About This Manual

Manual Purpose

This operator manual has been prepared by the technical writing staff of EVENTURE. It provides operating instructions for the Vetron patient monitor.

Intended Audience

This manual is geared for clinical professionals. Clinical professionals are expected to have working knowledge of medical procedures, practices, and terminology as required for monitoring of critically ill patients.

Intended Use

This product is intended for use as a hospital patient monitor. It is NOT intended for home use.

How to Reach Us …

The following are telephone numbers and addresses for contacting various service, product supplies and sales personnel

Product and Purchase Inquiry

Eventure Inc.

12151 62nd St. N. #:5

Largo, FL 33773

Tel:+1-727-531-8434

Service call

Tel: +1 727 531 8434

Web site of Eventure

URL : HTTP:// WWW.EVENTURE-VET.COM

※ In the event of a malfunction or failure, contact Service Dept. Of Eventure Inc. along with the model name, serial number, date of purchase and explanation of failure.

※ If you need the supply circuit diagrams, component list, descriptions and calibration instruction etc. you can contact us we will provide you with it.

Warranty

- To obtain information about a warranty, if any, for this product, contact your local Charm-care representatives.
- This product has been manufactured and inspected following the strict quality assurance guidelines of Eventure.
- Refer to the Economic Planning Board's "Regulations Regarding Consumer Compensation" for more information on conditions for product repairs and exchanges.
- Product malfunctions occurring from regular use shall be repaired for free at the Eventure service center during the term of the warranty period.
- During the term of the warranty period, report all problems with the product to Eventure by including the model no., the device no., date of purchase and a detailed description of the error.
- Manufacturer and/or the store where the product was purchased do not assume any responsibility for any and/or all problems resulting from improper use or improper storage of the product.

General precaution

Warning, Caution, Note

- For a special emphasis on agreement, terms are defined as listed below in operation manual. Users should operate the equipment according to all the Warning and Caution.

Warning: To inform that it may cause serious injury or death to the patient, property damage, material losses against the “Warning” sign.

Caution: To inform that it may cause no harm in life but lead to injury against the “Caution” sign.

Note: To inform that it is not dangerous but important for proper installation, operation, and maintenance of the equipment.

WARNINGS

ACIDECNTAL SPILLS

To avoid electric shock device malfunction liquids must not be allowed to enter the device. If liquids have entered a device, take it out of service and have it checked by a service technician before it is used again.

ACCURACY

If the accuracy of any value displayed on the monitor, central station, or printed on a graph strip is questionable, determine the patient`s vital signs by alternative means. Verify that all equipment is working correctly.

ALARMS

Do not rely exclusively on the audible alarm system for patient monitoring. Adjustment of alarm volume to a low level or off during patient monitoring may result in a hazard to the patient. Remember that the most reliable method of patient monitoring combines close personal surveillance with correct operation of monitoring equipment.

Alarm is divided into two, alarm for the patient's condition and alarm for the product's condition.
The patient's alarm sounds when the diagnostic functions (ASYSTOLE, VTAC/VFIB, VTAC) are detected. Each alarm sound differs in order and volume according to the levels of HIGH, MEDIUM, LOW, message.
The machine gives alarm sounds for its system with a related message flashing. For example, if sensors, probes or modules are intentionally disconnected by the operator the equipment gives "LOW" alarm sound and "LEAD FAULT" message.

After connecting the monitor to the central station, verify the function of the alarm system.

WARNINGS

BEFORE USE

Before putting the system into operation visually inspect all connecting cables for signs of damage. Damaged cables and connectors must be replaced immediately.

Before using the system, the operator must verify that it is in correct working order and operating condition.

Before using the system, be sure that the equipment is restricted to one patient at a time.

Periodically, and whenever the integrity of the product is in doubt, test all functions.

CABLES

Route all cables away from patient`s throat to avoid possible strangulation.

CONDUCTIVE CONNECTIONS

Extreme care must be exercised when applying medical electrical equipment. Many parts of the main/machine circuit are conductive, such as the patient, connectors, electrodes, transducers. It is very important that these conductive parts do not come into contact with other grounded, conductive parts when connected to the insulated patient input of the device. Such contact would bridge the patient`s insulation and cancel the protection provided by the insulated input. In particular, there must be no contact of the neutral electrode and ground.

DEFIBRILLATION

Do not come into contact with patients during defibrillation. Otherwise serious injury or deth could result.

