

RAYCOME



Model RBP-1200
Child Pulsewave Blood Pressure
Monitor

INSTRUCTION MANUAL

Raycome Shenzhen Raycome Health Technology Co., Ltd

Product Name: Child Pulsewave Blood Pressure Monitor

Model: RBP-1200

Address: 3F, 51 Building, No.5 QiangYu Rd., Hi-tech Industrial
Park, Nanshan District, Shenzhen, 518057, China.

Market Hotline: +86 755 26633509

Email: sales@raycome.com

Website: www.raycome.com

Shenzhen Raycome Health Technology Co., Ltd

Dear Customer,

Thank you for purchasing the Raycome Health Model RBP-1200 Child Pulsewave Blood Pressure Monitor. In order to use the device correctly and efficiently, please read this Instruction Manual before use; also you should take good care of the instruction manual so that you can use it expediently and timely when need.

Version No.: V1.0.





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SAFETY PRECAUTIONS

The purpose of the symbols used in the instruction as safety identifying is to enable you use the product safe and properly, and to prevent harm to you and others or damage to property.

SYMBOLS AND ABBREVIATIONS

Identifiers	Indications
 WARNING	It indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
 CAUTION	It indicates a potentially hazardous situation which, if not avoided, may result in minor or moderate injury to the user or patient or damage to the equipment or other property.
 BP TYPE	
	Attention! View the manual!

WARNING

1. Contact your physician for specific information about your blood pressure. Self-diagnosis and treatment using measured results may be dangerous. Follow the instructions of your physician or licensed healthcare provider.
2. This product is only suitable for measuring blood pressure and pulse rate of kids of 3-12 years old. The tested values are for reference.
3. It can't be used for kids less than 3 years old.

4. Be sure to use and purchase a dedicated lithium battery and power adapter, or it may cause a fire or damage to product.
5. Do not plug in the power adapter plug with wet hands.
6. When common arrhythmias (such as atrial premature ventricular premature and atrial fibrillation) appear, use the product under a doctor's guidance.

CAUTION

1. Be sure to use and purchase a dedicated double-bladder cuff, or you cannot get accurate results.
2. Do not use a cellular phone near the device, or it may cause electromagnetic interference resulting in an operational failure.
3. Relax yourself and breathe naturally before measuring, please keep quiet and keep correct posture in measuring process. Incorrect posture (for example, incorrect sitting posture, the height of measuring position is inconsistent with the height of the heart) and non-quiet status (for example, limbs shaking, head and body swing, talking and being nervous) may cause measuring results not correct.
4. Do not attempt to maintain or modify the device by yourself. Please contact the manufacturer or authorized distributor if maintenance service needed.
5. Repeat measuring the same person with an interval of at least 5 minutes because too frequent measurements may cause injury to you due to blood flow interference and get incorrect measurements.
6. DualCuff should not be overly persistent,

- and the pressure should keep below the value of 300mmHg, or it may cause arm blood be unable to timely reflow.
7. Do not use the cuff when arm is wet or sweaty, please use it after wiping up.
 8. Do not subject the monitor and the AC adapter to strong shocks, such as dropping on the floor.
 9. Do not soak the unit or cuff in water.
 10. Operate the device only as intended. Do not use the device for any other purpose.
 11. Do not store or use manual sphygmomanometer outside the specified temperature or humidity range, it may not achieve the claimed performance.
 12. If the monitor and battery achieved longevity, do not arbitrarily discard them, they should be processed according to the local environmental protection regulations in order to avoid environmental pollution.
 13. The cuff and Li batteries are classified as consumables.
 14. The cuff still meets safety and performance requirements after cycle use for 10000 times; Li batteries capacity will decrease after charge-discharge for 300 times.

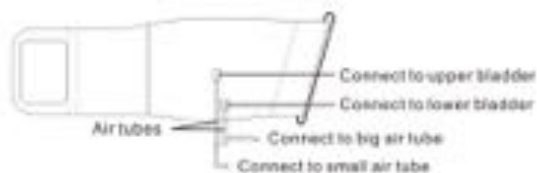
NOTES :

1. Before start the device, while press and hold the buttons "MEMORY" and "MENU" at the same time, then press the button "START/STOP" to enter test mode. Please do not unnecessarily perform the operation.
2. Calibration should be made every three years. Otherwise the device may reach less than the claimed accuracy.
3. Children should use this product under adult's care.

