ESH Protocol Embedded AHA Protocol Embedded

WatchBP Office Central

Cardiovascular Screening Solution for:

- -Central blood pressure measurement
- -Ankle Brachial Index assessment
- -Atrial fibrillation detection
- -Simultaneous assessment of the Inter-Arm Blood Pressure Difference

Instruction Manual

EN ➜ 3

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Preface

The WatchBP Office Central has been validated against simultaneous recorded intra-arterial blood pressure measurement, which is the gold standard for validation of central blood pressure measurement, and showed extreme high accuracy in measuring central systolic, central diastolic and central pulse pressure [1]. The WatchBP central has passed the validation protocol of the BHS for accuracy in blood pressure measurement (A/A) and is equipped with other innovative screening tools such as:

- An implemented atrial fibrillation (Afib) detection system that has proven excellent accuracy [2, 3] and is officially recommendation by the National Institute of Clinical health and Excellence (NICE) in the UK [4].
- Two arm cuffs that allow simultaneous blood pressure measurement of both arms for accurate determination of inter-arm BP differences [5, 6]. This mode is highly supported by the latest ESH guidelines (2013) stating that Inter-arm difference in blood pressure is only meaningful when obtained from simultaneous arm blood pressure measurement [7].
- Ankle-brachial index (ABI) performance that is validated against Doppler for accuracy with positive results and additionally showed that the assessment led to a significant time reduction as compared to Doppler [8]. Finally, the automated calculation of the ABI value guarantees uniformity and prevents errors due to registration and calculation failures [9].

1. 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: 42-50.

2. Stergiou, G.S., et al., Diagnostic accuracy of a home blood pressure monitor to detect atrial fibrillation. J Hum Hypertens, 2009. 23: 654-8.

3. Wiesel, J., et al., Detection of atrial fibrillation using a modified microlife blood pressure monitor. Am J Hypertens, 2009. 22: 848-52.

4. NICE, WatchBP Home A for opportunistically detecting atrial fibrillation during diagnosis and monitoring of hypertension. http://guidance.nice.org.uk/MTG13, 2013.

5. Lohmann, F.W., et al., Interarm differences in blood pressure should be determined by measuring both arms simultaneously with an automatic oscillometric device. Blood Press Monit, 2011. 16: 37-42.

6. Stergiou, G.S., et al., Automated device that complies with current guidelines for office blood pressure measurement: design and pilot application study of the Microlife WatchBP Office device. Blood Press Monit, 2008. 13: 231-5.

7. Mancia, G., et al., 2013 ESH/ESC Guidelines for the management of arterial hypertension: The Task Force for the management of arterial hypertension of the European Society of Hypertension (ESH) and of the European Society of Cardiology (ESC). J of Hypertens. 2013, 31:1281–1357.

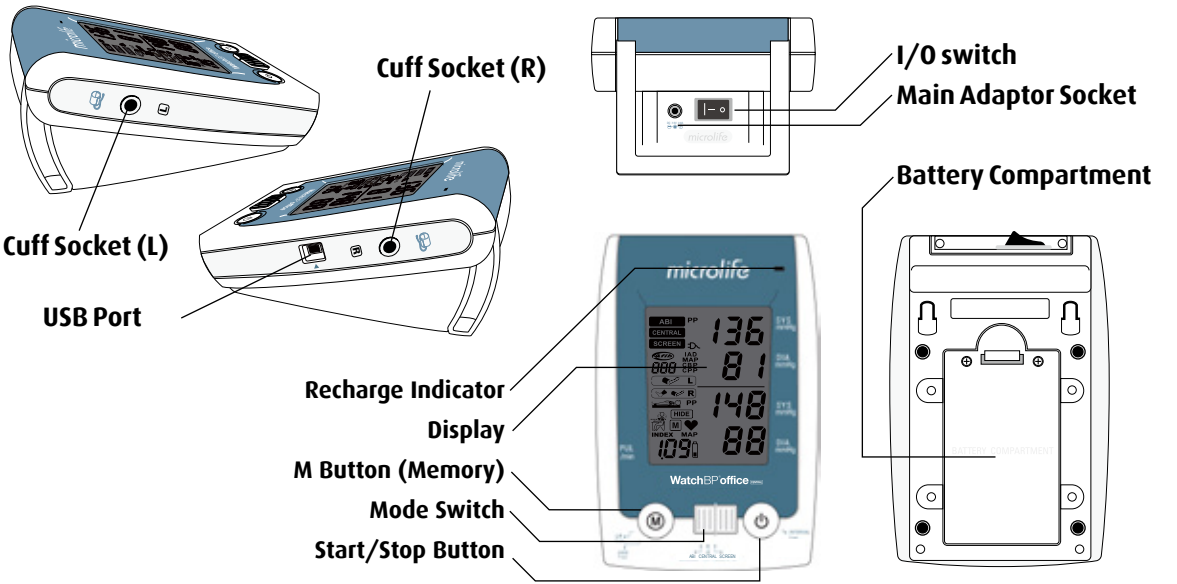
8. Kollias, A., et al., Automated determination of the ankle-brachial index using an oscillometric blood pressure monitor: validation vs. Doppler measurement and cardiovascular risk factor profile. Hypertens Res, 2011. 34: 825-30.

