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## Chapter1 Safety Precautions

- Before use, carefully read "Safety Precautions" for a correct use.
- To prevent users suffered hurt or damnification due to improper use, see "Safety Precautions", and use this product properly.

For safety reasons, be sure to comply with safety precautions.



If not to use correctly, it exists that a potentially hazardous situation which may result in injury to the user or patient or damage to the equipment or other property.



Self-diagnosis and treatment using measured results may be dangerous.

Follow the instructions of your physician.

Contact your physician for specific information about your animal's blood pressure.

Please hand measurement results to the doctor who know your animal's health to accept diagnosis.

For severe blood circulation disorder or arrhythmia patients, please use the device under the guidance of a doctor.

Otherwise it may lead to acute hemorrhage, or measurement error as a result of squeezed arm.

This device is intended for using in measuring blood pressure and pulse rate.

Do not use for any other purpose.

Otherwise it may cause accident or holdback.

Please use special cuff.

Otherwise it is possible that measurement result is incorrect.

Do not disassemble or attempt to repair the unit or components without permission.

Otherwise it can not measure correctly.

## Operation for AC Adapter (Separate Sale)



Please use sold separately dedicated AC adapter.  
Otherwise it may cause trouble.

The dedicated AC adapter must use AC 100V-240V.  
Otherwise it may cause fire or electric shock.

When there is breakage of sold separately dedicated AC adapter plug or wire ,  
please immediately pulled the plug from the socket.  
Otherwise it may cause electric shock or injury.

Do not plug or unplug the adapter power cord with wet hands.  
Otherwise it may cause electric shock or injury.

## **Operation for battery**



Please use 4 "AA" size manganese or alkaline batteries, do not use batteries of other types. Otherwise it may cause fire.

New and old batteries, different kinds batteries can not be confusion.

Otherwise it may cause battery leakage, heat, rupture, and damage to Electronic Sphygmomanometer.

+ and - polarities of the batteries must match the polarities of the battery compartment as indicated. When the batteries power exhausts, replace with four new batteries at the same time.

Please take out the batteries when you do not use the device for a long time.

Otherwise it may cause battery leakage, heat, rupture, and damage to Electronic Sphygmomanometer.

If battery fluid should get in your eyes, immediately rinse with plenty of clean water.

Contact a physician immediately.

Otherwise it will cause blindness or other hazards.

If electrolyte of the batteries immodestly glues on the skin or the clothes, immediately rinse with plenty of clean water.

Otherwise it may hurt the skin.

 **Advice** 

Do not subject the device to strong shocks, such as dropping the unit on the floor.

Do not inflate before the cuff wraps around the arm.

Do not inflect the cuff and the air tube forcibly.

 **Warning** 

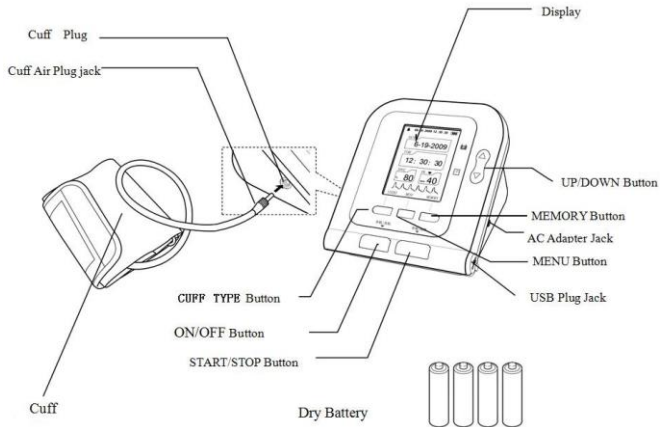
**You must not perform NIBP measurements on animals with sickle-cell disease or under any condition which the skin is damaged or expected to be damaged.**

**For a thrombasthemia animal, it is important to determine whether measurement of the blood pressure shall be done automatically. The determination should be based on the clinical evaluation.**

**Ensure that the correct setting and blood pressure cuff are selected when performing measurements on animal. It may be dangerous for the animal to use an over pressure level. The device has normal useful life for five years since the first electrified use. After its normal life, dispose the device and its accessories according to applicable local regulations about environmental.**

## Chapter2 Main Unit

The production is in the package. Open the package and confirm whether the production is whole.



