

LD8



Little Doctor®

Digital Blood Pressure Monitor

Instruction Manual

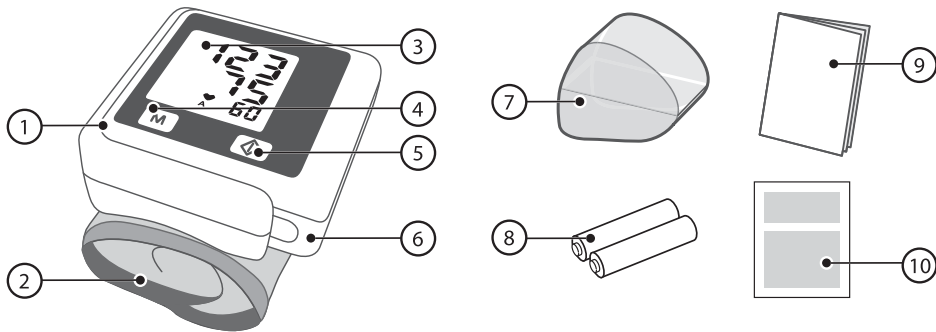
**Ciśnieniomierz elektroniczny LD
do pomiaru ciśnienia tętniczego krwi i pulsu**

Instrukcja obsługi

ENG

POL

NAME OF PARTS AND COMPONENTS



1. Electronic unit
2. Cuff
3. LCD display
4. Key «M» (Memory)
5. Key $\diamond$ (on-off power)

6. Battery compartment cover
7. Case
8. Battery
9. Instruction manual
10. Warranty card

GENERAL INFORMATION

This guide is intended to provide the user with the safe and efficient operation of a digital blood pressure monitor for measuring blood pressure and pulse rate LD, model LD8 (hereinafter: the device). The device should be used in accordance with the rules set forth herein, and should not be used for purposes other than those described here. It is important to read and understand the entire manual, especially the section «Recommendations for the correct measurement».

INDICATIONS FOR USE

The device is designed to measure the systolic and diastolic blood pressure and heart rate determination of patients aged 15 years. The device is recommended for use for patients with unstable blood pressure or known hypertension at home as a supplement to medical supervision. Cuff fits wrist with a circumference of about 12.5 to 20.5 cm .Pressure is measured in the range from 40 to 260 mm Hg, and pulse rate in the range from 40 to 160 beats per minute.

PRINCIPLE OF OPERATION

The device uses the oscillometric method for measuring blood pressure and pulse rate. The cuff is wrapped around the wrist and inflated automatically. The sensitive element of the device detects weak pressure oscillations in the cuff, made expansion and contraction of arteries in response to each heart beat. The amplitude of the pressure wave is measured, converted to millimeters of mercury and displayed as a digital value. The device has a memory cell 90 to store the measurement results.

NOTE: The device can not provide the specified accuracy if it is used or stored at a temperature or humidity other than specified in the «Specifications» section of this manual. Warning about possible errors in the measurement of blood pressure using the device in patients with severe arrhythmia. Consult your physician about blood pressure measurement in children.

USED NEW TECHNOLOGIES OF LD



Fuzzy Algorithm – an algorithm of processing the measurement data, which allows to take into account features of human heart, which provides higher accuracy.



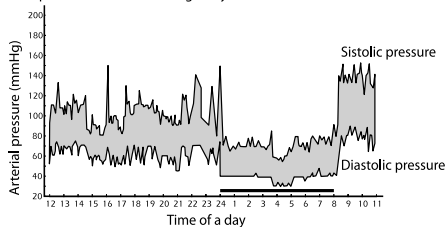
Indication of arrhythmia – a special icon “” on the display informs about the presence of an irregular heartbeat.

WARNING! Using a cuff other than the supplied this device is not permitted.