9. Verberk, W.J., et al., Automated oscillometric determination of the ankle-brachial index: a systematic review and meta-analysis. Hypertens Res, 2012. 35: 883-91.

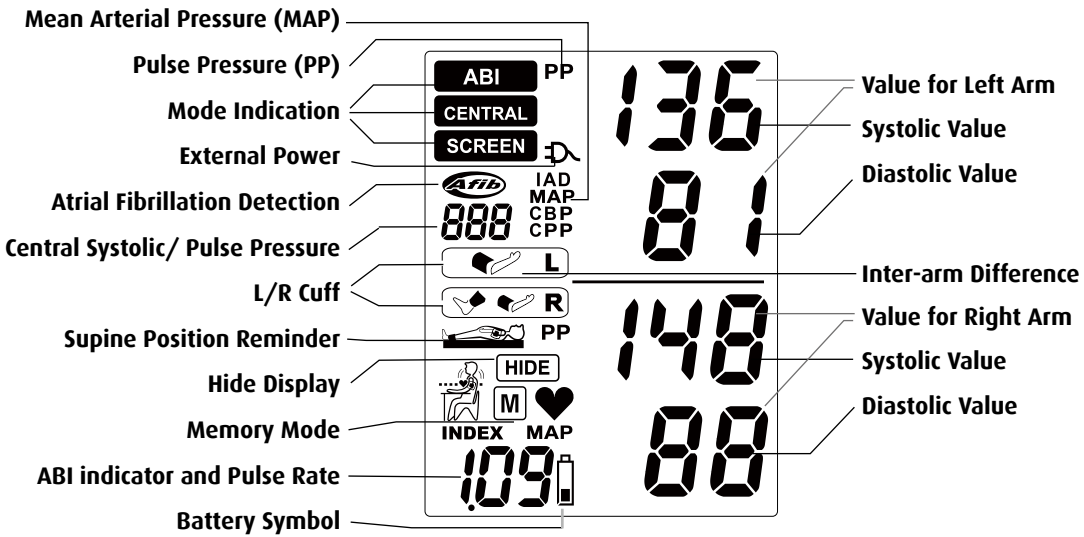
Table of Contents

Product description

Name of parts

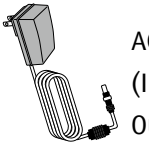


Display

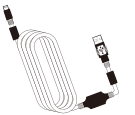

Mean Arterial Pressure (MAP)
Pulse Pressure (PP)
Mode Indication
External Power
Atrial Fibrillation Detection
Central Systolic/ Pulse Pressure
L/R Cuff
Supine Position Reminder
Hide Display
Memory Mode
ABI indicator and Pulse Rate
Battery Symbol
ABI
PP
CENTRAL
SCREEN
Afib
IAD
MAP
CBP
CPP
888
L
R
PP
HIDE
M
INDEX
MAP
1.09
136
81
148
88
Value for Left Arm
Systolic Value
Diastolic Value
Inter-arm Difference
Value for Right Arm
Systolic Value
Diastolic Value

Components and accessories

WatchBP Office Central
Blood Pressure Device

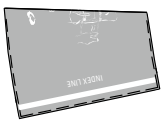


AC Adaptor UES18LCP-075200SPA X1
(Input: 100-240V~50/60Hz 0.5A
Output: +7.5V 2A)



USB Cable

Cuff for upper arm
M-**L** size (22cm~42cm) X 2



Cuff for ankle
M size (22cm~32cm) X 1

Instruction Manual
Quick Start Guide

Before using WatchBP Office Central

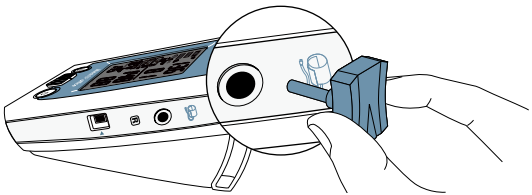
Selecting the correct cuff

Two upper arm cuffs and an ankle cuff are provided within the standard package of the WatchBP Office Central.

M-L (Medium - Large size), arm cuff
22 - 42 cm (8.7 - 16.5 inches)
With air tube 130 cm

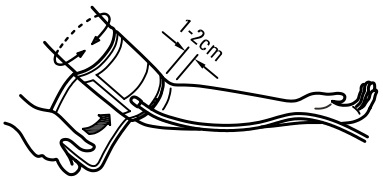
M (Medium size), ankle cuff
22-32 cm (12.6 - 16.5 inches)
With air tube 130 cm

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) Wrap the cuff around the arm. Make sure that the lower edge of the cuff lies approximately 2cm (¾ inch) above the elbow.



