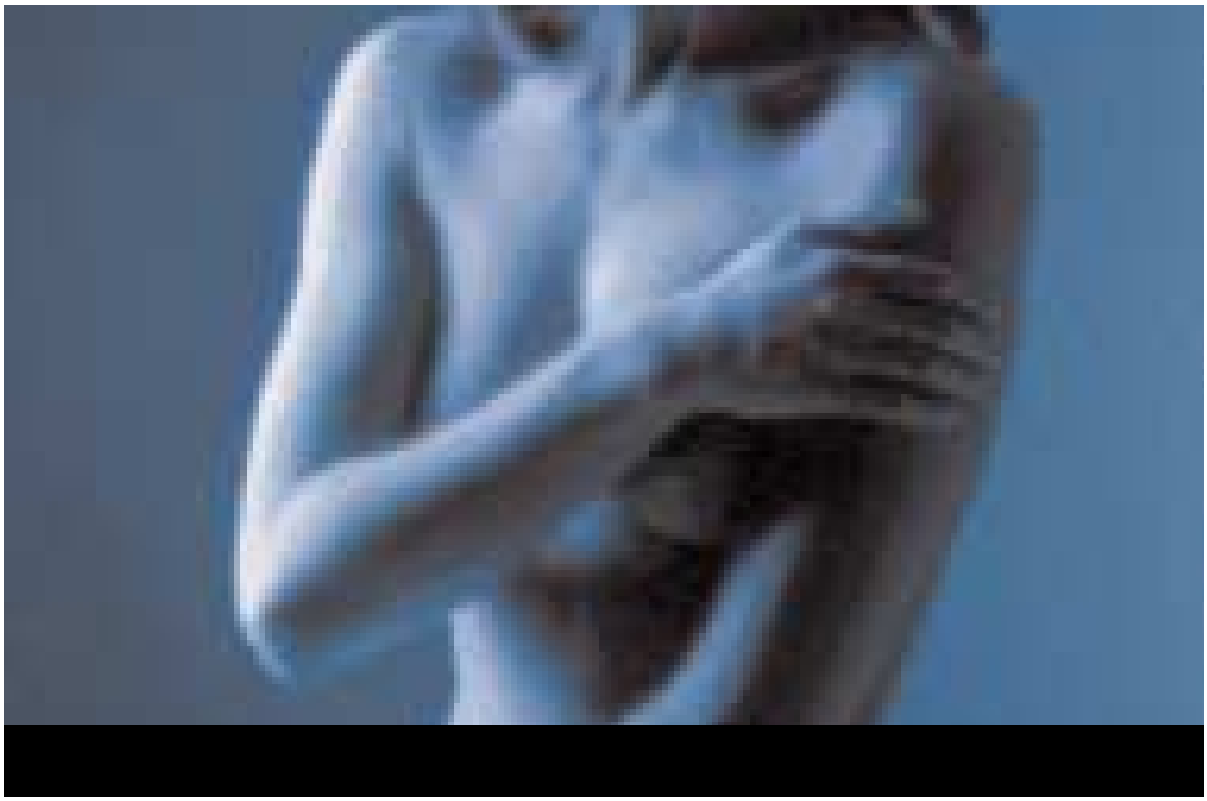

microlife BP 3BU1-5

Wrist Watch Blood Pressure Monitor
Instruction Manual (1-31)

Прибор для измерения
кровяного давления на запястье (32-63)

Automatyczny nadgarstkowy ciśnieniomierz krwi
Instrukcja obsługi (64-93)

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vérnyomásmérő készülék
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Wrist Watch Blood Pressure Monitor

Instruction Manual

Table of contents

1. Introduction

1.1. Features of the BP 3BU1-5

The blood-pressure monitor BP 3BU1-5 (with integrated time/date display) is a fully automatic, digital blood-pressure measuring device for use on the wrist, which enables very fast and reliable measurement of the systolic and diastolic blood-pressure as well as the pulse frequency by way of the oscillometric method of measuring.The device offers a very high and clinical tested measurement accuracy and has been designed to provide a maximum of user-friendliness.
Before using, please read through this instruction manual carefully and then keep it in a safe place. For further questions on the subject of blood-pressure and its measurement, please contact your doctor.

Attention!

1.2. Important information about self-measurement

- Do not forget: self-measurement means control, not diagnosis or treatment. Unusual values must always be discussed with your doctor. Under no circumstances should you alter the dosages of any drugs prescribed by your doctor.
- The pulse display is not suitable for checking the frequency of heart pacemakers!
- In cases of cardiac irregularity (Arrhythmia), measurements made with this instrument should only be evaluated after consultation with the doctor.