**Accessories:**

**Cuff:**



The sphygmomanometer supports cuffs in a variety of sizes, please choose suited cuff according to the size of the animal.

**User Manual**

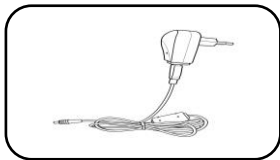


**Optional Accessories:**

**AC adapter**



Input: voltage: AC 100V~240V  
frequency: 50Hz/60HZ  
Rated current: AC 150mA  
Output: DC 6.0V±0.2V 1.0A  
or DC5.0V±0.2V 1.0A



#### **Cuff:**

There are several suitable cuffs(range of limb circumference,middle of upper limb)

the range of limb circumference is 6-11cm

the range of limb circumference is 10-19cm

the range of limb circumference is 18-26cm

the range of limb circumference is 22-32cm

the range of limb circumference is 32-43cm

#### **⚠ Note ⚠**

◎The cuff is a consumable. Calculate by measuring 6 times a day(3 times each morning and evening), the service life of the cuff is about 1 year.(using our experimental conditions)

◎In order to correctly measure blood pressure, please replace the cuff in time.

◎If the cuff leaks, please contact our company to buy a new one. The cuff purchased separately does not include the airway tube plug. When replacing, please do not throw the airway tube plug away, install it on the new cuff.

 **Note** 

When the product and accessories described in this manual are about to exceed the period of use, they must be disposed according to relevant product handling specification. If you want to know more information, please contact our company or representative organization.

## Chapter3 Button Functions

All the operations to the Electronic Sphygmomanometer are through the buttons. The names of the buttons are above them. They are:



**【ON/OFF】**

Hold the button to start or close the device.



**【START/STOP】**

Press to inflate the cuff and start a blood pressure measurement. When measuring, press to cancel the measurement and deflate the cuff.



The three buttons correspond with the hint in the LCD screen downside, pressing any button will carry on corresponding function, eg: **【MENU】**  
**【ENTER】** **【LIST】** etc.

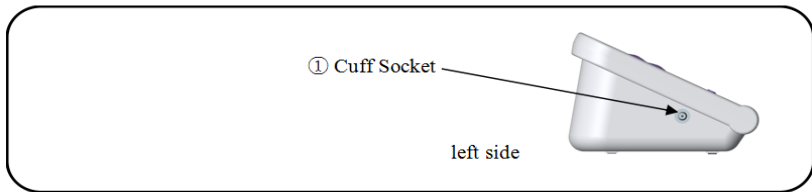


Up and down buttons respectively carry on the functions of moving the cursor up and down, changing the parameters and switching the status.

## Chapter4 External Interfaces

⚠ Note ⚠

**Please hold the air plug to remove the NIBP cuff.**



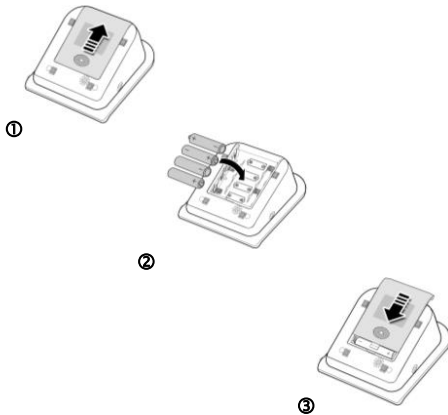
The right side of the instrument is USB socket and AC adapter socket.



right side


## Chapter5 Dry Battery/AC Adapter Installation

The production can use dry battery or AC adapter as power source.



## 5.1 Dry Battery Installation

- ① Demount the battery cover in the direction of the arrow.
- ② Install "AA" dry batteries according to  $\oplus$   $\ominus$  polarities.
- ③ Slide to close the battery cover.

Icon "": the batteries power will exhaust.

Replace with four new batteries (the same sort) at the same time.