* *Remove all clothing covering or constricting the measurement arm before applying the cuff.*

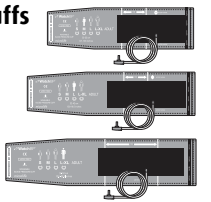
Selective Cuffs for upper arm and ankle

For upper arm

Rigid cuff

M - L (Medium - Large size, standard delivered)
22 - 42 cm (8.7 - 16.5 inches)
With air tube 130 cm

Soft cuffs

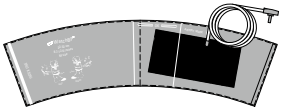


M (Medium size, to be ordered)
22 - 32 cm (8.7 - 12.6 inches) *With air tube 130 cm*

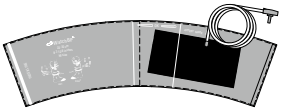
L (Large size, to be ordered)
32 - 42 cm (12.6 - 16.5 inches) *With air tube 130 cm*

L-XL (Large to extra-large size, to be ordered)
32 - 52 cm (12.6-20.5 inches) *With air tube 130 cm*

For ankle



M (Medium size, standard delivered)
22 - 32 cm (8.7 - 12.6 inches)
With air tube 200 cm

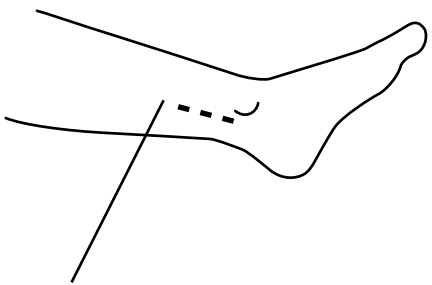


L (Large size, to be ordered)
32 - 42 cm (12.6 - 16.5 inches)
With air tube 200 cm

** Please contact Microlife or its distributor to purchase L-XL size or other size cuffs.*

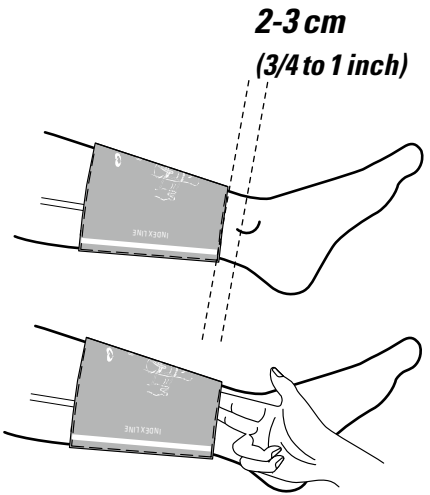
Application of the ankle cuff (in ABI mode)

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 3cm (¾ to 1 inch) above the ankle and notice that the artery mark is on the posterior tibial artery.



posterior tibial artery.

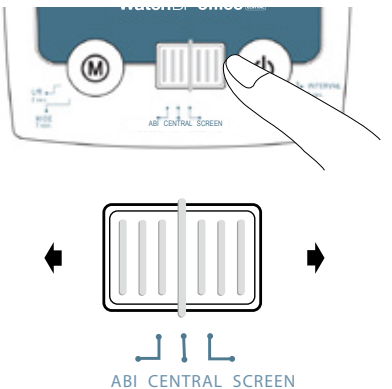
3) Wrap and tighten the cuff around the leg.
4) Leave a little free space between the leg of the patient and the cuff. Two fingers should fit between the leg and the cuff.



Three operation modes

Select an operation mode

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



«ABI» Mode

Select «**ABI**» Mode for Ankle-Brachial measurement. Select the arm with the higher blood pressure value as determined with the «**SCREEN**» Mode

ESH
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AHA
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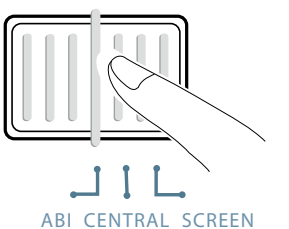
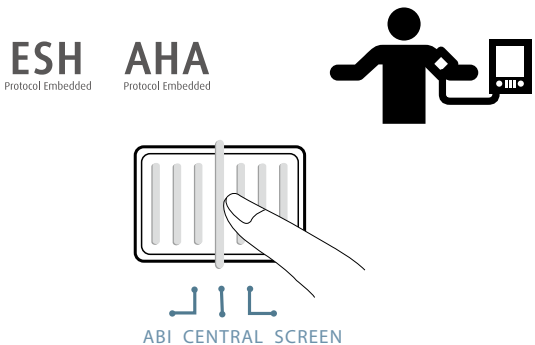


«CENTRAL» Mode

Select «**CENTRAL**» Mode to perform central blood pressure measurements on the preferred arm for prompt and accurate office measurements.



Automated double measurements

In «**CENTRAL**» Mode, the WatchBP Office Central device automatically takes two consecutive measurements at 15 second intervals on default. At each measurement brachial blood pressure is measured first, thereafter the cuff pressure will be hold around 60 mmHg for 30 seconds for assessing the central blood pressure value. the readings of the two brachial blood pressure values are averaged and displayed and the readings of the two central blood pressure values are averaged and displayed after the measurement process is finished. For verifying each measurement separately press the M button to see the 2nd measurement, press the M-button again to see the 1st measurement.