2. Important information on the subject of blood-pressure and its measurement

2.1. How does high/low blood-pressure arise?

The level of blood-pressure is determined in a part of the brain, the so-called circulatory centre, and adapted to the respective situation by way of feedback via the nervous system.
To adjust the blood-pressure, the strength and frequency of the heart (Pulse), as well as the width of circulatory blood vessels is altered. The latter is effected by way of fine muscles in the blood-vessel walls.
The level of arterial blood-pressure changes periodically during the heart activity: During the «blood ejection» (Systole) the value is maximal (systolic blood-pressure value), at the end of the heart's «rest period» (Diastole) minimal (diastolic blood-pressure value).
The blood-pressure values must lie within certain normal ranges in order to prevent particular diseases.

2.2. Which values are normal?

Blood pressure is too high if at rest, the diastolic pressure is above 90mmHg and/or the systolic blood-pressure is over 160mmHg. In this case, please consult your doctor immediately. Long-term values at this level endanger your health due to the associated advancing damage to the blood vessels in your body.
Should the systolic blood-pressure values lie between 140mmHg and

Even with normal blood-pressure values, a regular self-check with your blood-pressure monitor is recommended. In this way you can detect possible changes in your values early and react appropriately. If you are undergoing medical treatment to control your blood pressure, please keep a record of the level of your blood pressure by carrying out regular self-measurements at specific times of the day. Show these values to your doctor. **Never use the results of your measurements to alter independently the drug doses prescribed by your doctor.**

Table for classifying blood-pressure values (units mmHG) according to World Health Organization:

Range	**Systolic Blood-pressure**	**Diastolic Blood-pressure**	**Measures**
Hypotension	lower than 100	lower than 60	Check with your doctor
Normal range	between 100 and 140	between 60 and 90	Self-check
Mild hypertension	between 140 and 160	between 90 and 100	Consult your doctor
Moderately serious hypertension	between 160 and 180	between 100 and 110	Consult your doctor
Serious	higher than 180	higher than 110	Consult your

hypertension». Please consult your doctor if you suspect that this might be the case.

- Correctly measured diastolic blood-pressure values above 120mmHg require **immediate medical treatment.**

2.3. What can be done, if regular increased/low values are obtained?

a) Please consult your doctor.

b) Increased blood-pressure values (various forms of hypertension) are associated long- and medium term with considerable risks to health. This concerns the arterial blood vessels of your body, which are endangered due to constriction caused by deposits in the vessel walls (Arteriosclerosis). A deficient supply of blood to important organs (heart, brain, muscles) can be the result. Furthermore, with long-term continuously increased blood-pressure values, the heart will become structurally damaged.

c) There are many different causes of the appearance of high blood pressure. We differentiate between the common primary (essential) hypertension, and secondary hypertension. The latter group can be ascribed to specific organic malfunctions. Please consult your doctor for information about the possible origins of your own increased blood pressure values.

d) There are measures which you can take, not only for reducing a

A) Eating habits

- Strive for a normal weight corresponding to your age. Reduce overweight!
- Avoid excessive consumption of common salt.
- Avoid fatty foods.

B) Previous illnesses

- Follow consistently any medical instructions for treating previous illness such as:
- Diabetes (Diabetes mellitus)
- Fat metabolism disorder
- Gout

C) Habits

- Give up smoking completely
- Drink only moderate amounts of alcohol
- Restrict your caffeine consumption (Coffee)

D) Physical constitution:

- After a preliminary medical examination, do regular sport.
- Choose sports which require stamina and avoid those which require strength.
- Avoid reaching the limit of your performance.
- With previous illnesses and/or an age of over 40 years, please consult your doctor before beginning your sporting activities. He

- An advanced measurement accuracy is achieved by the automatic analysis of three successive measurements.
- The new system provides reliable values for the doctor and can be used as the basis for reliable diagnostics and medication therapy for high blood pressure.

A) Why MAM?

- Human blood pressure is not stable
- Scattering of devices

B) Key advantages

Reduction of:

- Device scattering
- Insufficient rest prior to measurement
- Movement artefacts
- Cuff positioning influences

C) Medical benefits

- Improved accuracy
- Reliable patient self-measurement data for the doctor
- Safe hypertension diagnostic
- Reliable therapy control

D) Measurement sequence

- With the full measurement cycles, the total measurement time

3. The various components of the blood-pressure monitor

The illustration shows the blood-pressure monitor BP 3BU1-5, consisting of:

Wrist cuff Type WC1 13.5–19.5 cm, for wrist circumference of 13.5 to 19.5 cm

4. Putting the blood-pressure monitor into operation

4.1. Inserting the batteries

After you have unpacked your device, first insert the batteries. The battery compartment is located on the left lateral side of the device (see illustration).

b) Insert the batteries (2 x size AAA 1.5V), thereby observing the indicated polarity.
c) If the battery warning appears in the display, the batteries are empty and must be replaced by new ones.

