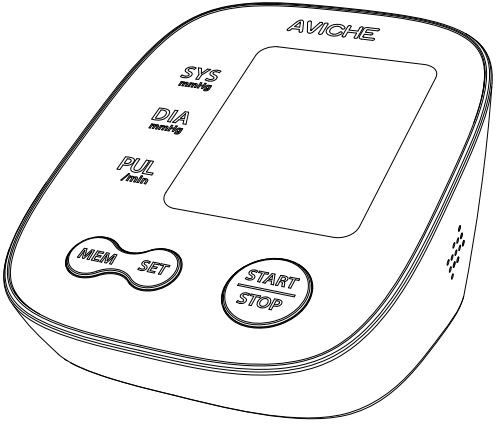
AVICHE®

User Manual

Automatic Digital Blood Pressure Monitor

Version 2.0



ES10

Attention: The user manual is in the packaging, please read all instructions before using and keep them properly for later use.

Issued time: January, 2019

Introduction

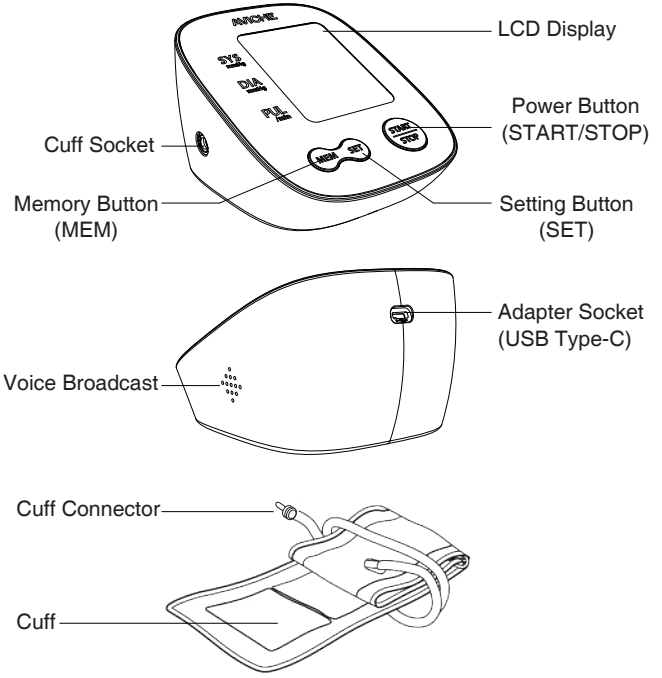
Thank you for purchasing our product. It is used to measure human blood pressure and pulse, help people to know their health status. With automatic control measurement technique, This digital blood pressure monitor will inflate intelligently according to people's systolic pressure and arm circumference, reducing the uncomfortable feeling caused by excessive pressure.

Product Features

· LCD backlit display
· Automatical intelligent inflation
· Upper arm blood pressure measurement
· Voice broadcast
· Alarm clock
· Two memories, each with 60 measured values
· Hypertension alarm
· Date/Time display
· Indicating average of the latest 3 readings
· Adapter is optional

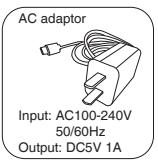
Table of Contents

Unit Description

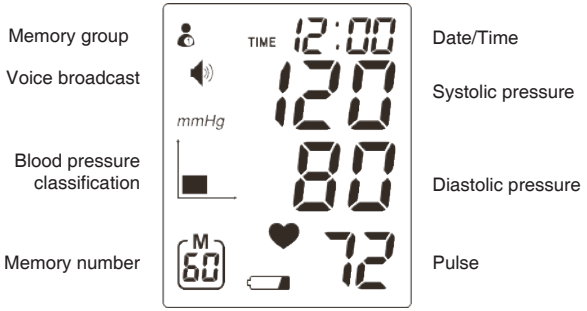


⚠ Attention if use AC adapter

1. If user needs to purchase the adapter, please refer to the specifications shown on the right figure.
2. Please use the power source in 100-240V.
3. Do not pull adapter with wet hands.
4. The standard packaging is without adapter, you can buy it separately if you need.