* *The user can manually set measurement intervals of 15, 30, 45 or 60 seconds in CENTRAL Mode. (Please refer to special functions section page 19 "Setting measurement intervals")*

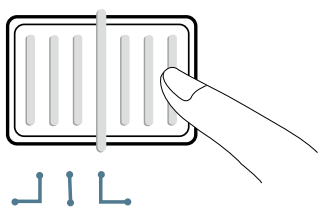
Three operation modes (cont.)

«SCREEN» Mode

Select **«SCREEN»** Mode to complete fully-automated triple measurements on both arms according to recommended ESH/AHA blood pressure measurement protocols for a patient's first office visit.

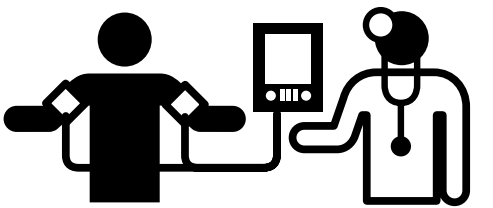
ESH
Protocol Embedded

AHA
Protocol Embedded



Simultaneous dual-arm measurements

In «**SCREEN**» Mode, the WatchBP Office Central device measures the patient's blood pressure on both arms simultaneously, for determining the arm with the highest blood pressure value and revealing the possible presence of peripheral arterial disease.



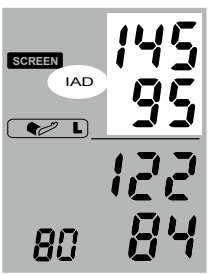
Automated triple measurements

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

* *The measuring intervals are fixed at one minute in SCREEN mode. The interval time can be shortened by pressing the on/off button during the countdown period.*
* *The arm with the higher blood pressure value should be taken for ABI measurement or future blood pressure measurements.*

Determine the proper arm and inter-arm difference

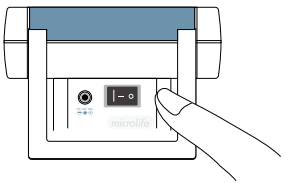
If the difference of blood pressure readings between two arms is more than 20mmHg for Systolic or 10mmHg for Diastolic at all three measurements, the device indicates the arm with the higher blood pressure value by displaying L or R and the "IAD" icon. The "IAD" icon and readings of the higher arm flash to indicate that more attention is needed as this patient might have peripheral arterial disease. .



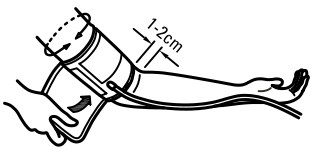
Taking measurements using WatchBP Office Central

«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.

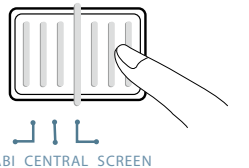


2) **Apply the cuff** – Properly fit one cuff to each of the patient's arms.



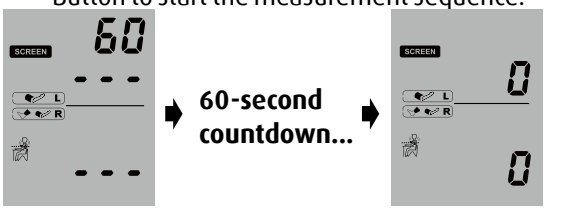
⁘ *Additional visual instruction can be found on the cuff*

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



4) **Inflation by fuzzy logic** – The device will adjust inflation pressure by fuzzy logic technology in order to determine the optimal inflation pressure.

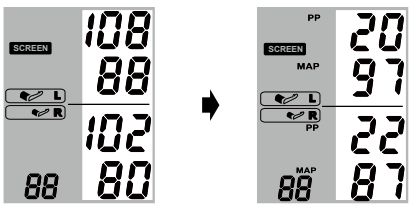
5) **Start measurements** – Press the Start/Stop Button to start the measurement sequence.



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

✲ *A 60-second countdown before each measurement.*

7) **The average value of the measurements –** The average value will be displayed after the measurements.



Taking less than three measurements

The measurement sequence can be stopped at anytime by pressing the Start/Stop Button in **«SCREEN» Mode.** The device enters Standby Mode and the remaining measurements are cancelled. Average of the measurements is saved and can be viewed by pressing the M Button.

Cancel remaining measurements at anytime during the measurement sequence.

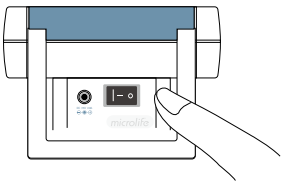
✲ *If one of the three measurements fail, a 4th measurement will be conducted.*

✲ *If the 3rd measurements is cancelled by pressing the Start/Stop after the 2nd measurement, the averages are calculated and saved to the memory as well. Press the M button displays the average, you can continue to press M-button to see the reading of the 2nd and the 1st measurement.*

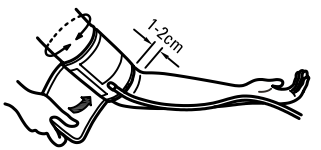
Taking measurements using WatchBP Office Central (cont.)

