

# VERVE

## BLOOD PRESSURE MONITOR

### MANUAL




CE 1282

RoHS  
2002/95/EC

EC	REP
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**ECB003**

## BLOOD PRESSURE MONITOR

### WHAT IS BLOOD PRESSURE?

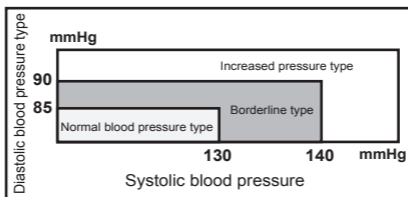
The blood pressure is the pressure the blood is exerting on the walls of the arteries. The blood pressure in the arteries is subject to continuous variation during a heart cycle. The highest pressure within this cycle is called 'systolic pressure' (SYS), the lowest pressure is called 'diastolic pressure' (DIA). With these two blood pressure values, a doctor can determine a patient's blood pressure. Your blood pressure may be influenced by many different factors as physical effort, anxiety or the time of the day etc. Generally, blood pressure is low in the morning and raises in the afternoon towards the evening. In summer, blood pressure is lower than in winter.

### WHY IS IT A GOOD THING TO MEASURE BLOOD PRESSURE AT HOME

Having one's blood pressure measured by a doctor in a hospital or clinic environment tends to stimulate nervousness in a patient and may lead to a higher blood pressure. Blood pressure varies in accordance with a variety of conditions and so judgment is not always possible on the basis of a single measurement. Blood pressure measured first thing in the morning after getting up, before eating, and keeping still, is known as the fundamental blood pressure. In practice it is rather difficult to record the fundamental blood pressure but measurement at home in the right environment aids this.

### BLOOD PRESSURE CLASSIFICATION OF THE WHO

The standards for the determination of high or low blood pressure independently from the patient's age – as shown on the table – were determined by the World Health Organization (WHO).



### VARIATIONS OF BLOOD PRESSURE

Individual blood pressure is subject to variations on a day-to-day basis or in relation to the time of the year. These variations are more perceptible in patients with high blood pressure. Usually, blood pressure is higher during work and is lowest in the night when sleeping. The

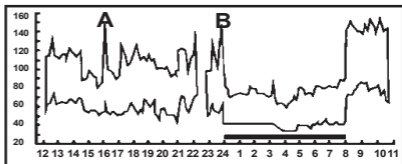


figure shows the variations of the blood pressure in the course of a day with measurements taken every 5 minutes. The bold line represents the sleep phase. The increase in blood pressure at 4 pm (shown as letter 'A' in the figure) and at midnight (shown as letter 'B' in the figure) mark pain events of the patient.

### TECHNICAL SPECIFICATIONS

Measuring method	Oscillometric
Memory capacity	2*60 records
Display (Pa)	LCD display size 77*53mm
Measuring range	Pressure : 0 – 290 mmHg (0-40 kPa) Pulse rate: 40 – 180 pulses/minute
Measurement accuracy	Pressure: $\pm 3$ mmHg (0,4 kPa) at an ambient temperature of 15-25 °C $\pm 6$ mmHg (0,8 kPa) at an ambient temperature of 10-14 °C and 26-40°C Pulse rate: $\pm 5\%$
Adjustable length of the cuff	22-32 cm
Air release	Automatic rapid air release by electromagnetic control valve
Press detection	Electrostatic capacity semi-conductor pressure sensor
Power supply	4*AAA batteries (not included) ; DC 6V adapter (not included)
Operating temperature and humidity	10°C to 40°C; 30% to 80% RH
Storage temperature	"-20°C to 60°C; 10% to 95% RH

