

Shenzhen Pango Medical Electronics Co., Ltd.
Main Site Building 2, No. 25 Fenghuang Road, Industrial Zone, Xixiang First Village, Henggang Street, Longgang District, Shenzhen, 518115 Guangdong, P. R. China.
Additional site 1/4 Floor No.5 Shanzhang Rd, Xixiang Village, Henggang Town, Longgang District, Shenzhen, 518115 Guangdong, P. R. China.
Tel:+86-755-33825988 Fax:+86-755-33825989

Lotus NL B.V.
Address: Koningin Julianaplein 10, 1e Vert, 2585AA, The Hague, Netherlands.
Tel: +31644168999

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ELECTRONIC BLOOD PRESSURE MONITOR

Instruction Manual

MODEL: PG-800A18

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The icon indicates something that is compulsory (what must always be observed).
Matters involving actual compulsory actions are indicated by text or pictures in or near . The left icon refers to "general compulsion".

The icon indicates something can't be disassembled or "Don't disassemble".
Matters involving actual compulsory actions are indicated by text or pictures in or near . The left icon refers to "general prohibition".

Type BF Applied part

Please refer to the instructions for use

Indicates a medical device that needs to be protected from moisture.

Contact its local authorities to determine the proper method of disposal of potentially bio hazardous parts and accessories.

IP Classification: IP22

Indicates medical device

The following symbol indicates that the device is MR-unsafe:

Caution

Patient must follow doctor's instruction and should not perform self-judgment and self-treatment by the measuring result.
 Self-diagnosis of measured results and treatment are dangerous. The device should not be used to judge illness, first aid and continuously monitor measuring.
 This device can not be used for Patient transport and surgical care. It can be used in household or fixed places only.
 Please press "on/off" button to stop work when you feel uncomfortable with the wrist, or if the air is inflating abnormally without stop.
 This device should not be used by children under 18 years old or people who cannot express their will, otherwise it will cause harm.
 Do not use the unit for purpose other than measuring blood pressure. May cause accident or trouble.
 Please do not use mobile phone around the device. Please do not use the device around the magnetic field.
 The device is prohibited from being used movement.
 Do not use the equipment in outdoor or shower rooms.
 Do not disassemble, repair, or remodel the main unit or the wrist cuff of the blood pressure monitor.
 Will cause the unit to function erroneously.

Requests from Manufacturer

Make sure there is no connection tubing kinking before start measuring to avoid any injury to patient.

For any patient, do not measure more than 3 times continuously, it should be at least above 5 minutes of interval rest between any two measurements, otherwise will cause extravasated blood.

Do not measure your blood pressure over 6 times each day.

Do not apply the cuff over a wound as this can cause further injury.

Do not measure on the wrist which is on the side of a mastectomy, otherwise it could cause injury.

Observe the air pressure value from the LCD display.

When measuring, it could not exceed 280 mmHg, otherwise Please press "on/off" button to stop

Do not use force to bend the wrist cuff or the air tube.

Do not knock or drop the main unit.

Always use the specified accessories in the manual, the use of other parts not approved by the manufacturer may cause faults or injuries.

For service information, parts list etc., please contact the dealer.

-The PATIENT is an intended OPERATOR.

-Not servicing and maintenance while the ME EQUIPMENT is in use.

-The user can maintain the product, the maintenance method is described in the maintenance instructions of manual.

-Stop using the equipment immediately, if it is in contact with water.

ABOUT BLOOD PRESSURE

1. What is blood pressure?
Blood pressure is the force exerted by blood against the walls of the arteries. Systolic pressure occurs when the heart contracts. Diastolic pressure occurs when the heart expands.

Blood pressure is measured in millimeters of mercury (mmHg). One's natural blood pressure is represented by the fundamental pressure, which is measured first thing in the morning while one is still at rest and before eating.

