

Oregon Scientific™ Wrist Blood Pressure Monitor (BPW221)

User Manual

TABLE OF CONTENTS

Introduction	2
Key features	2
Main unit	2
Plastic storage container	2
LCD display symbols	2
Safety and care instructions	3
Safety precautions	3
Caring for your blood pressure monitor	4
About blood pressure	4
What is blood pressure?	4
What are systolic pressure and diastolic pressure?	4
What is mean arterial pressure?	4
Why measure your blood pressure?	4
What is the standard blood pressure classification?	5
Variation in blood pressure	5
How does the blood pressure monitor work?	5

Getting started	6
Installing and replacing the batteries	6
Setting the date, time and measurement units	6
Positioning the wrist cuff	7
Taking a blood pressure measurement	8
Recalling measurements stored in the memory	9
Troubleshooting guide	9
Additional resources	11
Specifications	11
Information concerning the CE mark	12
Blood pressure log book	12

INTRODUCTION

Thank you for selecting the Oregon Scientific™ Wrist Blood Pressure Monitor (BPW221) as your health product of choice. This product has been designed to provide you with many years of reliable service provided it is used correctly, and can help you measure and track the following metrics:

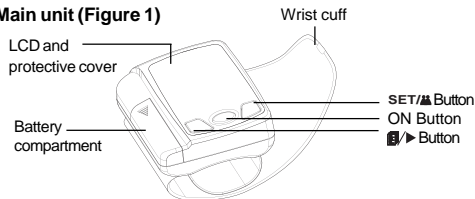
- Systolic pressure
- Diastolic pressure
- Mean arterial pressure
- Pulse rate
- A historic record of up to 60 measurements per user (maximum 2 users)

Readings taken by the BPW221 are equivalent to those obtained by a trained observer using the cuff and stethoscope auscultation method, within the limits prescribed by “EN1060-3 Non-invasive Sphygmomanometers-Part 3: Supplementary requirements for electro-mechanical blood pressure measuring systems.” The monitor’s accuracy in measuring diastolic pressure was tested using the fifth Korotkoff sound method.

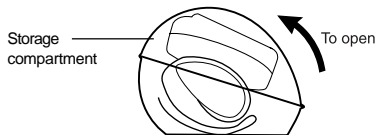
This manual contains important safety and care information, and provides step-by-step instructions for using the product. Read the manual thoroughly before using the product

KEY FEATURES

Main unit (Figure 1)









Plastic storage container (Figure 2)



LCD display symbols

Symbol	Description	Explanation
SYS <i>mmHg</i>	Systolic pressure	The highest blood pressure measured.
DIA <i>mmHg</i>	Diastolic pressure	The lowest blood pressure measured.
12:18	Time (hour : minutes)	The current time.

MAP mmHg	Mean arterial pressure	The average blood pressure measured (for more information, see page 4, "What is Mean Arterial Pressure?").
Pul  /min	Pulse	Pulse rate per minute.
	User	Shows which user profile (1 or 2) is being displayed.
	Memory	If "MEM" shows, the displayed measurement value is from the memory, and not necessarily from the last reading.
	Weak battery	Batteries are low and need to be replaced.
	Inflating	Unit is inflating with air to obtain the needed level of pressure.
	Deflating	Wrist cuff air is exhausting, or deflating.

SAFETY AND CARE INSTRUCTIONS

Safety precautions

Please observe the following safety precautions when setting up and using your blood pressure monitor.

- This device is intended for adult use only.
- This device is intended for non-invasive measuring and monitoring of arterial blood pressure. It is not intended for use on extremities other than the wrist or for functions other than obtaining a blood pressure measurement.
- Do not confuse self-monitoring with self-diagnosis. This unit allows you to monitor your blood pressure. Do not begin or end medical treatment based solely on the measurements of this device. Consult a physician for treatment advice.
- If you are taking medication, consult your physician to determine the most appropriate time to measure your blood pressure. Never change a prescribed medication without consulting your physician.
- This unit is not suitable for continuous monitoring during medical emergencies or operations.
- If the cuff pressure exceeds 300mmHg, the unit will automatically deflate. Should the cuff not deflate when pressures exceeds 300mmHg, detach the cuff from the wrist and press the **ON** button to stop inflation.
- To avoid measurement errors, carefully read this manual before using the product.