Turn the unit off before replacing the batteries.

 **Note** 

**Dispose of the batteries according to applicable local regulations about environmental.**

## 5.2 Using the AC Adapter

- ① Connect device and the AC Adapter. Insert the AC Adapter Plug into the AC Adapter Jack on the right side of the device.
- ② Please insert the power plug of AC adapter into the 100V- 240V socket.

 **Note** 

**①Hold and pull the Housing to remove the AC Adapter from the electrical outlet. Do not remove by pulling on the cord.**

**② Remove the AC Adapter plug from the unit.**

**Please be sure to use dedicated AC adapter.**

**⚠ Note ⚠**

**You'd better take off batteries when use the AC adapter as power source. If there is any damage to the AC adapter, you should use batteries to run the device.**

**When adapter and batteries are both used at the same time, the battery power will not be consumed. Switch adapter and battery as power supply when the device is off, otherwise, the device may shutdown due to power failure.**



## Chapter6 Setting the Date and Time

**is necessary to set date and time after turning on the device.**

The Electronic Sphygmomanometer can automatically stores measurement results, date and time.

If dry battery power exhausts or removed, the time to stop.

At the moment, please reset date and time.

The Electronic Sphygmomanometer stores 100 groups of measurement results at most. If the date and time are set correctly, the date and time when measuring will be correct in the memory, otherwise it may not be correct. The results can be uploaded to PC via USB and processed with the PC software. If the date and time are set correctly, the date and time when measuring will be correct in the memory, otherwise it may not be correct.

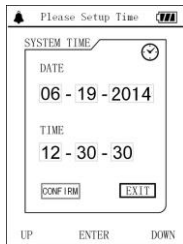
 **Note** 

### **Correctly use data upload function:**

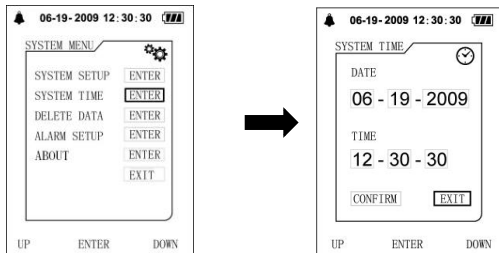
1. First, make sure the time is right, there are three modes of time setting:

(1) When using the Sphygmomanometer for the first time or after the Sphygmomanometer has been placed without power supply for a certain time (more than 5 minutes), after power on, there is a prompt of time error on the main interface, set date and time with **【UP】**, **【DOWN】** and

**【ENTER】** button.



(2) Press **【MENU】** button on the main interface to enter system menu, then enter **【SYSTEM TIME】** item, the current time will be displayed on the screen. Set date and time with **【UP】**, **【DOWN】** and **【ENTER】** button



2. After setting, select **【CONFIRM】** option and press **【ENTER】** button to confirm the setting value. If you do not want to change the time, select **【EXIT】** option and press **【ENTER】** button to return to the previous menu.

⚠ **Note** ⚠

**The year can be set between 2010 and 2099. When the display reaches 2099, it will return to 2010 when pressing **【UP】** button.**

⚠ **Note** ⚠

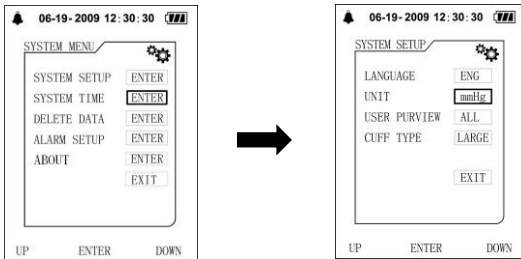
**Please choose the computer which should be ensured compliance with the requirements of IEC60950, or else it may damage the device.**

## Chapter7 Unit

There are two units: "mmHg" and "kPa".

The default is: "mmHg".

To switch "mmHg" and "kPa" units, enter the **【SYSTEM SETUP】** submenu in **【SYSTEM MENU】**, and complete switching in **【UNIT】** item.

