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WARNING

We highly appreciate you choose this JAWON product.

Those who will use this blood pressure monitor are strongly advised to read this manual thoroughly and understand all instructions and warnings before using it.

Information in this manual is made for informational purpose and this manual and product are not meant to be a substitute for the advice provided by your own physician or other medical professional.

You should not use this information contained in this manual or this equipment for diagnosis or treatment of health problem or prescription of medication.

If you have or suspect that you have a medical problem, consult your physician promptly.

ABOUT BLOOD PRESSURE

1. What is blood pressure?

Blood pressure refers to the force or pressure exerted on the artery vessel when blood flows through them. In order to allow the blood to supply nutrition and oxygen to every organ and corner of the body, a certain level of pressure is necessary and it comes from the each time the heart beats or contracts.

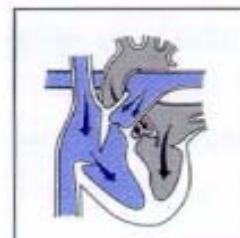
The heart activity is broken down into two phases called Systole and Diastole. Systolic is the pressure to send blood out into the body and Diastolic is the pressure creating as the heart pulls blood back through it.

Blood pressure is recorded as systolic over diastolic, as shown below.

115/75



systole occurs
during the contraction
and emptying of the heart



diastole occurs
during the relaxation
and filling of the heart

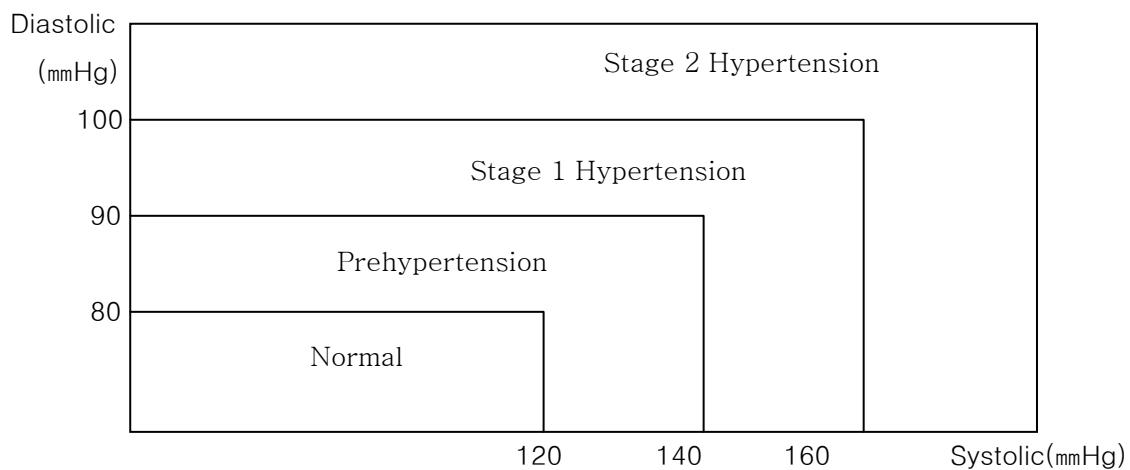
2. What makes my blood pressure fluctuate?

Blood pressure changes in response to many factors.

These factors include changing in the temperature and humidity, physical exercise, restlessness due to stress, fear, anxiety, anger, food and an individual's physical condition.

3. Classification of the blood pressure

: National High Blood Pressure Education Program, National Heart, Lung and



Note

Blood pressure constantly fluctuates during of a day, so that monitoring should be done at least three times and determined. Occasional high or low readings do not mean your monitor is malfunctioning or you are ill. The important thing is that you have information to talk with your doctor about normal and abnormal results corresponding your circadian rhythm.

4. Why do I have to check blood pressure at home?

Home monitoring may help alleviate the medical phenomena 'White Coat Hypertension' which causes a sensitive individual blood pressure to be higher when taken in a medical office setting. The elevation of it may be due to several factors, including stress, nervousness, or increased sympathetic activity associated with the clinical environment. It may cause your blood pressure to rise about 20 to 30mmHg higher than usual. When monitoring at home, you may get a truer indication of your blood pressure in a usual, relaxed state. Regular home monitoring provides you a valuable over time readings to give to your physician to diagnose and optimize the treatment program corresponding your circadian rhythm of blood pressure. It also provides you the information when your blood pressure falls or rises to enable to manage your health. Therefore, it is important to take regular daily home monitoring and keep clear records.

5. What is benefit of ECHO-H User-set inflation level monitor use?

ECHO-H allows that user can set up the inflation level corresponding the blood pressure of user-self. This function is ideal for the hypertensive while other kinds of pressurization method are more suitable to the person who is able to estimate own blood pressure or under treatment. For a correct monitoring, the pressurization need 30mmHg higher than your estimated blood pressure. Therefore the hypertensive may have frequently experienced re-pressurization during monitoring with the monitor employed those methods. In case of excessive hypertension or a feeble pulse, it is possible to experience it over 2 times a monitoring. That will affect your emotion, blood vessel and eventually monitoring results.

ECHO-H, the monitor of user-set inflation excludes the necessity of re-pressurization during monitoring of the hypertensive and makes it convenient and correct with the single pressurization trial.

6. What is the benefit of date and time recorded wrist monitor use?

There is no need to remember monitoring date and time if the device automatically records them. As ECHO-H is built-in calendar and clock that inconvenience is not any more.

These are more helpful to the device having big memory capacity.

7. What is the benefit of ECHO-H data transmissible wrist blood pressure monitor use?

Without going to hospital, you can have physician's advice with data transmissible blood pressure monitor.

ECHO-H is a Home to Hospital bi-directional networking blood pressure monitor that you can transmit saved data from the device to your personal computer through interface then send your physician them. Your physician will read those to find health problems and give proper advice you through computer network. With the support of the analyzing program, ECHO-H tracks your blood pressure changes sophisticatedly and enables you to realize the characteristics of yours and control it. ECHO-H is a time and cost saving healthcare networking watch-type instrument.

INTRODUCTION

Thank you for purchasing the ECHO-H.

