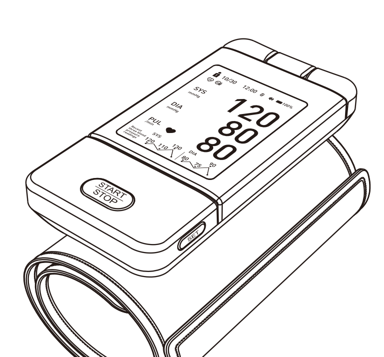
RUNSTAR

Instruction Manual

Electronic Blood Pressure Monitor

Model: BP-202



Version: 1.0

Revise date: 2023-02

Made in China

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1. Safety Instructions

Thank you for purchasing Runstar Arm-type Electronic Blood Pressure Monitor.

⚠ Please read this instruction manual carefully before use.

⚠ This device is not a direct diagnostic device. It is only suitable for monitoring the blood pressure and pulse rate of adults. The measurement results should not be used for self-diagnosis or treatment. Please follow your doctor's advice.

Blood pressure is an important indicator of the human circulatory system. The home blood pressure monitor is easy to use regularly. It is crucial for preventing cardiovascular disease, encouraging hypertension patients to seek treatment, and managing high blood pressure.

Blood pressure fluctuates continuously throughout the day and night. The highest values typically occur during the day and the lowest at midnight. It is recommended that you measure your blood pressure at roughly the same time each day.

Various activities such as physical exercise, excitement, stress, eating, drinking, smoking, body posture, and other factors (including taking a blood pressure measurement) can influence blood pressure readings. Due to these factors, it is uncommon to obtain identical blood pressure readings in multiple measurements.

Definition and Classification of Blood Pressure Levels from WHO-ISH

Classification	Systolic Pressure (mmHg)	Diastolic Pressure (mmHg)
Ideal Blood Pressure	<120	<80
Normal Blood Pressure	<130	<85
High Normal	130~139	85~89
Hypertension Grade Ⅰ (Slight)	140~159	90~99
Hypertension Grade Ⅱ (Medium)	160~179	100~109
Hypertension Grade Ⅲ (Serious)	≥180	≥110
Isolated Systolic Hypertension	≥140	<90

The information above is for reference only.

1.1 Warning:
This product is intended for daily blood pressure monitoring only and should not be used for diagnosing hypertension.

● Use this product only for blood pressure measurements. Using it for other purposes may lead to accidents.
● This device is suitable for use by adults only. Do not use it on infants, toddlers, children or individuals who cannot express themselves.
● Self-diagnosis and treatment based on blood pressure readings are not recommended. Consult healthcare professionals for proper evaluation and guidance.
● Patients with severe blood pressure or circulation disorders, as well as blood diseases, should use this device under medical supervision.
● The displayed pulse reading should not be used as medical heart rate monitoring.
● Patients with arrhythmia or arteriosclerosis should have their blood pressure readings confirmed by medical professionals.
● Do not apply the cuff on limbs with intravascular access, therapy, or arterio-venous shunts to prevent blood flow interference and patient injury.
● Do not use the cuff on an injured or operated arm to prevent further harm.
● In the presence of common arrhythmias, such as premature beats or atrial fibrillation, the accuracy of the readings may be affected.
● Keep the device away from any great power appliances (e.g. high-voltage equipment, X-ray machine, and ultrasound equipment, etc.) to prevent interference during use.
● Keep the device away from active HF surgical equipment, MRI system and RF shielded rooms which generate strong electromagnetic interference.
● Keep the device away from strong electromagnetic fields (e.g. near the mobile power supply, microwave oven, etc.), as it may affect accuracy.
● Do not submerge the device in water or any liquids.
● Do not use the device near flammable anesthetic mixtures.
● Do not stack this device with other equipment to prevent operational issues.
● Keep batteries away from fire and out of reach of children and pets.