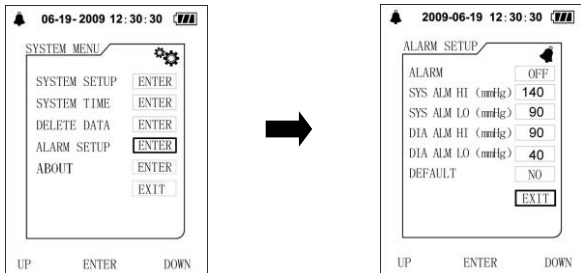


## Chapter8 Alarm Function

Alarms are classified into two categories: technical alarm and physiological alarm.

### Physiological Alarm

User can press **【MENU】** button to enter system menu, select **【ALARM SETUP】** item to enter its interface, and then set alarm on-off and the high and low alarm limits, when blood pressure is higher than the high limit or lower than the low limit, the physiological alarm will occur.



Press any button to cancel the alarm in physiological alarm state and this method brings no affection to the next alarm. To close alarm in **【ALARM SETUP】** will disable the alarm function until switch alarm on.

**Technical Alarm**

When power is about to exhaust and alarm is on , then the alarm will occur. This alarm can not be cancelled unless being closed or the power replaced.

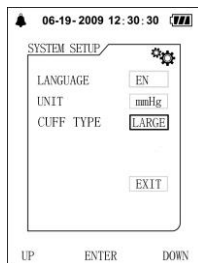
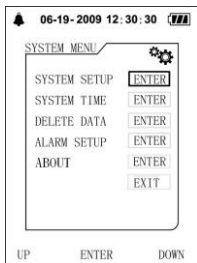
## Chapter9 Applying the Limb Cuff

The measurement can be carried out by applying the cuff on left or right forelimb.

Carry out the operation in a room with comfortable temperature.

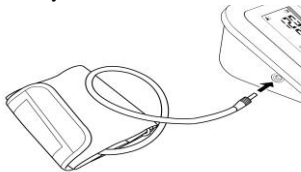
In order to measure accurately, pay attention to applying the cuff properly. Select a proper cuff according to different animals, then select proper cuff type(large, middle and small).

There are two ways to select the cuff mode, in the time interface, press CUFF button to switch cuff mode; or enter the **【SYSTEM SETUP】** submenu in **【SYSTEM MENU】**, and complete switching in **【CUFF TYPE】** item.



**Wear the cuff accurately following these steps:**

- ① Make sure the air plug is securely inserted in the main unit.



- ② Apply the blood pressure cuff to the animal's leg following the instructions below .
- Ensure that the cuff is completely deflated.
  - Apply the appropriate size cuff to the animal. Ensure that the cuff is not wrapped too tightly around the limb. Excessive tightness may cause discoloration and eventual ischemia of the extremities.







⚠ Note ⚠

**Every CUFF TYPE corresponds to different cuff sizes, which are identified on the cuff. As follows:**

Animal Type	Limb perimeter
Small	<13
Middle	8 ~ 26 cm
Large	>25 cm

- Make sure that the cuff edge falls within the range of mark. If it does not, use a larger or smaller cuff that fits better.

 **Warning** 

**Before starting a measurement, verify that you have selected an appropriate setting of animal type (large, middle, or small) for your animal according to its limb perimeter.**

**Do not apply the cuff to a limb that has an intravenous infusion or catheter in place. This could cause tissue damage around the catheter when infusion is slowed or blocked during cuff inflation.**

## **Chapter10 BP Measurement**

### **10.1 Accurate Measurement Way**

The limb chosen for taking the measurement should be placed at the same level as the animal's heart. If this is not possible you should apply the following corrections to the measured values:If the cuff is placed higher than the heart level, add 0.75 mmHg for each inch of difference.If it is placed lower than the heart level, deduct 0.75 mmHg for each inch of difference.

**Try to measure your animal's blood pressure at the same time each day with the same arm**

**and the same pose for consistency.**

Do not touch Electronic Sphygmomanometer, cuff and windpipe during measurement.

**Measurements should be taken in a quiet place and the body relax.**

Remain still 4~5 minutes before measurement.

Relax the body, do not let the muscle activity.