Intended use

This home blood pressure monitoring device is indicated for use in the noninvasive measurement of systolic and diastolic blood pressure and heart rate in adult age 18 and over, in a home care environment. This model is designed to enable a person who suspects some trouble with blood pressure to check it at home.

User-set inflation and Oscillometric method

Your unit employs a user-set inflation and an oscillometric method. The user can decide its inflation level corresponding the characteristics of the user's blood pressure. Oscillometric for measurement of blood pressure and heart rate, which refers to check blood pressure by measuring oscillation in the cuff while the artery of the arm oscillate reflecting contracts and relaxes every heart beat.

Data transmissible and analyzing software

This device is data transmissible. You can transmit readings saved memory of the device to your personal computer then mailing to your physician and get advice about it from her/him at home. ECHO-H is a time saving device partially replacing a necessity your visit to your physician. Additionally the data transmitted to your PC can be analyzed and tracked sophisticatedly with analyzing program optionally offered by manufacturer.

Voice massage

Makes you monitor blood pressure easily and know the result clearly without third person's help especially for the elderly.

Noise detecting

As ECHO-H is contrived to detect moving or noising during measurement and display it both on the real time and recalled reading on LCD, you and your physician can determine if the readings are reliable.

Memory feature

It has 64 reading memory capacity recorded monitoring date and time supporting built-in calendar and clock which are input them automatically to each reading.

Accuracy

Blood pressure measurements determined with this device are equivalent to those obtained by a trained observer using the cuff/stethoscope auscultation method, within the limits prescribed by the American National Standard, Electronic or

WORD DEFINITION

To ensure safe operation and durable performance stability, it is essential that you fully understand the functions, operation and maintenance instructions by reading this manual carefully before using the unit.

Particular attention must be paid to all warnings, cautions and notes incorporated herein. The following conventions are used throughout the manual to denote information of special emphasis.

CAUTION

Important information to indicate the presence of a hazard in which may arise severe personal injury, death or substantial property damage if the warning is ignored.

NOTE

Important information to notify the user of operation or maintenance information in which is important but not hazard-related. Hazard warning should never be included under the note signal word.

- ※ Property damage refers to a wide range of damage involving your house, household goods, domestic animals, and pets etc..

NOTE TO USER

- For all damages or injuries caused by user's incorrect operation or failure in maintenance the unit relieves, the manufacturer and its agent of the system do not have any responsibility and non-compliance with specifications.
- Please keep this manual together with the appliance since it is compiled to provide the maximal convenience to those who use this device.
- Defective unit or accessories that is shipped off from customer to Jawon medical Co. or its authorized dealer for service must be packed in the safe way and the replacement carton. Shipping and insurance cost for returning of defective unit must be prepaid by customer.

CLASSIFICATION & COMPLIANCE WITH STANDARD

Classification and Compliance with Standards Model ECHO-H manufactured by Jawon medical is classified as :

- ECHO-H is specified as Class 2 type BF unit under the standard of IEC60601-1 (Safety of Medical Electrical Equipment).
- Internally powered equipment (Battery : 2 × LR6-AAA)
- Ordinary equipment without protection against ingress of water
- Equipment not suitable for use in presence of a flammable anesthetic mixture by standard of IEC60601-1 (Safety of Medical Electrical Equipment)
- Equipment that complies with Class B for Noise-Emission, Level B for Noise-immunity by standard of IEC60601-1-2 (Electromagnetic Compatibility Requirements)

This blood pressure meter complies with the EN1060-1 : 1995 Non-invasive Sphygmomanometers general requirements as well as EN1060-3 : 1997 supplementary requirements for electro-mechanical blood pressure measuring system.

FCC Information

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- (1) This Device may not cause harmful interface, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for CLASS B digital device, pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try correct the interference by one or more of the following measures:

- 1.1. Reorient or relocate the receiving antenna.
- 1.2. Increase the separation between the equipment and receiver.
- 1.3. Connect the equipment into an outlet on a circuit different from that to which receiver is connected.
- 1.4. Consult the dealer or experienced radio/TV technician for help.

WARNING

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

SAFETY PRECAUTIONS

ECHO-H are designed and manufactured in deep consideration for users' and operators' safety and completing reliability of the unit based International Standards for medical equipment.

The following precautions must be observed for additional safety ;

1. User must not touch or handle the inner side the system at anytime. It may cause an electrical shock and flame out.
2. The unit has been factory-adjusted for optimum performance. Do not attempt to modify or adjust any preset controls or switches except those specified in this manual for operation. If any modification is desired, ask manufacturer or its authorized dealer for service.
3. If you have any trouble with the unit, switch it off immediately, and contact manufacturer or its authorized dealer for assistance.
4. Avoid the following environments for storage and operation
 - where the ambient temperature deviates $-20^{\circ}\text{C} \sim 60^{\circ}\text{C}$ for storage
 - where the ambient temperature deviates $10^{\circ}\text{C} \sim 40^{\circ}\text{C}$ for operation
 - where the atmospheric pressure deviates $70\text{kPa}(700\text{mbar})\sim106\text{kPa}(1060\text{mbar})$
 - where the humidity is above 95% for storage and below 30% or above 75% for operation
 - where the unit is exposed to spray or splashing water
 - where the unit is exposed to dust
 - where the unit is exposed to water vapor
 - where the unit is exposed to high density oil vapor
 - where the unit is exposed to salty atmosphere
 - where the unit is exposed to explosive gas
 - where the unit is exposed to excessive shocks or vibrations
 - where the angle of inclination of mounting surface is in excess of 10 degrees
 - where the unit is exposed to direct sunlight
5. Do not use the unit on infants or persons who cannot express one's intension
6. Do not use the unit for any purpose other than measuring blood pressure
7. Do not use a cellular phone near the unit improper operation may result
8. Do not force to bend the arm cuff or the air tube excessively
9. When removing the air tube, pull at the connector

10. Do not apply strong shock or drop the main unit
11. Do not inflate the arm cuff without it being wrapped on the arm
12. The battery liquid may leak and damage the main unit. Please observe the following points.
 - When you are not going to use the unit for an extended period of time (approximately three months or more), remove the batteries
 - Replace the exhausted batteries with new ones immediately
 - Do not use exhausted and new batteries together
 - Do not insert the batteries with their polarities in wrong direction

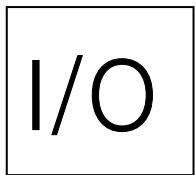
SAFETY SYMBOLS

The International Electro-technical Commission (IEC) has established a set of symbols for medical electrical equipment that classify a connection or warn of any potential hazards. The symbols are shown below.

