Speaking

Blood Pressure Monitor

User Manual

BM52
Thank you for purchasing the LloydsPharmacy Speaking Blood Pressure Monitor.

Please read these instructions for use carefully and keep them for later use, be sure to make them accessible to other users.

The upper arm blood pressure monitor is used for non-invasive measurement and monitoring of adults arterial blood pressure. You can use it to measure your blood pressure quickly and easily, storing the results and displaying the progression of readings together with the average reading.

• This symbol is displayed for anyone suffering from cardiac arrhythmia.

• The values determined are classified and graphically evaluated.
**Important information**

**Caution**

Note on important information

Follow instructions for use

This symbol indicates that the Blood Pressure Monitor is a type BF device. The cuff is type BF applied part.

Direct current

Disposal in accordance with EC Directive WEEE (Waste Electrical and Electronic Equipment).

Batch code

Date of manufacture

**Note**

The name and address of the manufacturer

Permissible transport and storage temperature. Permissible transport and storage humidity.

Permissible operating temperature and humidity

Keep dry

Serial number

The CE labelling certifies that the product complies with the essential requirements of Directive 93/42/EEC on medical products.

Model number

**Advice on use**

• In order to ensure comparable values, always measure your blood pressure at the same time of day.
• Before every measurement, relax for about five minutes.
• If you want to perform several measurements on the same person, wait five minutes between each measurement.
• Do not take a measurement within 30 minutes after eating, drinking, smoking or exercising.
• Repeat the measurement if you are unsure of the measured value.
• The measurements taken by you are for your information only – they are not a substitute for a medical examination. Discuss the measurements with your doctor, and never base any medical decisions on them (e.g. medicines and their administration).
• Do not use the blood pressure monitor on newborns or patients with pre-eclampsia. We recommend consulting a doctor before using the blood pressure monitor during pregnancy.
• This device is not intended for use by people (including children) with restricted physical sensory or mental skills or lack of experience and/or lack of knowledge, unless they are supervised by a person who has responsibility for their safety or they receive instructions from this person on how to use the device. Supervise children around the device to ensure they do not play with it.
• Cardiovascular diseases may lead to incorrect measurements or have a detrimental effect on measurement accuracy. The same also applies to very low blood pressure, diabetes, circulatory disorders and arrhythmias as well as chills or shaking.
• The blood pressure monitor must not be used in connection with a high-frequency surgical unit.
• Only use the device on people who have the specified upper arm measurement for the device.
• Please note that when inflating, the functions of the limb in question may be impaired.
• During the blood pressure measurement, blood circulation must not be stopped for an unnecessarily long time. If the device malfunctions, remove the cuff from the arm.
• Avoid any mechanical restriction, compression or bending of the cuff tube.

**Important information**

**Signs and symbols**

The following symbols are used in these instructions

- **Caution**
- **Note**
- **Follow instructions for use**
- **Note on important information**
- **Direct current**
- **Disposal in accordance with EC Directive WEEE (Waste Electrical and Electronic Equipment).**
- **Batch code**
- **Date of manufacture**

Advice on use:

- In order to ensure comparable values, always measure your blood pressure at the same time of day.
- Before every measurement, relax for about five minutes.
- If you want to perform several measurements on the same person, wait five minutes between each measurement.
- Do not take a measurement within 30 minutes after eating, drinking, smoking or exercising.
- Repeat the measurement if you are unsure of the measured value.
- The measurements taken by you are for your information only – they are not a substitute for a medical examination. Discuss the measurements with your doctor, and never base any medical decisions on them (e.g. medicines and their administration).
- Do not use the blood pressure monitor on newborns or patients with pre-eclampsia. We recommend consulting a doctor before using the blood pressure monitor during pregnancy.
- This device is not intended for use by people (including children) with restricted physical sensory or mental skills or lack of experience and/or lack of knowledge, unless they are supervised by a person who has responsibility for their safety or they receive instructions from this person on how to use the device. Supervise children around the device to ensure they do not play with it.
- Cardiovascular diseases may lead to incorrect measurements or have a detrimental effect on measurement accuracy. The same also applies to very low blood pressure, diabetes, circulatory disorders and arrhythmias as well as chills or shaking.
- The blood pressure monitor must not be used in connection with a high-frequency surgical unit.
- Only use the device on people who have the specified upper arm measurement for the device.
- Please note that when inflating, the functions of the limb in question may be impaired.
- During the blood pressure measurement, blood circulation must not be stopped for an unnecessarily long time. If the device malfunctions, remove the cuff from the arm.
- Avoid any mechanical restriction, compression or bending of the cuff tube.