DICHARGE TO CLEAR PATIENT DATA

When admitting a new patient, you must clear all previous patient data from the system. To accomplish this, disconnect patient cables(if you use a Tram module be sure the module is locked in place in the Tram-rac housing), then do a discharge.

WARNINGS

DISCONNECTION FROM MAINS

When disconnecting the system from the power line, remove the plug from the wall outlet first. Then you may disconnect the power cord from the device. If you do not observe this sequence, there is a risk of coming into contact with line voltage by inserting metal objects, such as the pins of leadwires, into the sockets of the power cord by mistake.

DISPOSAL

Dispose of the packaging material, observing the appliable waste control regulations and keeping it out of children`s reach.

EXPLOSION HAZARD

Do not use this equipment in the presence of flammable anesthetics, vapors or liquids.

INTERFACING OTHER EUIPMENT

Devices may only be interconnected with each other or to parts of the system when it has been determine by qualified biomedical engineering personnel that there is no danger to the patient, the operator, or the environment as a result. In those instances where there is any element of doubt concerning the safety of connected devices the user must contact the manufacturers concerned (or other informed experts) for proper use. In all cases, safe and proper operation should be verified with the applicable manufacturer`s instructions for use, and system standards IEC 60601-1-1/EN 60601-1-1 must be complied with.

RATE METERS

Keep pacemaker patients under close observation. Rate meters may continue to count the pacemaker rate during cardiac arrest and some arrhythmias. Therefore, do not rely entirely on rate meter alarms.

WARNINGS

SITE REQUIREMENTS

For safety reasons, all coonectors for patient cables and sensor leads (with rhe exception of temperature) are designed to prevent inadvertent disconnection, should someone pull on them. Do not route cables on a way that they may present a stumbling hazard. For devices installed above the patient, adequate precautions must be taken to prevent them from dropping on the patient.

INTRACARDIAC APPLICATION

When applying devices intracardially, electrically conductive contact woth parts connected to the heart (pressure transducers, metal tube connections and stopcocks, guide wires, etc.) must be avoid in all cases.

To prevent electrical contact, we recommend the following:

- Always wear isolating rubber gloves,
- Keep parts that are conductively connected to the heart isolated from ground,
- If possible, do not use tube fittings or stopcockes made of metal.

During intracardiac apllication of a device, a defibrillator and pacemaker whose proper functioning has been verified must be kept at hand.

LEAKAGE CURRENT TEST

When interfacing with other equipment, a test for leakage current must be performed by qualified biomedical engineering personel before using with patients.

POWER SUPPLY

The device must be connected to a properly installed power outlet with protective earth contacts only. If the installation does not provide for a protective earth conductor, disconnect the monitor from the power line and operate it on battery power, if possible.

All devices of a system must be connected to the same power supply circuit. Devices which are not connected to the same circuit must be electrically isolated when operated (electrically isolated RS232 interface).

WARNINGS

PATIENT AMBULATION

A Patient must be assisted if ambulating with a roll-stand mounted monitor.

PROTECTED LEADWIRES

Only use protected leadwires and patient cables with this monitor. The use of unprotected leadwires and patient cables creates the potential for making an electrical connection to ground or to a high voltage power source which can cause serious injury or death to the patient.

ACCESSORIES (SUPPLIES)

To ensure patient safety, use only parts and accessories manufactured or recommended by EVENTURE.

Part and accessories used must meet the requirements of the applicable IEC 60601 series safety standards ans essential performance standards, and/or the system configuration must meet the requirements of the 60601-1 medical electrical system standards.

ACCESSORIES (EQUIPMENT)

The use of ACCESORY equipment not complying with the equivalent safety requirements of this quipment may lead to a reduced level of safety of the resulting system. Consideration relating to the choice shall inculde:

Use of the accessory in the PATIENT VICINITY; and

Evidence that the safety certification of the ACCESORY has been performed in accordance to the appropriate IEC 60601-1 and/or IEC 60601-1-1 harmonized national standard.

BATTERY POWER

If a device equipped with an optional battery pack will not be used or not be connected to the power line for a period of over six months, remove the battery.

WARNINGS

ACCESSORIES CONNECTION

Accessory equipment connected to the analog and digital interfaces must be certified according to the respective IEC standards (e.g. IEC 950 for data processing equipment and IEC 601-1 for medical equipment). Furthermore all configurations shall comply with the system standard EN 60601-1-1:1993. Everybody who connects additional equipment to the signal input part or signal output part configures a medical system, and is therefore responsible that the system complies with the requirements of the system standard IEC 601-1-1:1993. If in doubt, consult the technical service department or your local representative.