Do not bark or move during the measurement.

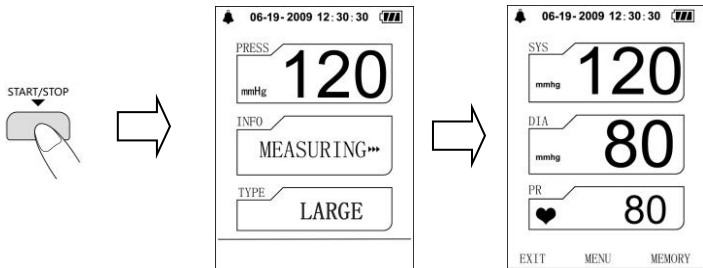
Wait 4~5 minutes between measurements.

Do not use precision instruments near the Sphygmomanometer.

Please use the sphygmomanometer at an environment of suitable temperature and humidity(refer to Chapter 16), otherwise it will cause measurement error.

## 10.2 BP Measurement

① Press **【START/STOP】** button to take a measurement.



Start measurement

measurement result

During measurement, please keep correct pose and quiet state, do not move.

### Stop Measurement

During measurement, if you wish to stop measuring, press **【START/STOP】** button to stop and deflate.

② Confirm Measurement Value

Measurement value can be automatically stored.([memory function] refer to Chapter 11)

\*Self-diagnosis and treatment using measured results may be dangerous. Follow the instructions

of your physician.

 **Note** 

■ **Wait at least 4-5 minutes between measurements.**

When repeated measurements, because, the limb appears congestion, it may not get correct blood pressure measurement. After the blood flow, take a measurement once again.

■ When some factors affect the measurement results in measurement process, error messages hints will appear on the screen, you can obviate the malfunction and restart a measurement.

③ In no physiological alarm state, press any button to carry on the corresponding button function; in audio alarm state, press any button (except **【ON/OFF】** button) to clear up the audio alarm.

④ Take off the cuff, hold **【ON/OFF】** button to turn the device off.

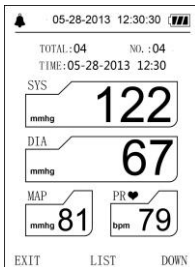
\*The device will automatically turn off after two minutes in which there is no operation to the device, even if you forget to turn the power off.

## Chapter11 Memory Function

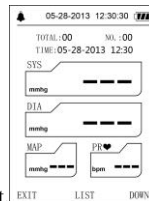
The device is designed to store and display the blood pressure, pulse rate values and the date and time when measured, which are up to 100 items. If there have been 100 items stored, when the 101 measurement have been taken, the earliest results are deleted.

### 11.1 Review the Memory Value

1. In the main interface (interface when boot-strap), press **【MEMORY】** button to review the most recent measurement values in large-print with the serial number from 1 to 100.



2. Press **【UP】** / **【DOWN】** button to circularly switch the former measurement values.



\*The right figure shows that there is no Measurement result.

3. Press **【LIST】** button to switch to data table interface.

06-19-2009 12:30:30 **FAA**

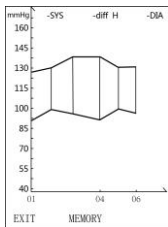
BP TABLE

NO.	SYS	DIS	PR	MAP
03	125	84	53	94
2009-06-19 12:30				
02	116	77	78	089
2009-06-19 12:30				
01	175	108	77	131
2009-06-18 12:30				

EXIT TREND DOWN



4. Press **【TREND】** button to display trend interface.



5. Finish displaying the measurement values

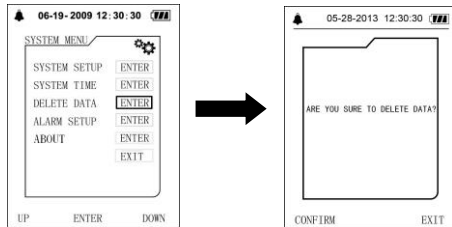
Press **【EXIT】** to return the main interface or hold **【ON/OFF】** button to turn the power off.

\*The device will automatically turn off after two minutes in which there is no operation to the device, even if you forget to turn the power off.