Advice on use:

- In order to ensure comparable values, always measure your blood pressure at the same time of day.
- Before every measurement, relax for about five minutes.
- If you want to perform several measurements on the same person, wait five minutes between each measurement.
- Do not take a measurement within 30 minutes after eating, drinking, smoking or exercising.
- Repeat the measurement if you are unsure of the measured value.
- The measurements taken by you are for your information only – they are not a substitute for a medical examination. Discuss the measurements with your doctor, and never base any medical decisions on them (e.g. medicines and their administration).
- Do not use the blood pressure monitor on newborns or patients with pre-eclampsia. We recommend consulting a doctor before using the blood pressure monitor during pregnancy.
- This device is not intended for use by people (including children) with restricted physical sensory or mental skills or lack of experience and/or lack of knowledge, unless they are supervised by a person who has responsibility for their safety or they receive instructions from this person on how to use the device. Supervise children around the device to ensure they do not play with it.
- Cardiovascular diseases may lead to incorrect measurements or have a detrimental effect on measurement accuracy. The same also applies to very low blood pressure, diabetes, circulatory disorders and arrhythmias as well as chills or shaking.
- The blood pressure monitor must not be used in connection with a high-frequency surgical unit.
- Only use the device on people who have the specified upper arm measurement for the device.
- Please note that when inflating, the functions of the limb in question may be impaired.
- During the blood pressure measurement, blood circulation must not be stopped for an unnecessarily long time. If the device malfunctions, remove the cuff from the arm.
- Avoid any mechanical restriction, compression or bending of the cuff tube.
• Do not allow sustained pressure in the cuff or frequent measurements. The resulting restriction of the blood flow may cause injury.

• Ensure that the cuff is not placed on an arm in which the arteries or veins are undergoing medical treatment, e.g. intravascular access or therapy, or an arteriovenous (AV) shunt.

• Do not use the cuff on people who have undergone a mastectomy.

• Do not place the cuff over wounds as this may cause further injury.

• You can either use the blood pressure monitor with batteries or with a mains charger. Please note that data transfer and data storage is only possible when your blood pressure monitor is supplied with power. As soon as the batteries are empty or the mains disconnected from the power supply, the blood pressure monitor loses the date and time.

• To conserve the batteries, the monitor switches off automatically if no buttons are pressed for 3 minutes.

• The device is only intended for the purpose described in these instructions for use. The manufacturer is not liable for damage resulting from improper or careless use.

Storage and Care

• The blood pressure monitor is made up of precision electronic components. Accuracy of readings and the instrument’s service life depend on careful handling.

  – You should protect the device from impact, moisture, dirt, major temperature fluctuations and direct exposure to the sun’s rays. – Never drop the device. – Do not use near strong electromagnetic fields, i.e. keep it away from any radiosystems and mobile phones. – Only ever use the cuffs provided with the monitor or original replacement cuffs.

• If the instrument is not to be used for any length of time, we recommend removing the batteries.

Important information

Notes on handling batteries

• If your skin or eyes come into contact with battery fluid, flush out the affected areas with water and seek medical assistance.

• Choking hazard! Small children may swallow and choke on batteries. Store the batteries out of the reach of small children.

• Observe the plus (+) and minus (-) polarity signs.

• If a battery has leaked, put on protective gloves and clean the battery compartment with a dry cloth.

• Protect the batteries from excessive heat.

• Risk of explosion! Never throw batteries into a fire.

• Do not charge or short-circuit batteries.