Caring for your blood pressure monitor

To ensure you receive the maximum benefit from using this product, please observe the following care guidelines.

- When not in use, store the main unit in the protective plastic container that came with it.
- Do not immerse the main unit in water. If it comes in contact with water, dry it immediately with a soft lint-free cloth.
- Use a soft, slightly moistened cloth to wipe off the main unit casing and cuff. Do not use abrasive or corrosive cleaning agents, as these may cause damage.
- Remove the batteries whenever you are planning to store the main unit for a long period of time.
- When replacing batteries, use new batteries as specified in this user manual. Do not mix new and old batteries.
- Do not place objects such as stickers on the wrist cuff or main unit, as these may impair the measurement.
- Do not subject the main unit to excessive force, shock, dust, temperature changes, or humidity. Such treatment may result in malfunction, a shorter electronic life span, damaged batteries, or distorted parts.
- Do not tamper with the internal components. Doing so will terminate the product warranty and may cause damage. The main unit contains no user-serviceable parts.
- If you no longer need to use this product, protect the environment by bringing it to your dealer or designated collection point for proper disposal.

ABOUT BLOOD PRESSURE

What is blood pressure?

Blood pressure is the force generated by the blood against the walls of arteries during cardiac contraction and relaxation (e.g., the pumping action of the heart).

What are systolic pressure and diastolic pressure?

When ventricles contract and pump blood out of the heart, blood pressure reaches its maximum value. This highest pressure in the cycle is known as systolic pressure. When the heart relaxes between heartbeats, the lowest blood pressure is diastolic pressure.

What is mean arterial pressure (MAP)?

The mean arterial pressure (MAP) is the average pressure that forces blood through the arteries. It is not the average of the systolic and diastolic blood pressure; rather, MAP corresponds to a state of balance between the compressive and expansive forces acting on the arterial wall when there is no distension outward or inward. MAP is an excellent way to evaluate the stress on the walls of your blood vessels, and can be used to evaluate excessive load on the cardiovascular system. Show your MAP history to your doctor to provide additional information that may help him or her understand your situation.

Why measure your blood pressure?

Blood pressure measurement can highly reflect one's health condition. High blood pressure is potentially linked to serious illnesses such as stroke, heart disease and kidney failure. Since there is no symptom most of the time, many hypertensive

people do not realize they are at risk until their health is seriously threatened.

What is the standard blood pressure classification?

The following chart (Figure 3) was taken from the World Health Organization (WHO), and describes the various classifications.

Please note:

- Hypotension value is for reference only.
- Blood pressure is considered high when either the diastolic or systolic blood pressure value exceeds the normal range.

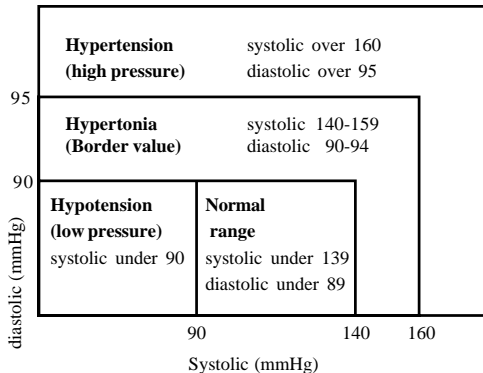


Figure 3

- Only a physician can tell you your normal blood pressure range and the point at which you are at risk. Consult your physician to obtain these values. If the measurements taken with this product fall outside the range, consult your physician.

Why does my blood pressure fluctuate throughout the day?

Individual blood pressure varies greatly both on a daily and a seasonal or temperature basis. These variations may be more pronounced in hypertensive patients. Normally the blood pressure rises while at work and is at its lowest during sleep. Figure 4 below illustrates the variations over a single day with measurement taken every five minutes. The thick line represents sleep time. The rises in blood pressure at 4 PM (A in the graph) and 12AM (B in the graph) correspond to an attack of pain and sexual intercourse (Beven, Honour & Stott, Clin. Sci. 36:329, 1969).