Save these instructions for your safety.



- Isolated patient connection (IEC 60601-1 Type BF)



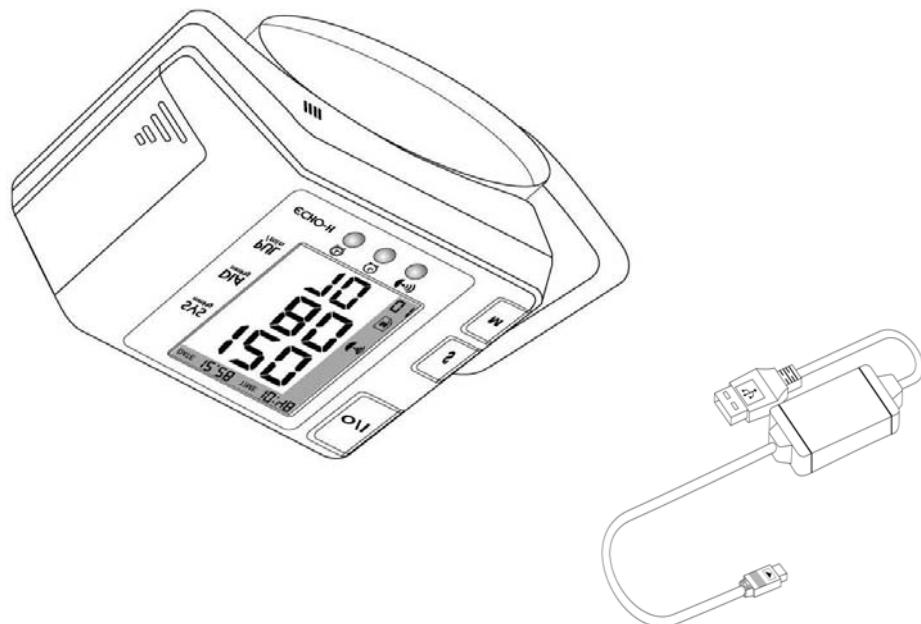
- I and O on power switch represent ON and OFF respectively



- This symbol identifies a safety note.
Ensure you understand function of this control before using it. Control function is described in operation manual.

PART NAMES & FUNCTIONS

1. Main unit and accessories



Cuff

Button

I / O : Power ON/OFF & automatic start,
Enter to sound and volume mode

S : An inflation setting button

M: Button to memory view, sound off and volume control

⌚ : Entering the mode to set date and time

⌚ : Number up button to set date and time

🔊 : Button to transmit data

USB cable : To use data transmission refer to owners' manual of software 'Hour 24' how to use or how to install.

2. SYMBOLS IN LCD INDICATOR



♥ : Displays and flashes when pulse is detected

▲ : **Pressurization** Displays during inflation

▼ : **Exhausting** Displays during deflation

☒ : Displays when the batteries need to be changed

■ : Memory indicator

↔ : Displays when sound is ON

▲▼ : Indicates noise or movement sensed

■ : Memory indicator

01 : Indicates the number of stored results

DATE(10.01) TIME(12:00) : Month.day Hour : minute

PRECAUTIONS FOR MEASUREMENT

Exercise or any kind of activity may affect blood pressure. Rest about 5 minutes before monitoring.



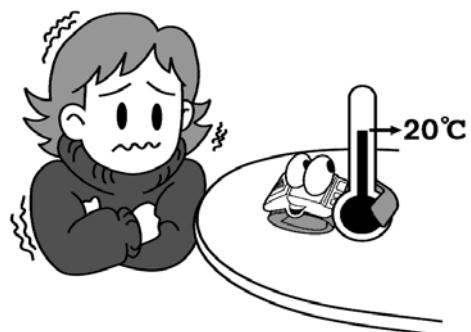
Contain one's urine may elevate blood pressure. Start monitor a few minutes after urination.



Insufficient sleep or constipation may elevate blood pressure.



Cold may elevate blood pressure. Warm yourself at room temperature (about 20°C) before monitoring.



Avoid smoking and drinking caffeine contained beverages such as coffee, tea, and coke, ect..
They may elevate blood pressure.



Moving or talking during monitoring causes error.



To compare the results, choose the readings got under the same condition.
(monitoring site, position, time etc.)



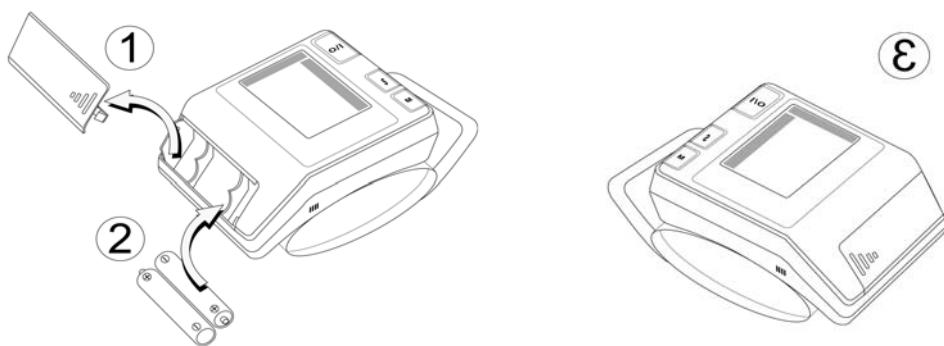
Continuous monitoring causes arm congested and inaccurate readings.
Allow 3~5 minutes interval between measurements.