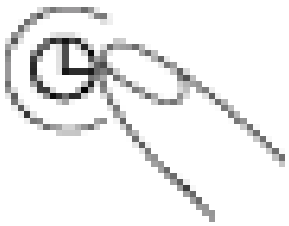
Attention!

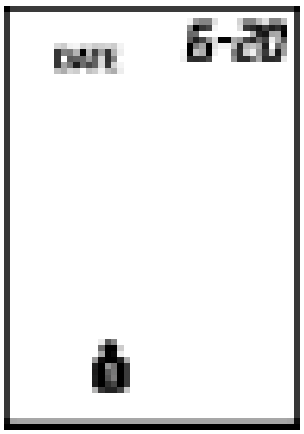
- After the battery warning appears, the device is blocked until the batteries have been replaced.
- Please use «AAA» Long-Life or Alkaline 1.5V Batteries. The use of 1.2V Accumulators is not recommended.
- If the blood-pressure monitor is left unused for long periods, please remove the batteries from the device.

Functional check: Press and hold the 0/I button to test all the display elements. When functioning correctly all segments appear.

4.2. Reading the set date

Please press the «Time» key.

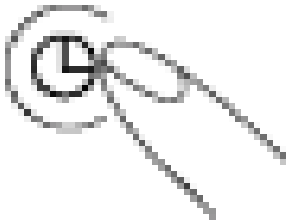


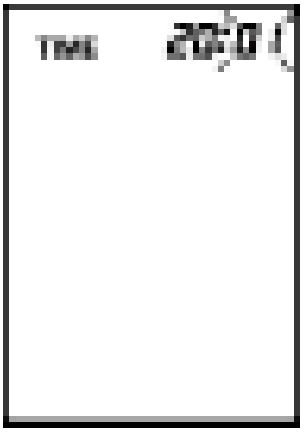


4.3. Setting the time and date and user

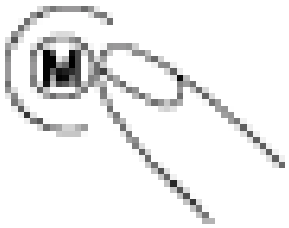
You must then re-enter the date and current time. For this, please proceed as follows (Example: Entering 2001-06-20 Time 09:30 o'-clock):

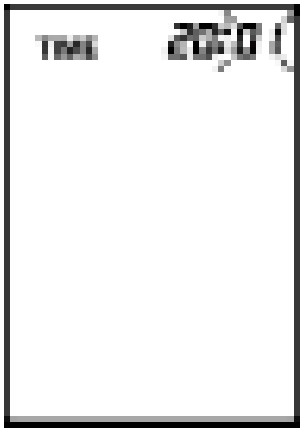
1) Press the TIME button for at least 3 seconds. The display now indicates the set year, during which the last two characters blink.



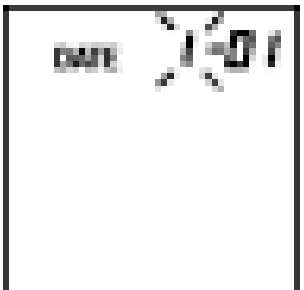


2) The correct year can be entered by pressing the MEMORY button. (Example: 1 x press)

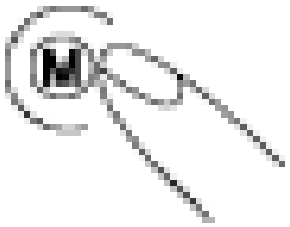


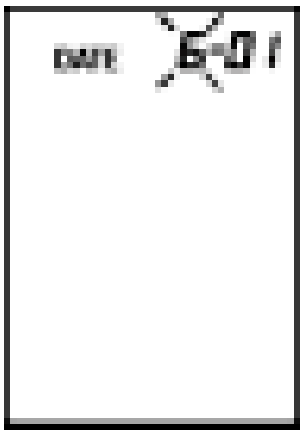


3) Press the TIME button again. The display now switches to the current date, during which the first character (month)