«CENTRAL» 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.

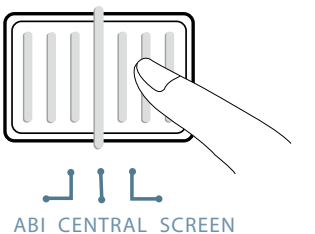


2) **Apply the cuff** – Properly fit one cuff to the preferred measurement arm.



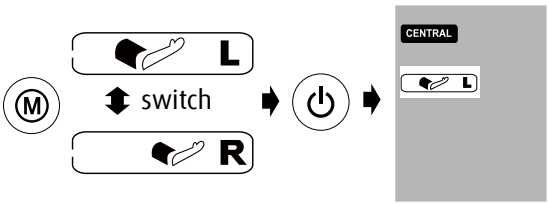
⁘ *Additional visual instruction can be found on the cuff*

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



4) **Select the inflation cuff** – Set the device to the preferred measurement side (left or right). Press and hold the M Button for 3 seconds.

5) Press the M Button to switch between left(L) and right(R). Press the Start/Stop Button to save the setting.



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

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

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

9) **The average value of the measurements**– The average values of both the brachial and central blood pressure will be displayed and stored automatically.

* *The measurement intervals can be set to 15, 30, 45 or 60 seconds in CENTRAL Mode. (Please refer to special functions section on page 19 "Setting up measurement intervals")*

Taking measurements using WatchBP Office Central (cont.)

Skipping the countdown time

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

Skip the countdown time and begin measurement.

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

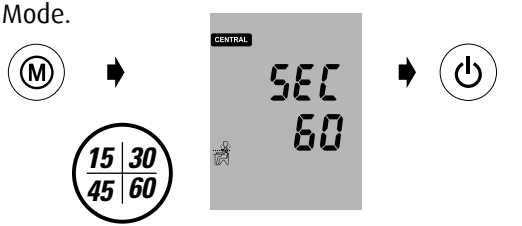
Standby Mode

Setting measuring intervals in «CENTRAL» Mode

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

Press and hold for 3 seconds...

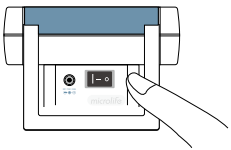
2) Press the M Button to adjust the measurement interval, then press the Start/Stop Button to confirm, the device will go back to Standby Mode.



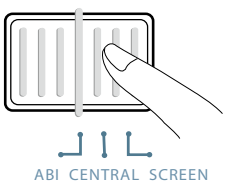
⁘ *The default measuring interval is 15 seconds. The interval can be set as 15, 30, 45 or 60 seconds.*

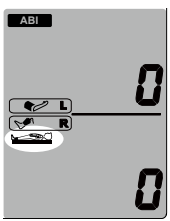
«ABI» Mode

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.

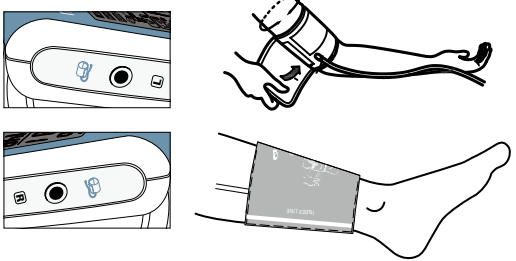


2) **Switch to «ABI» Mode** – Slide the Mode Switch to «**ABI»** Mode. The supine position reminder will display.
3) The patient has to lie down in supine position.





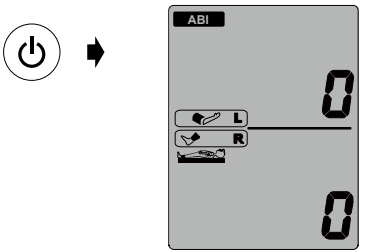
4) **Apply the cuff*** – Properly fit the arm cuff to the upper arm and the ankle cuff to the leg of the preferred measurement side of the body. The preferred arm is the arm with the higher blood pressure value, which can be determined in **«SCREEN»** Mode.
5) Make sure the upper arm cuff is connected to the left cuff socket and the ankle cuff is connected to the right cuff socket.



* *Additional instruction can be found on the cuff.*

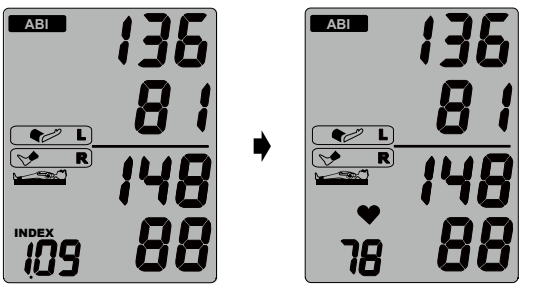
Taking measurements using WatchBP Office Central (cont.)

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



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

8) **Display of the measurement values–**
The measurement values will be displayed and the Ankle-brachial index is automatically calculated when the measurement is completed. The Ankle-brachial index and the blood pressure value display first, the brachial index value is replaced by the pulse value for 3 seconds.
All the values are saved automatically.