BEFORE INSTALLATION

Compatibility is crictical to safe and effective use of this device. Please contact your local sales or service representative prior to installation to verify equipment compatibility.

DEFIBRILLATOR PRECAUTION

Patient signal inputs labeled with the CF and BF symbols with paddles are protected against damage resulting from defibrillation voltages. To ensure proper defibrillator protection, use only the recommended cables and leadwires.

Proper placement of defibrillator paddles in relation to the electodes is required to ensure successful defibrillation.

DISPOSABLES

Disposable devices are intended for single use only. They should not be reused as performance could degrade or contamination could occur.

DISPOSAL

At the end of its accssories, must be disposed of in this manual, as well as its accessories, must be disposed of in compliance with the guidelines regulating the disposal of such produts. If you have questions concerning disposal of products, please contact EVENTURE or its representatives.

WARNINGS

ELECTROCAUTERY PRECATIONS

To prevent skin burns, apply electrocautery electrodes as far as possible from all other electrodes, a distance of at 15 cm/6 in. is recommended.

EMC

Magnetic and electrical fields are capable of interfering woth the proper performance of the device. For this reason make sure that all external devices operated in the vicinity of the monitor comply with the relevant EMC requirements. X-ray equipment or MRI devices are a possible source of interference as they may emit higher levels of electromagnetic radiation. Also, keep celluar phones ot other telecommunication equipment away from the monitor.

INSTRUCTION FOR USE

For continued safe use of this equipment, it is necessary that the instructions are followed. However, instructions listed in this in no way supersede established medical practices concerning patient care.

LOSS OF DATA

Should the monitor at any time temporarily lose patient data, the potential exists that active monitoring is not being done. Close patient observation or alternate monitoring devices should

be used until monitor function is restored.

If the monitor does not automatically resume operation within 60 seconds, power cycle the monitor using the power on/off switch. Once monitoring is restored, you should verify correct monitoring state and alarm funcion.

MAINTENANCE

Regular preventive maintenance should be carried out annually (Technical inspections). You are responsible for any requirements specific to your contry.

CAUTIONS

MPSO

The use of a multiple portable socket outlet (MPSO) for a system will result in an enclosure leakage current equal to the sum of all individual earth leakage currents of the system if there is an interruption of the MPSO protective earth conductor. Do not use an additional extension cable with the MPSO as it will increase the chance of the single protective earth conductor interruption.

NEGLIGENCE

EVENTURE does not assume responsibiliity for damage to the equipment caused by inproperly vented cabinets, improper or faulty power, or insufficient wall strength to support equipment mounted on such walls.

NOTES

POWER REQUIREMENTS

Before connecting the device to the power line, check that the voltage and frequency ratings of

the power line are the same as those indicated on the unit`s label. If this is not the case, do not connect the system to the power line until you adjust the unit to match the power source.

In U.S.A, if the intalltion of thos equipment will use 240V rather than 120V, the source must be a center-tapped, 240V, single-phase circuit.

RESTRICTED SALE

U.S. federal law restricts this device to sale by or on the order of a physician.

SUPERVISED USE

This equipment is intended for use under the direct supervision of a licensed health care practitioner.

VENTILATION REQUIREMENTS

Set up the device in a location which affords sufficient ventilation. The ventilation openings of the device must not be obstructed. The ambient conditions specified in the technical specifications must be ensured at all times.

、Put the monitor in a location where you can easily see the screen and access the operating controls/

、This product is protected against the effects of cardiac defibrillator discharges to ensure proper recovery, as required by test standards. (the screen may blank during a defibrillator discharge but recovers within second as required by test standards.)

REFERENCE LITERATURE

Medical Device Directive 93/42/EEC

EN 60601-1/1990 +A1: 1993 +A2 : 1995 : Medical electrical equipment.

General requirements for safety

EN 60601-1-1/9. 1994 +A1 12.95: General requirements for safety.

CLEANING

Using various methods can clean VETRON and its accessories. Please follow the methods mentioned below to avoid unnecessary damage or contamination to the Equipment.

In the event that harmful (unauthorized) materials are used for cleaning, the damaged or contaminated Equipment shall not be serviced without charges regardless of warranty period.