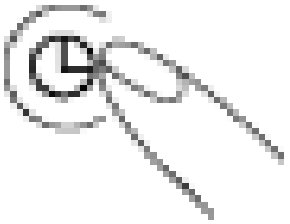


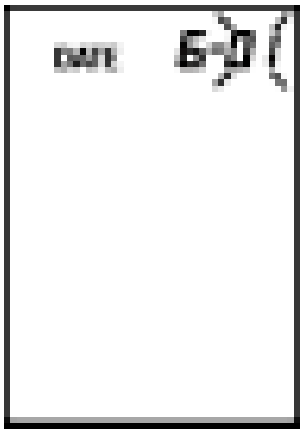
4) The corresponding month can now be entered by pressing the MEMORY button.
Example: 6 x presses)



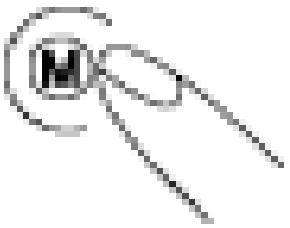


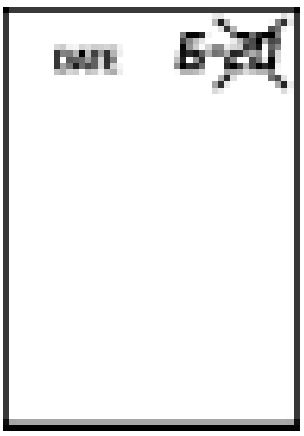
5) Press the TIME button again. The last two characters (day) are now blinking





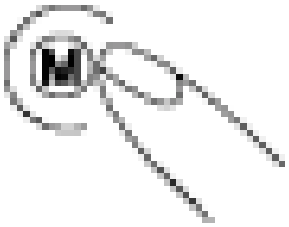
6) The corresponding day can now be entered by pressing the MEMORY button.
(Example: 15 x presses)

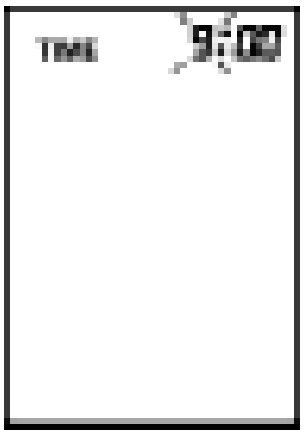




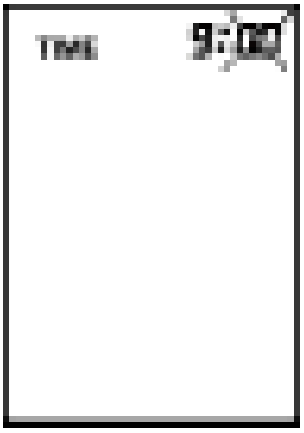
7) Press the TIME button

8) The corresponding hour can now be entered by pressing the MEMORY button.
(Example: 9 x presses)

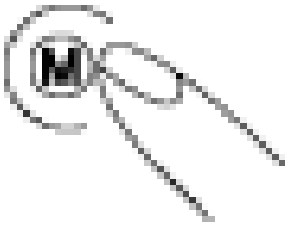


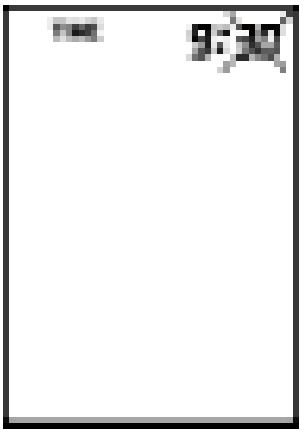


9) Press the TIME button again. The last two characters (Minutes) now blink.



10) The exact time can now be entered by pressing the MEMORY button.
(Example: 30 x presses)



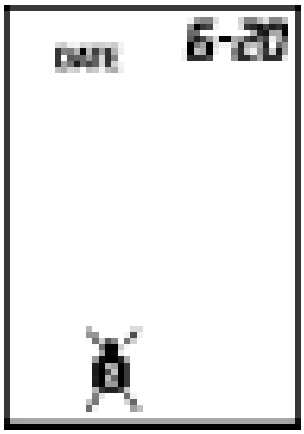


11) Now after all settings

User selection:

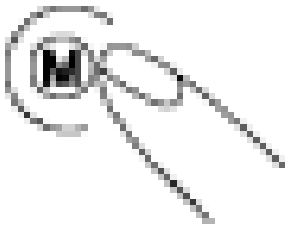
This advanced blood pressure monitor allows you to track blood pressure readings for 2 individuals independently.