1.2 Caution
- For best results, practice multiple times to become familiar with the measurement technique.
- Inspect the device for any damage before use, especially the cuff. Do not use if damaged to avoid skin injury.
- Verify the device is in proper working condition before use.
- Do not inflate the cuff when not properly wrapped around the arm.
- If cuff pressure causes discomfort, stop the measurement immediately by pressing the "START/STOP" button to release pressure, and remove the cuff.
- Inaccurate measurement values may occur due to unconscious mis-operation.

- Please follow the provided cleaning instructions in section 11 of this manual to minimize Cross-infection risks for the intended reuse of the product.
- Do not clean the device with volatile solvents.
- Avoid dropping the device or subjecting it to strong impacts.
- Use only specified accessories provided by the manufacturer to maintain proper functionality.
- Follow local laws when disposing of parts or the device at the end of its life cycle.

2. Working Principle

The Electronic Blood Pressure Monitor adopts the principle of oscillometric method, receives the blood pressure signal in the armband (cuff) through the pressure sensor, and measures the systolic blood pressure and diastolic blood pressure of the human body after processing by the chip. During the process of measuring blood pressure, the blood pressure sensor detects the number of pulsations of arterial blood vessels, and then converts them into the number of pulsations within a minute to achieve pulse rate measurement.

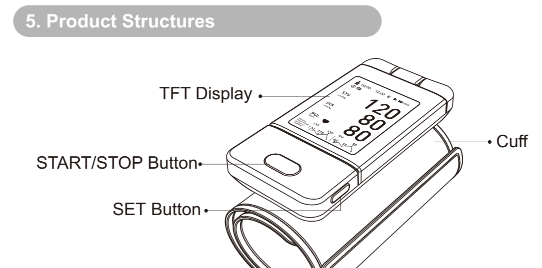
3. Intended Purpose

This device is a digital monitor intended for use in measuring blood pressure and pulse rate in adult patient population who can understand this instruction manual with the arm circumference range printed on the arm cuff.
Population: Adult, not including pregnant patients.
Contraindications: No known contradictions.
Side effects: Not applicable.

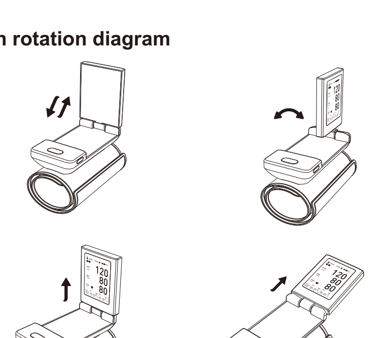
4. Product Introduction

Product Name: Electronic Blood Pressure Monitor
Model: BP-202
This equipment is composed of a main body and a cuff. The main body is composed of a central processing unit, a pressure sensor, an air pump, a solenoid valve, a uniform speed vent valve, a PCB board, and an TFT display.

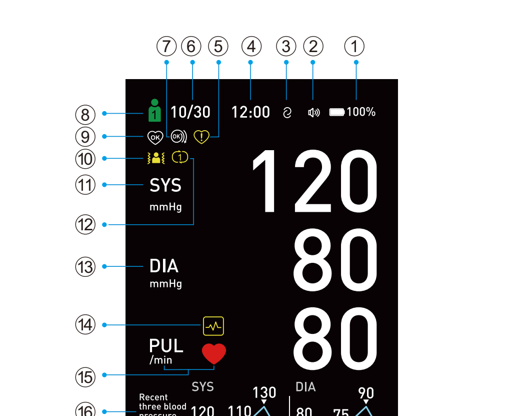
5. Product Structures



Screen rotation diagram



TFT Display Explanation



① Battery Indicator
② Sound Icon
③ Wireless Connection Icon
④ Time Icon
⑤ Blood Pressure Out of Range
⑥ Date Icon
⑦ Cuff Wrap Guide: Correct
⑧ User Icon
⑨ Normal Blood Pressure
⑩ Movement Error
⑪ Systolic Blood Pressure
⑫ Test Again
⑬ Diastolic Blood Pressure
⑭ Irregular Pulse
⑮ Pulse Rate Icon
⑯ Recent 3 Blood Pressure Readings