BATTERY INSERTION / REPLACEMENT

1. How to insert the batteries

- ① Pull the battery cover in the arrow direction and open it.
- ② Insert one AAA type battery to match polarities.
- ③ Insert other AAA type battery to match polarities as shown below.
- ④ Cover the lid of battery case.
- ⑤ The figure that was finished after inserting batteries



2. Replacement of the Batteries

- ① If the  indicator flashes on LCD, change all batteries. Before batteries are changed or used up, you should transmit memorized readings from your device to your personal computer. If you do not so, you might lose them.

Note When batteries are changed or used up, the memorized readings must be lost.

- ② Replace + (positive) and - (negative) polarities should be matched the polarities of the battery compartment as shown above 1-①
If the polarities of the battery are positioned incorrectly, the unit does not work.
- ③ When you change the batteries, use the same type.
- ④ Remove the used batteries immediately to protect the product from damage.
- ⑤ When you are not going to use the unit for an extended period of time (approximately three months or more), remove the batteries.

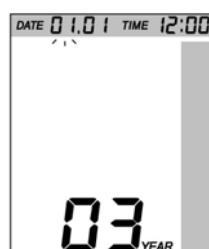
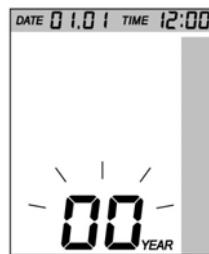
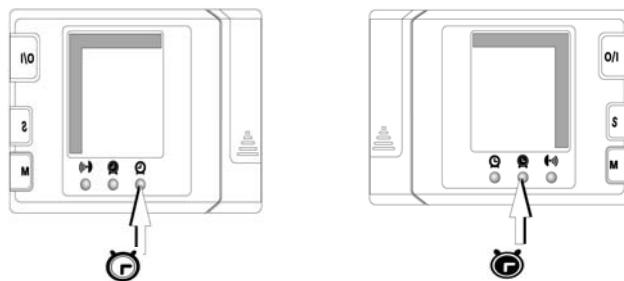
Note If battery is not disposed properly, it can be harmful. Protect the environment by taking exhausted batteries to authorized disposal place.

SETTING DATE AND TIME

- Sequence is Year→Month→Day→Hour→Minute.

1. Entering the mode to set date and time.

- ① After change batteries, the mode appears on LCD automatically.
- ② At power off, press [⌚] button. [00_{YEAR}] will appear on the screen, and [00] flashes.



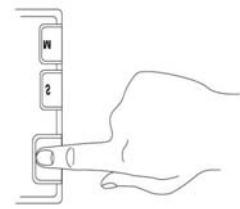
2. Setting up

- ① Press [⌚] button located in the middle to set the year. Whenever [⌚] button is pressed or you keep it pressing, the number will increase gradually or rapidly by '1'. Its range is 00 to 99.
- ② After setting the year, press [⌚] button again. The month indicator, the first two numbers in upper LCD line, will flash. Set it by pressing [⌚] button. Its range is 01 to 12.
- ③ After setting the month, press [⌚] button once again. The day indicator, the second two numbers in upper LCD line, will flash. Set it as same way. Its range is 01 to 31.
- ④ After setting the day, press [⌚] button again. The hour indicator, the third two numbers in upper LCD line, will flash. Set it by pressing [⌚] button. Its range is 00 to 23.
- ⑤ After setting the hour, press [⌚] button once more. The minute indicator, the last two numbers in upper LCD line, will flash. Set it as same way.

Its range is 00 to 59.

⑥ After setting the minute, please power off then on.

Always the second starts from 00.



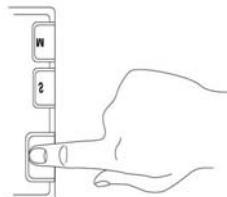
Note

When you press I/O button after setting the date and time, they are stored coinciding with the power off. If you press I/O button on your way to set, what you have done will be stored. The date and time are maintaining during power off but they will return to initial status when batteries are changed.

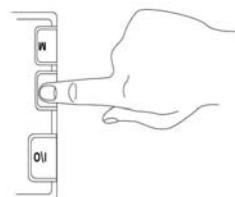
Note When the clock becomes incorrect after using some time, set it again please.

SOUND ON/OFF

① If you press [I/O] button around 2 seconds, [Snd On/OFF] signal appears on LCD.



② Press [S] button to change it.



③ Press [I/O] button to complete it.

SET INFLATION LEVEL

① If you press a [S] button, the display as right will appear.

화면

② Press [S] button again to set inflation level.

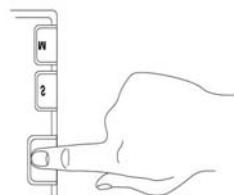
Whenever pressing the [S] button the pressyrisation is varied by 5mmHg from 180~300mmHg rotationally. It is recommended to set inflation 30~40mmHg higher than own systolic blood pressure.

Stop pressing at the level what you desire.



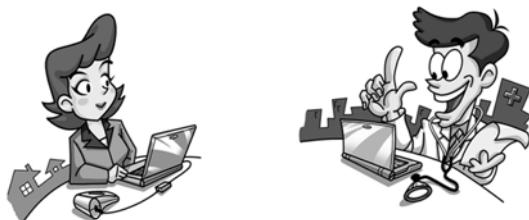
③ Press [I/O] button to start measurement.

The inflation level set is saved the unit automatically with the button pressing.



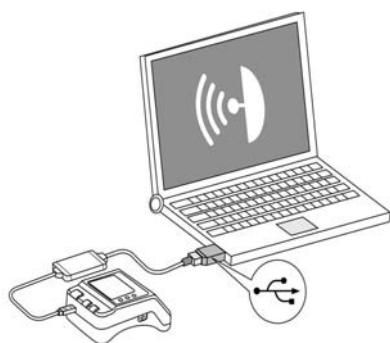
DATA TRANSMISSION

1. How to transmit monitoring data to your PC



ECHO-H blood pressure monitor is a Home to Hospital bi-directional networking instrument. You can reserve memorized data on your personal computer then send them to your physician. If you monitor your blood pressure periodically and memorize reference for your physician, they will be a good information to enable your physician to optimize the treatment program and determine how much medication is required to you corresponding your circadian rhythm of blood pressure.