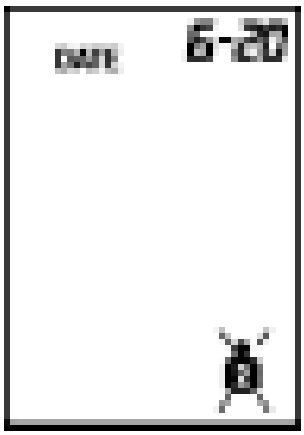
a) Before measurement make sure you set the unit for the intended user. The unit can track results for 2 individuals. (User 1, User 2)



b) The unit is set to User 1. Click the TIME button to change to User 2.

c) click the MEMORY button to change into User 1





d) We suggest the first person to take their pressure to be User 1.

☞ **Further Information**

With each press of the button

5. Carrying out a measurement

5.1. Before the measurement:

- Avoid eating, smoking as well as all forms of exertion directly before the measurement. All these factors influence the measurement result. Try and find time to relax by sitting in an armchair in a quite atmosphere for about ten minutes before the measurement.
- Measure always on the same wrist (normally left).
- Attempt to carry out the measurements regularly at the same time of day, since the blood-pressure changes during the course of the day.

5.2. Common sources of error:

Note:

Comparable blood-pressure measurements always require the same conditions! These are normally always quiet conditions.

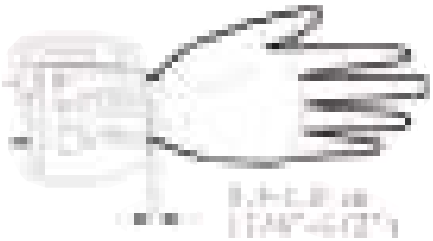
- All efforts by the patient to support the arm can increase the blood-pressure. Make sure you are in a comfortable, relaxed position and do not activate any of the muscles in the measurement arm during the measurement. Use a cushion for support if necessary.
- If the wrist artery lies considerably lower (higher) than the

peated after a 5 minute pause or after the arm has been held up in order to allow the accumulated blood to flow away (after at least 3 minutes).

5.3. Fitting the cuff

a) Remove all eventual objects and jewellery (e.g. wristwatch) from the wrist in question. Draw the cuff over the wrist.

b) The distance between the cuff and the hand should be approx. 10 mm.



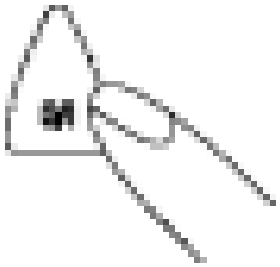
c) Secure the cuff with the Velcro fastener, so that it lies comfortably and not too tight, whereby no space should remain between the cuff and the wrist.

d) Lay the arm on a table, with the palm upwards.Support the

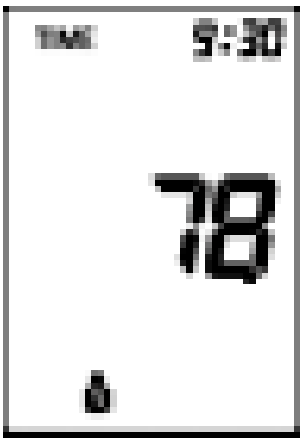
5.4. Measuring procedure

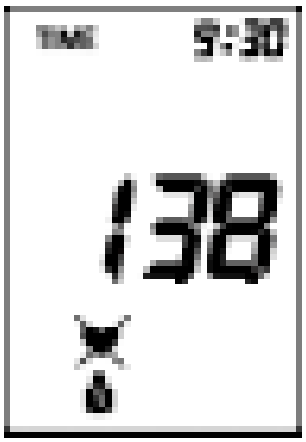
After the cuff has been appropriately positioned, the measurement can begin:

a) Press the 0/I-button, the pump begins to inflate the cuff. In the display, the increasing cuff-pressure is continually displayed.



b) After reaching the inflation pressure, the pump stops and the pressure slowly falls away. The cuff-pressure (large characters) is displayed during the measurement. When the device has detected the pulse, the heart symbol in the display begins to blink and a beep tone is audible for every pulse beat.

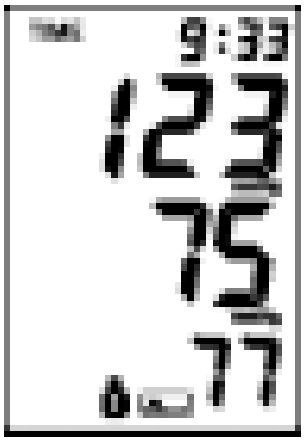




c) When the measurement has been concluded, a long beep tone sounds. The measured

The measurement results are displayed, until you switch the device off. If no button is pressed for 5 minutes, the device switches automatically off, to save the batteries.