Icons in Display

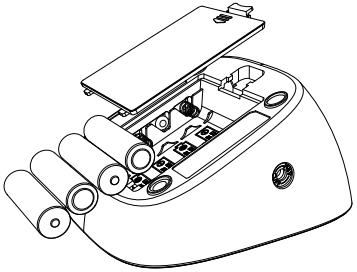


Display Symbols

	Storing or reading memory symbol
	Low battery symbol, replacing battery
	Alarm clock
	Hypertension classification
	Voice function
	Pulse symbol
	Memory group 1
	Memory group 2
AVG	Average of latest 3 readings
E1	Inflating error
E2	the pressure is more than 300mmHg when inflate manually
EE	measuring error

Inserting and Replacing Batteries

1. Remove the battery compartment lid according to the arrow direction.
2. Insert 4pcs AA batteries with correct polarity, then put on the battery cover.



⚠ Attention:

1. Replace the batteries when indicating low battery symbol or no display after switching on machine.
2. Please make sure adapter unconnected when replacing the batteries and battery polarity is correct. Never use new and old batteries at the same time.
3. Remove batteries from device when not in operation for more than 3 months.
4. Attached batteries is for testing only, we advise good alkaline batteries.
5. Battery life will change with the ambient temperature, shorter in cold situation.
6. Please dispose batteries according to local environmental protection law.
7. Batteries are dangerous article, don't dump them into regular trash.
8. Use only the approved arm cuff for this device. Use of other arm cuffs may result in incorrect measurement results.

Setting Date, Time, Voice, Unit, and Alarm Clock

Right time setting can help you to record every measurement time correctly.

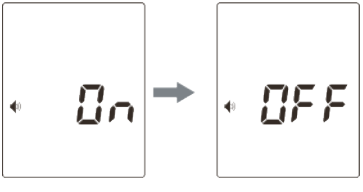
1. Press SET button for 3 seconds, then enter the setting interface, the year in display starts to flash (Figure 1).
2. Press MEM button to adjust year, the figure will be added for every press, circulate between 00 to 99.
3. Press SET to confirm when appear the right year, then enter to month and date setting (Figure 2).
4. Repeat above three procedure to set month, date and time (Figure 3).

Figure 1

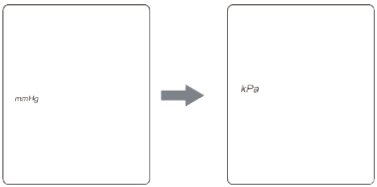
Figure 2

Figure 3

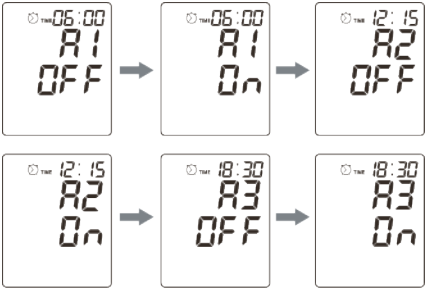
5. Set voice broadcast function. After setting the time, it will automatical ly enter the voice broadcast settings, press MEM button to open or close the voice broadcast function.



6. mmHg and kPa unit conversion setting. After setting the voice, it will automatically enter the unit setting and user can press MEM button to adjust mmHg to kPa.



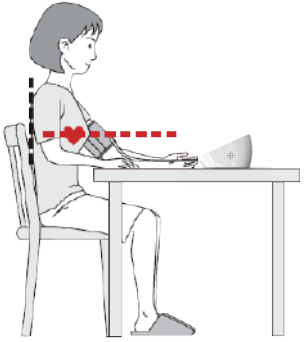
7. 3 groups of alarm clock remind you to measure blood pressure on time, after unit setting it automatically enter A1 alarm setting, press MEM to adjust ON or OFF, press SET button to confirm, after finish setting, enter A2 alarm time setting, repeat the above steps, can set A2, A3 alarm time setting.