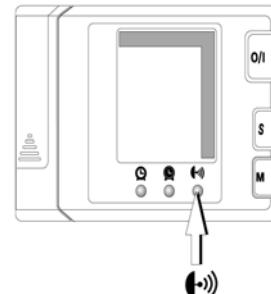
NOTE Must install an USB driver to use an USB port when connect a computer to an ECHO-H. (Refer to 'Hour24')



To install an USB driver in a computer, follow the guidance contained in, manual of software 'Hour 24' Turn on the power of two appliances after connecting ECHO-H to the computer running 'Hour 24'(USB cable should be used the one supplied by JAWON MEDICAL exclusively)

2. Data transmission

- ① Execute software 'Hour 24' in a personal computer.
- ② Connect USB cable to a computer and a port of ECHO-H in order to transmit saved data.
- ③ Press only one time of [M] button of ECHO-FT.
- ④ Press a [] button and transmit to a computer.
(All measurement data saved in memory is transmitted)



3. How to send the data to your doctor

Note Microsoft Outlook Express must be installed in a computer to use a transmission function of 'Hour24'.

- ① Retrieve saved data in order to try to have selected the date and time in software 'Hour 24'.

Measurement date	Measurement time	Measurement 1	Measurement 2	Expt. Unit 1	Expt. Unit 2
2008-01-03	8:30:24	140	60	110	60
2008-01-03	8:30:00	140	60	110	60
2008-01-03	8:29:59	140	60	110	60
2008-01-03	8:29:58	140	60	110	60
2008-01-03	8:29:57	140	60	110	60
2008-01-03	8:29:56	140	60	110	60
2008-01-03	8:29:55	140	60	110	60
2008-01-03	8:29:54	140	60	110	60
2008-01-03	8:29:53	140	60	110	60
2008-01-03	8:29:52	140	60	110	60
2008-01-03	8:29:51	140	60	110	60
2008-01-03	8:29:50	140	60	110	60
2008-01-03	8:29:49	140	60	110	60
2008-01-03	8:29:48	140	60	110	60
2008-01-03	8:29:47	140	60	110	60
2008-01-03	8:29:46	140	60	110	60
2008-01-03	8:29:45	140	60	110	60
2008-01-03	8:29:44	140	60	110	60
2008-01-03	8:29:43	140	60	110	60
2008-01-03	8:29:42	140	60	110	60
2008-01-03	8:29:41	140	60	110	60
2008-01-03	8:29:40	140	60	110	60
2008-01-03	8:29:39	140	60	110	60
2008-01-03	8:29:38	140	60	110	60
2008-01-03	8:29:37	140	60	110	60
2008-01-03	8:29:36	140	60	110	60
2008-01-03	8:29:35	140	60	110	60
2008-01-03	8:29:34	140	60	110	60
2008-01-03	8:29:33	140	60	110	60
2008-01-03	8:29:32	140	60	110	60
2008-01-03	8:29:31	140	60	110	60
2008-01-03	8:29:30	140	60	110	60
2008-01-03	8:29:29	140	60	110	60
2008-01-03	8:29:28	140	60	110	60
2008-01-03	8:29:27	140	60	110	60
2008-01-03	8:29:26	140	60	110	60
2008-01-03	8:29:25	140	60	110	60
2008-01-03	8:29:24	140	60	110	60
2008-01-03	8:29:23	140	60	110	60
2008-01-03	8:29:22	140	60	110	60
2008-01-03	8:29:21	140	60	110	60
2008-01-03	8:29:20	140	60	110	60
2008-01-03	8:29:19	140	60	110	60
2008-01-03	8:29:18	140	60	110	60
2008-01-03	8:29:17	140	60	110	60
2008-01-03	8:29:16	140	60	110	60
2008-01-03	8:29:15	140	60	110	60
2008-01-03	8:29:14	140	60	110	60
2008-01-03	8:29:13	140	60	110	60
2008-01-03	8:29:12	140	60	110	60
2008-01-03	8:29:11	140	60	110	60
2008-01-03	8:29:10	140	60	110	60
2008-01-03	8:29:09	140	60	110	60
2008-01-03	8:29:08	140	60	110	60
2008-01-03	8:29:07	140	60	110	60
2008-01-03	8:29:06	140	60	110	60
2008-01-03	8:29:05	140	60	110	60
2008-01-03	8:29:04	140	60	110	60
2008-01-03	8:29:03	140	60	110	60
2008-01-03	8:29:02	140	60	110	60
2008-01-03	8:29:01	140	60	110	60
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2008-01-03	8:28:59	140	60	110	60
2008-01-03	8:28:58	140	60	110	60
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2008-01-03	8:28:54	140	60	110	60
2008-01-03	8:28:53	140	60	110	60
2008-01-03	8:28:52	140	60	110	60
2008-01-03	8:28:51	140	60	110	60
2008-01-03	8:28:50	140	60	110	60
2008-01-03	8:28:49	140	60	110	60
2008-01-03	8:28:48	140	60	110	60
2008-01-03	8:28:47	140	60	110	60
2008-01-03	8:28:46	140	60	110	60
2008-01-03	8:28:45	140	60	110	60
2008-01-03	8:28:44	140	60	110	60
2008-01-03	8:28:43	140	60	110	60
2008-01-03	8:28:42	140	60	110	60
2008-01-03	8:28:41	140	60	110	60
2008-01-03	8:28:40	140	60	110	60
2008-01-03	8:28:39	140	60	110	60
2008-01-03	8:28:38	140	60	110	60
2008-01-03	8:28:37	140	60	110	60
2008-01-03	8:28:36	140	60	110	60
2008-01-03	8:28:35	140	60	110	60
2008-01-03	8:28:34	140	60	110	60
2008-01-03	8:28:33	140	60	110	60
2008-01-03	8:28:32	140	60	110	60
2008-01-03	8:28:31	140	60	110	60
2008-01-03	8:28:30	140	60	110	60
2008-01-03	8:28:29	140	60	110	60
2008-01-03	8:28:28	140	60	110	60
2008-01-03	8:28:27	140	60	110	60
2008-01-03	8:28:26	140	60	110	60
2008-01-03	8:28:25	140	60	110	60
2008-01-03	8:28:24	140	60	110	60
2008-01-03	8:28:23	140	60	110	60
2008-01-03	8:28:22	140	60	110	60
2008-01-03	8:28:21	140	60	110	60
2008-01-03	8:28:20	140	60	110	60
2008-01-03	8:28:19	140	60	110	60
2008-01-03	8:28:18	140	60	110	60
2008-01-03	8:28:17	140	60	110	60
2008-01-03	8:28:16	140	60	110	60
2008-01-03	8:28:15	140	60	110	60
2008-01-03	8:28:14	140	60	110	60
2008-01-03	8:28:13	140	60	110	60
2008-01-03	8:28:12	140	60	110	60
2008-01-03	8:28:11	140	60	110	60
2008-01-03	8:28:10	140	60	110	60
2008-01-03	8:28:09	140	60	110	60
2008-01-03	8:28:08	140	60	110	60
2008-01-03	8:28:07	140	60	110	60
2008-01-03	8:28:06	140	60	110	60
2008-01-03	8:28:05	140	60	110	60
2008-01-03	8:28:04	140	60	110	60
2008-01-03	8:28:03	140	60	110	60
2008-01-03	8:28:02	140	60	110	60
2008-01-03	8:28:01	140	60	110	60
2008-01-03	8:28:00	140	60	110	60