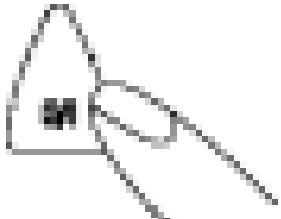
d) When the unit is set to **Average Mode setting** generally 3 separate measurements will take place in succession and calculates your detected blood pressure value. There will be 35 seconds resting time in-between each measurement. A count down indicates the remaining time and a beep will sound 5 seconds before the 2nd and 3rd readings will begin.



In case that the single data of each cycle differ too much from each other, a fourth measurement is performed before the result will be displayed. In rare cases the blood pressure is such unstable that even after four measurements the data vary too much. In this case „ERR 6“ is shown and no result can be given. If one of measurement causes an error message it is repeated.

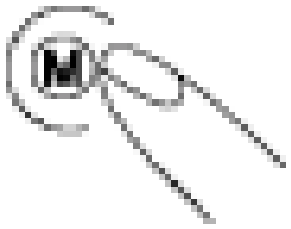
5.5. Discontinuing a measurement

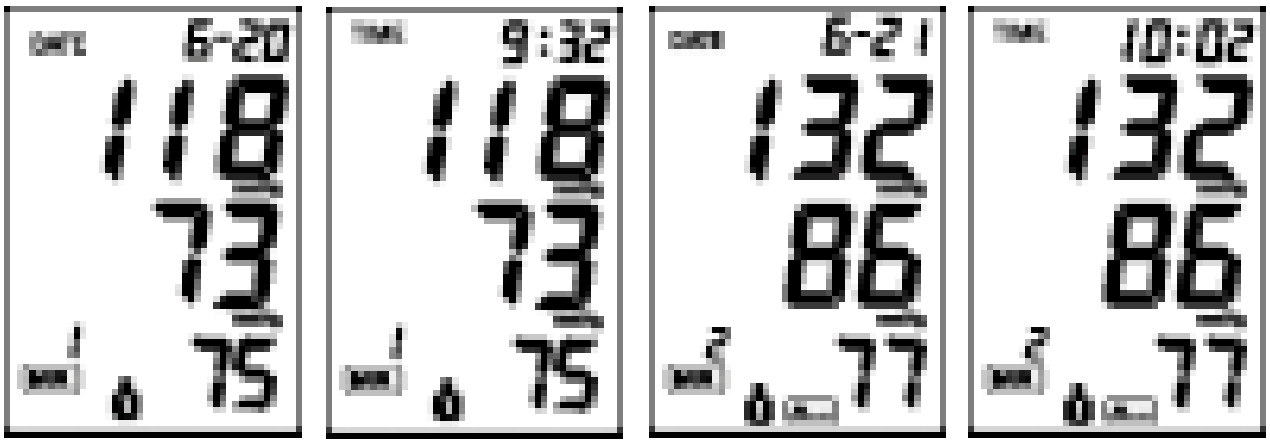
If it is necessary to interrupt a blood pressure measurement for any reason (e.g. the patient feels unwell), the 0/I button can be pressed at any time. The



5.6. Memory – storage and recall of the measurements

The blood-pressure monitor automatically stores each of the last 30 measurement values. By pressing the MEMORY button, the last measurement (MR1) as well as the further last 29 measurements (MR2, MR3, ..., MR30) can be displayed one after the other.





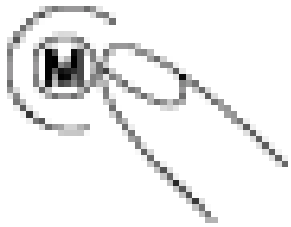
(MR1: Values of the last measurement)

(MR2-MR30: Values of the measurement before MR1)

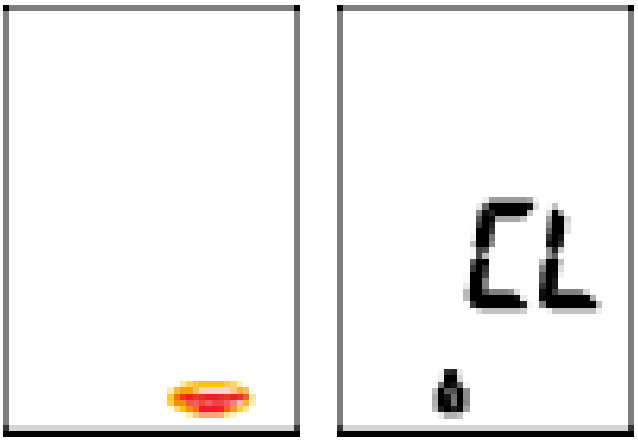
☞ Further information

Measurements should not occur soon after each other, since otherwise, the results will be falsified. Wait therefore for several minutes in a relaxed position, sitting or lying, before you repeat a measurement.