6. Symbol Explanation

Graphic Symbol	Content
⚠	**WARNING** Indicates a potentially hazardous situation, which if not avoided, could result in death or serious injury.
⚠	**CAUTION** 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.
	Please read the instructions before use.
	It belongs to the electric shock protection BF application part.
IP22	Cover Protection Class IP22: 2 Protected against solid foreign objects of 12,5 mm ∅ and greater; 2 Protected against vertically falling water drops when enclosure tilted up to 15°.
	The WEEE mark for electronic product recovery indicates that when the end user intends to discard the product, it must be taken to the appropriate facility for recovery and recycling.
	Manufacture date
	Manufacturer
LOT	Production batch number
UDI	Unique device identifier
MR	MR unsafe
FC UKCA UL UN38.3	Lithium battery certification

7. Product Specification

Item	Specification
Operating Environment	Temperature: 5°C~40°C Humidity: 15%~85% RH Atmospheric pressure range: 70kPa~106kPa
Measuring Method	Oscillometric method
Storage and Transportation Environment	Temperature: -20°C~50°C Humidity: 15%~85% RH Atmospheric pressure range: 70kPa~106kPa
Pressure Sensor	Resistance type pressure sensor
Maximum allowed pressure	299mmHg
Cuff deflation pressure	＜10s deflate 260mmHg to less than 15mmHg
Static leakage	≤±6mmHg for 6min
Manometer test mode	Dynamic pressure mode, Static pressure mode
Measuring Range	Blood Pressure/Indication Range: 0-299mmHg (0-39.9kPa)
	Pulse Rate: 40-199 beats/minute
Display	TFT display
Measuring Accuracy	Blood Pressure: ±3mmHg (±0.4kPa)
	Pulse Rate: ±5 %
Reproducibility of Blood Pressure Determination	±3mmHg (Root mean square between 10 measurements and their average)
Stability of Blood Pressure Determination	≤±3mmHg (Maximum deviation between the maximum value of 10 measurements and its average)
Resolution	1mmHg (0.1kPa)
Power Supply	Rechargeable Lithium-ion (1000mAh/3.7V/3.7Wh)

Charging Voltage	DC 5.0V
Memory Capacity	2 users with 99 memories each
Measure Time	Approx. 60s
Auto off	Auto power off after 60 seconds of inactivity
Cuff Specification	Approx. 22 to 42cm (8.6" to 16.5")
Dimension	Approx. 132mm (l) × 71mm (w) × 93mm (h) (5.2" × 2.8" × 3.7")
Weight	Approx. 248g (Included cuff)
Package List	USB-C cable, Instruction manual
Lifetime	5 years

Statement
The electronic blood pressure monitor has been performed clinical investigation according to ISO 81060-2: 2018 Non-invasive sphygmomanometers - Part 2: Clinical investigation of intermittent automated measurement type. The mean error and the maximum permissible standard deviation met the requirements of ISO 81060-2: 2018.
-This monitor is clinically investigated in accordance with the requirements of IEC 80601-2-30:2018.
-This monitor's biocompatibility has been verified by test according to ISO 10993 series standards.
-This monitor has been designed and tested in accordance with EN 60601-1:2006+A1:2013 to ensure safety and essential performance.
-Any serious incidents should be reported to the EU representative, manufacturer, and competent authority.

8. Settings

Long press the setting button to enter the settings function:

8.1 Unit Switching
1) Long press the "SET" button. If the current unit is mmHg, press the "START/STOP" button to switch to kPa.

2) The screen will display 0.0kPa, indicating successful switching.
3) Press the "SET" button to save and proceed to the next setting.