- ③ A window to get input if click a 'E-mail' button opens. Input a mail address and title and click a 'Send' button.
(A save situation of a file is marked in E-mail title, and a transmitted figure file and blood pressure measurement file are saved in a computer of a user.
('Hour24' manual reference)

Note Please transmit the data file which use a [SAVE] function of software 'Hour 24' use personal mail, and to transmit, and was saved. Detailed contents refer to 'Hour 24' manual.

MEASUREMENT

Remove thick or tight-fit clothes from your wrist.

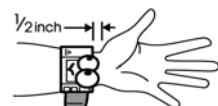
Sit on a chair with your feet flat on the floor and place your wrist on a table so that the cuff can position as same level as your heart.

1. Wrapping the cuff

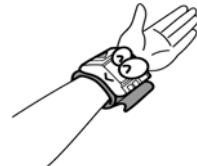
① Wrap the cuff around your wrist. It should be applied radius artery (inside wrist) and the monitor should face you.



② Position the lower edge of the cuff is $1/4 \sim 1/2$ inch above the hand as shown in the picture.



③ Strain the cuff with about a finger space between the cuff and the wrist.



Note Take off thick coat, sweater or tight-fit clothes from the monitoring site. The cuff should be touched directly to the skin. When you roll up your sleeve, ensure it does not constrict the blood stream in your wrist.

2. Correct measuring posture

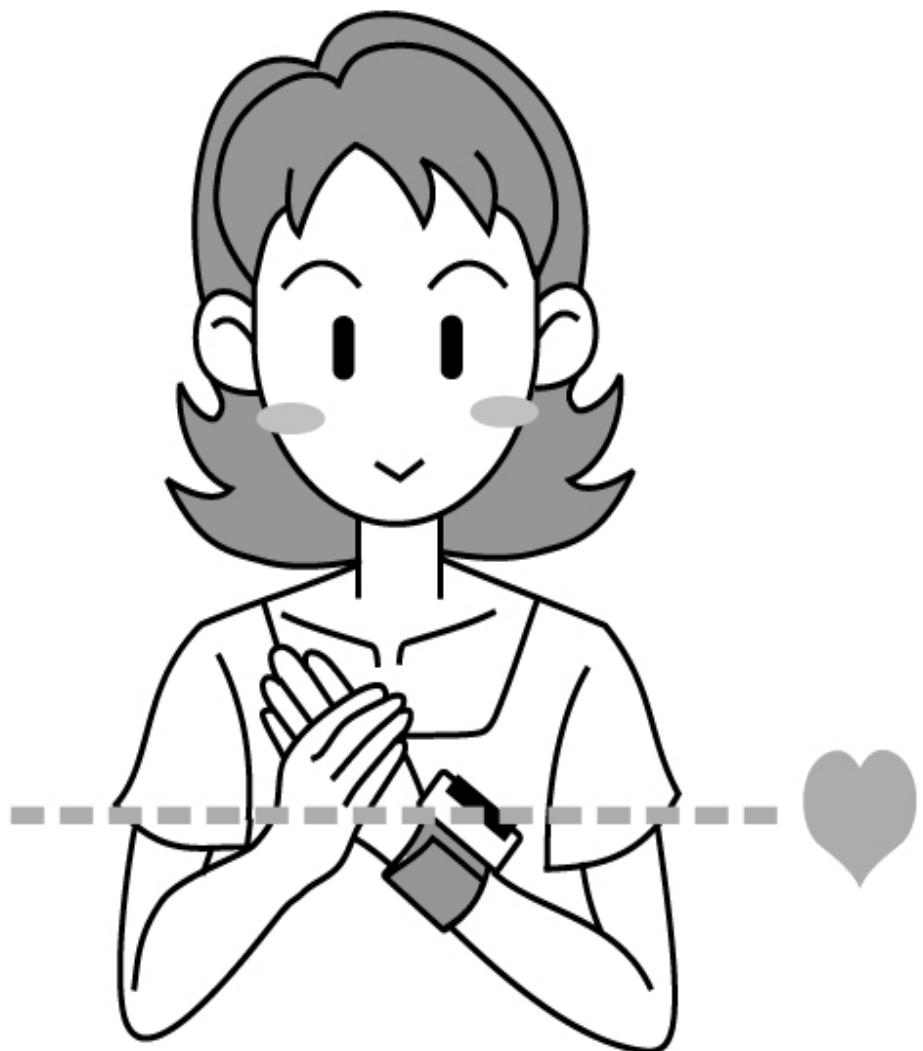
① During monitoring, place your wrist on your chest or a table at the same level as your heart please. Your palm and monitor should face you.

Fasten your monitoring arm to your heart with the another hand.