Caution!
Please check carefully both frame and sensor, after cleaning the Equipment, Do not use the Equipment that is worn out or damaged.

At least once a month, clean and wipe off the frame by using the soft cloth after wetting it with lukewarm water and alcohol. Do not use lacquer, thinner, ethylene, or oxides, which could be harmful to the Equipment.

Make sure both cables and accessories are free of dust or contaminants, and wipe them off with soft cloth wetted with lukewarm water(40℃ / 104℉), and at least once a week, clean them by using the clinical alcohol.

Do not submerge the accessories under any liquid or detergent. Also, make sure any liquid not to penetrate into the Equipment or probe.

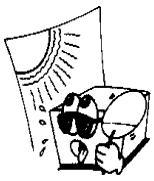
Caution!
Do not dispose single use probe to any hazard place, Always think about environmental contamination.

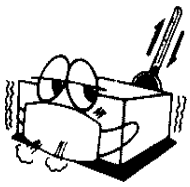
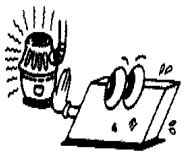
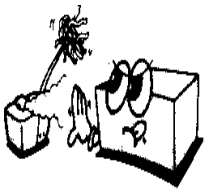
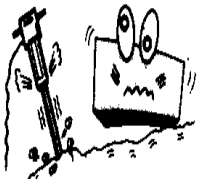
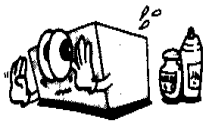
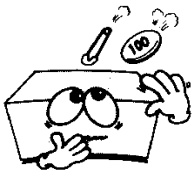
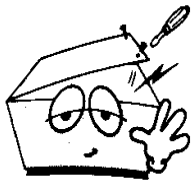
Caution!
There is back-up battery(CR1220 3.0 Volt) on board inside system. When users dispose this chip. Please waste proper place for environmental protection.

Warning!
Check the electrodes of batteries before changing back-up battery(CR1220 3.0 Volt)

General Precaution on Environment

- Do not keep or operate the equipment in the environment listed below.

	Avoid placing in an area exposed to moist. Do not touch the equipment with wet hand .		Avoid exposure to direct sunlight

	Avoid placing in an area where there is a high variation of temperature. Operating temperature ranges from 10°C to 40°C. Operating humidity ranges from 30% to 85%.		Avoid the vicinity of Electric heater
	Avoid placing in an area where there is an excessive humidity rise or ventilation problem.		Avoid placing in an area where there is an excessive shock or vibration.
	Avoid placing in an area where chemicals are stored or where there is danger of gas leakage.		Avoid being inserted dust and especially metal material into the equipment
	Do not disjoint or disassemble the equipment. Eventure Co., Ltd. takes no responsibility for it		Power off when the equipment is not fully installed. Otherwise, the equipment could be damaged.

General Precaution on Electric Safety

Warning
Check the item listed below before operating the equipment.

1. Be sure that AC power supply line is appropriate to use.

(AC 100 - 240V)

2. Be sure that the power source is the one supplied from Eventure.
(DC 12V)

3. Be sure that the entire connection cable of the system is properly and firmly fixed.

4. Be sure that the equipment is completely grounded. (Otherwise, noise could result.)

5. The equipment should not be placed in the vicinity of electric generator, X-ray, broadcasting apparatus to eliminate the electric noise during operation. Otherwise, it may cause incorrect results.

Classifications

The VETRON patient monitor is classified, according to IEC 60601-1 as:

Type of protection against electric shock :	**I**
Degree of protection against electric shock :	**CF** - ECG **BF** - SpO2, Temp, NIBP
Degree of protection against harmful ingress of water :	Ordinary equipment(enclosed equipment without protection against ingress of water)
Degree of safety of application in the presence of a flammable anesthetic-mixture with air or with oxygen or nitrous oxide :	Not suitable

I : Class I equipemt

CF : Type CF applied part

BF : Type BF applied part

Not suitable : Equipment not suitable for use in the presence of flammable anesthetic mixture with air or with oxygen or nitrous oxide.

Part 1 Product Summary

CX210 is a patient monitor that measures blood oxygen saturation. Batteries may be inserted to

make the product portable for monitoring patient status on the go.

The buttons on the front panel of the product allow you to configure the device to suit your needs and patient status results may be printed out on a printer.