• If the device is not to be used for a long period, take the batteries out of the battery compartment.

• Use identical or equivalent battery types only.

• Always replace all batteries at the same time.

• Do not use rechargeable batteries.

• Do not disassemble, split or crush the batteries.

General disposal

• For environmental reasons, do not dispose of the device in the household waste at the end of its useful life. Dispose of the unit at a suitable local collection or recycling point. Dispose of the device in accordance with EC Directive – WEEE (Waste Electrical and Electronic Equipment). If you have any questions, please contact the local authorities responsible for waste disposal.

Battery disposal

• The empty, completely flat batteries must be disposed of through specially designated collection boxes, recycling points or electronics retailers. You are legally required to dispose of the batteries.

• The codes below are printed on batteries containing harmful substances:

  • PB = Battery contains lead,
  • Cd = Battery contains cadmium,
  • Hg = Battery contains mercury.
**Parts**

- Cuff tube
- Cuff connector
- Connection for cuff connector (left-hand side)
- Scale for classifying the measurements
- Start/Stop button
- Memory button
- Display
- Function buttons

**Information on the Display**

- Battery replacement symbol
- Memory space number
- Multi-user memory
- Classification of measurements
- Systolic pressure
- Diastolic pressure
- Pulse value
- Time and date
- Cardiac arrhythmia symbol
- Inflating/release air

- Inflate
- Release air

- Memory display: average value (AVG) morning (AM), evening (PM)
Insert the batteries

- Open the battery compartment lid.
- Insert four 1.5 V AA (alkaline type LR6) batteries. Make sure that the batteries are inserted with the correct polarity, according to the label. Do not use rechargeable batteries. The message "The device is ready for use. You may start measuring." is displayed.
- Close the battery compartment lid again carefully.
- With inserted batteries, the unit permanently displays the time and date.

If the low battery indicator and appear, no further measurements can be performed. The device will announce: “Battery weak.” Please replace all batteries. Once the batteries have been removed from the unit, the date, time and language must be set again.

Set date, time and language
This menu allows you to set the following functions, one after another.
Date → Time → Language → Volume

It is essential to set the date and time. Otherwise, you will not be able to save your measured values correctly with a date and time and access them again later.

The time is displayed in 24-hour format.

In addition, the device has 1 language setting.

If you press and hold the function buttons +/-, you can set the values more quickly.
Setting up your Blood Pressure Monitor

**Voice output**
The device is ready for use. You may start measuring.

**Date/Time**
- Insert the batteries or press and hold the Memory button \( \text{M} \) for 5 seconds. The year flashes on the display.
- Set the year with the function buttons \( \text{+/–} \) and confirm with the Memory button \( \text{M} \).
- Set the month, day, hour and minutes and confirm each setting with the Memory button \( \text{M} \).

**Language**
The language will flash on the display.
- You can select the following languages with the function buttons \( \text{+/–} \):
  - \( \text{L} = \text{English} \)
  - \( \text{LG} = \text{Language off} \)
- Confirm your selection with the Memory button \( \text{M} \).

**Volume**
- You can set the volume of the selected language using the function buttons \( \text{+/–} \):
  - \( \text{Vo3} = \text{loud} \)
  - \( \text{Vo2} = \text{medium} \)
  - \( \text{Vo1} = \text{quiet} \)
- Confirm your selection with the Memory button \( \text{M} \).

How to use your Blood Pressure Monitor

- Please ensure the unit is at room temperature before measuring.

**Positioning the cuff**

1. Fit the cuff on your arm. Blood circulation in the arm should not be restricted by tight clothing or other objects.
2. The cuff should be placed on the upper arm so that the lower edge is about 2 to 3 cm from the bend of the elbow and above the artery. The tube should be in line with the centre of the palm.
3. Tighten the free end of the cuff, but make sure that it is not too tight around the arm and close to the hook-and-loop fastener. The cuff should be fastened so that two fingers fit under the cuff.
4. Insert the cuff line into the connection for the cuff connector.