COMPONENTS OF THE PRODUCT

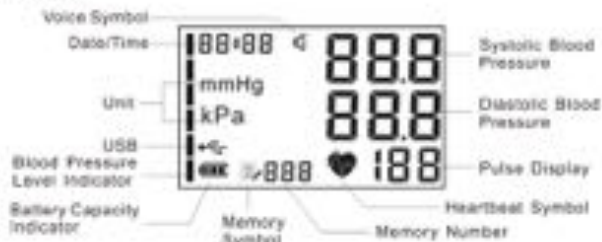


DualCuff:



According to applicable scope of arm circumference, the cuff size is divided into:
 Extra small size (ss): 15cm-18cm
 Small size (s): 18cm-22cm

Display

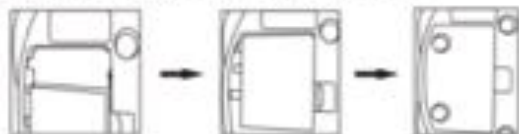


BATTERY INSTALLATION

1. Slip off the battery cover as the arrow direction,



2. Load the battery at the direction of the arrow and then replace the battery cover. As shown below:



NOTES:

- When the Low Battery Indicator "⏻" appears on the display screen, it indicates that battery power is low, please recharge the battery through the AC Adapter or replace battery.
- Please turn off the device before remove the battery.
- After the battery removed, stored memory will be still saved.
- Used batteries are classified as hazardous waste. Do not arbitrarily discarded them in household rubbish bins. They should be processed according to the local environmental protection regulations.

RECHARGE THE BATTERY

When symbol "⏻" at the lower left corner of the screen displays or "EE 7" error indicator appears, it indicates that battery power is low. Please charge the battery through the power adapter.

1. Plug the round plug of AC adapter into the adapter socket of blood pressure monitor on the side. Then insert the AC adapter into the power outlet. As shown below:



2. Device can be recharged no matter it is on or off. In charging process, the display will loop the symbols "⏻ → ⏻ → ⏻ → ⏻". The symbol "⏻" indicates battery is full charged. The device can be used for measurement when charging. The screen when charging is as shown below. During the process of charge, the user can also use the monitor normally, display of "be charging" show as below.



NOTES:

- 1. Do not plug in the power adapter with wet hands.
- 2. Do not use non-dedicated power adapter for this product.

APPLYING THE DUALCUFF

1. Make sure the air plugs are securely inserted in the main unit.



NOTE:

The DualCuff must be fully exhausted before plug into the unit.

2. Take off the thick garments and cuff has to be applied on the bare skin. Thin clothing does not affect the measurement if it does not take pressure to the arm.



3. Apply the DualCuff as shown below. Put your arm through the cuff loop. (The bottom of the cuff should be approximately 1 cm above the elbow.) The tubes should run down centre of arm approximately even with middle finger.



NOTE:

Do not put your thick clothes into cuffs.

POSTURES INSTRUCTIONS

1. Sit in a chair with your feet flat on the floor and place your arm on a table so that the cuff is at the same level as your heart.



2. Be relaxed and breathe normally before measurement.

NOTES:

- Do not put your arm on the airway tubes. Or this will restrict the flow of air to the DualCuff.
- Your arm cuff and heart should be on the same level. Otherwise, measurement accuracy will be affected.

SETTING DATE/TIME/VOICE/UNIT

After batteries are installed, press the button "START/STOP" to turn on the device, the display screen enters into the initial state.

After power off (Remove the lithium battery and pull out the circular DC plugs of power adapter), the date/time/voice/unit need to be set when starting up the device for the first time which enters into setting status automatically. If you want to set the voice and unit in the process of using, please press the button "MENU" into setting status.

NOTES:

- If the date and time were not set correctly, it would not be able to record the correct date and time when measuring blood pressure. For continuous blood pressure management, please set the date and time correctly.
- If the batteries are removed for too long, you need to set the date and time again.

SETTING THE DATE/TIME

Set the date and time with year, month, day, hour, minute sequentially as the following steps:

- (1) Boot for the first time, the year will flash on the display. You can also enter setting status in the process of using by pressing the button "MENU".
- (2) Press the button "MEMORY" to advance by increments of one year. Press and hold the "MEMORY" button to increase year value faster. The year can be set between 2014 and 2034.



- (3) Press the button "MENU" to confirm the current year. The month flashes on the display.
- (4) Press the button "MEMORY" to advance by increments of one month. Press and hold the "MEMORY" button to increase month number faster.