Parts

▣ Basic Accessories

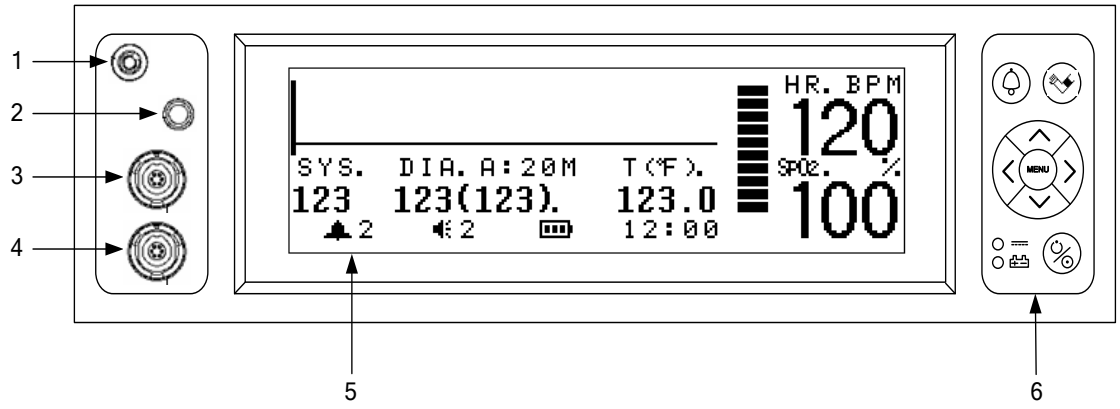
Type	Quantity
SpO2 Sensor	1
ECG Cable(3-lead)	1
Adult NIBP Cuff	1
NIBP Hose	1
TEMP Sensor	1
ECG Electrode	10
DC Power Unit	1
Power Cord	1
User's Manual	1

▣ Optional Parts

1. Neonate NIBP Cuff
2. Pedi NIBP Cuff
3. SpO2 Sensor(pediatric, neonate, Y-type)
4. SpO2 extension cable
5. ECG Electrode
6. Pole Bracket

Nomenclature of the Parts

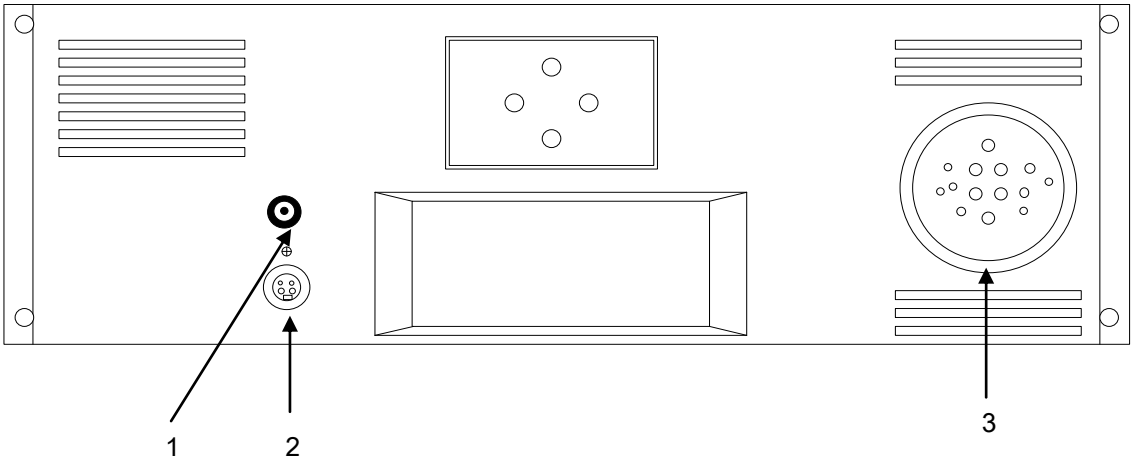
▣ Buttons & Front



1.NIBP Cuff Port 2.TEMP Probe Port 3.ECG cable Port 4.SpO2 Probe Port

5.Screen 6. Button

▣ Rear



1. DC Port 2. Serial Port 3. Speaker

Warning
To prevent electric shock, keep the top cover closed and do not attempt to disassemble the product on your own. Product should only be disabled by authorized service personnel.

Symbols

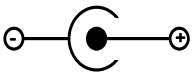
ATTENTION : Consult accompanying documents

TYPE CF APPLIED PART : Insulated (floating) applied part suitable for intentional external and internal application to the patient including direct cardiac application.