If the measurement is performed on the right upper arm, the line should be located on the inside of your elbow. Ensure that your arm is not pressing on the line.
Using your Blood Pressure Monitor

If the values between the two arms are significantly different, please consult your pharmacist or doctor to determine which arm should be used for the measurement.

Important: The unit may only be operated with the original cuff. The cuff is suitable for an arm circumference of 22 to 36 cm. A larger cuff for upper-arm circumferences of 35 to 44 cm can be obtained from www.lloydspharmacy.com

Correct posture
• Rest for approx. 5 minutes before each measurement. Otherwise there may be divergences.
• You can perform the measurements either sitting or lying down. Always make sure that the cuff is on a level with your heart.
• To carry out a blood pressure measurement, make sure you are sitting comfortably with your arms and back leaning on something. Do not cross your legs. Place your feet flat on the ground.
• In order not to distort the result, it is important to keep still during the measurement and do not talk.

Selecting memory

Selecting memory

• Switch on the device with the Start/stop button.

When the device is switched off, the time and date are permanently displayed.
• Select the desired user memory by pressing the function buttons ↓↑.

You have 2 memories, each with 60 memory spaces to store the measurements of 2 different people separately.
Performing the blood pressure measurement

• As described before, attach the cuff and adopt the posture in which you want to perform the measurement.
• Switch on the device with the Start/stop button.
• A display check is performed, during which all display segments light up.
• Start the device with the Start/stop button. The memory space that will be used is displayed.
• The cuff is inflated to 190 mmHg. The cuff’s air pressure is slowly released. If a tendency for high blood pressure is already recognised, the cuff is reinflated and the cuff’s pressure is increased again. As soon as a pulse is detected, the symbol flashes.

Measuring can be cancelled at any time by pressing the Start/stop button.

• Systolic pressure, diastolic pressure and pulse measurements are displayed.

Voice output when voice function is active
The device is ready for use. You may start measuring.

Systolic ... mmHg
Diastolic ... mmHg
Heart rate ... beats per minute
According to the WHO guidelines your blood pressure is
- optimal
- normal
- high to normal
- shows slight hypertension
- shows medium hypertension
- shows strong hypertension

Performing the blood pressure measurement

Whilst the message is being displayed, the volume can be adjusted with the function buttons +/-.

• E ... appears if the measurement could not be performed properly. Observe the chapter on error messages/trouble-shooting in these instructions for use and repeat the measurement.
• The measurement is automatically stored.
• The device switches off automatically after 1 minute.

Wait at least 5 minutes before performing another measurement!
Cardiac arrhythmia:
This unit can identify potential disruption of the heart rhythm when measuring and if necessary, indicates this after the measurement with the symbol 🔄. If the voice function is activated, the device will announce: “A possible cardiac arrhythmia was found.” This can be an indicator for arrhythmia. Arrhythmia is an illness in which the heart rhythm is abnormal because of flaws in the bioelectrical system that regulates the heartbeat. The symptoms (skipped or premature heart beats, pulse being slow or too fast) can be caused by factors such as heart disease, age, physical make-up, excess stimulants, stress or lack of sleep. Arrhythmia can only be determined through an examination by your doctor. If the symbol 🔄 is shown on the display after the measurement has been taken, it should be repeated. Please ensure that you rest for 5 minutes beforehand and do not speak or move during the measurement. If the symbol 🔄 appears frequently, please consult your doctor. Self-diagnosis and treatment based on the measurements can be dangerous. Always follow your GP’s instructions.

Evaluating results

WHO (World Health Organisation) Definitions and Classification of Blood Pressure Levels.

* If systolic and diastolic BP fall into different categories, the higher value should be taken for classification e.g, if your BP is 141/83 you should read the advice in the Hypertension category (not the normal category). Your BP should be re-assessed professionally at least once every 5 years unless you have high BP in which case it should be re-assessed at least once a year - speak to your LloydsPharmacy pharmacist or healthcare professional.