8.2 User Switching
1) After completing the previous setting, enter the user setting.
2) Press the "START/STOP" button to switch between "1" and "2" users. 3) Press the "SET" button to save and proceed to the next setting.

8.3 Date/Time Setting
1) After completing the previous setting, enter the date setting (year, month, day).
2) Press the "START/STOP" button to adjust the year, then press the "SET" button to enter the month setting.
3) Press the "START/STOP" button to adjust the month, then press the "SET" button to enter the day setting.
4) Press the "START/STOP" button to adjust the day, then press the "SET" button to save and proceed to the 12/24-hour format setting.
5) Press the "START/STOP" button to switch between 12-hour and 24-hour format.
6) Press the "SET" button to save and proceed to the hour setting.
7) Press the "START/STOP" button to adjust the hour, then press the "SET" button to enter the minute setting.
8) Press the "START/STOP" button to adjust the minute.
9) Press the "SET" button to save and proceed to the next setting.

8.4 Voice Settings
1) After completing the previous setting, enter the voice settings.
2) Press the "START/STOP" button to switch between ON and OFF.
3) Press the "SET" button to save and proceed to the next step.

8.5 Clearing Memory Data
1) After completing the previous setting, enter the memory deletion setting.
2) Press and hold the "START/STOP" and "SET" buttons simultaneously for 2 seconds. When the screen displays "--", all memory data has been successfully deleted.
3) Press the "SET" button to save and turn off the device.

Note: Memory deletion will permanently erase all stored measurement data for all users on this device.

Note: When the device is in settings mode, the "START/STOP" button cannot be used to turn the power on or off. You must cycle through all settings to the end, then press the "SET" button to shut down the device. Once shut down, the "START/STOP" button will resume its normal power function.

8.6 Viewing Stored Memory
1) Short press the "SET" button to enter the memory viewing mode to check the measurement data stored on the device.

9. Blood Pressure Measurement Method

9.1 Check and Prepare Before Measurement
1) Avoid exercising, bathing, drinking stimulating drinks (such as coffee or alcohol), and smoking within 30 minutes before the measurement.
2) Rest in a comfortable and stable environment for at least 5 minutes before the measurement.
3) Remove tight-fitting or thick clothing from your arm, bare the upper arm or wear thin shirts for the measurement.
4) Sit in a chair with your feet flat on the floor and arms on the table.

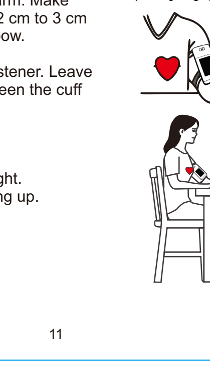
9.2 Apply the Cuff

1) Unfold the cuff into a loop and ensure it is open wide enough for your arm to fit in.

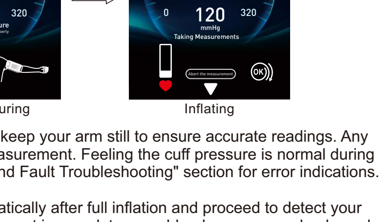
2) Wrap the cuff around the upper arm. Make sure the bottom edge of the cuff is 2 cm to 3 cm (approx. 1 inch) above the inner elbow.

3) Secure the cuff with the fabric fastener. Leave enough space to fit one finger between the cuff and your arm.

Correct measurement posture:
A. Rest your elbows on the table.
B. Align the cuff with your heart height.
C. Relax your body with palms facing up.



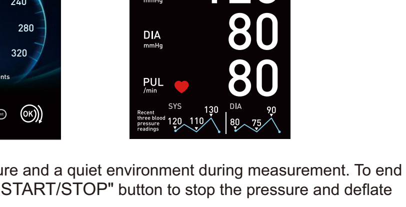
9.3 Start Blood Pressure Measurement
1) Press the "START/STOP" button while the device is in shutdown or standby mode to initiate the measurement process. The cuff will automatically inflate.