Setting Memory Space

1. Press SET button to choose memory or .

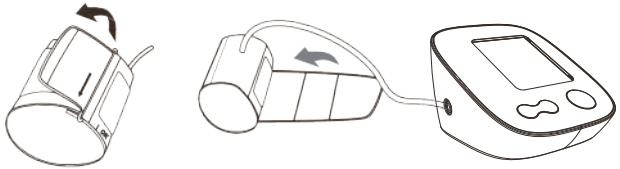
Measuring Position



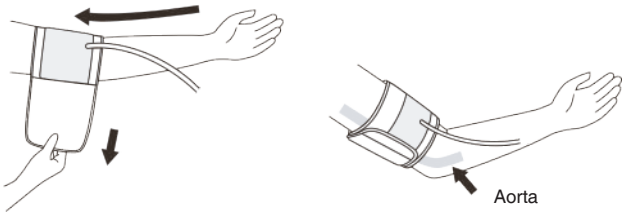
Take a seat and two feet flat on the floor, place your arm on the table comfortably, palms up, ensure that the arm cuff is at heart height. Keep still and do not talk during the measurement.

Fitting the Cuff

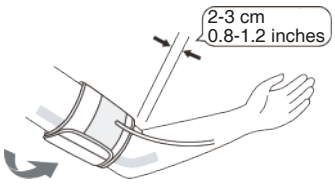
1. Open arm cuff, slide the open end of cuff through the metal bracket so that the velcro fastener is on outside, insert the cuff tube connector solidly into blood pressure monitor body.



2. Slide the cuff over the left upper arm, wrapped the arm cuff tightly, artery indicator close to artery of upper arm (the inner arm).

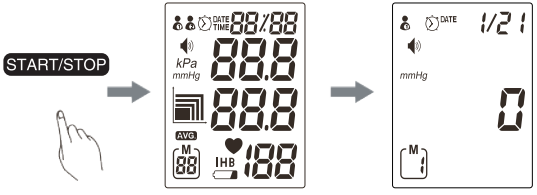


3. Left palm up, the cuff should be 2-3cm above the elbow crease.

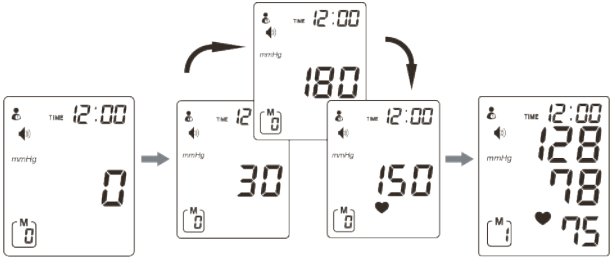


Measuring Blood Pressure

1. Wrap the arm cuff properly on the arm (refer to cuff using).
2. Press START/STOP button display full screen, ready to measure.



3. Press START/STOP button to start measuring, the device will inflate until the pressure is suitable for you, and then deflate, keep still and quiet during measurement. It will display systolic pressure, diastolic pressure and pulse after measuring finished.

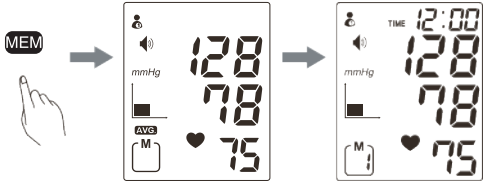


Reference table for blood pressure warning

Range of blood pressure value	Systolic (mmHg)	Diastolic (mmHg)	Indicator
Normal	≤120	≤80	
High-normal	121-130	81-85	
Mild hypertention	131-140	86-90	
Moderate hypertention	>140	>90	

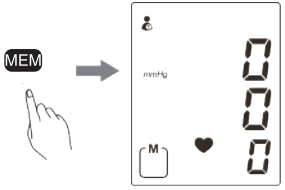
Reading Memory

1. When you press MEM button, the first display is the average of the latest 3 measured value.
2. Press MEM button again, it will display the record of the previous time.



Deleting Memory

1. Press MEM button for 3 seconds, all records will be deleted.



⚠ Attention:

1. You can not delete only some of the values, all stored results will be cleared if you press deletion. (You can make record for future reference before deleting).
2. The measuring values in the monitor will not get lost if batteries are taken out.

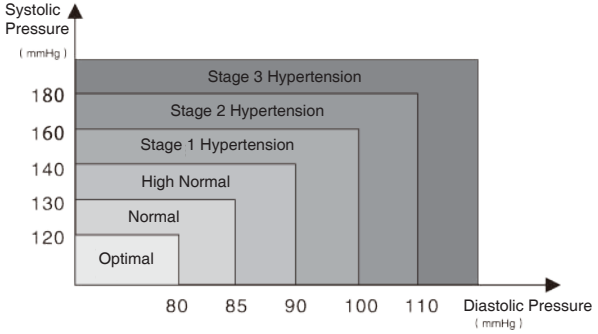
Blood Pressure Knowledge

What is the blood pressure ?