<table>
<thead>
<tr>
<th>SYSTOLIC MMHG</th>
<th>DIASTOLIC MMHG</th>
<th>WHO INDICATOR</th>
<th>ADVICE ON RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤120</td>
<td>≤80</td>
<td>GREEN</td>
<td>Practice a healthy lifestyle. Consult your doctor only if suffering symptoms of low BP (e.g fainting).</td>
</tr>
<tr>
<td>120-129</td>
<td>80-84</td>
<td>GREEN</td>
<td>Practice a healthy lifestyle.</td>
</tr>
<tr>
<td>130-139</td>
<td>85-89</td>
<td>GREEN</td>
<td>Practice a healthy lifestyle.</td>
</tr>
<tr>
<td>140-159</td>
<td>90-99</td>
<td>YELLOW</td>
<td>Practice a healthy lifestyle. Re-measure BP monthly over the next 3 weeks. If high levels (≥140/90) persist (e.g. 2 high readings on 2 separate occasions) consult your LloydsPharmacy pharmacist or doctor.</td>
</tr>
<tr>
<td>160-179</td>
<td>100-109</td>
<td>ORANGE</td>
<td>Practice a healthy lifestyle. Re-measure BP monthly over the next 4 weeks. If high levels (≥140/90) persist (e.g. 2 high readings on 2 separate occasions) consult your LloydsPharmacy pharmacist or doctor.</td>
</tr>
<tr>
<td>≥180</td>
<td>≥110</td>
<td>RED</td>
<td>We would recommend that you see your doctor urgently.</td>
</tr>
</tbody>
</table>
Saving, displaying and deleting measurements

Whilst the message is being displayed, the volume can be adjusted with the function buttons +/-.

The results of every successful measurement are stored together with the date and time. If there are more than 60 measurements, the oldest measurements are lost.

- Switch on the device with the Start/stop button. The device is ready for use.
- You may start measuring.
- Select the desired user memory (1 or 2) by pressing the function buttons.
- Press the Memory button. The average value of all saved measured values in this user memory is displayed first.
- If you press the Memory button again, the average value of the morning measurements for the last 7 days will be displayed (morning: 5 a.m. – 9 a.m., display AM).
- If you press the Memory button again, the average value of the evening measurements for the last 7 days will be displayed (evening: 6 p.m. – 8 p.m., display PM).

Voice output when voice function is active

The device is ready for use. You may start measuring.
User memory 1
User memory 2

Average count:
Systole ... mmHg
Diastole ... mmHg
Heart rate ... beats per minute

According to the WHO guidelines your blood pressure is ...

Delete measured values

The measured values in the corresponding user memory can be deleted by switching on the device, selecting the desired user memory and pressing the function buttons and simultaneously for 5 seconds. All the counts in the memory have been erased.

Memory space ...
Systole ... mmHg
Diastole ... mmHg
Heart rate ... beats per minute
According to the WHO guidelines your blood pressure is ...
Error message/trouble shooting

In the event of errors, the error message E appears on the display.
Error messages can occur when
1. it was not possible to record the pulse (E1),
2. you move or speak during the measurement (E2),
3. the cuff is fastened too tightly or loosely (E3),
4. errors occur during the measurement (E4),
5. the pump pressure is higher than 300 mmHg (E5),
6. the batteries are almost empty (E6).

In such cases, repeat the measurement. Ensure that you do not move or speak. If necessary, reinsert or replace the batteries.

Cleaning and storing the unit
• Clean your blood pressure monitor carefully using a slightly damp cloth only.
• Do not use any cleaning agents or solvents.
• Under no circumstances should you hold the unit under water, as this can cause liquid to enter and damage the unit.
• If you store the unit, no heavy objects should be placed on top of it. Remove the batteries. The cuff line should not be bent sharply.