2. What is hypertension and how is it controlled?
Hypertension, an abnormally high arterial blood pressure, if left unattended, can cause many health problems including stroke and heart attack. Hypertension can be controlled by altering lifestyle, avoiding stress and with medication under a doctor's supervision. To prevent hypertension or keep it under control:

- Do not smoke
- Reduce salt and fat intake
- Maintain proper weight
- Exercise regularly
- Have regular physical checkups

3. Why measure blood pressure at home?
Blood pressure measured at a clinic or doctor's office may cause apprehension and produce an elevated reading, 25 to 30 mmHg higher than that measured at home. Home measurement reduces the effects of outside influences on blood pressure readings, supplements the doctor's readings and provides a more accurate, complete blood pressure history.

4. WHO blood pressure classification
Standards for assessment of high blood pressure, without regard to age, have been established by the World Health Organization (WHO), and shown in chart below.

5. Blood pressure variations
An individual's blood pressure varies greatly on a daily and seasonal basis. It may vary by 30 to 50 mmHg due to various conditions during the day. In

Reference Material: Journal of Hypertension 1999, Vol 17 No.2

hypertensive individuals, variations are even more pronounced. Normally, the blood pressure rises while at work or play and falls to its lowest levels during sleep. So, do not be overly concerned by the results of one measurement.

Take measurements at the same time every day using the procedure described in this manual, and know your normal blood pressure. Many readings give a more comprehensive blood pressure history.

Be sure to note date and time when recording your blood pressure. Consult your doctor to interpret your blood pressure data.

PRECAUTIONS BEFORE USE

1. If you are taking medication, consult with your doctor to determine the most appropriate time to measure your blood pressure. NEVER change a prescribed medication without first consulting with your doctor.

2. For people with irregular or unstable peripheral circulation problems due to diabetes, liver disease, hardening of the arteries, etc, there may be fluctuation in blood pressure values measured at the upper arm versus at the wrist.

3. Measurements may be impaired if this device is used near televisions, microwave ovens, X-ray, mobile phone equipment or other devices with strong electrical fields. To prevent such interference, use the monitor at a sufficient distance from such devices or turn them off.

4. Before using, should wash your hands.

5. Do not measure on the arm which simultaneously used monitoring ME Equipment, otherwise it could cause loss of function.

6 Consult your doctor if the unexpected readings are obtained, also please refer to "Trouble shooting" of the manual.

7. The reading is probably a little lower than measured in the hospital due to the steady mode at home.

8. Cuff pressure range 0-299mmHg

FEATURES OF THE PRODUCT

1. Memory can store 90 measurements.

2. Large and clear LCD display.

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3. WHO blood pressure classification display.

4. Easy to use, Press a button to automatically measure, record the measurement values and measurement time.

5. Automatically turns off (within 1 minute) to save power.

PARTS IDENTIFICATION

Accessories: Manual, CASE

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INSERT OR REPLACE BATTERIES

1. Remove the battery cover.

2. Insert new batteries into the battery compartment as shown, taking care that the polarities(+) and (-) are correct.

3. Close the battery cover. Use only LR03, AAA batteries.

CAUTION

- Insert the batteries as shown in the battery compartment. If not, the device will not work.
- When (LOW BATTERY mark) blinks in the display, replace all batteries with new ones. Do not mix old and new batteries. It may shorten the battery life, or cause the device to malfunction.
- (LOW BATTERY mark) does not appear when the batteries run out.
- Please ensure to distinguish positive polar "+" and negative polar "-" of batteries when replacing batteries.

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- Batteries, which have fluid on surface or be modified, can not be inserted into the products.
- Battery short circuit must be prevented.
- Battery life varies with the ambient temperature and may be shorten at low temperatures.
- The batteries may leak and cause a malfunction.
- Use the specified batteries only. The batteries provided with the device are for testing monitor performance and may have a shorter life.
- Used batteries may leak and damage the main unit. Pleases observe the following points.
 - * If you are not going to use the unit for a long period of time (approximately three months or more), remove the batteries.
 - * Replace worn batteries with their polarities in the correct direction.