Start Measuring   Inflating

Note: During inflation, please keep your arm still to ensure accurate readings. Any movement may affect the measurement. Feeling the cuff pressure is normal during inflation. Refer to the "Error and Fault Troubleshooting" section for error indications.

2) The device will stop automatically after full inflation and proceed to detect your pulse rate. Once the measurement is complete, your blood pressure and pulse values will be displayed.



Note: Maintain a correct posture and a quiet environment during measurement. To end the measurement, press the "START/STOP" button to stop the pressure and deflate the cuff.

3) After the measurement, remove the cuff, press the "START/STOP" button to manually turn off the device. If no action is taken, the device will turn off automatically after 60 seconds.

Notice:
- Various factors such as measurement site, patient position (standing, sitting, lying down), cuff placement, exercise, and physiological condition can affect blood pressure readings.
- Extreme temperature, humidity, and altitude can impact the blood pressure monitor's performance. Use the device in the environment in accordance with the Instruction Manual.
- Proper cuff tightness is crucial for accurate readings.
- Maintain consistency in measurement timing, body position, posture, and device usage.
- Please measure both arms for first-time use.
- During measurement, please avoid squeezing the cuff, as squeezing may cause persistent over-inflation of the cuff. Excessive pressure can block blood flow and cause discomfort to the user. If you feel strong discomfort, promptly press the "START/STOP" button to release pressure, and remove the cuff.
- Wait at least 2-3 minutes between measurements to allow the artery to return to its normal state.
- Avoid frequent measurements to prevent blood flow interference and potential injury.
- Cuff pressurization may temporarily affect the function of other monitoring devices on the same arm.
- Make sure that the blood pressure monitor operation does not excessively impede blood circulation.

10. Error and Fault Troubleshooting

Symbol	Cause	Solution
ER1	Abnormal sensor signal	Check whether the cuff is normal and whether it is worn correctly, re-measure.
ER2	No measurement results	Check whether the cuff is normal, whether it is worn correctly, whether the blood pressure monitor communicates with heart. Using correct sitting posture, keep relaxed and quiet, re-measure.
ER3	Abnormal measurement results	Please check if the cuff is normal and properly worn, and ensure the blood pressure monitor is aligned with the level of the heart. Adopt the correct sitting posture, maintain a relaxed and quiet state, and take the measurement again.
ER4	The cuff is too loose or leaks air.	Check whether the cuff is secured with adequate tightness (one or two fingers should fit between the cuff and the arm); check for any noticeable air leakage from the cuff, then re-measure.
ER5	The cuff is too tight or the cuff is blocked.	Check whether the cuff is tight enough to fit one or two fingers into your arm; re-measure.
ER6	Severe pressure interference during measurement.	Check whether there are strong interference devices in the measurement environment, such as mobile phones, motors, and microwave ovens. Do not speak during measurement and keep relaxed. Do not use force or move the arm suddenly during measurement, re-measure.
ER7	Pressure exceeds upper limit	Do not speak during measurement and keep relaxed. Do not use force or move the arm suddenly during measurement, re-measure.

11. Maintenance and Cleaning

11.1 Maintenance
1) Do not disassemble, repair, replace parts, or modify the device. Contact the seller or manufacturer for any necessary assistance.
2) Avoid exposing the equipment to high temperatures, moisture, excessive humidity, or direct sunlight. Follow the instructions in this manual for proper usage and storage under specified environmental conditions.
3) Store the device in a secure location out of children's reach.

11.2 Cleaning:
1) Clean the device with a soft, dry cloth or a slightly damp cloth. It is advised to clean

the device before each use.
2) Disinfect the device with a soft cloth dampened with 75% medical alcohol after cleaning. Daily disinfection is recommended. Allow the device to air dry in a cool place after disinfection.
3) Avoid using strong volatile or corrosive solvents or abrasive cleaners.