Technical specifications

<table>
<thead>
<tr>
<th>Model no.</th>
<th>BM 52</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement method</td>
<td>Oscillometric, non-invasive blood pressure measurement on the upper arm</td>
</tr>
<tr>
<td>Measurement range</td>
<td>Cuff pressure 0 – 300 mmHg, systolic 50-250 mmHg, diastolic 30-200 mmHg, Pulse 30–180 beats/minute</td>
</tr>
<tr>
<td>Display accuracy</td>
<td>Systolic ± 3 mmHg, diastolic ± 3 mmHg, pulse ± 5 % of the value shown</td>
</tr>
<tr>
<td>Measurement inaccuracy</td>
<td>Max. permissible standard deviation according to clinical testing: systolic 8 mmHg/diastolic 8 mmHg</td>
</tr>
<tr>
<td>Memory</td>
<td>2 x 60 memory spaces</td>
</tr>
<tr>
<td>Dimensions</td>
<td>L 145 mm x W 96 x H 60 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>Approx. 264 g (without batteries)</td>
</tr>
<tr>
<td>Cuff size</td>
<td>22 to 36 cm</td>
</tr>
<tr>
<td>Permissible operating conditions</td>
<td>+10 °C to +40 °C, ≤ 85 % relative air humidity (non-condensing)</td>
</tr>
<tr>
<td>Permissible storage conditions</td>
<td>-20 °C to +50 °C, ≤ 85 % relative air humidity, 800 – 1050 hPa ambient pressure</td>
</tr>
<tr>
<td>Power supply</td>
<td>4 x 1.5V AA batteries</td>
</tr>
<tr>
<td>Battery life</td>
<td>For approx. 250 measurements, depending on the blood pressure level and/or pump pressure</td>
</tr>
<tr>
<td>Accessories</td>
<td>Instruction for use, 4 x 1.5V AA batteries, storage pouch</td>
</tr>
<tr>
<td>Classification</td>
<td>Internal supply, IPX0, no AP or APG, continuous operation, type BF applied part</td>
</tr>
</tbody>
</table>
Technical Information

This unit is in line with European Standard EN 60601-1-2 and is subject to particular precautions with regard to electromagnetic compatibility (EMC). Please note that portable and mobile HF communication systems may interfere with this unit. More details can be requested from the stated Customer Service address or found at the end of the instructions for use.

This device is in line with the EU Medical Devices Directive 93/42/EC, the „Medizinproduktgesetz“ (German Medical Devices Act) and the standards EN 1060-1 (non-invasive sphygmomanometers, Part 1: General requirements), EN 1060-3 (non-invasive sphygmomanometers, Part 3: Supplementary requirements for electro-mechanical blood pressure measuring systems) and IEC 80601-2-30 (Medical electrical equipment – Part 2 – 30: Particular requirements for the safety and essential performance of automated non-invasive blood pressure monitors).

The accuracy of this blood pressure monitor has been carefully checked and developed with regard to a long useful life. If using the device for commercial medical purposes, it must be regularly tested for accuracy by appropriate means. Precise instructions for checking accuracy may be requested from the service address.

Electromagnetic Compatibility Information

Guidance and manufacturer’s declaration – electromagnetic emissions – for all EQUIPMENT and SYSTEMS

The BM52 blood pressure monitor is intended for use in the electromagnetic environment specified below. The customer of the user of the BM52 blood pressure monitor should assure that it is used in such and environment.

<table>
<thead>
<tr>
<th>Emission test</th>
<th>Compliance</th>
<th>Electromagnetic environment – guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>RF emissions CISPR 11</td>
<td>Group 1</td>
<td>The BM52 blood pressure monitor uses RF energy only for its internal function. Therefore, its RF emissions are very low and are not likely to cause any interference in nearby electronic equipment.</td>
</tr>
<tr>
<td>RF emission CISPR 11</td>
<td>Class B</td>
<td>The BM52 blood pressure monitor is suitable for use in all establishments, including domestic establishments and those directly connected to the public low-voltage power supply network that supplies buildings used for domestic purposes.</td>
</tr>
</tbody>
</table>

Guidance and manufacturer’s declaration – electromagnetic immunity – for all EQUIPMENT and SYSTEMS

