KD-5904

Fully Automatic Electronic Blood Pressure Monitor

(ELECTRONIC SPHYGMOMANOMETER)

Operation Guide

CE 0197

Name of Each Part

- Systolic
- Diastolic
- Pulse

- ((♥)) irregular heartbeat symbol
- ◣ low battery
- ♥ deflate the remnant air
- ♠ inflate to measure

- "Voice" symbol
- "Voice" key
- Cuff
- Cuff tube plug
- Rubber tube
- LCD
- Memory "Power" key
- Blood pressure level classification indicator
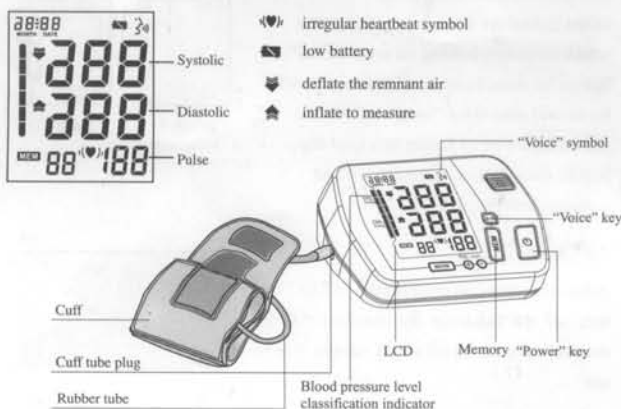
Function Description

Based on oscillometric method and silicon integrate pressure sensor technology, blood pressure and heart rate can be measured automatically and non-invasively with voice function which helps to ease the operation. New blood pressure classification indicator visually indicates user's blood pressure category, 60 memories with date and time display. Big LCD screen will show the result of measurement and irregular heartbeat (if any).

Specification

(1) Model: KD-5904	(9) Pressure measuring range:0-299mmHg
(2) Classification: Internal powered, Type B	(10) Measuring accuracy: ±3mmHg
(3) Machine size: 145mmx104mmx55mm	(11) Heart rate range: 40-180/min
(4) Cuff size: 475mmx135mm	(12) Environmental temperature for using: 5℃~40℃
(5) Weight: about 310g (exclude batteries)	(13) Environmental humidity for using: <85%
(6) Measuring method: oscillometric method, automatic air inflation and measurement	(14) Environmental temperature for storage: -20℃~55℃
	(15) Environmental humidity for storage: <95%
(7) Memory volume: 60 times with time and date displaying	(16) Environmental pressure: atmosphere pressure
(8) Power source: DC 6V or AAx4 batteries	(17) Battery life: Approx.2 months with 3-min. usage per day

Measuring Procedures

1. Battery Loading

a. Open battery cover at the back of the machine.
b. Load four "AA" size batteries. Please pay attention to polarity.
c. Close the battery cover.
★ When LCD shows battery signal it means you must change the batteries at once. Rechargeable batteries with a voltage of 1.2V are not suitable for this product.
★ Take out all the batteries if the device will be not used for a long time to avoid battery leakage and relevant damage.
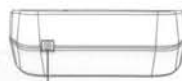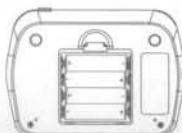

External power supply socket

The equipment, the batteries and cuff used in it can be disposed as industrial rubbish at the end of their usage or according to local regulations.
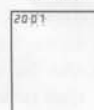
2. Clock display mode

a. Once you install the battery, the LCD will show the time. See picture 1. The date and the clock will show out turn and turn about. See picture 2.
b. When the machine is turned off, press the button "MODE" for 2 seconds, the number of year will glitter on LCD. See picture3. Press button "MODE" continuously, the numbers of month, date, hour, and minute will glitter.
While the number is glittering, press button "+" the corresponding number will increase by 1, and the button "-" will decrease by 1. Hold on pressuring the button "+" or "-" the number will change fast.
c. After pressuring "START" button the fifth time, numbers on LCD will not glitter, then you exit the time adjusting mode.
d. After you change the batteries, you have to readjust the date and time.
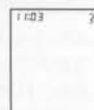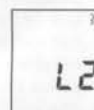