### IMPORTANT INSTRUCTIONS OF THE DEVICE

- Blood pressure should be judged by a medical doctor or other medical specialist who is familiar with your case history. Through the regular use of the blood pressure gauge you can continuously record your pressure values. These records can be used for therapeutic purposes.
  - Tightly wrap the cuff around your upper arm. The cuff must be **positioned on the level of the heart**.
  - The monitor must not be moved or shaken during measuring as this would lead to inaccurate results.
  - Carry out measuring in a still and relaxed position.
  - Do not wrap the cuff around the sleeve of a jacket, shirt which could make measuring impossible.
  - Keep in mind that blood pressure naturally varies in the course of the day and is influenced by many different factors as, e.g., smoking, alcohol, drugs and physical effort. We recommend not to smoke, eat or do physical exercises for about 30 minutes before measuring.
  - To the people with following condition which leads to circulatory disorders (diabetes, kidney diseases, hardening of the arteries), the values measured with this device may be lower than those measured with a gauge taking the blood pressure at the upper arm. Consult your doctor to make sure that measuring blood pressure at your upper arm leads to accurate measuring values.
  - The measuring device is designed for the measuring of blood pressure in adults only.
  - Do not use the device if your upper arm is injured.
  - If the automatic inflation function of the cuff does not stop automatically it must be opened and taken off immediately!
- Note** User group: This device is not suitable for invasive blood pressure measuring in adults or children. It may only be used for non-invasive blood pressure monitoring and only in adults!

### SELECTING THE POWER SOURCE

#### A. Putting in the batteries

Remove the cover of the battery compartment on the lower side of the measuring device and put the batteries into the battery compartment as the signs showed inside the battery compartment. Put in 4 batteries of type 1.5V, type AAA. Pay particular attention to the correct positions of the + and – poles of the batteries. Close the battery compartment.

#### B. Operation with mains adaptor

You can optionally operate the device over a mains adaptor (not included).

- Put the plug of the mains adaptor into a properly installed shockproof socket (230V, 50Hz).
- Connect the device to the main adaptor by putting the plug of the mains adaptor into the 6V DC jack of the device.
- When using a mains adaptor (6V DC) take care to apply the correct polarization.

## DEVICE DESCRIPTION

- (1) ON/OFF button
- (2) SET / ▼ button (setting / down button )
- (3) ▲ / MEM button (up / memory button)
- (4) Year/date/time display
- (5) Systolic blood pressure
- (6) Diastolic blood pressure
- (7) Pulse display
- (8) Blood pressure level indicator
- (9) User ID symbol (A / B)
- (10) Memory symbol
- (11) Irregular heartbeat symbol ( flashes when irregular heartbeat detected )
- (12) Heartbeat symbol (Flashes during measurement)
- (13) Average value symbol



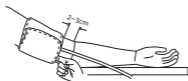
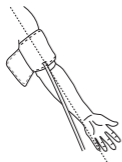
## SET THE DATE, TIME AND MEASUREMENT UNIT

- Before taking measurements, set the current date, time and measurement unit. The measured value will be stored in memory together with the date and time of measurement.
- Check that the device is turned off (the LCD display is off) or turn it off by pressing the ON/OFF button.
- Press the button SET, and hold for 2 seconds, the default year will flash on the display. During the initial setup the display will show year (2017), month (1) and day (1).
- Set the current year by pressing the button MEM and confirm it by pressing button SET. And the display show another page with date and time.
- The first two numbers (which means month ) are flashing, Press the button MEM to put the right month and confirm by pressing button SET.
- The date number flashes. Press the button MEM to put the right date and confirm by pressing button SET.
- The hour number flashes and press the button MEM to put the right hour, This device is set with 24-hour time format.
- The minute number flashes. Press button MEM to put the right minute and confirm by pressing button SET.
- The LCD shows another page for unit selection. Press MEM button to switch between mmHg and KPa. "0" means the unit of mmHg while "0.0" means the unit of KPa. Confirm the setting by pressing button SET.
- All settings are done. Switch off the device by pressing ON/OFF button.

## MEASURING BLOOD PRESSURE

### Basic instruction for achieving the most accurate measuring results

- Always take measurements at the same time of day, ideally in the morning, at noon and in the evening under the same conditions or according to the recommendations of your doctor.
- Do not perform measurement sooner than 30-45 minutes after consuming coffee, tea or smoking a cigarette.
- Wait at least 20 minutes after taking a hot shower or bath.
- During measurement sit calmly, relax and don't talk. Do not move the arm to which the cuff is attached.
- Wait approximately 4-5 minutes before measuring again.