## 11.2 Delete Memory Values

Users can delete all values stored in the memory of each user separately instead of deleting a special item.

1. Press **【MENU】** button to enter the system menu, select **【DELETE DATA】** to enter the confirm interface, after confirming again, all measurement results will be deleted.












## 2.Finish Operation




Select **【CONFIRM】** or **【EXIT】** to return the previous menu, or hold **【ON/OFF】** button to turn the power off.

\*The device will automatically turn off after two minutes in which there is no operation to the device, even if you forget to turn the power off.

## Chapter12 Keys and Symbols

Signal	Description
	Warning – See User Manual
SYS	Systolic pressure
MAP	MAP pressure
DIA	Diastolic pressure
PR	Pulse rate (bpm)
LARGE	Large animal
MIDDLE	Middle animal
SMALL	Small animal
INFO	Information

	Open the alarm sound indication
	Close the alarm sound indication
	Low-power
	Full-power
	1.no NIBP data to review 2.An indicator of signal inadequacy
	Class II equipment
	WEEE (2002/96/EC)
	Type BF Applied Part

SN	Serial number
	This item is compliant with Medical Device Directive 93/42/EEC of June 14, 1993, a directive of the European Economic Community.
	European Representative
	USB socket connect SpO <sub>2</sub> probe(This item only fit for European Union market)

## Chapter13 Error Message

Error message will be displayed in the screen if there is something wrong when measuring. The causes and solutions are shown as follows:

Error Message	Causes	Solutions
Self-test failure System failure	Function abnormal	Please contact us
Loose cuff	Cuff is not connected correctly.	Correctly connect cuff (refer to Chapter 9)
Air leakage	Cuff plug fall off	Make sure the cuff plug is securely inserted in the windpipe (refer to Chapter 9)
Air pressure error	Air pressure error	Refer to the troubleshooting
Weak signal	The pulse signal is too weak or the cuff is loose.	Correctly connect cuff (refer to Chapter 9)
overpressure	Cuff is blocked or squeezed	Correctly connect cuff (refer to Chapter 9)

Excessive movement Over range Saturated signal	The signal extent is too big owing to the arm or body moving or other reasons when measuring	Keep limb, body still, measure again
Time out	It takes too much time	

## Chapter14 Troubleshooting



Abnormal Phenomenons	Causes	Solutions
BP measurement values too high or too low.	Cuff is not connected correctly.	Correctly connect cuff (refer to Chapter 9)
	Move limbs when measuring	Keep quiet and restart a measurement
No pressure	Cuff leakage	Buy a new cuff
	The cuff windpipe is not correctly connected with cuff	Correctly connect
	Cuff is not inflated	Stop using the device and contact us
Cuff deflates in short time	Loose cuff	Correctly apply cuff
It can not carry on measurement when press the measurement button		Switch on the power once again and restart a measurement
Power off suddenly when inflating	No use for a long time, the power of batteries can be exhausted owing to the changed	Replace all four batteries with new ones.



	temperature	
Hold the on/off button but can not start the device	Power of batteries can be exhausted	Replace all four batteries with new ones.
	The battery polarities is reversed	Check the battery installation for proper placement of the battery polarities.
Cuff inflation start before press the measurement button or never stop inflating when measuring		Pull out the cuff to deflate. Stop using the device and contact us.
Cuff never deflation		Pull out the cuff to deflate. Stop using the device and contact us.
Air pressure error	No deflation or deflation error or inflation without stop	Pull out the cuff to deflate. Stop using the device and contact us.
	Others	Keep arm, body still, measure again.
No press value displayed or the value unchanged or change erratically when cuff inflated		Pull out the cuff to deflate. Stop using the device and contact us.
Other phenomenon		Switch on the power once again and restart an operation. Replace the batteries. If no, please contact us.

## Chapter15 Clean and Maintenance

\*Please follow the instructions in the user manual. If you do not comply, our company will not assume responsibilities of the quality.