picture 1
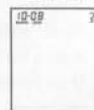
picture 2

picture 3

3. Voice Setting

a. Voice language setting: In clock display mode, you can select the voice language by keeping on press the Voice key. Now LCD twinkle "L1" and "L2" circularly. "L1" represents English, "L2" represents Spanish, the monitor will speaking out the corresponding language at the same. You can select the wanted language by releasing the Voice key when display the corresponding language code. See picture 4.
b. Voice volume setting: After set the language, the monitor will automatically enter the volume set mode. You can select the voice volume by keeping on press the Voice key again. Now the bars on the LCD change and the number of the bars indicates the volume. See picture 5. You can select the wanted volume by releasing the button when display the corresponding bars. If you want skip this, press the "START" button is ok.
c. Once you choose the language and the volume, the monitor will speak out measurement results and tips with that language during the measurement process.

picture 4

picture 5

d. You can turn on/off the voice by press the Voice key during most states except the pressure is rising up. And when the LCD is displaying the result, re-open the voice can make the monitor speak once again.

4. Cuff Connecting

a. Be sure there is no leakage when placing the rubber tube plug of cuff socket.
b. Put the end of cuff through metal hoop. Make sure that the two nylon outlets are located on the outside surface of the cuff.

5. Cuff Swathing

a. Place cuff 1-2cm above elbow joint.
★ Place palm upside and let it be parallel with rubber tube.
★ Measuring at the same arm each time.
★ Measuring on the bare arm, especially for the feeble pulse.
★ When the cuff is dirty, detach it from the equipment, wash the cuff by hand with proper detergent and rinse it in the enough cold water. Dry in air. Never iron it.

b. Turn the cuff end outward and tighten it by pulling through the metal loop. Then press the loop onto the surface of cuff.
c. Do not place the cuff too loose or too tight; spacing of a finger is appreciated.

Sitting Measurement
a. Sit upright
b. Place arm horizontally on the chair or table with the palm upside.
c. Cuff position should be at the same level as the heart.

Lying down Measurement
a. Lie on your back
b. Naturally place arm and hand straight, with palm upside.
c. Keep the cuff at the same level as the heart.
★During measurement, please make sure the cuff stays at the same height as the heart. Either above or below the position, the accuracy will be affected.
★Stay calm for 5 minutes before measuring and keep yourself comfortable, steady and quiet during measuring.
★Do not sway your body or move the monitor or press the rubber tube. Avoid swaying your arms.

6. Measuring Process

a. After your body is in a comfortable position, press the "START" button. After that the BPM will verify itself, and all LCD will light automatically. There is also a sound as "ding". See picture 6.

b. If it already has memory, then LCD will show the last result. See picture 7. If machine does not have memory before, the LCD will show of a single "0". See picture 8. If the monitor found that the air pressure is unstable, the "down arrow" will glitter, please do not move the monitor and the cuff.

c. If the voice function is on, the monitor will speak out the notice at the same time.

d. After that, if the voice function is on, the monitor will speak out the beginning message.

e. Then the monitor begins to pressurize automatically.
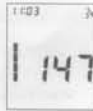
picture 6

picture 7

picture 8

f. During the measurement, the current pressure will display on the LCD, and the bars will automatically rise up or fall down with the current pressure in the cuff. See picture 9. And when the pressure is falling down, the heartbeat sign will glimmer as the monitor measured the heartbeat. See picture 10.

g. After measurement, the result of systolic, diastolic and pulse rate will all display on LCD. And irregular heartbeat symbol and blood pressure classification indicator will glimmer, see picture 11. The result will be automatically memorized by itself.

h. If the voice function is on, the monitor will speak out your systolic pressure, diastolic pressure, and the heart rate. If there is an arrhythmia, it also will be mentioned. After that the monitor will speak the WHO level which your blood pressure belongs to.

i. During the measurement, you can turn off the monitor by press the "START" button.