RECOMMENDATIONS FOR CORRECT MEASUREMENT

1. For proper measurement you need to know that BLOOD PRESSURE SUBJECT TO SHARP FLUCTUATIONS EVEN IN THE SHORT TERM. Blood pressure depends on many factors. It is usually lower in the summer and higher in winter. Blood pressure varies with atmospheric pressure, independent of physical activity, emotional anxiety, stress and diet. Taken medicines, alcohol and smoking have a great influence. For many people, even the procedure for measuring the pressure in the clinic causes an increase in performance. Therefore, blood pressure measured at home are often different from the pressure measured in the clinic. Since blood pressure rises at low temperatures, take measurements at room temperature (approximately 20 ° C). If the device is kept at a low temperature before using it to soak at least 1 hour at room temperature, otherwise the measurement may be erroneous. During the day the difference in readings in healthy people may be 30-50 mm Hg systolic (top) and pressure up to 10 mm Hg diastolic (lower) pressure. The dependence of blood pressure by different factors is individual for each person. It is therefore recommended to conduct a special diary readings of blood pressure. ONLY CERTIFIED PHYSICIAN BASED ON DATA FROM DIARY COULD CHANGE YOUR ANALYZE TRENDS IN BLOOD PRESSURE.
2. In cardiovascular diseases and several other diseases that require of blood pressure, take measurements during the hours that are defined by your doctor. REMEMBER THAT THE DIAGNOSIS AND TREATMENT OF ANY HYPERTENSION MAY BE CONDUCTED ONLY BY CERTIFIED PHYSICIAN BASED ON MEASUREMENT OF BLOOD PRESSURE RECEIVED BY DOCTOR YOURSELF. ADMISSION OR CHANGE OF DOSAGES OF TAKEN MEDICINES SHOULD BE ONLY AS PRESCRIBED BY YOUR PHYSICIAN.

● Blood pressure variations during a day



3. In these violations as vascular deep sclerosis, weak pulse wave, as well as in patients with severe rhythm of heartbeats, the correct measurement of blood pressure can be difficult.

IN THESE CASES, GET ADVICE FOR USE OF ELECTRONIC DEVICE FROM CERTIFIED PHYSICIAN.

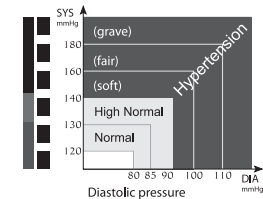
4. SHOULD KEEP QUIET DURING MEASUREMENT SO TO GET THE RIGHT READINGS OF YOUR BLOOD PRESSURE FROM THE USE OF ELECTRONIC DEVICE.

Measurement of blood pressure should be conducted in a relaxed comfortable atmosphere at room temperature. An hour before the measurement it is necessary to exclude food intake, for 1.5-2 hours, smoking, soft drinks and alcohol.

5. The accuracy of measurement of blood pressure depends on how the size of the device match the size of your arm. CUFF IS NOT TO BE SMALL OR, CONVERSELY, IS GREAT.

6. Repeated measurements are taken with an interval of 3 minutes to restore blood circulation. However, persons with severe atherosclerosis, due to a significant loss of elasticity of blood vessels requires a greater time of interval between measurements (10-15 minutes). This concerns patients, long-term diabetes. For a more accurate determination of blood pressure is recommended that the series of 3 consecutive measurements and calculate the average value of the measurement results.

7. Blood pressure at the wrist may differ from the pressure on the arm. For a healthy person, this difference is within ± 10 mm Hg. of Art. for both systolic and diastolic blood pressure. Caution is needed for people with hypertension, diabetes, liver dysfunction, obstructed peripheral circulation, etc. In these cases, the difference between the measurements at the wrist and the arm may be more significant.



(classification of the World Health Organization)

BEFORE USING

1. Installation of batteries.

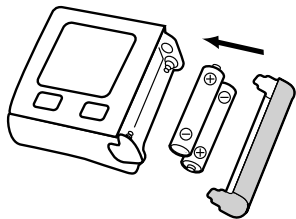
1) Open the battery compartment, gently pulling it towards you.

2) Install two alkaline batteries AAA, observing polarity.

Batteries can be easily installed by pressing the end “-” on the spring.

3) Close the cover until it clicks

Replace all the batteries when the display continuously shows the battery replacement indicator “” or there is no indication on the display. The replacement battery indicator does not show the degree of discharge.