12. Product Charging

12.1 How to Charge
This monitor is powered by a built-in lithium-ion battery. Please ensure the device is sufficiently charged before use. When the battery is low, please charge the device using the steps below:

1) Insert the charging cable into the power port on the monitor.
2) Plug the USB end of the cable into a DC 5V/1A USB power adapter, then plug the adapter into a standard 110V-240V AC outlet. The battery indicator will flash sequentially during charging.
3) Once fully charged, the battery indicator will display 100%. Unplug the adapter and disconnect the cable.

Important Safety Notes:
When used with a power adapter, this device is classified as a Medical Electrical System. Please ensure the adapter complies with the requirements of GB9706.1-2020.

12.2 Battery Life
A full charge provides approximately 200 measurements under normal usage conditions.

13. After-sale Service

Visit official website or scan QR code to activate lifetime warranty：
www.runstar.com

14. EMC Information and Statement

⚠Precautions：
- This product conforms to the electromagnetic compatibility requirements of IEC 60601-1-2:2014 standard.
- The user shall use the device according to EMC information provided in this manual.
- Portable and mobile RF communication equipment may affect the performance of the product. Avoid strong electromagnetic interference, such as close to mobile phones and microwave ovens.
- The guidance and manufacturer's statement are detailed in the table below.

⚠ **Warnings:**
- This product should not be used close to or stacked with other devices. If it must be used close to or stacked with other devices, it should be observed to verify that it can operate normally under the configuration used.

Table 1: Electromagnetic Emissions

Guidance and Declaration - Electromagnetic Emissions	
The product is intended for use in the electromagnetic environment specified below. The customer or the user of the product should assure that it is used in such an environment.	
Emission Test	**Compliance**
RF emissions CISPR 11	Group 1, Group B

Table 2: Electromagnetic Immunity

Guidance and Declaration - Electromagnetic Emissions		
Immunity Test	**Compliance**	
Electrostatic Discharge (ESD) IEC 61000-4-2	±8 kV contact ±15 kV air	
Power Frequency (50/60 Hz) Magnetic Field IEC 61000-4-8	30 A/m	
Radiated RF IEC 61000-4-3	80MHz- 2.7GHz	10 V/m
	380MHz- 390MHz	27 V/m
	430MHz- 470MHz	28 V/m
	704MHz- 787MHz	9 V/m
	800MHz- 960MHz	28 V/m
	1.7GHz- 1.99GHz	28 V/m
	2.4GHz- 2.57GHz	28 V/m
	5.1GHz- 5.8GHz	9 V/m

Table 3: Not Applicable

Harmonic Emissions (IEC 61000-3-2), Voltage Flicker Emissions (IEC 61000-3-3), Electrical Fast Transients (IEC 61000-4-4), Surge (IEC 61000-4-5), Voltage dips (IEC 61000-4-11), Conducted Immunity (IEC 61000-4-6)
Note: These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects, and people.

WARNINGS!
• This device should not be used in the vicinity or on the top of other electronic equipment such as cell phone, transceiver or radio control products. If you have to do so, the device should be observed to verify normal operation.
● The use of accessories and power cord other than those specified, with the exception of cables sold by the manufacturer of the equipment or system as replacement parts for internal components, may result in increased emissions or decreased immunity of the equipment or system.

15. Manufacturer Information

Manufacturer: Shenzhen HBcare Technology Co.,Ltd
Manufacturer Address: 4-5/F, Building 11, Tongfuyu Industrial Park, Lezhujiao, Huangmabu Community, Hangcheng Street, Bao'an District, Shenzhen, China

FC BSCI ISO 13485 Registered MDSAP MEDICAL DEVICE SINGLE AUDIT PROGRAM RoHS

FCC Statement

This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.
Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
•Reorient or relocate the receiving antenna.
•Increase the separation between the equipment and receiver.
•Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
•Consult the dealer or an experienced radio/TV technician for help.
The device has been evaluated to meet general RF exposure requirement. The device can be used in portable exposure condition without restriction.