② For monitoring, sit down comfortably on a chair with your feet flat on the floor and take deep breaths 5 to 6 times and relax.





<Correct measuring posture of wrist type>

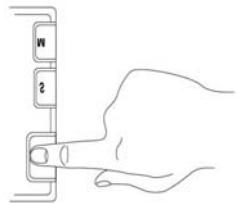
Note Sit comfortably on a chair with your feet flat on the floor and relax before monitoring starts. Monitoring should be taken in a quiet place.

3. Measuring method

① Press the [I/O] button

After wrapping the cuff, press [I/O] button to start.

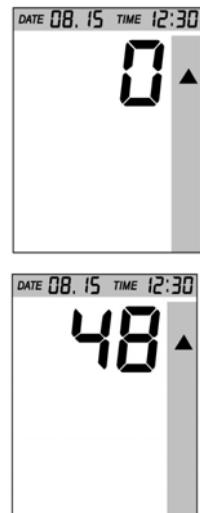
There will be a momentary full-segment display.



Note If you want to transmit the real time data to your PC, you should connect the device to the computer before the monitoring starts in ECHO-H.

② Automatic pressurization

The LCD panel changes to the momentary screen displayed all symbol in LCD edge and [0] in main LCD. Then [▲] symbol remains on LCD panel coinciding with a start of pressurization. At this time the number to show the inflated cuff pressure will increase rapidly as a normal process and the cuff will tighten as air enters in it. The value of pressurizing follows pre-set. Do not move your arm and remain still until the entire measurement completed.



Note If a higher inflation is needed in any circumstances, the device re-inflates the cuff up to 30mmHg higher

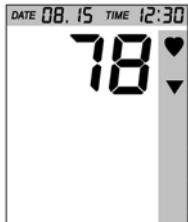
③ Monitoring is in progress

When the pressurizing is over, [▼] symbol appears and air is released from the cuff slowly. You can feel the cuff become less tight gradually.



④ Monitoring will start with deflation and if the pulse is sensed during deflation [♥] symbol appears and flashes

⑤ When noise is detected during measurement, [▲▼]



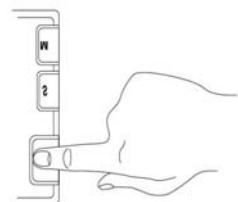
appears on its place on the screen. In case that you move or speak, [▲▼] is accompanied with a voice warning as “Don’t move or speak please.” but monitoring will be continued after a pause.

⑥ When Error occurs due to insufficient inflation, re-pressurization will be held automatically with a voice message as “Can’t measure. We will try again.”



⑦ Display the results

When monitoring is over, the value of systolic and diastolic blood pressure and pulse rate will be displayed on LCD simultaneously, then the voice message comes out as “Your blood pressure is systolic 000, diastolic 000, pulse 000.” If the noise or movement detected during monitoring, voice message says also “**There was movement during measuring.**” and shows the [▲▼] in result view.



⑧ Switch off the power

To finish the measurement, press the [I/O] button and remove the cuff gently. The monitored reading will be stored automatically into the memory.

Caution

1. During measurement, do not move your fingers, hand, or arm, and do not put them on stress.
2. If you want to stop measuring, press the I/O button. Pressurization will stop immediately and air will be exhausted rapidly, then the power will be turned off.

Note If you forget to press the I/O button, the power will be automatically turned off after 1 minute.

4. Memorizing

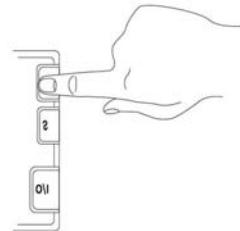
ECHO-H has 64 reading memory capacity. When memorized readings are retrieved, they are displayed with monitoring date & time respectively. The reading detected noise or movement during measurement accompanies [\blacktriangle \blacktriangledown].

1) Storing the readings

The readings are stored automatically when the monitoring is completed. When it is stored by 64 readings, the oldest one will automatically deleted as new one is added.

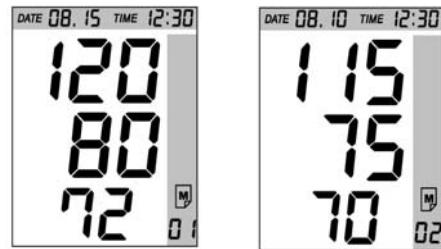
2) How to retrieve the stored data

① Press the [M] button.



② The latest reading will be displayed on main LCD and the number '01' appears in the memory number displaying part.

③ When the [M] button is pressed again the second latest reading will be displayed on LCD with the memory number '02'.



④ Further pressing of the [M] button, the data will be displayed respectively in reverse order from the latest one to oldest one with memory number increasing.

⑤ If there is no data reserved, the LCD displays as shown.

Note

1. During power off and after transmission, the stored data in unit is continuously maintained.
2. The memory capacity is subject to change for promotion.

MAINTENANCE

1. Maintaining

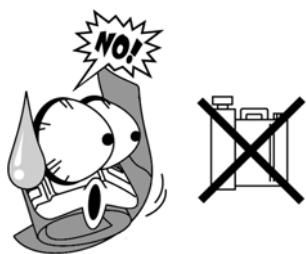
Avoid exposure to dust, direct sunlight, humidity and extreme changes in temperature.	If this unit is not being used for a long period of time, please remove the batteries.
	
Do not drop the unit.	Do not disassemble the main body or the cuff.

Caution Do not immerse the unit in water. The device exposed to foreign material and exceptional environment need to be check whether the device is functioning properly and safely before using.

2. Cleaning

1) Main body'

- ① When cleaning, use a soft cloth, slight moistened with water or a neutral detergent, then wipe it with a dry cloth. If the unit is contact with water in outer case, dry it immediately with a soft lint-free cloth.
- ② Do not use abrasive or corrosive cleaning agent, thinner, alcohol, benzene or similar solvents which might damage the device. It is recommended to clean the unit monthly.



2) Cuff

Do not wash or dip the cuff in the water.

Note When you need change a cuff worn out or become dirty, ask manufacturer or its authorized dealer for service.