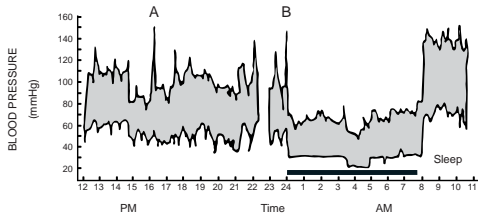


Figure 4

HOW DOES THE BLOOD PRESSURE ?

This product uses the Oscillometric Measuring method to detect your blood pressure. Before every measurement, the

main unit establishes a “zero pressure” equivalent to the air pressure. Then it starts inflating the wrist cuff to 180mmHg or higher until it senses that it has blocked your blood in the artery. After that, the deflation process starts, during which time the main unit detects pressure oscillations generated by beat-to-beat pulsatile, which is used to determine the systolic, mean and diastolic pressure, and also your pulse rate. Any motion during this period will result in an incorrect measurement. After all readings are determined and displayed on LCD, the measurement is finished and the wrist cuff automatically deflates.

GETTING STARTED

Installing and replacing the batteries

To install the batteries:

1. Slide off the battery cover (Figure 5a).
2. Install the batteries by matching the correct polarity, as shown by Figure 5b. Always use the correct battery type (2 Alkaline LR03 AAA-size).
3. Replace the cover (Figure 5c).




Figure 5a



Figure 5b



Figure 5c


Note: Replace the batteries whenever the weak battery mark () shows, the display is dim, or the display does not illuminate when the power is on. Replace all the batteries at the same time – it is dangerous to mix old and new batteries.

Contact your local waste disposal authority for instructions on how to dispose of used batteries. Used batteries can be harmful to the environment, and should not be thrown out with household trash.

Setting the date, time, and measurement units

It is important to set the clock before using your blood pressure monitor, so that a time stamp can be assigned to each record that is stored in the memory.

To set the date, time, and measurement unit:

1. Press and hold **SET** for 2 seconds to enter the setting mode.
The setting order is as follows: 12/24 hour format, hour, minute, month/day or day/month format, month, date, and measurement unit (mmHg or kPa).
2. Press  to increase a value or change the setting.
3. Press **SET** to accept the change and switch to the next setting.
4. When you are finished, press **ON** to exit the setup menu.

Positioning the wrist cuff

It is important to properly position the wrist cuff to ensure that you receive an accurate reading.

1. Remove all accessories (watch, bracelet, etc.) from your left wrist. If your physician has diagnosed you with poor circulation in your left arm, use your right wrist.
2. Roll or push up your sleeve to expose the skin.
3. Apply the cuff to your left wrist with your palm facing up (Figure 6a).
4. Position the edge of the cuff about 1 centimeter from the bottom of your palm (Figure 6b).
5. Fasten the wrist cuff around your wrist, leaving no extra room between the cuff and your skin. If the cuff is too loose, the measurement will be inaccurate (Figures 6c – 6d).

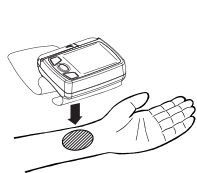


Figure 6a

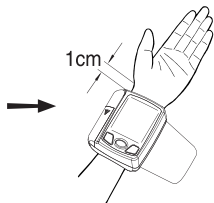


Figure 6b

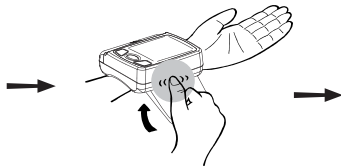


Figure 6c

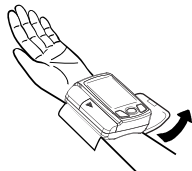


Figure 6d

Note: Graphics may not exactly match product.

TAKING A BLOOD PRESSURE MEASUREMENT

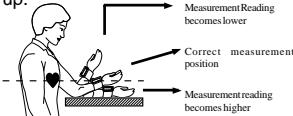

You can choose to take your blood pressure while sitting or lying down.