<table>
<thead>
<tr>
<th>Immunity test</th>
<th>IEC 60601 test level</th>
<th>Compliance level</th>
<th>Electromagnetic environment – guidance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electrostatic discharge (ESD) IEC 61000-4-2</td>
<td>± 6 kV contact</td>
<td>± 6 kV contact</td>
<td>Floors should be wood, concrete or ceramic tile. If floor are covered with synthetic material, the relative humidity should be at least 30%.</td>
</tr>
<tr>
<td></td>
<td>± 8 kV air</td>
<td>± 8 kV air</td>
<td></td>
</tr>
<tr>
<td>Power frequency (50Hz) magnetic field IEC 61000-4-8</td>
<td>3 A/m</td>
<td>3 A/m</td>
<td>Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.</td>
</tr>
</tbody>
</table>
The BM52 blood pressure monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the BM52 blood pressure monitor should assure that it is used in such an environment.

### Immunity test

<table>
<thead>
<tr>
<th>Type</th>
<th>IEC 60601-4-6 Test level</th>
<th>Compliance level</th>
<th>Electromagnetic environment – guidance</th>
</tr>
</thead>
</table>
| Conducted RF| 3 Vrms (150 kHz to 80 MHz) | 3 V/m | Portable and mobile RF communications equipment should be used no closer to any part of the BM52 blood pressure monitor, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.

Recommended separation distance:

\[ d = \frac{1}{2\pi f} \sqrt{\frac{P}{2}} \]

\[ d = \frac{1}{4\pi f} \sqrt{\frac{P}{2}} \]

Where \( P \) is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and \( d \) is the recommended separation distance in metres (m).

\[ d = \frac{1}{2\pi f} \sqrt{\frac{P}{2}} \text{ (80 MHz to 800 MHz)} \]

\[ d = \frac{1}{4\pi f} \sqrt{\frac{P}{2}} \text{ (800 MHz to 2.5 GHz)} \]

Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range. Interference may occur in the vicinity of equipment marked with the following symbol: 

Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the BM52 blood pressure monitor is used exceeds the applicable RF compliance level above, the BM52 blood pressure monitor should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as reorienting or relocating the BM52 blood pressure monitor.

Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy.
Electromagnetic Compatibility Information

Recommended separation distances between portable and mobile RF communications equipment and the EQUIPMENT or SYSTEM – for EQUIPMENT or SYSTEM that are not LIFE-SUPPORTING

The BM52 blood pressure monitor is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the BM52 blood pressure monitor can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the BM52 blood pressure monitor as recommended below, according to the maximum output power of the communications equipment.

<table>
<thead>
<tr>
<th>Rated maximum output power of transmitter (W)</th>
<th>Separation distance according to frequency of transmitter (m)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>150 kHz to 80 MHz</td>
</tr>
<tr>
<td></td>
<td>d = ( \frac{0.117}{\sqrt{P}} )</td>
</tr>
<tr>
<td>0.01</td>
<td>0.117</td>
</tr>
<tr>
<td>0.1</td>
<td>0.370</td>
</tr>
<tr>
<td>1</td>
<td>1.170</td>
</tr>
<tr>
<td>10</td>
<td>3.700</td>
</tr>
<tr>
<td>100</td>
<td>11.7</td>
</tr>
</tbody>
</table>

|                                              | 80 MHz to 800 MHz                                           |
|                                              | d = \( \frac{0.117}{\sqrt{P}} \)                             |
| 0.01                                         | 0.117                                                       |
| 0.1                                          | 0.370                                                       |
| 1                                            | 1.170                                                       |
| 10                                           | 3.700                                                       |
| 100                                          | 11.7                                                        |

|                                              | 800 MHz to 2.5 GHz                                          |
|                                              | d = \( \frac{0.234}{\sqrt{P}} \)                             |
| 0.01                                         | 0.234                                                       |
| 0.1                                          | 0.740                                                       |
| 1                                            | 2.340                                                       |
| 10                                           | 7.400                                                       |
| 100                                          | 23.4                                                        |

For transmitters rated at a maximum output power not listed above, the recommended separation distance \( d \) in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where \( P \) is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

**NOTE 1** As 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

**NOTE 2** These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.