Central blood pressure

Central blood pressure is the pressure in the ascending aorta, the largest artery that originates from the left ventricular of the heart and from where oxygen is distributed to all parts of the body through the systemic circulation.

How is central blood pressure measured?

The WatchBP Office Central uses brachial pulse volume plethysmography (PVP) waveforms [1] to determine central blood pressure. The WatchBP Office Central is designed to perform PVP at a cuff pressure of 60 mmHg. Based on the analysis of PVP waveforms the central systolic blood pressure value and the central pulse pressure value are then determined [1].

Accuracy of the WatchBP Office Central

The accuracy of central blood pressure measurement performed with an automated oscillometric device can only reliably be determined against intra-arterial blood pressure measurement. The WatchBP Office Central has been validated against simultaneous recorded intra-arterial blood pressure measurement in 85 subjects and showed high accuracy [2].

CPP (Central Pulse Pressure)

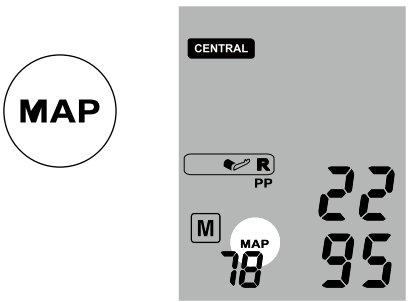
Central Pulse Pressure by this monitor is estimated directly through pulse volume plethysmography (PVP) waveform analysis.

1. *Sung, S.H., et al., Measurement of central systolic blood pressure by pulse volume plethysmography with a noninvasive blood pressure monitor. Am J Hypertens, 2012. 25: 542-8.*
2. *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: 42-50.*

Special Function (cont.)

MAP (Mean Arterial Pressure)

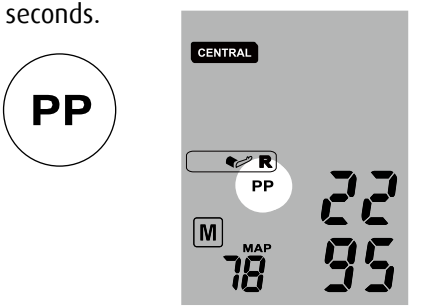
The WatchBP Office Central device measures the true mean arterial pressure (MAP). Each measurement includes a single MAP value. The average measurement will display the average MAP value. When viewing in Memory mode, the MAP value will be displayed with the systolic and diastolic pressure once every 5 seconds.



⁘ *The Mean Arterial Pressure (MAP) in this device is determined from the maximum peak of the oscillometric envelope curve.*

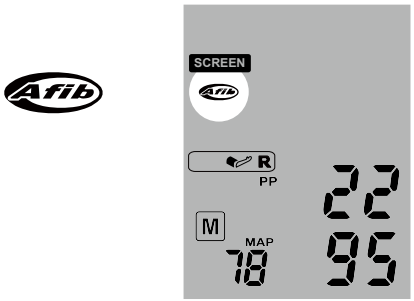
PP (Pulse Pressure)

This measurement 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.



Appearance of the atrial fibrillation indicator for early detection

The WatchBP Office Central is designed to screen for 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 accuracy: a sensitivity of 97% and a specificity of 89%. [1,2*]



1. *Joseph Wiesel, et al. Detection of Atrial Fibrillation Using a Modified Microlife Blood Pressure Monitor. Am J Hypertens 2009; 22, 848–852.*
2. *G S Stergiou, et al. Diagnostic accuracy of a home blood pressure monitor to detect atrial fibrillation. J Hum Hypertens 2009, 23, 654-658.*

* *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.*

Special Function (cont.)

About Atrial Fibrillation (Afib)

Afib 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 18% individuals aged 85 years and older. It is a common cause of major strokes. About 15% of all strokes are caused by Afib.

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

Afib can last from a few minutes, to days or weeks and even years. Afib 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 Afib.

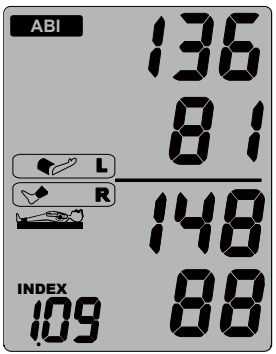
A doctor can confirm the presence of Afib by using a 12-lead ECG. Sometimes Afib is present incidentally. Therefore, a doctor may not see it on regularly scheduled visits.

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 followed by adequate treatment can reduce the chance of stroke by two-thirds.

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 measurement.

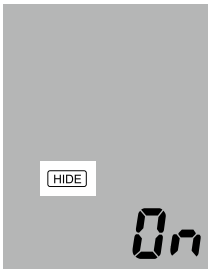


A low ankle-brachial index (ABI) is indicative of systemic vascular disease, and places a patient in the high-risk category.

Special Function (cont.)

Hiding measurement values

The WatchBP Office Central features a Hide function in order to prevent unnecessary elevated blood pressure in patients due to nervousness triggered by visible blood pressure values.