Battery lifetime

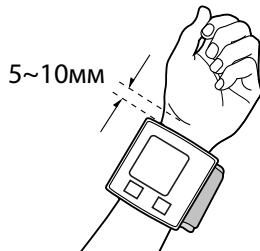
One set of new alkaline batteries (Alkaline Batteries) is enough for about 150-200 measurements.

Note.

The supplied batteries are used for testing the device in the sale and service life may be shorter than that recommended alkaline batteries.

2. Fixation the cuff on the wrist

- 1) Hold the left hand palm up, place the cuff on the wrist so that the housing was on the side of the palm.
- 2) Place the cuff on your arm so that its edge is at 5-10 mm from the edge of the palm.
- 3) Pull the lower part of the cuff, as shown in the picture, fix it so that there is no free space between the cuff and the wrist . The cuff should fit comfortably.



3. If the cuff can not be worn on the left wrist

If it is not possible to put the cuff on your left wrist , use right wrist for measurement.

NOTE!

- Wear the cuff on naked wrist
- Make sure that the clothes do not come under the cuff
- Do not touch the key O / I, before the cuff is fully fixed at the wrist

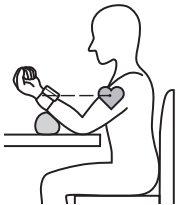
IMPORTANT!

- Do not operate the appliance if the cuff is not wearing on the wrist, as this will lead to excessive pumping of the cuff and may cause its rupture.

CORRECT POSTURE FOR MEASUREMENT

Correct posture for measurement

1. Sit on a chair.
2. Lift your left hand slightly palm up and place your elbow on the table.
3. Place the cuff at heart level by placing the forearm case or a folded towel.



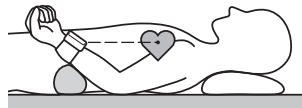
When there is no table

1. Sit on a chair
2. Place the cuff at heart level, lightly pressing his left hand to his chest.
3. During the measurement, keep the left hand slightly with your right hand.



Pressure measurement while lying

1. Lie on your back
2. Place the cuff at heart level, using a case or a folded towel.



- Sit in a chair, take 5-6 deep breaths to relax before measurement.
- The results of measurements can vary slightly depending on the posture during the measurement. Do not cross your legs during the measurement.
- Measurements should be held at the same wrist in the same position.
- If the cuff is below (above) in relation to the heart, the measurements will be overstated (understated).

PROCEDURE FOR MEASURING

1. Before measuring make 5-6 deep breaths and relax. Do not move, talk, and do not strain your arm during the measurement.
2. Touch the key .
3. The display will briefly highlight all the characters (Fig. 1) and the appliance will inflate automatically the cuff.
Initially the pumping stops at 190 mm Hg. of Art. (Fig. 2).

4. After reaching 190 mm. Hg, cuff pressure will gradually decrease. The values displayed on the screen will decrease. The pulse is indicated by flashing symbol "♥" (Fig. 3).

WHEREAS, BLOOD PRESSURE AND PULSE ARE MEASURED DURING AIR RELEASE FROM THE CUFFS, TRY TO REMAIN STILL AND NOT TO MOVE THE HAND DURING THE MEASUREMENT AND DO NOT STRAIN YOUR ARM MUSCLES.

5. At the end of the measurement device releases all air from the cuff and the display shows the measurement result (Fig. 4).
6. Touch the key  - the unit turns off.

To re-measure repeat the steps in this section.

TO OBTAIN ACCURATE RESULTS NEEDED A BREAK BETWEEN THE MEASUREMENTS IN ORDER TO RESTORE BLOOD CIRCULATION. WHY SPEND REPEATED MEASUREMENTS NOT EARLIER THAN IN 3 MINUTES.