TIME AND VOICE ON/OFF OF SYSTEM SETUP

1. Press "SET" key to time display.

2. In the off state, Press and hold "SET" key until the year number displays and flashes on LCD to enter setting mode.

3. Press "MEM" key to adjust the year, then press "SET" key again to save your setting and enter the month setting mode.

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4. Press "MEM" key to adjust the month. Following the same steps to adjust date/hour/minute/Voice (on/off) until setting completed ("DP" is the On, "DP" is the Off) Non-talking model does not have this function.

UNIT CONVERSION mmHg/kPa DISPLAY

The goods have mm Hg(mmHg), kPa (kPa) two kinds of blood pressure display units(mmHg factory to express).

Press "ON / OFF" button for 10 seconds to display unit switching interface, then press "MEM" key to select mmHg / KPa, press "ON / OFF" button to exit.

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The units will be chosen by the above shows mmHg/kPa after decontrol, After the normal boot unit values are shown as blood pressure.

Also select memory unit value changes.

WHO BLOOD PRESSURE CLASSIFICATION DISPLAY

Diastolic blood pressure

Reference material: journal of hypertension 1999, vol 17 No.2

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ATTACHING THE WRIST CUFF

1. **Fastening the wrist cuff**

1) Wrap the wrist cuff around your wrist about (1-2)cm above your hand as shown in the figure at the right.

2) Fasten the wrist cuff tightly by using the Velcro Strip.

For proper measurements, fasten the wrist cuff tightly and measure on a bare wrist.

2. **How to take proper measurements**

For best accuracy in blood pressure measurement:

- Sit comfortably at a table. Rest your wrist on the table.
- Relax for about 5 to 10 minutes before measurement.
- Raise your hand so that the wrist cuff is at the same level as your heart.
- Remain still and keep quiet during measurement.
- Do not measure left after physical exercise or a bath.
- Measure your blood pressure at about the same time every day.

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HOW TO MEASURE BLOOD PRESSURE

1. Fasten the wrist cuff according to the instructions in "ATTACHING THE WRIST CUFF".

2. Press the "ON/OFF" button. All icons appear two seconds on DISPLAY, then switch to measurement, and display "0" or last measurement record.

3. Start measurement, the cuff in the strap will automatically inflate.

The mark will flash on LCD. When complete, the results will be displayed.

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RECALL MEMORY

Press "MEM" button to inquire memory average values "RUG" Average Value Display: the latest 3 groups of memory average values (Memory values are displayed regardless of period).

Press "MEM" button, a memory reading out the latest measurements, "MEM" for the buttons(UP), "SET" button for the memory (DOWN)

Power Measurement, clock or after the end of the state, can press the "MEM" button read out the latest measurement of memory.

DELETE MEMORY

The state read out the memory press the (memory) button five seconds, the LCD display "RD" has been to delete all memory.

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CLEAN AND MAINTENANCE

1. Keep this device in the case provided with the device when you do not use it.

2. Do not fold the arm cuff too tightly.

3. Clean the monitor with a soft dry cloth. Do not use any cleaning solution.

4. Do not submerge the device or any components in water

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SPECIFICATIONS

Measuring Method	Oscillometric Measurement
Indication	Digital LCD display
Measuring Range	Pressure:(30~280)mmHg Pulse:(40~199)Beat/min
Accuracy	Static Pressure: ±3mmHg Pulse: ±5%
Memory	90 Memories
Power supply	2x1.5V Batteries(LR03 or AAA) use alkaline battery measure above 200 times.
Operating condition	+5℃~+40℃, 15%RH~93%RH Atmospheric pressure: 70kPa~106kPa
Storage condition	-20℃~+55℃, 0%RH~93%RH Atmospheric pressure:50kPa~106kPa
Dimensions	Approx:90(W)X70(H)X29(D)mm
Weight	Approx: 130g, excluding batteries
Classification	Type BF
Wrist circumference	(13.5~19.5)cm

* Specifications may be changed without notice in the event of improvement being made.