Blood pressure is the pressure exerted by circulating blood upon the walls of blood vessels, which refers to systolic pressure and diastolic pressure. Systolic pressure is the highest pressure output by blood during systole. Diastolic pressure is the lowest pressure that blood flow back to heart during diastole.

Blood pressure classification standard

The World Health Organization (WHO) and International Society of Hypertension (ISH) made a set of standard for blood pressure. It is a general rule for people of different age. It is important to consult your doctors frequently, they will tell you the critical point which need attention.



Change of blood pressure

Blood pressure is not constant, it is influenced by season, time, emotion, sport, alcohol, tobacco, coffee, medicine etc, therefore, the result will be more accurate when you measure blood pressure in a quite environment and physical comfort.

Safety Cautions

1. Battery leakage may damage the machine body, remove the batteries if the product will not be used for a long time.
2. The product is not allowed to use on infants and young children.
3. Do not inflate before wrapping the cuff.
4. Patients can not judge the results and care themselves, please follow doctor's instruction and ask professional person to explain the measured value.
5. For patients with cardiovascular and cerebrovascular diseases, please use it under the guidance of doctors.
6. Be sure to use an adapter with specifications as shown on page 4.
7. Please be sure to use AC100-240V power source.
8. Please don't use wet hand to pull out the power adapter in case of electric shock.
9. Avoid using mobile phone near the device as it may cause malfunction.
10. Do not use this device in electromagnetic fields. It may result in incorrect measurement results.

Important Information

1. Take the measurement one hour after meal.
2. Do not smoke, drink alcohol, tea or coffee one hour before measurement.
3. Do not measure when you are over fatigue or emotional.
4. keep quiet for 10-20 minutes before measurement.
5. As far as possible, make everyday measurement in the same time, same condition and same position, wait 5 minutes between each measurement.
6. If the device stored in low temperature environment, place it in normal temperature environment for at least one hour before using.
7. Do not use it in moving vehicles (cars, planes), otherwise it can't measure correctly.
8. Please use it in the required temperature and humidity environment, or it may not be able to measure correctly.

9. There may be risk if the air bag is over inflated for a long time.
10. When common arrhythmia (such as atrial premature, premature ventricular, atrial fibrillation) appears, measured values may not be accurate or blood pressure can't be measured.

The accuracy of this monitor has been rigorously tested. It is recommended to check and calibrate once a year to ensure the monitor is functioning properly and accurately. The monitor has a static pressure detection mode for the relevant technical department to perform the test. For more details, please call the customer service hotline for consultation.

Troubleshooting

If there are following abnormal phenomenon, you may refer to the corresponding solutions:

Abnormality	Reason	Checkout
Press the START/STOP button, no display	Batteries low	Replace new batteries
	Check if the batteries are installed with the correct polarity	Re-install the batteries
LCD shows E1 , abnormal inflating	Check if the Cuff tube connector is firmly fixed	Reinsert the tube connector
LCD shows measuring error “EE” or abnormal high (low) blood pressure value	Check if the cuff fixed Well	Refix the cuff
	Speak or move arm during measurement	Keep quiet and take a measurement again

If abnormal phenomenon still cannot be solved, please contact the manufacturer or consult the distributor. Please do not disassemble or repair if not knowing the reasons well.

Maintenance

1. Please keep the blood pressure cuff and accessories in the saving bag when not using.
2. In order to avoid the damage of the device, do not expose the blood pressure monitor and cuff to high temperature, humidity, full of water vapor or direct sunlight. Avoid strike and fall of the device.
3. To keep the machine clean, please use soft dry cloth to clean it. Do not use diluent, alcohol, petrol and other chemical reagent to clean the device body and cuff.

Note: Please clean the components of arm cuff after one year application.