### **Wrap the cuff around the upper arm**

- Open the Velcro fastener and pull to open the cuff.
- Lead your arm through the cuff and pull the cuff up to a position 1-2 cm above your elbow. The cuff is suitable for a perimeter of the upper arm about 22-32 cm.
- Pull the cuff tight around the upper arm. Do not pull on the cuff with exaggerated force.
- Do not pull the cuff too tight, leave a gap of about the width of a finger.

### **Correct body position for measuring**

To receive best possible measuring results make sure that the cuff is held on the same level as your heart. If the cuff is held in a position above or below the heart this may lead to deviations from the exact value.

### **MEASURING BLOOD PRESSURE IN SITTING POSITION**

- Rest your elbow on a table or other surface (as, e.g., a bag).
- Position your arm on the rest in a way that makes sure that the cuff is on the same level with your heart.
- Relax your arm. The palm of your hand must point upwards.

### **MEASURE THE BLOOD PRESSURE**

- Put the device on a solid and level surface.
- Connect the cuff. Insert the rubber hose to the air jack on the unit.
- Wrap the cuff around your upper arm.
- Sit down on a chair and take an upright position.
- Push the ON/OFF button and hold it down for about 1 second. The number '888' will be shown on the display for 1 second. Then the display will show the value '0'. Air pressure can be increased to 190 mmHg. In case of a tendency to high blood pressure, the air pressure can be increased to the required level (up to 290 mmHg). Do not move or talk during the measuring cycle.
- After the measuring cycle has been completed, the values of the systolic, diastolic pressures and the pulse rate are shown on the display. To finish the measurement, push the ON/OFF button. If you do not turn off the device, it will turn off automatically 3 minutes after the last measurement. Remove the cuff from your arm after completing the measurement.

### **SWITCH THE USER (A and B)**

User A is set as default user.

Press ON/OFF button and hold it for 6 seconds, the icon  will show up.

### **SAVE THE MEASURING DATA AND SHOW THE MEMORY**

#### **a. Save data**

- After each measurement of the blood pressure measurement, the data of the systolic/diastolic pressures and heartbeat rate of the measuring cycle are automatically saved. The last 60 measuring results can be retrieved from the device's memory. If the number of measuring results exceeds 60, the oldest data in the memory are automatically deleted.
- Each user has 60 memories of measurements.

#### **b. Display the stored measurement results**

- To display the stored measurement results press the button MEM and hold for 2 seconds. The first page displays with AVG symbol. It shows the most recent average value based on the last 3 measurements.

- Press MEM or SET button again, the display will show the stored measurement results with serial No.

MEM button: from more recent values to older values.

SET button: from older values to more recent values.


### **MAINTENANCE**

- To clean the housing of the device use a cloth moistened with water or a soft cleaning agent, then dry it with a dry cloth. Use a dry cloth to clean the cuff if it should be dirty.

- Do not immerse the device in water.
- Do not use gas or strong cleaning agents.
- If the measuring device is not used for a longer time, the batteries should be removed. (Leaking batteries may damage the device.)

#### STORAGE

- Protect the measuring device with its accessories from direct sunlight, high temperatures, humidity and dust.
- Do not expose the device to extremely low (below  $-20^{\circ}\text{C}$  ( $-4.0^{\circ}\text{F}$ )) or high (above  $65^{\circ}\text{C}$  ( $122.0^{\circ}\text{F}$ )) temperatures.

ERROR CODE	PROBLEMS	CHECK
Er4	LCD display didn't show "0"	Keep cuff still.
Er2	Wrong measurement result	Take a break for 3 minutes. Tighten cuff. Don't talk nor move during test.
Er30	Cuff is loose	Tighten cuff.
Er10	Blood pressure exceeds 295mmHg.	Check if user wear something under cuff.
	Low power supply	Change to new batteries. 1.5V alkaline batteries are recommended.
	Abnormal air circulation	Tighten cuff.