- (5) Press the button "MENU" to confirm the current month. The day flashes on the display.
- (6) Set the day, hour and minute with the same method as setting year and month.
- (7) Press the button "MENU" to confirm the current minute and then enter voice setting.

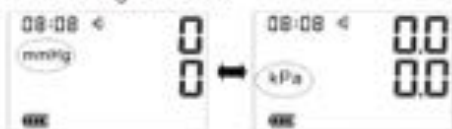
SETTING THE VOICE

The voice symbol flashes on the display in setting mode. Press the button "MEMORY" to turn on or turn off the voice.



SETTING THE UNIT

This monitor has two different units optional: mmHg and kPa. The default unit is mmHg. The 'mmHg' symbol or 'kPa' symbol flashes on the display after voice set. Press the button "MEMORY" to change the unit.



Press the button "START/STOP" to save the setting value and quit the setting status.

NOTES:

- If you do not have to set any of the items above mentioned, please press the button "MENU" to skip.
- You can also press the button "START/STOP" to measure directly if there is no item to be set.

TAKING A MEASUREMENT

The device is especially designed for blood pressure measurement of kids who are over 3 years old. It can't be used for kids less than 3 years old.

This monitor has two different units optional: mmHg and kPa. The default unit is mmHg. The following values are displayed mmHg as an example.

1. Users should try to relax the body before the test, and sit for 2-3 minutes. Users are advised to be measured at the same time each day. Apply the DualCuff correctly (Refer to the section "APPLYING THE DUALCUFF") and set right measuring postures (Refer to the section "POSTURES INSTRUCTIONS").
2. Press button "START/STOP" to turn on the unit and set the voice and unit as above mentioned (Refer to the section "SETTING VOICE/UNIT").
3. Press button "START/STOP" the speaker prompts: "Measuring, please be quiet", then the lower bladder starts to inflate.



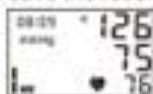
4. If the display shows the error code of 'EE5' during inflation process, it means a failure of inflation of lower bladder.



5. Inflation stops automatically and the measurement starts. As the arm cuff deflates, decreasing numbers appear on the display.



6. After the measurement finished, the DualCuff deflates quickly. Your blood pressure and pulse rate are displayed, and the monitor will save the result automatically.



7. Press button "START/STOP" to turn off the monitor. Directly press the button "START/STOP" if you want to stop measurement.

NOTES:

- The monitor will automatically turn off after 30 seconds without operation.
- Do not repeat the measurements in a short time, or they may cause arm blood can't timely return which may result in incorrect results. A new measurement can be started after at least five minutes once the previous measurement finished.
- If in the measurement process the body movement occurs, an error message will appear (see "Error Indicators"). Please re-measure and keep quiet until the the measurement finished.
- If in the measurement process a system error occurs for some reasons which result in measurement failure, or the cuff is excessively inflated, please press the button "START/STOP" to turn off the device and restart it.

INFLATING MANUALLY

Use manual inflating to get higher pressure if you find pressure value is not enough. Press and hold the button "START/STOP" when arm cuff is inflating until the pressure value reaches your expectation. Then arm cuff starts to deflate as normal measurement status.



Inflating to a higher pressure than necessary may result in bruising where the cuff is applied.

NOTES:

- Do not inflate manually when not necessary.
- The monitor could not inflate above 270 mmHg, it will begin to deflate and enter into measurement state when the pressure reaches up to 270 mmHg.

USING MEMORY FUNCTION

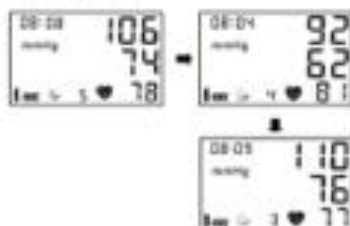
The monitor automatically stores up to 200 sets of measurement values (blood pressure and pulse rate). When 200 sets of measurement values have been stored, the earliest record is deleted to save the most recent values.

TO DISPLAY THE MEASUREMENT VALUES

1. Without entering the setting or measuring status, press the button "MEMORY", the memory symbol flashes on the display, and then you can check the memory value.

2. By pressing the button "MEMORY", the values are displayed from the most recent to the earliest.

As the following pictures:



3. Press "START/STOP" to exit.

TO DELETE ALL VALUES STORED IN THE MEMORY

Press and hold the button "MEMORY" for more than three seconds to delete all the stored data.



NOTE:

- You cannot partially delete values stored in the memory.