4. Water and other liquid are kept out of this product.
5. Do not fold the cuff or air pipe tightly.
6. The calibration interval is 1 year. Users can do it in advance if necessary. The device must be tested and calibrated after repair.
7. Do not attempt to open, repair any part, if any problems, contact with distributor of this product.

Specification

Product name	Automatic Digital Blood Pressure Monitor
Model number	ES10
Power supply	4 “AA” batteries 1.5V or USB power line (Type-C)
Measuring method	Oscillometric method
Measure range	Pressure: 0 to 280 mmHg (0-37.3kPa) Pulse: 40 to 199 beats/min
Accuracy	Pressure: ±3 mmHg (±0.4kPa) Pulse: ±5% of display reading
Pressure sensor	Semiconductor
Inflation	Automatic
Deflation	Automatic
Memory groups	2 group, each group has 60 values
Operating environment	Temperature 5~40 ℃ relative humidity ≤80% Air pressure 80.0kPa-105.0kPa
Transportation and storing environment	Temperature -20~55 ℃ relative humidity 10%~90% Air pressure 80.0kPa-105.0kPa
Device weight	About 279g (without batteries and adapter)
Cuff circumference	22-36cm or 22-42cm (optional)
Overall dimension	129(L) × 110 (W) × 77.5(H) mm
Automatic off time	1 minute
Operation method	Continuous operation
Equipment category	Class II, internal electric source
Limited users	Adults above 18 years old
	BF type product
	Read the user manual
	Class II equipment
	Symbol for warning
	Dispose the used product to the recycling collection point according to local regulation
CE	The product conforms to the requirement of EC Directive MDD(93/42/EEC)
Disinfection, sterilization method	According to the method provided by manufacturer
Safety sort	Cannot be used in the condition of flammable anesthesia gas mixed with air or with oxygen or nitric oxide
Electromagnetic compatibility	Group 1, class B equipment
Ingress protection grade	IP22 Prevent solid objects into greater than 12 mm, 15 degrees tilt when still can prevent water intrusion

EMC Declaration

Guidance and manufacturer's declaration - electromagnetic immunity

The “blood pressure monitor” is intended for use in the electromagnetic environment specified below. The customer or the user of the “blood pressure monitor” should ensure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment — guidance
Electrostatic discharge (ESD) IEC 61000-4-2	±6kV contact ±8kV air	±6kV contact ±8kV air	Floor should be wood, concrete, or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	±2kV for power supply lines ±1kV for input/output lines	±2kV for power supply lines ±1kV for input/output lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	±1kV differential mode ±2kV common mode	±1kV differential mode ±2kV 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 IEC 61000-4-11	<5%UT (>95% dip in UT) for 0.5 cycle 40%UT (60% dip in UT) for 5 cycles 70%UT (30% dip in UT) for 25 cycles <5%UT (>95% dip in UT) for 5 sec	<5%UT (>95% dip in UT) for 0.5 cycle 40%UT (60% dip in UT) for 5 cycles 70%UT (30% dip in UT) for 25 cycles <5%UT (>95% dip in UT) for 5 sec	Mains power quality should be that of a typical commercial or hospital environment. If the user of the “blood pressure monitor” requires continued operation during power mains interruptions, it is recommended that the “blood pressure monitor” be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	3A/m	3A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.
NOTE: UT is the a.c. mains voltage prior to application of the test level.			

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment — guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHZ	3V	Portable and mobile RF communications equipment should be used no closer to any part of the “blood pressure monitor”, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d=1.2\sqrt{P}$ $d=1.2\sqrt{P}$ 80MHz to 800MHz $d=2.3\sqrt{P}$ 800MHz to 2.5Ghz 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,[a] should be less than the compliance level in each frequency range.[b] Interference may occur in the vicinity of equipment marked with the following symbol: 
Radiated RF IEC 61000-4-3	3 V/m 80 MHz to 2.5 Ghz	3V/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.

a Field strengths from fixed transmitters, such as base stations far 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 “blood pressure monitor” is used exceeds the applicable RF compliance level above, the 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 “blood pressure monitor”.

b Over the frequency range 150 kHz to 80 MHz, field strengths should be less than [V1]V/m.

Guidance and manufacturer's declaration - electromagnetic emissions

The “blood pressure monitor” is intended for use in the electromagnetic environment specified below. The customer or the user of the “blood pressure monitor” should ensure that it is used in such an environment.