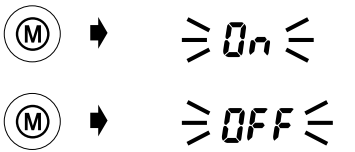


⁘ *This feature is available in both SCREEN mode and CENTRAL mode.*

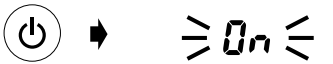
⁘ *When the «**Hide**» function is ON, only the average values are displayed after the consecutive measurements and the Hide icon is displayed.*

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.

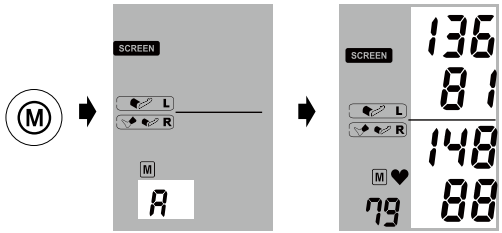


⁘ *The default setting of "Hide" is set at "ON" in both «SCREEN» Mode and «CENTRAL».*

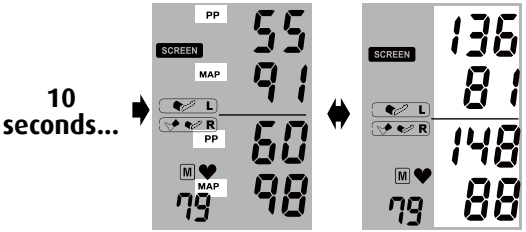
«SCREEN» Mode

1) **Viewing the average of all measurements**

When the last measurement is performed in «SCREEN» mode, press the M button displays the average of the 3 measurements of the «SCREEN» mode.



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



3) **Viewing individual measurements** – All individual readings can be viewed by repeatedly pressing the M Button. The display will flash a number before the reading indicating the sequence of the measurement.

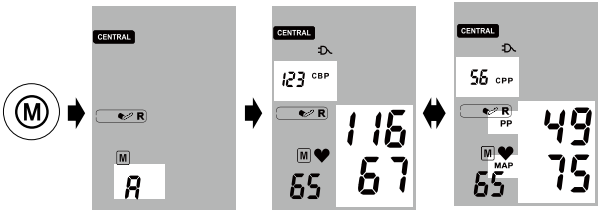
4) Values of the individual measurement (including PP and MAP values) will be displayed in the order listed in step 2.

Viewing and transferring Measurements (cont.)

«CENTRAL» Mode

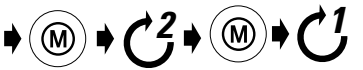
1) **Viewing the average of all measurements**

When the last measurement is performed in «CENTRAL» mode, press the M button displays the average of the 2 measurements of the «CENTRAL» mode.



2) **Viewing MAP, PP, central systolic blood pressure (CBP) and central pulse pressure (CPP) values –** The device switches the display for the average blood pressure, Pulse Pressure (PP), Mean Arterial Pressure (MAP), central systolic blood pressure (CBP) and central pulse pressure (CPP) automatically.

3) **Viewing individual measurements** – All individual readings can be viewed by repeatedly pressing the M Button. The display will flash a number before the reading indicating the sequence of the measurement.

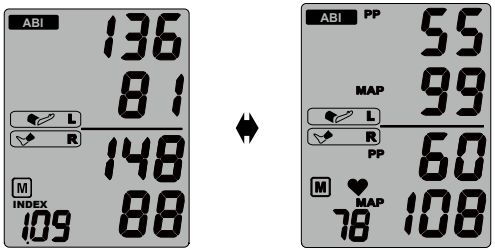


4) The device switches the display for values of the individual measurement (including PP, MAP, CBP and CPP values).

«ABI» Mode

1) When the last measurement is performed in «ABI» mode, press the M button displays the result of the ABI measurement.
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 display of the average blood pressure value, the values for Pulse Pressure (PP) and Mean Arterial Pressure (MAP) are displayed.



- *There is only one set of memory capacity in the device. Only the last measurements will be saved in the memory.*
- *The memory will be deleted when the power is turned off.*

Viewing and transferring Measurements (cont.)

Transferring measurements

Installation of the software program

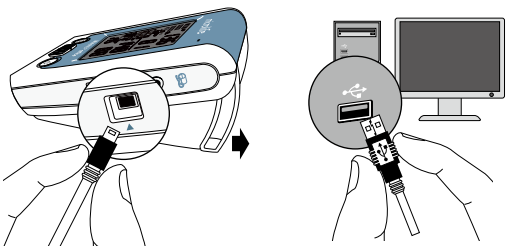
1) Put the CD in the CD-ROM drive of your computer or click on **«setup.exe»** in the CD's directory alternatively.
2) Follow the instructions provided in the installation window on the computer screen.
3) When the installation is finished, be sure to restart the computer before you start working with the program.