In order to delete all stored readings, depress the MEMORY button for at least 7 seconds, the display will show the symbol " CL" and 3 short beep sounds will be heard to indicate deletion of stored readings.



Note:
If your last stored measurement was taken in the Average Mode, you will see the „MAM“ symbol in approximately 3 seconds during the deletion procedure. (The display will show these symbols during deletion of all stored measurements if the last measurement is taken from the Average Mode)

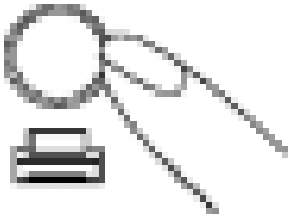


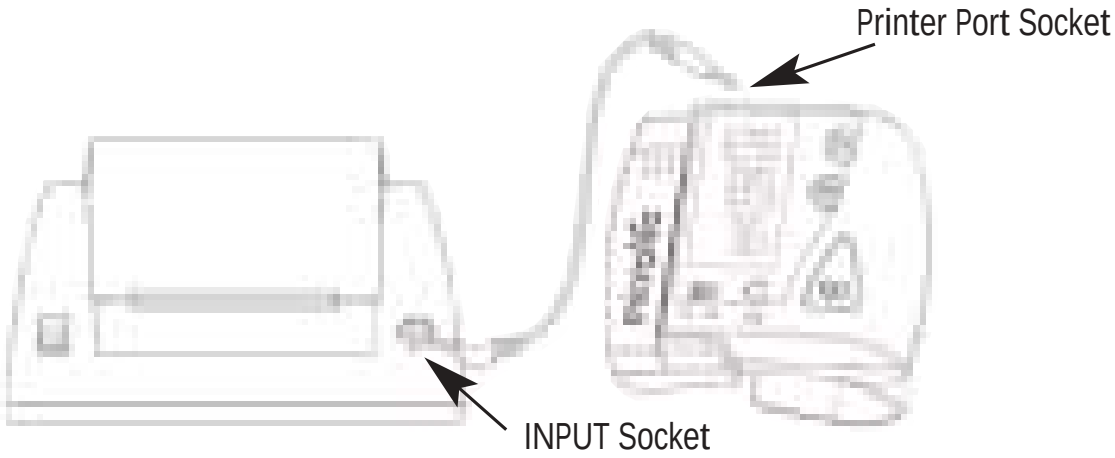
6. Printer Funtions

This unit can be used in connection with the Microlife diagnostic printer. The unit can print out measurements stored in the memory by pressing the PRINTER button. There are 2 kinds of formats available.

b) Connect the printer with the monitor and switch the printer on (for details please refer to the manual of the printer).

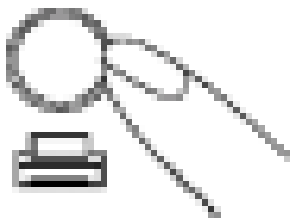
c) Click the PRINTER button of the monitor once. The display will show "Pr1" and the printer will print the last stored measurement for User 1 or 2 based on your selection.





6.2. How to print all measurements stored in memory and a data chart, (data print out with chart).

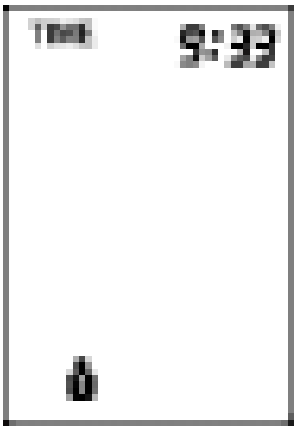
a) Select correct printer objective first before you depress the PRINTER button.



b) Connect the printer with the monitor and switch the printer on (for details please refer to the manual of the printer).

6.3. Stop printing

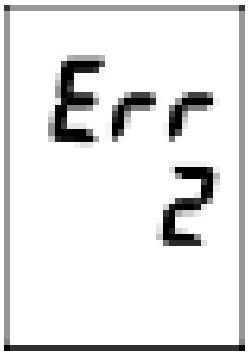
If you would like to stop printing, click the PRINTER button during the printing process.



NOTE:
Further details regarding the printer can be found in the printer instruction manual.

7. Error messages/malfunctions

If an error occurs during a measurement, the measurement is discontinued and a corresponding error code is displayed (Example: Error No. 2).