CARE AND MAINTENANCE

- If the monitor gets dirty, use soft cloth dipped little water or a mild detergent to slightly wipe it. Do not use gasoline, thinners and other solvents.
- Do not wet the DualCuff or let the liquid enter the device.
- Do not crash or fall down the monitor or AC adapter.
- Keep the monitor and accessories in packing case when not in use.
- Do not subject the monitor and the AC adapter to extreme high or low temperatures, humidity or direct sunlight.
- Do not forcefully bend the DualCuff or airway tubes. Do not fold tightly.
- Do not start measurement when the DualCuff is not applied, or else, the DualCuff may be damaged.
- Changes or modifications not approved by Raycome Health will void the user warranty. Do not disassemble or attempt to repair the unit or components.
- Remove the batteries if the unit will not be used for three months or longer.

ERROR INDICATORS

Error Code	Reasons	Measures
EE1	Upper bladder Pressure reaches 270mmHg by accident	Turn off the monitor and pull up the big cuff tubes
EE2	Cuff not applied correctly	Apply the cuff correctly
	Air is leaking from the upper bladder	Replace the cuff with the new one
EE3	Lower bladder pressure exceeds 150mmHg	Turn off the unit or pull out the small air plug
EE4	Movement or talk during measurement	Repeat measurement. Remain still and do not talk during measurement
EE5	Cuff not applied correctly	Apply the cuff correctly
	Air is leaking from the lower bladder	Replace the cuff with the new one
EE6	Cuff not applied correctly	Apply the cuff correctly
EE7	Low battery	Plug in the AC adapter charging directly.
EE8	Abnormal storage	Turn off the monitor and restart it again. Please contact Raycome Health if the situation still exists
EE9	Deflated time of the cuff is too long	Repeat measurement

EE10	Strong radiation nearby (such as cell phone, computer and etc)	Move away the radiation source from the monitor
Others	Unknown errors	Contact Raycome Health

TROUBLESHOOTING TIPS

The following chart lists common faults you may come across when you use blood pressure monitor. Please contact our after-sales service department for help in case problems still cannot be solved.

Number	Phenomenon of fault	Possible reason	Solution
1	No display appears on the screen after starting up.	No power	Replace all four batteries with new ones or use the AC adapter to supply power.
		Incorrect batteries installation	Check the battery installation for proper placement of the battery polarities.
2	Unable to measure or measurement value is too high.	Arm cuff may not be at the same level as the heart	Please apply the arm cuff correctly.
3	Measurement values appear too high or too low.	Blood pressure varies constantly. Many factors including stress, time of day, and how you wrap the cuff, may affect your blood pressure.	Take a deep breath to relax and keep quiet.

PRODUCT SPECIFICATION

Name: Child Pulsewave Blood Pressure Monitor

Model: RBP-1200

Measurement Range: Pressure: 0 to 270mmHg (0 to 36kPa);
Pulse rate: 40 to 180/min

Accuracy: Pressure: ± 3 mmHg (± 0.4 kPa)
Pulse rate: $\pm 5\%$

Storage Capacity: 200 sets

Power Supply: Lithium Battery (DC 3.7V) or AC adapter(Input:
AC 100-240V,50/60Hz,0.5A,Output:6V,1A)

Operating Temperature/Relative Humidity/Air Pressure: 5°C
to 40°C (41°F to 104°F)/15% to 85% RH/80kPa to 106kPa

Storage and Transportation Temperature/ Relative Humidity
/Air Pressure: -20°C to +55°C (-4°F to 131°F)/<93%RH/50kPa
to 106kPa

Main Unit Weight: Approximately 350g (18.2 OZ) not including
batteries

Main Unit Dimension: 6.496"(L)×4.409"(W)×2.36"(H)
(165mm×112mm×60mm)

Shock Protection: Internal power, Type BF applied part.

APPENDIX A: PACKING LIST

When the user opens Blood pressure monitors packaging, please check the following packing list. If objects are not complete or have other questions, please contact Raycome Health or authorized distributors.

No.	Name	Quantity
1	Main unit	1
2	DualCuff √SS √S	2
3	Lithium Battery	1
4	Power Adapter	1
5	Instruction manual	1

APPENDIX B: EMC





-  Please install and use this instrument according to the EMC information provided in this Instruction Manual.
-  The portable and mobile RF communications equipment can affect this instrument's normal operation.
-  Please use the accessories sold by our company, the inappropriate one may result in increased emission or decreased immunity of this instrument.
-  The instrument should not be used adjacent or stacked with other equipment and if adjacent or stacked use is necessary, please verify its normal operation in the configuration in which it will be used.