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1. Type of protection against electric shock: INTERNALLY POWERED EQUIPMENT.

2. Degree of protection against electric shock: TYPE BF APPLIED PART.

3. Mode of operation: CONTINUOUS OPERATION.

4. Equipment not suitable for category AP&APG equipment use in presence.

STATEMENT

The system might not meet its performance specifications if stored or used outside the temperature and humidity as mentioned below:

Operating conditions: +5℃~+40℃, 15%RH~93%RH 70kPa~106kPa

Storage conditions: -20℃~+55℃, 0%RH~93%RH

TROUBLE SHOOTING

If you have trouble in using the unit please check the following points first.

ERROR DISPLAY	POSSIBLE CAUSE	HOW TO CORRECT
Nothing is displayed	No battery installation	Insert batteries
When you push the POWER button or Battery icon flash	Battery worn out	Replace new batteries
	The polarities of batteries placed wrongly	Insert battery in the correct polarities

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E1 can't normally increase pressure	Check your wrist cuff if any air leakage	Replace wrist cuff with new one
E3 inflate pressure too high	Pressure value of more than 299mmHg	Re-measurement or send back dealer for re-calibrate pressure
E2/E4 have shaking while measurement	Hand or body shaking	keeping static and correct gesture to measure again
Battery icon on	Battery low power	Replace battery and measure again
The systolic pressure Value or diastolic Pressure value too high	1. The wrist cuff was held lower than your heart 2. The wrist cuff was not attached properly 3. You moved your body or spoke during measurement	keeping correct position and gesture to measure again
The systolic pressure Value or diastolic Pressure value too low	1. The wrist cuff was held higher than your heart 2. you moved your body or spoke during measurement	

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Appendix 1 Guidance and Manufacturer Declaration Tables

Guidance and manufacturer's declaration – electromagnetic emissions

The Model PG-800A18 Series Electronic Blood Pressure Monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the Model PG-800A18 Series Electronic Blood Pressure Monitor should assure that it is used in such an environment.

Emissions	Compliance	Electromagnetic environment-guidance
RF emissions CISPR 11	Group 1	The Model PG-800A18 Series Electronic 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.
RF emissions CISPR 11	Class B	The Model PG-800A18 Series Electronic Blood Pressure Monitor is used in home and it's powered by DC 3V
Harmonic emissions IEC 61000-3-2	N. A.	
Voltage fluctuations/flicker emissions IEC 61000-3-3	N. A.	

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Guidance and manufacturer's declaration – electromagnetic immunity

The Model PG-800A18 Series Electronic Blood Pressure Monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the Model PG-800A18 Series Electronic Blood Pressure Monitor should assure 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	±8 kV contact ±4 kV, ±4 kV, ±6 kV, ±15kV air	±8 kV contact ±2 kV, ±4 kV, ±6 kV, ±15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30 %
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m, 50/60Hz	30 A/m, 50/60Hz	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE U_i is the a.c. mains voltage prior to application of the test level

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Guidance and manufacturer's declaration – electromagnetic immunity

The Model PG-800A18 Series Electronic Blood Pressure Monitor is intended for use in the electromagnetic environment specified below. The customer or the user of the Model PG-800A18 Series Electronic Blood Pressure Monitor should assure that it is used in such an environment.

Immunity test	IEC 60601 test level	Compliance level	Electromagnetic environment - guidance
Conducted RF IEC 61000-4-6	3 Vrms 150 kHz to 80 MHz 6 Vrms 150 kHz to 80 MHz outside ISM bands	N/A	Portable and mobile RF communications equipment should be used no closer to any part of the Model PG-800A18 Series Electronic Blood Pressure Monitor, including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter. Recommended separation distance $d = \left[\frac{3.5}{f} \right] \sqrt{P}$

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Radiated RF IEC 61000-4-3	10 V/m 80 MHz to 2.7 GHz	10 V/m	$d = \left[\frac{3.5}{f} \right] \sqrt{P}$ 80MHz to 800MHz $d = \left[\frac{7}{f} \right] \sqrt{P}$ 800MHz to 2.7GHz
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where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and is in the recommended separation distance is metres(m).

Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey, should be less than the compliance level in each frequency range * Interference may occur in the vicinity of equipment marked with the following symbol:

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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 The ISM (industrial, scientific and medical) bands between 0,15 MHz and 20,83 MHz are 6,795 MHz, 6,795 MHz; 13,553 MHz to 13,567 MHz; 26,957 MHz to 27,283 MHz; and 40,66 MHz to 40,70 MHz. The amateur radio bands between 0,15 MHz and 80 MHz are 1,8 MHz to 2,0 MHz, 3,5 MHz to 4,0 MHz, 5,3 MHz to 5,4 MHz, 7 MHz to 7,3 MHz, 10,1 MHz to 10,15 MHz, 14 MHz to 14,2 MHz, 18,07 MHz to 18,17 MHz, 21,0 MHz to 21,4 MHz, 24,89 MHz to 24,99 MHz, 28,0 MHz to 29,7 MHz and 50,0 MHz to 54,0 MHz.

b The compliance levels in the ISM frequency bands between 150 kHz and 80 MHz and in the frequency range 80 MHz to 2,7 GHz are intended to decrease the likelihood that mobile/portable communications equipment could cause interference if it is inadvertently brought into patient areas. For this reason, an additional factor of 10/3 has been incorporated into the formulae used in calculating the recommended separation distance for transmitters in these frequency ranges.

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c Field strengths from fixed transmitters, such as base stations for 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 Model PG-800A18 Series Electronic Blood Pressure Monitor is used exceeds the applicable RF compliance level above, the Model PG-800A18 Series Electronic Blood Pressure Monitor should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the Model PG-800A18 Series Electronic Blood Pressure Monitor.

d Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the Model PG-800A18 Series Electronic Blood Pressure Monitor

The Model PG-800A18 Series Electronic 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 Model PG-800A18 Series Electronic Blood Pressure Monitor can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the Model PG-800A18 Series Electronic Blood Pressure Monitor as recommended below, according to the maximum output power of the communications equipment.

Rated maximum output of transmitter	Separation distance according to frequency of transmitter		
	150 kHz to 80 MHz	80 MHz to 800 MHz	800 MHz to 2.7 GHz
0.1	$d = \left[\frac{3.5}{f} \right] \sqrt{P}$	$d = \left[\frac{3.5}{f} \right] \sqrt{P}$	$d = \left[\frac{7}{f} \right] \sqrt{P}$
0.1	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

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For transmitters rated at a maximum output power not listed above the recommended separation distance d in metres (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.

CALIBRATION METHOD

1. Press and hold the "ON/OFF, MEM" button at the same time, load the battery, enter the static air pressure calibration mode after the LCD screen is fully displayed, and then release the button.

2. Press ON/OFF to close the internal air valve.

3. Connect the external standard barometric interface and the digital barometer interface to the cuff interface.

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4. External input 50mmHg and 200mmHg standard static air pressure, observe the air pressure value displayed at the position of the LCD systolic pressure (SYS) and the value of the digital pressure gauge should be in the range of +/-3mmHg.

Caution

1. ME devices can be used in exposed environments, including electromagnetic interference environment to ensure basic safety and basic performance unchanged.

2. In the event of any serious event related to this product, such as serious adverse event, significant alteration of the product resulting in change of intended use, etc., it will be reported to the manufacturer and the competent authorities of the user and/or the member states where the patient is located.

Notes:

Essential performance: Limits of error of the manometer, ±3mmHg. Reproducibility of the blood pressure determination, ±3mmHg.

Clinical benefits: Accurate measurement of SBP and DBP. Clinical performance meets the requirements of ISO 81060-2:2018.

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