⁘ *System Requirements: 550MHz CPU. 256MB Memory, 1024x768 pixel resolution, 256 color, CD-ROM drive, 1 free USB port, 40MB free hard disk space, Microsoft Windows XP / Vista / Win7.*

Transferring data to the computer

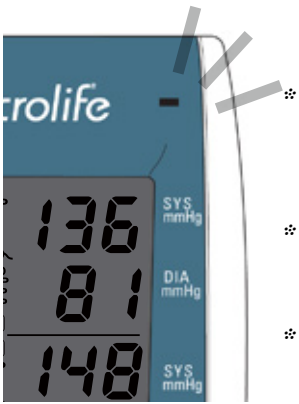
1) Start the software program and connect the device to the computer using the cable supplied.
2) Refer to the software user manual for detailed information and instructions.

When measuring blood pressure can not use computer to transfer data, the connected computer needs to meet the related safety standards.



Rechargeable Battery

The device is equipped with a built-in, rechargeable Ni-MH battery pack which delivers up to 400~500 measurement cycles. The batteries can be recharged while the power adaptor is plugged in. It does not affect the measurement.



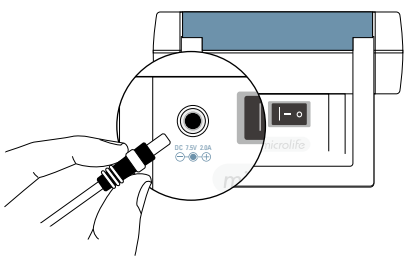
- *First time use , charge the batteries until the recharge indicator turns to green*
- *An orange recharge indicator means recharge in progress.*
- *A green recharge indicator means recharge is completed.*

Using a power adaptor

Please only use the Microlife adaptor supplied with the device to recharge the device.

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

The device program version is EB68h-20130131.



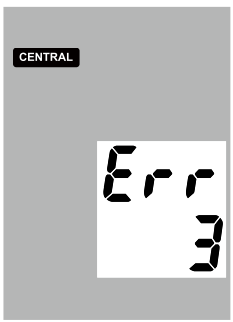
Troubleshooting

Problem	Possible cause	How to make correction
No power(No LCD display)	Power supply is not properly plugged in	Plug power supply into 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 or bladder	Check for cracks on the tube or the bladder. Please contact Microlife customer service for this issue.
No result displayed between measurements	The Hide function is activated	Disable “hide” function

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.*



Error	Description	Potential cause and remedy
Err 1	**Signal too weak**	The pulse signals on the cuff are too weak. Re-position the cuff and repeat the measurement.
Err 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.

Error messages

Err 3	**No pressure in the cuff**	An adequate pressure cannot be generated in the cuff. A leak may have occurred. Replace the batteries if necessary. Repeat the measurement.
Err 5	**Abnormal result**	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.
Err 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.
Err 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. Repeat the measurement, keeping your arm still

Err 13	**Cuff pressure errors during Central blood pressure measurement**	An adequate pressure cannot be generated in the cuff. A leak may have occurred. Check that the cuff is correctly connected and is not too loose. Replace the batteries if necessary. Repeat the measurement.
Err 15	**Abnormal result of Central blood pressure reading**	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.

HI	**Pulse or cuff pressure too high**	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.
LO	**Pulse too low**	The pulse is too low (less than 40 beats per minute). Repeat the measurement.

Safety, care, accuracy test and disposal

Read the instruction manual carefully before using this device, especially the safety instructions, and keep the instruction manual for future use. Do not use the instrument close to strong electromagnetic fields such as mobile telephones or radio installations

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

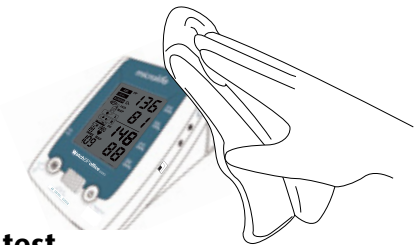
Protect device from impact and drops

Device care

Clean the device with a soft, dry cloth.

Cleaning the adapter

Clean the adapter with a dry cloth.



Accuracy test

We recommend the WatchBP Office Central 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.

Cleaning the cuff

Do not wash and scrub cuff . DO NOT iron the cuff cover.

Do not wash and scrub cuff

Do not iron the cuff!

Technical specifications

Operation temperature/ humidity:
- 10 to 40 °C (50 to 104 °F), 15 - 90 % relative maximum humidity at an atmospheric pressure range of 860hPa to 1060 hPa.

Transportation/ 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
- Pulse accuracy: ±5 % of the readout value

Voltage source:
- Rechargeable battery pack; 4.8V C3500 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.

CE 0044

The stipulations of the EU Directive 93/42/EEC for Medical Devices Class IIa have been fulfilled.


Type BF applied part


Manufacturer

REF Reference number


Class II equipment


Caution


For indoor use

Microlife reserves the right to alter technical specifications without prior written notice.

Guarantee card

This device is covered by a two-year guarantee and accessories are cover 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.

Name: _____

Address: _____

_____

Date: _____

Telephone: _____

E-mail: _____

Product model: WatchBP Office Central

REF: TWIN200 CBP

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