- Never open device
- Protect device from impact and drops
Device care
Clean the device with a soft, dry cloth.

Cleaning the cuff
DO NOT wash the cuff. DO NOT iron the cuff cover.

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

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

**Operation temperature/humidity:**
- 10 to 40 °C (50 to 104 °F)

**Storage temperature/humidity:**
- -20 to 55 °C (-4 to 131 °F)
- 15 - 90 % relative maximum humidity

**Weight:**
- 1100 g (including rechargeable battery pack)

**Dimensions:**
- 200 x 125 x 90 mm

**Measuring method:**
- Oscillometric, corresponding to Korotkoff

**Measurement range:**
- 30 - 280 mmHg – blood pressure
- 40 - 200 beats per minute – pulse

**Cuff pressure display:**
- Range: 0 - 299 mmHg
- Resolution: 1 mmHg
- Static accuracy: pressure within ± 3 mmHg or 2% of reading > 200mmHg
- Pulse accuracy: ±5 % of the readout value

**Voltage source:**
- Rechargeable battery pack; 4.8V C4000 mAh
- Mains adapter DC 7.5V, 2 A

**Reference to Standards:**
- Device corresponds to the requirements of the standard for non-invasive blood pressure monitor.
- EN 1060-1
- EN 1060-3
- EN 1060-4
- IEC 60601-1
- IEC 60601-1-2

**Electromagnetic compatibility:**
- Device fulfills the stipulations of the standard IEC 60601-1-2.
- The stipulations of the EU Directive 93/42/EEC for Medical Devices Class IIa have been fulfilled.

Microlife reserves the right to alter technical specifications without prior written notice.
This device is covered by a two-year guarantee and accessories are covered by a one-year guarantee from the date of purchase. This guarantee is valid only on presentation of the guarantee card completed by the owner confirming date of purchase or purchase receipt.

Product: WatchBP Office ABI
Product Number: TWIN200 ABI
Date:
Read the instructions carefully before using this device.

Caution: Federal law restricts this device to sell by or on the order of a physician.