Medical Standard Definition : F-type applied part (floating/insulated) complying with the specified requirements of IEC 60601-1/UL 2601-1/CSA 601.1 Medical Standards to provide a higher degree of protection against electric shock than that provided by type BF applied parts.

TYPE BF APPLIED PART : I Insulated (floating) applied part suitable for intentional external and internal application to the patient excluding direct cardiac application.

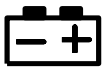
Medical Standard Definition : F-type applied part (floating/insulated) complying with the specified requirements of IEC 60601-1/UL 2601-1/CSA 601.1 Medical Standards to provide a higher degree of protection against electric shock than that provided by type B applied parts.



DC power port

%SPO2 Oxygen saturation

DC power



Battery power

RS-232,Serial port

NIBP : Noninvasive Blood Pressure

Part 2 Product Installation

First-time users: Read the installation instructions thoroughly and install the product in a safe place to ensure product longevity.

Caution When Installing

- Use the product in a place where the temperature is between 5~40℃ and the humidity is 5~95%.
- Make sure that the power cord is plugged in properly.
- Do not plug in more than one device into one outlet.
- Do not use a power cord that causes noise.
- The product is very sensitive to shock. Caution is advised.
- Keep the product dust-free and install away from flammable materials.

Connecting the Power

- Connecting the Power – Connect the power to the power port in the back of the product.

Warning
Use the power supply device supplied by the manufacturer. Failure to do so may result in electric shock and damage to the product.

Warning
edge or points of the Product can hurt to patient and user.

Warning
Users must pay attention on connecting any auxiliary device via LAN port or nurse calling. Always consider about summation of leakage current, Please check if the auxiliary device is qualified by IEC 60601-1, or consult your hospital biomedical engineer

Installing the Stand

The product may also be mounted on a stand, which can then be attached to an IV stand. This makes the product more portable. (*Stand is optional.)

Step 1) The product may be used horizontally or vertically. First, decide how you want the product to be mounted. Then, insert two bolts into the holes on the stand and tighten.

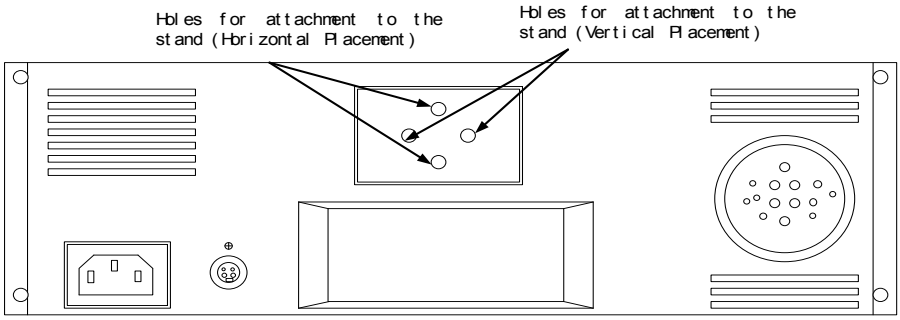
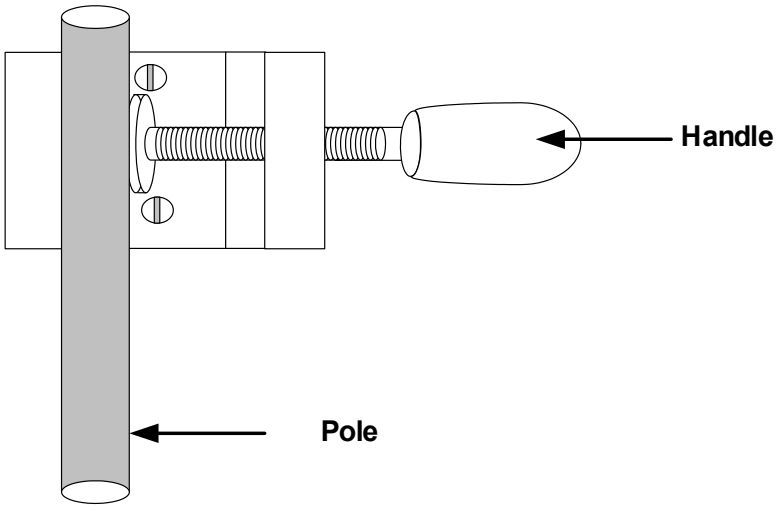


Fig. Attaching the stand

Step 2) Mount the stand to the pole by sliding the stand onto the pole and then, turn the handle to tighten.