Fig. 1

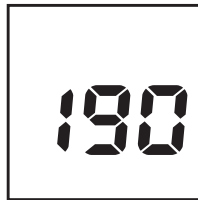


Fig. 2

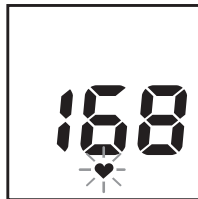


Fig. 3

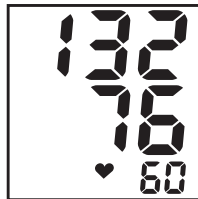


Fig. 4

The result of each measurement (blood pressure and heart rate) is automatically stored in the memory of device.

DATA IN MEMORY WILL BE SAVED EVEN IN THE DEVICE WITHOUT BATTERIES. IN ORDER TO DELETE SAVED DATA FROM THE MEMORY DEVICE, FOLLOW THE STEPS DESCRIBED IN THE "MEMORY FUNCTION".

If the power is not switched off and the appliance is not used for 3 minutes, then switches off.

AUTOMATIC INFLATING

If the initial pressure level (190 mm Hg.) is insufficient or there is movement of the hand during the measurement, the unit will stop measuring and inflate the cuff to the next higher level of pumping. The device has 4 fixed inflation level of the cuffs: 190, 230, 270, 300 mm Hg.

Automatic inflating of the cuff is repeated until the measurement is completed successfully. This is not a malfunction.

FORCED RELEASE OF PRESSURE FROM THE CUFF

If during the measurement you need to relieve quickly the pressure in the cuff - touch . The device release quickly the air from the cuff and off.

MEMORY FUNCTION

1. The result of each measurement (blood pressure and heart rate) is automatically stored in the memory of device.

MEASUREMENT RESULT WILL NOT BE SAVED IN CASE OF THE NOTICE OF ERROR.

2. The memory device can save up to 90 measurements and average of the last 3. When the number of measurements exceeds 90, the oldest data is automatically replaced with the following data measurements.

3. You can view the contents of the memory device by touching the key M. The first time you touching the key M, the symbol "A" on the screen briefly displays and the average value of all readings stored in memory (Fig. 5). When you touch the key M again, the index "1" (the number of memory cells) displays briefly on the screen, then the result will be the last measurement (Fig. 6).

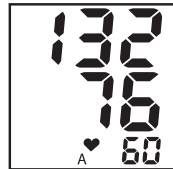


Fig. 5

Each time you touch the key M, the index of numbers of the memory cell will increase by one and then indicate the contents of the specified memory location on the display.

PURIFICATION MEMORY OF THE DEVICE

It is necessary to touch the key M and hold it for more than 5 seconds in order to remove all stored measurement results from the memory of device. The display shows symbols «Clr» and will clean the entire memory.

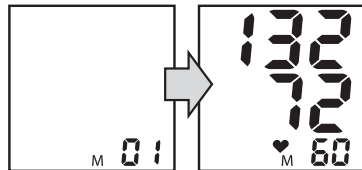


Fig. 6

ERROR REPORTS

Indication	Probable cause	Remedies
	Not wearing the cuff properly.	Make sure the cuff is wearing properly and repeat the whole procedure of measurement.
	The measurement could not be done due to the movement with your hand or talk during measurement.	Repeat the measurement, while fully respecting the recommendations of this manual.
	At the expressed rhythm disturbances of heart rate, deeper vascular sclerosis, weak pulse wave, the correct blood pressure measurement can be difficult.	In these cases, it is necessary to get advice on the use of an electronic device from a licensed physician.
	Discharged batteries.	Replace all the batteries with new ones.

CARE, STORAGE, REPAIR AND RECYCLING

1. This appliance must be protected from excessive moisture, direct sunlight, shock and vibration. **UNIT IS NOT WATERPROOF!**
2. Do not store or use the device in close proximity to heaters and open flames.
3. If the product is not used for a long time, remove the battery from the unit. The flow of electrolyte from batteries can cause product's damage. **KEEP BATTERIES OUT OF REACH OF CHILDREN!**
4. Do not pollute the unit and keep it dust. For cleaning, you can use a soft, dry cloth.
5. Do not let the unit and its parts with water, solvents, alcohol, gasoline.
6. Keep the cuff, bulb and the tubes from sharp objects.
7. Do not expose the unit to strong shocks and do not drop it.
8. If you need to repair only in specialized organizations.
9. On the expiry of the period of service should periodically consult specialists (specialized repair organizations) to check the technical condition of the unit.
10. When disposing guided by the rules in your area. Special conditions for the disposal of this product is not established by the manufacturer.
11. The cuff is resistant to multiple sanitization. Processing is permitted inside the tissue covering the cuff (in contact with the patient's arm) with a cotton swab dipped in 3% hydrogen peroxide solution. With prolonged use, may be a partial bleaching of textiles to the cuff. Do not wash the cuff, as well as treatment with a hot iron.