Error No.	Possible cause(s)
ERR 1	No pulse has been detected.
ERR 2	Unnatural pressure impulses influence the measurement result. Reason: The arm was moved during the Measurement (Artefact).
ERR 3	The inflation of the cuff takes too long. The cuff is not correctly seated.

Other possible malfunctions and their elimination

If problems occur when using the device, the following points should be checked and if necessary, the corresponding measures are to be taken:

Malfunction	Remedy
The display remains empty when the instrument is switched on although the batteries are in place.	1. Check batteries for correct polarity and if necessary insert correctly. 2. If the display is unusual, re-insert batteries or exchange them.
The device frequently fails to measure the blood pressure values, or the values measured are too low (too high).	1. Check the positioning of the cuff. 2. Measure the blood-pressure again in peace and quiet under observance of the details made under point 5.
Every measurement produces a different value although the instrument functions normally and the values displayed are normal	1. Please read the following information and the points listed under «Common sources of error». Repeat the measurement. **Please note: Blood pressure fluctuates continually so s uccessive measurements will show some variability**.
Blood pressure measured differ from	1. Record the daily development of the values and consult your doctor.

☞ Further Information

The level of blood-pressure is subject to fluctuations even with healthy people. Important thereby is, that comparable **measurements always require the same conditions (Quiet conditions)!** If, in spite of observing all these factors, the fluctuations are larger than 15mmHg, and/or you hear irregular pulse tones on several occasions, please consult your doctor.

For licensing, the device has been subjected to strict clinical tests, by which the computer programme used to measure the blood-pressure values was tested by experienced specialist doctors in Germany. The same computer programme is used in every individual device, and has thus also been clinically tested.
The manufacture of the devices takes place according to the terms of the European standard for blood-pressure measuring devices (see technical data) under the supervision of the Technical Monitoring Association Essen (RWTüV-Essen).

You must consult your specialist dealer or chemist if there are technical problems with the blood-pressure instrument. Never attempt to repair the instrument yourself!
Any unauthorised opening of the instrument invalidates all guarantee claims!

8. Care and maintenance, recalivration

a) Do not expose the device to either extreme temperatures, humidity, dust or direct sunlight.

b) The cuff contains a sensitive air-tight bubble. Handle this carefully and avoid all types of straining through twisting or buckling.

c) Clean the device with a soft, dry cloth. Do not use petrol, thinners or similar solvent. Spots on the cuff can be removed carefully with a damp cloth and soapsuds. The cuff must not be washed!

d) Do not drop the instrument or treat it roughly in any way.

Periodical recalibration

Sensitive measuring devices must from time to time be checked for accuracy. We therefore recommend a periodical inspection of the static pressure display every 2 years.
Your specialist dealer would be pleased to provide more extensive information about this.

9. Guarantee

The blood-pressure monitor BP 3BU1-5 is guaranteed for 2 years from date of purchase. This guarantee includes the instrument and the cuff. The guarantee does not apply to damage caused by improper handling, accidents, not following the operating instructions or alterations made to the instrument by third parties.
The guarantee is only valid upon presentation of the guarantee card filled out by the dealer.

Name and company address of the responsible dealer:

10. Reference to standards

Device standard: Device corresponds to the requirements of the European standard for non-invasive blood- pressure monitor
EN1060-1 / 12:95
EN1060-3 / 09:97

DIN 58130, NIBP – clinical investigation
ANSI / AAMI SP10, NIBP – requirements

Electromagn. compatibility: Device fulfils the stipulations of the European standard EN 60601-1-2

Clinical testing: The clinical performance test was carried out in Germany according to the DIN 58130 / 1997 procedure N6 (sequential).

The stipulations of the EU-Guidelines 93/42/EWG for Medical Products Class IIa have been fulfilled.

11. Technical specifications

Weight:	148g (with batteries + cuff)
Size:	85 x 77 x 75mm (including cuff)
Storage temperature:	–5 to +50°C
Humidity:	15 to 85% relative humidity maximum
Operation temperature:	10 to 40°C
Display:	LCD-Display (Liquid Crystal Display)
Measuring method:	oscillometric
Pressure sensor:	capacitive
Measuring range:	
SYS/DIA:	30 to 280 mmHg
Pulse:	40 to 200 per minute
Cuff pressure display range:	0-299 mmHg
Memory:	toring the last 2 x 30 measurements automatically
Measuring resolution:	1 mmHg
Accuracy:	Pressure within ± 3 mmHg Pulse ± 5 % of the reading
Power source:	2 dry cells (Batteries) UM-4, size AAA 1.5V
Accessories:	storage case