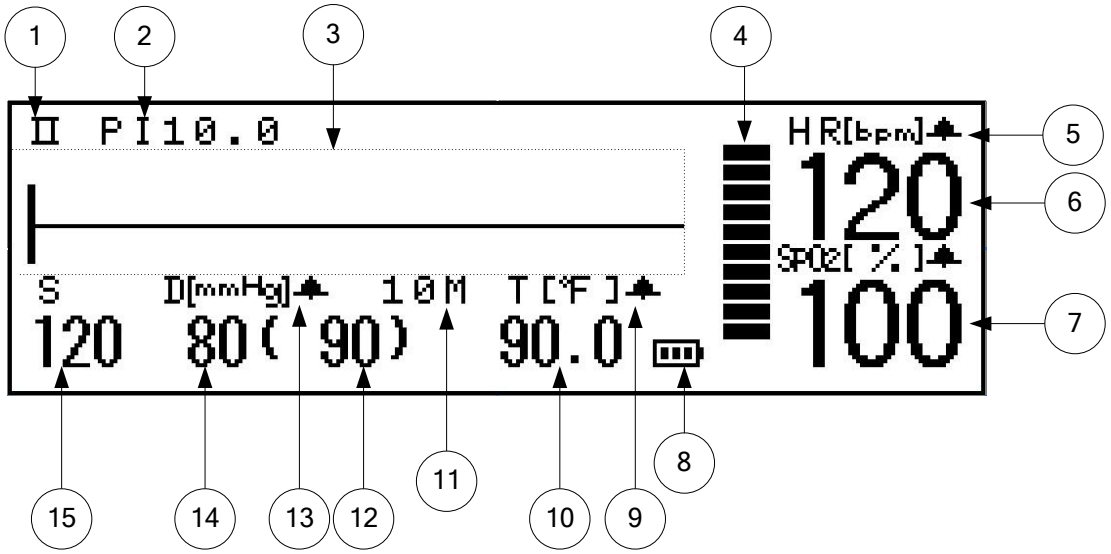
Caution
The pole on which the stand is mounted should be less than 40mm in diameter. Do

not use poles that are any thicker than this.

Part 3 Using the Product

This section contains information on the basic nomenclature and directions for using the product.

The Screen



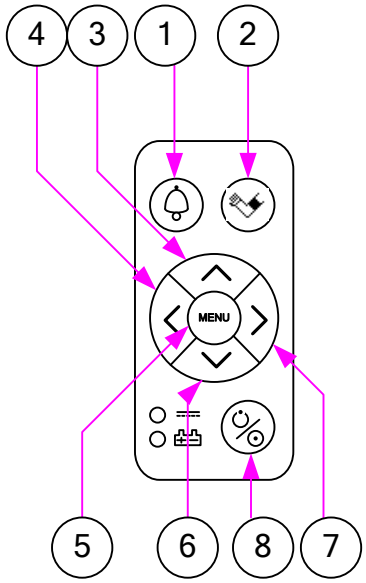
Screen and Button Descriptions

No.	Name	Description
1	Electrocardiogram Channel	Displays the electrocardiogram channel
2	Pulse Strength Display	Displays the strength of the pulse
3	Wavelength	Draws the electrocardiogram and/or oxygen saturation waves
4	Pulse Amplitude Display	Displays the pulse amplitude of oxygen saturation in ten bar graphs; Bar graphs are displayed relative to the patient's pulse.
5	Heart Rate (Pulse) Warning Display	Displays the warning alarm activation and deactivation status regarding heart rate (pulse)
6	Heart Rate (Pulse)	Displays the pulse or number of heart beats over a one-

	Display	minute period
7	Oxygen Saturation Display	Displays the oxygen saturation level
8	Battery Power Display	Displays the remaining battery power for usage
9	Body Temperature Warning Display	Displays the warning alarm activation and deactivation status regarding body temperature
10	Body Temperature Display	Displays the patient's temperature in units of ℃and/or ℉
11	Blood Pressure Measurement Mode Display	Displays the measurement mode ranging from manual (displayed by MANU), automatic (time interval displayed), and continuous (displayed by STAT)
12	Average Blood Pressure Display	Displays the average of blood pressure measurements taken
13	Blood Pressure Warning Display	Displays the warning alarm activation and deactivation status regarding blood pressure
14	Minimum Blood Pressure Display	Displays the minimum value of blood pressure measurements taken
15	Maximum Blood Pressure Display	Displays the maximum value of blood pressure measurements taken

Button Usage (Shortcut Button Usage)

Single buttons can be used for speedy and convenient use of functions from the product menu.