<table>
<tr><th>Emissions test</th><th>Compliance</th><th>Electromagnetic environment — guidance</th></tr>
<tr><td>RF emissions
CISPR 11</td><td>Group 1</td><td>The “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 emissions
CISPR 11</td><td>Class B</td><td rowspan="3">The “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>
<tr><td>Harmonic emissions
IEC 61000-3-2</td><td>Class A</td></tr>
<tr><td>Voltage fluctuations/
flicker emissions
IEC 61000-3-3</td><td>Complies</td></tr>
</table>

Recommended separation distances between portable and mobile RF communications equipment and the blood pressure monitor

The “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 blood pressure monitor can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the “blood pressure monitor” as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output power of transmitter W	Separation distance according to frequency of transmitter (m)		
	150kHz to 80MHz $d=[\frac{3.5}{V1}]\sqrt{P}$	80MHz to 800MHz $d=[\frac{3.5}{E1}]\sqrt{P}$	800MHz to 2.5GHz $d=[\frac{7}{E1}]\sqrt{P}$
0.01	0.12	0.12	0.23
0.1	0.38	0.38	0.73
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 meters (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.

Blood Pressure Diary

Name: Age: Weight:

Date														
Time														
mmHg 240														
220														
200														
180														
160														
140														
120														
100														
80														
60														
Pulse														
Health status														

Name: Age: Weight:

Date														
Time														
mmHg 240														
220														
200														
180														
160														
140														
120														
100														
80														
60														
Pulse														
Health status														

Name: Age: Weight:

Date														
Time														
mmHg														
240														
220														
200														
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140														
120														
100														
80														
60														
Pulse														
Health status														

Name: Age: Weight:

Date														
Time														
mmHg														
240														
220														
200														
180														
160														
140														
120														
100														
80														
60														
Pulse														
Health status														

After-safes Service and Warranty Card

1. Implement the national policy of Three Guarantees.
2. Free maintenance will be provided by AVICHE in case of quality problems within one year from the date of purchase. In case of such issues over one year, Users can seek services by right of invoice and warranty card to the after-sales service departments, branch offices and distributors of AVICHE, where the spare parts for maintenance will be provided with reasonable charges. If users can not provide invoice, the warranty period will be identified by extension of 13 months from the date of production.
3. The followings are not covered by the warranty:

3.1 The Vulnerable Consumables.

3.2 The liquid leaked by the users enters into the device to cause abnormal operation.

3.3 Trouble caused by unauthorized demolition, repair or transformation of device.

3.4 Trouble caused by accidentally falling down in use or handling.

3.5 Trouble caused by the failure to operate in accordance with the correct operations in user manual.

3.6 The damage caused by unpredictable natural disasters (such as fire, earthquakes, floods, etc.).

AVICHE®

Automatic Digital Blood Pressure Monitor
Warranty Card

Model No.	ES10	
Warranty Period	From M/ D/ Y to M/ D/ Y	
Purchaser	Name	
	Address	
	Phone	
Sales Unit	Name	
	Address	
	Phone	
After-sales Service Instructions	1. Warranty a) Since the date of purchase, the warranty period will last for 1 year, and free maintenance will be provided (except for force majeure and human factors). b) The affiliated gifts will not be covered within the warranty. c) Proof: Purchase records, shopping certificate, and invoice. 2. Spare Parts Spare parts will be provided free of charge within the warranty period, and is subject to charges out of warranty period. 3. Contact Information for After-sales Service Service Hotline: +86-400-800-9850	

AVICHE Shandong Medical Technology Co., Ltd.

WeChat Official Account
Of AVICHE

Production date: See the label on the bottom of monitor
Service life: 2 years
Distributed by: AVICHE Shandong Medical Technology Co., Ltd.
Manufacturer: AVICHE Shandong Medical Technology Co., Ltd.
Address: Floor 26, Building A, A2-1 Jinan Pharm Valley, Gangxingsan Road, High-tech District, Jinan City, Shandong Province, China.
Service Hotline: +86-400-800-9850
Website: www.aviche.com
Email: aviche1@163.com
Tel/Fax: +86-531-55683666