POTENTIAL PROBLEMS

PROBLEM	POSSIBLE CAUSE	REMEDY
After touching the key  , there is no indication on the display	Discharged batteries. No polarity of batteries. Dirty battery.	Replace all batteries with new ones. Install the batteries correctly. Wipe the contacts with a dry cloth.

Inflating is stopped and restart again.	There is an automatic inflating to ensure correct measurements. Perhaps you talked or moved by hand during the measurement.	See PROCEDURE THE MEASUREMENT Calm down and repeat the measurement.
Inflating is stopped and restart again.	The cuff is not at the level of the heart. Not wearing the cuff properly. Your hand is strained. Perhaps you talked or moved by hand during the measurement.	Take the correct posture for measurement. Put on the cuff correctly. Relax before the measurement. During the measurement, observe the silence and tranquility.
Blood pressure is different each time. Measurement values are too low (high).	Perhaps you talked or moved by hand during the measurement. Measurements were made soon after exercise.	During the measurement, observe the silence and tranquility. Repeat the measurement not less than in 5 minutes.
Unable to produce a large number of measurements.	The use of low-quality batteries.	Use only alkaline batteries produced by well-known manufacturers.
Self power off.	An automatic power-off operates.	This is not a malfunction. The device automatically turns off in 3 minutes after the last operation of the device.

If, in spite of the above suggestions, you can not get the right measurements, stop operation and contact the organization that performs

WARRANTY

1. The following LD product is covered by warranty for the period specified in the warranty card.
2. The warranty liabilities are contained in the warranty card given at the sale of this unit to a purchaser.
3. The addresses of organizations for warranty maintenance are given in the warranty card.

TECHNICAL CHARACTERISTICS

Model:	LD8
Method of measurement	oscillometric with technology Fuzzy Algorithm
Indicator	9-digit LCD
Measuring range	from 40 to 260 mm Hg (pressure in the cuff) from 40 to 160 beats per minute (pulse rate)
Measurement error	±3 mm Hg (pressure in the cuff) ±5 % readings (pulse rate)
Inflation of the cuff	automatic (air pump)
Release air from the cuff	automatic
Deflation after the end of the measurement	automatic (electronic valve)
Power supply	3 V, 2 x AAA (dry alkaline elements)
Maximum power consumption	1,5 W
Memory	90 measurements + average of the last three measurements
Conditions of use	
temperature	from 10 °C to 40°C
relative humidity	85% and below
Conditions of storage and transportation:	
temperature	from 20 °C below zero to 50°C above zero
relative humidity	85% and below
Cuff	
Model:	CUFF-LD8
Type	pre-formed cuff
Size	adult (circumference of the wrist 12,5-20,5 cm)

Overall dimensions	
Size (without cuff)	62(l) x 61(w) x 35(h) mm
Mass (without package, case and batteries)	approximately 115 g
Completeness	electronic unit with a cuff, two batteries, carrying case, instruction manual, warranty card, packaging
Year of manufacture	Year of manufacture is indicated in the serial number after the letters «AA» on the case of the device

CERTIFICATION AND STATE REGISTRATION

This device manufacturing is certified according to international standard ISO 13485:2003.

This device complies with the requirements of European Directive MDD 93/42/EEC, international standards, EN980, EN1041, EN1060-1, EN1060-3, EN10601-1-2, ISO 14971.

✉ **Complaints and requests should be addressed to:**

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Service phone: +48 12 2684748, 2684749

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