Helpful Tips for taking a measurement:

- Be sure to set the clock before taking your first measurement, or whenever you replace the batteries, so that the date and time are stored in the memory with your history. For instructions, refer to page 6.
- It is important to relax when taking your blood pressure. Try to take a 15-minute rest before you begin.
- Do not lean backward or bend your wrist inward while taking a measurement.
- Avoid talking or moving your fingers and hand while taking a measurement. Rapid movements or other activities may alter your reading.
- Wait at least one hour before taking your blood pressure if you have just eaten a large meal.
- Do not smoke or drink alcohol before taking your blood pressure.
- Do not measure your blood pressure if you are under stress.
- Wait at least 3 minutes between measurements. This allows your blood circulation to recover.
- For a meaningful comparison, try to measure under similar conditions. For example, take daily measurements at approximately the same time, on the same wrist, or as directed by a physician.
- To stop the measurement process at any time, press the **ON** button.
- The main unit automatically switches off 1 minute after taking a measurement. To save the battery life, press the **ON** button as soon as you are finished.

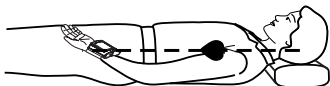
To take a measurement:

1. Choose the position you from which you wish to measure – sitting or lying down.
2. Position your body so that your wrist is parallel with your heart, using the chart and illustrations below as a guide.

IF you are...	THEN...
Sitting down with an armrest	<p>Place your elbow on a table, using the plastic storage case or other object as a support under your forearm. Your wrist should be parallel with your heart with the palm facing up.</p> 
Sitting down with no armrest	<p>Place your arm across your chest with the wrist parallel to your heart. Hold your elbow with the other hand.</p> 

Lying down

Position your wrist on a support, cushion, or your thigh so that it is parallel with your heart with the palm facing up.



3. Relax your hand.
4. If you wish to save the record to the memory, press **SET** to select "user 1" or "user 2". If you do not press the **SET** button, the record will not be saved.
5. Press the **ON** button.

Result: After a few seconds, the blood pressure monitor beeps and begins inflating the wrist cuff. It then slowly deflates until there is another beep, signifying that the measurement is complete. Don't move from the first beep until the last to ensure a more accurate measurement. Your systolic and diastolic pressure readings flash on the display, followed by MAP (Mean Arterial Pressure, see page 4) and pulse per minute readings every two seconds. If you chose to save the record to memory in Step 4, the measurement is automatically stored as the first (1) entry in the user record you selected; the last entry (60) is dropped, and all the entries in between move up one digit (e.g., 58 becomes 59, and so on).

RECALLING MEASUREMENTS STORED IN THE MEMORY

The memory can hold up to 60 records per user, for two users. The records are only stored if you choose to press the **SET** button prior to taking a new record (See Steps 4 - 5 for "Taking a blood pressure measurement", on page 8.)

To view a history of **user 1's** records, press **1**➤.

To view a history of **user 2's** records, press **SET**.

OR, press **SET** to display a list of users, and then press **1**➤ to select a user.

Note:

- The most recent record (1) is shown first. Each new measurement is assigned to the first (1) record. All other records are pushed back one digit (e.g., 2 becomes 3, and so on), and the last record (60) is dropped from the list.
- Press **1**➤ again to see additional records.
- The date and time of measurement are shown with each record.
- Memory records will be kept even when the batteries are replaced.

TROUBLESHOOTING GUIDE

This section includes a list of error messages and frequently asked questions for problems you may encounter with your blood pressure monitor. If the product is not operating as you think it should, check here before arranging for servicing.

Problem	Symptom	Check this	Remedy
No power	Display is dim or will not light up.	Batteries are exhausted.	Replace with new batteries (→6).
		Batteries are inserted incorrectly.	Insert the batteries correctly(→6).
Low batteries	⊘ shows on the display.	Batteries are low.	Replace with new batteries (→6).
Error message	<i>Err</i> shows on the display.	A measurement error occurred.	Relax for a moment and then measure again.
	<i>Err</i> 1, 2, or 3 shows on the display.	The wrist cuff is not secure.	Refasten the cuff and then measure again (→7).
	<i>Err</i> 4 shows on the display.	The monitor detected motion while measuring	Movement can affect the measurement. Relax for a moment and then measure again.
	<i>Err</i> 5 shows on the display.	Pressure is over 280mmHg (37.3 kPa)	Relax for a moment and then measure again.