TROUBLE SHOOTING

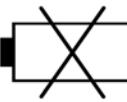
1. Against Error

ERROR	CAUSE	SOLUTION
Err 0	<ul style="list-style-type: none"> * When inflation level is not sufficient. * When air hose is not connected well. * When air leaks from the cuff. * When battery power is low. 	<ul style="list-style-type: none"> * Please set higher inflation Level. * Check if there is any 'CAUSE'. * After settle it, monitor again.
Err 1	<ul style="list-style-type: none"> * When a cuff is not connected to a monitor. * When a cuff is positioned incorrectly 	<ul style="list-style-type: none"> * Please check if the cuff is connected well to the unit and monitor again.
Err 2	<ul style="list-style-type: none"> * When the pressurization is over than 300mmHg. 	<ul style="list-style-type: none"> * Please turn the power off then on and monitor again.
Err 3	<ul style="list-style-type: none"> * When monitoring is carried out the wrong way. * When a readed data is not output as a result of noise or movement detected. 	<ul style="list-style-type: none"> * Please read 'wrapping the cuff' and 'correct measuring posture' in 'Measurement' part. (page 18~19) * Monitor again following the way instructed.
Err 4	<ul style="list-style-type: none"> * When moving or speaking is sensed during monitoring. 	<ul style="list-style-type: none"> * Please do not move or speak during monitoring.

※ If any error continues, call its service center.

TROUBLE SHOOTING

2. Against trouble

SYMPTOM	CAUSE	COUNTERMEASURE
	The battery power is low. (When batteries are exhausted completely, the mark does not appear on the LCD any more.)	Replace all two "AAA" type batteries at the same time. Before change transmit the data to your computer first.
The blood pressure value seems too high or low.	High: When your arm positioned lower than your heart during monitoring. Low : When your arm positioned higher than your heart during monitoring.	Make sure that your arm position at the same level as your heart, then monitor it again.
Re-pressurization	In case of insufficient inflation. (In case of excessive hypertension or a feeble pulse, it is possible to occur re-pressurization over 2 times.)	Relax for a few minutes then monitor it again with correct posture. Do not move during monitoring.
The unit does not start monitor again after error occurs.	The cuff may not be positioned incorrectly.	Monitor it again after wearing the cuff correctly and positioning your arm as your heart level.

WARRANTY

1. Manufacturer's limited warranty

The warranty and remedy provided herein are exclusive and in lieu of all other express warranties and unless stated herein, any statements or representations made by any other person or entity are void.

Neither the manufacturer, distributor nor their affiliates shall be liable for any loss, inconvenience, injury, or damage including direct, special, incidental, or consequential damages resulting from the use or inability to use this product, whether arising out of any breach of this warranty or any other legal theory. All express and implied warranties, including the warranties of merchantability, are limited to the applicable warranty period set forth above.

Manufacturer and distributor assume no responsibility for damages or penalties incurred resulting from the use of this product in a manner or location other than that for which it is intended.

Some states do not allow the exclusion or limitation of incidental or consequential damages, or limitations on how long an implied warranty lasts, so the above exclusions or limitations may not apply to you. This warranty gives you specific legal rights and you may also have other rights that vary from state to state.

Should your product prove defective during this warranty period, please return the product in the original carton to your place of purchase for warranty service.

2. Warranty steps

Should you experience any technical problems with your product, please follow the steps as below :

- ① Re-read "Battery installation" and "Measurement" parts of the instruction carefully, then take a monitoring again. If the problem persists, your product may be defective. If you believe the product is defective, follow this warranty steps ② or ③.
- ② Manufacturer, at its option, will repair or replace your product (with a same or a comparable model) with new or rebuilt parts, free of charge within one year from the date of original purchase in the event of a defect in materials or workmanship. This warranty is extended only to the original purchaser. A

purchase receipt or other proof of date of original purchase will be required before warranty performance is rendered.

③ This warranty only covers failure due to defects in material or workmanship which occur during normal use and does not cover abnormal wear of the product. This warranty is void if the product housing has been removed, if the manufacturer's label, logo, or serial number have been removed, or should the product fail to function properly as a result from accident, misuse, abuse, neglect, mishandling, misapplication, defective batteries, faulty installation, set-up and adjustments, improper maintenance, alteration, maladjustment of controls, modification, power surges, commercial use of the product, or service by anyone other than an authorized service center, or acts beyond manufacturer's control.

3. Where applying for solving problem

Should you be dissatisfied with the service you received from your retailer, please write

JAWON MEDICAL CO., LTD.

- Seoul office

Tel : *82-2-587-4056

Fax : *82-2-588-1937

- Factory

13 Lot, 21 Block

Jinryang Industrial Complex, Kyungsan-city

Kyungsangbuk-do 712-830, R.O.Korea

Tel : *82-53-856-0993

Fax : *82-53-856-0995

Include in your correspondence the following information, clearly printed

- (i) Your name and street address
- (ii) Daytime telephone number
- (iii) A detailed description of the problem
- (iv) A copy of your dated proof of purchase or bill of sale

SPECIFICATION

Model	ECHO-H
Method of Measuring	Oscillometric
Method of indicating	Digital
Pressurizing Method	PWM(Pulse Width Modulation)
Range of Measuring	Blood Pressure : 30 ~ 280mmHg Pulse Rate : 40 ~ 200beats/min
Accuracy	Pressure : within ± 2 mmHg or $\pm 2\%$ Pulse Rate : within $\pm 5\%$
Memory	64 Reading Memory
Resolving Power	1mmHg
Automation Shut-off System	Performs approximately 1 minutes after measurement.
Power	DC 3V (AAA type 1.5V x 2),
Operating Environment	Temperature : 10°C to 40°C Humidity : 30% to 75% RH, non condensing
Storage Environment	Temperature : -20°C to 60°C Humidity : less than 95% RH, non condensing
Dimension	77.0(W) X 57.0(D) X 35.5(H) mm
Weight	Approx. 200g (Including cuff &batteries)
Pressure Mode	User-set inflation

◆ Specifications are subject to change without notice.

- ※ Life of battery can be reduced according to environment.
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