Table 1:

1	Guidance and manufacturer's declaration—electromagnetic emission		
2	The Child Pulsewave Blood Pressure Monitor is intended for use in the electromagnetic environment specified below. The customer or the user of Child Pulsewave Blood Pressure Monitor should assure that it is used in such an environment.		
3	Emissions test	Compliance	Electromagnetic environment—guidance
4	RF emissions EN 55011	Group 1	The Child Pulsewave 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 to nearby electronic equipment.
5	RF emissions EN 55011	Class B	The Child Pulsewave 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.
6	Harmonic emissions EN 61000-3-2	Class A	
7	Voltage fluctuations/ flicker emissions EN 61000-3-2	Complies	

Table 2:


Guidance and manufacturer's declaration – electromagnetic immunity			
The Child Pulsewave Blood Pressure Monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the Child Pulsewave Blood Pressure Monitor should assure that it is used in such an environment.			
Immunity test	EN 60601 test level	Compliance level	Electromagnetic environment—guidance
Electrostatic discharge (ESD) EN 61000-4-2	± 6 kV contact ± 8 kV air	± 6 kV contact ± 8 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrostatic transient/burst EN 61000-4-4	± 2 kV for power supply lines ± 1 kV for input/output lines	± 2 kV for power supply lines ± 1 kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge EN 61000-4-5	± 1 kV differential mode ± 2 kV common mode	± 1 kV differential mode ± 2 kV common mode	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips, short interruptions and voltage variations on power supply input lines EN 61000-4-11	± 5 % U _n (+95 % dip in U _n) for 0.5 cycle 40 % U _n (10 % dip in U _n) for 7 cycles 70 % U _n (10 % dip in U _n) for 25 cycles	± 5 % U _n (+95 % dip in U _n) for 0.5 cycle 40 % U _n (10 % dip in U _n) for 7 cycles 70 % U _n (10 % dip in U _n) for 25 cycles	Mains power quality should be that of a typical commercial or hospital environment. If the user of the Child Pulsewave Blood Pressure Monitor requires continued operation during power mains interruptions, it is recommended that the Child Pulsewave Blood Pressure Monitor be powered from an uninterruptible power supply or a battery.

Immunity test	EN 61010 test level	Compliance level	Electromagnetic environment guidance
Power frequency (50-60 Hz) magnetic field EN 61010-4-8	3 A/m	3 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE	U is the a.c. mains voltage prior to application of the test level		

Table 3:

Guidance and manufacturer's declaration – electromagnetic immunity

The Child Pulsewave Blood Pressure Monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the Child Pulsewave Blood Pressure Monitor should assure that it is used in such an environment.

Immunity test	EN 61010 test level	Compliance level	Electromagnetic environment guidance
Conducted RF EN 61010-4-6	3 V/m 150 kHz to 80 MHz	3V	Portable and mobile RF communications equipment should be used no closer to any part of the Automatic Pulsewave Blood Pressure Monitor, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = \sqrt{\frac{300000}{f} P}$ 80 MHz to 100 MHz $d = \sqrt{\frac{300000}{f} P}$ 100 MHz to 2.5 GHz 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). Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey ¹ should be less than the compliance level in each frequency range. ² Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF EN 61010-4-3	3 V/m 80 MHz to 2.5 GHz	3 V/m	

NOTE 1 At 80 MHz and 100 MHz, the higher frequency range applies

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

* Field strengths from fixed transmitters, such as base stations for radio (cellular/wireless) 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 Child Pulsewave Blood Pressure Monitor is used exceeds the applicable RF compliance level above, the Child Pulsewave 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 Child Pulsewave Blood Pressure Monitor.

† Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 1V/m

Table 4:

Recommended separation distances between portable and mobile RF communications equipment and the Child Pulsewave Blood Pressure Monitor

The Child Pulsewave 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 Child Pulsewave Blood Pressure Monitor can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Child Pulsewave Blood Pressure Monitor as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output of transmitter	Separation distance according to frequency of transmitter		
	150 kHz to 80 MHz $d = 1.5 \sqrt{\frac{P}{f}}$	80 MHz to 800 MHz $d = 1.5 \sqrt{\frac{P}{f}}$	800 MHz to 2.5 GHz $d = 1.5 \sqrt{\frac{P}{f}}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.71
1	1.2	1.2	2.3
10	3.8	3.8	7.3
100	12	12	23

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 At 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.