Problem	Symptom	Check this	Remedy
Error message	<i>Err</i> 6 shows on the display.	Deflation period was too long	Movement can affect the measurement. Relax for a moment and then measure again.
	<i>Err</i> 7 or 8 shows on the display.	A calibration error occurred	Retake the measurement. If the problem persists, contact the retailer or our customer service department for further assistance. Refer to the warranty for contact information and return instructions.
Settings are wrong	Date and time are incorrect.	The clock was not set or reset after installing new batteries.	Reset the clock (→6).
	Measurement unit (mmHg or kPa) are incorrect.	The measurement unit was not set or reset after installing new batteries.	Reset the measurement unit (→6).

Problem	Symptom	Check this	Remedy
No user memory	Cannot find a record.	The memory was not activated prior to taking a measurement.	Retake the measurement (→8). In Step 4, press SET to activate the memory, and then select the user record to which you wish to store the measurement.
		The record was stored to the wrong user memory	Press ▶ to view user 1's record. Press SET to view user 2's record.

ADDITIONAL RESOURCES

Visit our website (www.oregonscientific.com) to learn more about your blood pressure monitor and other Oregon Scientific™ products such as digital cameras, sports watches, hand-held organizers, alarm clocks, and weather stations. The website also includes contact information for our customer service department, in case you need to reach us.

SPECIFICATIONS

Application:

Measuring method	Oscillometric / non-invasive
Application	For adult use only
Measurement location	Wrist section of lower arm
Memory	Maximum 60 records per user
Maximum Number of users	2

Dimensions:

Height x Width x Depth	~ 91mm x 80mm x 31mm (3.6in x 3.2in x 1.3in)
Weight	160g (5.5 oz) with batteries
Cuff circumference	~ 13.5 – 19.5cm (5.3 – 7.7in)

Measuring range:

Pressure	30 - 280mmHg (4.0 – 37.3 kPa)
Pulse	30 - 200 pulse/min

Accuracy:

Pressure	+/- 3mmHg (+/- .4 kPa)
Pulse	+/- 5%

Power:

Power supply	3V DC, two (2) LR03 / AAA / UM4-size 1.5V batteries
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Power save	Auto power off after 1 minute of non-activity
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Operating environment:

Operation	10°C...40°C (50°F...104°F)
Storage / Transport	-20°C...60°C (-4°F...140°F)
Humidity range	10%...83% relative humidity


INFORMATION CONCERNING THE CE MARK

This device complies with the European regulations based on the Medical Products Code, and bears the CE mark “**CE0123**”. The device has been quality inspected according to EG guideline 93/42/EWG and tested in compliance to the “EN1060-1 Non-invasive sphygmomanometers – Part 1, General requirements” and “EN1060-3 Non-invasive sphygmomanometers – Part 3: Supplementary requirements for electromechanical blood pressure measuring systems”. The CE mark further indicates that this blood pressure monitor meets the general requirements for electronic products as regards to resistance to electromagnetic interference. Malfunctioning may however occur in the proximity of extremely strong electromagnetic fields. In accordance with the “Ordinance for Operators of Medical Products”, a technical inspection must be carried out if this device is used for industrial or commercial purposes.

BLOOD PRESSURE LOG BOOK

To create a log of your blood pressure history, complete the personal information section at the top, then enter the details (date, time, and measurements) for each reading you take. To plot your history, use an S (systolic), D (diastolic) and M (mean arterial pressure) to mark the points where each measurement falls on the chart, then connect the points to view your history over time.

Name: _____ Age: _____ Weight: _____ (kg/lbs)

Date	10 Oct	17 Oct												
Time	10 PM	10 PM												
SYS	158	155												
DIS	90	95												
MAP	110	112												
Pul  <small>min</small>	85	90												
kPa	mmHg													
29.3	220													
26.7	200													
24.0	180													
21.3	160	S	S											
18.7	140													
16.0	120	M	M											
13.3	100	D	D											
10.7	80													
8.0	60													