j. After measurement, the monitor will be automatically powered off if you do not use it more than 1 minutes.
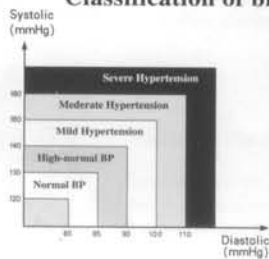
picture 9

picture 10

picture 11

c. Keep on pressing "Mem" button after the last memory of result, the machine will power off. Under the memory-displaying mode, it will be automatically power off after 1 minute of none use. Or you can press "START" button to shut down the machine.

d. If it has no memory, then LCD will show "0" for systolic, diastolic, and pulse rate, and show "00" for the number of memory. While press the "MEMORY" or "START" or after 1 minute of none use, machine will power off.

9. Deletion of Memories

When it displays one memory (no matter which memory), holding on press "Mem" button for three seconds, all memories will be deleted after three "beep". LCD will show the picture 14 before you raise the button, then come to the mode without memory, see picture 15

picture 14   picture 15

10. Shut Down

After measurement, press button "START" to turn off the machine; the machine will be automatically power off after 1 minute of none use.

7. Assessing High Blood Pressure for Adults

The follow standards for assessing high blood pressure (without regard to age or gender) have been established as a guide line according to WHO (World Health Organization) standard. Please note that other risk factors (e.g. diabetes, obesity, smoking, etc.) need to be taken into consideration and may affect these figures. Consult with your physician for accurate assessment.

Classification of blood pressure for adults

BLOOD PRESSURE CLASSIFICATION	SBP mmHg	DBP mmHg	COLOR INDICATOR
Optimal	<120	<80	GREEN
Normal	120-129	80-84	GREEN
High-Normal	130-139	85-89	GREEN
Stage 1 Hypertension	140-159	90-99	YELLOW
Stage 2 Hypertension	160-179	100-109	ORANGE
Stage 3 Hypertension	≥180	≥110	RED

WHO/ISH Definitions and Classification of Blood Pressure Levels

Abnormality & Troubleshooting (1)

Abnormality	Reason	Checkout
LCD shows low battery symbol	Batteries low	Change for new batteries
LCD shows "EE 0"	Pressure system unstable before measurement	Do not move the monitor and try again.
LCD shows "EE 1"	Systolic pressure detect fail	Measurement again
LCD shows "EE 2"	Diastolic pressure detect fail	Measurement again
LCD shows "EE 3"	Pneumatic system blocked or cuff is to tight during inflation	Tighten cuff correctly and refer to "CUFF Connecting"
LCD shows "EE 4"	Pneumatic system leakage or cuff is to loose during inflation	Tighten cuff correctly and refer to "CUFF Connecting"
LCD shows "EE 5"	Inflation above 300mmHg	Press the button "START"

8. Reading Result of Memories

a. Under the clock-displaying mode, press button "Mem" and enter the mode of reading results. LCD will show the how many results it has.

b. Then the last result will be displayed, which is 01 for memory number. The time when you measured will also displayed. And if the voice on, the monitor will speak out the memory number, your systolic pressure, diastolic pressure, the heart rate, the arrhythmia (if it was) and the WHO level which your blood pressure belongs to. See picture 12. Continuously press the "Mem" button, the memory number will increase by 1, see picture 13.
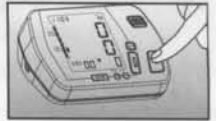
picture 12

picture 13

Abnormality & Troubleshooting (2)

LCD shows "EE 6"	Over 3 minutes while pressure above 15 mmHg	Press the button "START"
LCD shows "EE 7"	EEPROM access error	Please contact the factory
LCD twinkling all	Device parameter check error	Please contact the factory
LCD shows "EE 9"	MCU self-verity error	Please contact the factory
LCD shows "EE A"	Span error	Please contact the factory
LCD shows "EE b"	EEPROM backup error	Please contact the factory
BPM no response when you press button. BPM hang	Incorrect operation	Take out batteries for 5 min at least, and then reinstall all batteries.