 **Warning** 

**Must remove batteries and cut off the alternating power supply before cleaning the sphygmomanometer, accessories must be clean separately.**

 **Caution** 

- Do not high pressure disinfect the sphygmomanometer and accessories.
- Do not immerse the sphygmomanometer and accessories into any liquid.
- Do not use any sphygmomanometer and accessories that may be damaged or deteriorated.

### **Cleaning:**

- If there is something dirty on the sphygmomanometer and accessories, please wipe it with a dry and soft cloth.
- If the sphygmomanometer and accessories are very dirty, you can clean them with a soft cloth dampened with water or neutral detergent after the cloth is full twisted.

### **Maintenance:**

\*Please follow the instructions in the user manual. If you do not comply, our company will not assume responsibilities of the quality.

- Frequently clean the Electronic Sphygmomanometer.

- The device should be inspected regularly (or according to the inspection procedure of hospital). The device can be inspected by inspection organizations which designated by the state, or inspected by professionals, also, users can contact with our company.



**⚠ Warning ⚠**

**Do not submerge the device in water.**

**⚠ Advice ⚠**

- Do not use any naphtha, thinner or gas to clean.



- Do not attempt to clean or wash the cuff.



### Keeping

⚠ Advice ⚠

**Do not place the machine in the following areas:**

- Easy to splash water areas.
- Direct sunlight, extreme hot, humidity, dust, causticity gas areas.



- Lean or the area which can cause vibration, impact.



- Chemicals or corrosive gas storage areas.
- Remove the batteries if the unit will not be used for long time.

**⚠ Warning ⚠**

**It is recommended that you check if there is any damage on the Sphygmomanometer or the accessories regularly, if you find any damage, stop using it, and contact our Customer Service immediately.**


**⚠ Warning ⚠**


**The disposal of scrap instrument and its accessories and packing (including batteries, plastic bags, foams and paper boxes) should follow the local laws and regulations.**

**EMC declaration:**

- 🔔 When this device is installed or putted into service, EMC should be paid more attention, as

the portable and mobile RF communications equipment with higher EM interference can affect this device.

 The internal components and cables should not be changed, as this may decrease IMMUNITY of the device.


 The Electronic Sphygmomanometer should not be used adjacent to or stacked with other equipment.

**Classification:**

EMC: Group I Class B.

According to the MDD 93/42, the classification of this medical device: IIa.

The type of protection against electroshock: Class II equipment.

The degree of protection against electroshock: type BF applied part. 

The degree of protection against ingress of water: IPX1.

According to the mode of operation: Continuous.

According to the degree of safety of application in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide: Equipment not suitable for use in the presence of a flammable anesthetic mixture with air or with oxygen or nitrous oxide.

## Chapter16 Specification

Name	Electronic Sphygmomanometer
Display	2.8" color LCD Display
<b>NIBP Specifications</b>	
Measurement Method	Oscillometric method
Working modes	Automatic
Operation mode	Continuous operation
Measurement Range	Pressure:0~290mmHg(0~38.6kPa)
	Pulse: 40~240/min
Resolution	Pressure:1mmHg
Accuracy	Static pressure: $\pm 3$ mmHg( $\pm 0.4$ kPa)
Error	The BP Value of the device is equivalence with the measurement value of Stethoscopy. The error meets all the conditions in the ANSI/AAMI SP-10:2002+A1:2003 +A2:2006.
Operating Temperature/ Humidity	+5°C~40 °C . 15%RH~80%RH
Transport	Transport by general vehicle or according to the order contract, avoid pounded, shake and splash by rain and snow in transportation.

Storage	Temperature: -20°C~+55°C; Relative humidity: ≤95%; No corrosive gas and drafty.
Atmospheric pressure	700hPa~1060hPa
Power supply	4 "AA" alkaline batteries, AC Adapter(AC, 100V-240V, optional)
Battery life	When the temperature is 23°C, limb circumference is 270mm, the measured blood pressure is normal, 4 "AA" alkaline batteries can be used about 300 times.
Main Unit Dimensions	130(L)*110(W)*80mm(H)
Main Unit Weight	300gram
Safety classification	class II, type BF applied equipment
Service life	The service life of the device is five years or 10000 times of BP measurement.