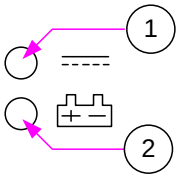
No.	Name	Description
①	Cancel Alarm Button	Used to cancel the warning alarm function during measurement, with deactivation of the alarm function lasting approximately two minutes
②	Blood Pressure Measurement Button	Used to begin blood pressure measurement, or cancel measurement once started; Pressing this button in the SETUP screen moves directly to the measurement screen
③	Up Button	Used to move to an upper item in the SETUP screen
④	Left Button	Used to reduce the value of the selected item in the SETUP screen
⑤	Menu Button	Used to return to the SETUP screen, or enter a lower menu item
⑥	Down Button	Used to turn on/off the LCD backlight in the measurement screen; used to move to a lower item in the SETUP screen
⑦	Right Button	Used to adjust the volume of the heart rate (pulse) tone in the measurement screen; Used to increase the value of the selected item in the SETUP screen
⑧	Power Button	Used to turn on/off the power to the product

Note

When the battery gets low, the battery status display on the screen will start blinking and the alarm will sound. Depending on the parameters, the power may become disconnected right away. Therefore, it is advised that the DC power be connected immediately.

Using Power

Attach the supplied DC power device to the DC power port in the rear of the product. The green “Power Operated” light will come on. If the DC power device is not connected, the product will operate on the internal battery. In this case, the red “Battery Operated” light will come on.



① Using DC Power ② Using Battery Power

Note

When the battery gets low, the battery status display on the screen will start blinking and the alarm will sound. Depending on the parameters, the power may become disconnected right away. Therefore, it is advised that the DC power be connected immediately.

Part 4 SpO2 Measurement

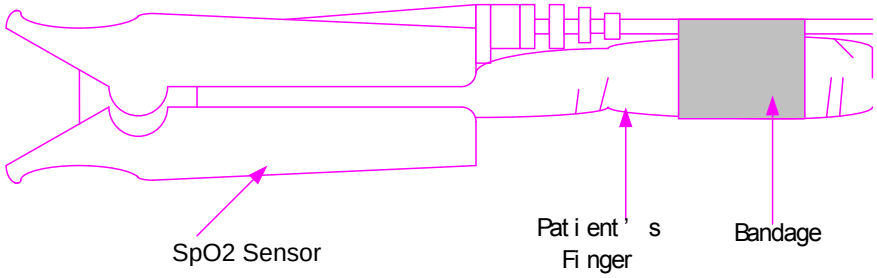
Attaching the SpO2 Probe

Step 1) Wipe down the area where you wish to place the probe with alcohol.

Step 2) Attach the probe to the patient's finger.

Step 3) To get an accurate reading, make sure the patient minimizes all movement and Please attach the probe wire to patient's finger firmly. Attach the bandage loosely so as to not cut of circulation to the finger.

Step 4) Check the patient's finger and the probe every two to three hours to make sure that the sensor is properly placed over the finger. If there is a change in the appearance of the patient's finger due to the prolonged exposure to the probe, switch the probe to another finger.



Warning
-Measuring SpO2 on a patient undergoing an MRI may result in severe burns for the patient. To minimize risk for burns, use a non-inductive wire. In the event that this does occur, immediately remove the probe from the patient. -The area around the Sp02 sensor shall not exceed 37℃. The sensor will not work in temperatures above 37℃. -Do not attach the probe near arterial or venous catheters. -Make sure that the sensor emits a light and that the sensor is properly placed over the patient's finger.

Caution
- Handle the probe sensor and wire with caution. Careless handling may damage the sensitive sensor. Protect the wire from sharp objects. - The skin of patients who have high fevers or have problems with distal circulation will be 2-3 degrees higher than normal. - Patients with abnormally high oxyhemoglobin or methemoglobin levels will not give a proper SpO2 reading.

Note
- Taking the NIBP can affect the SpO2 reading. When taking NIBP, place the SpO2 probe on the other arm. - Avoid using the probe with other medical equipment that affects blood flow. Avoid placing the probe near an area that requires medical attention.

Measuring the SpO2

Step 1) Put 2(4) x double AA battery or connect adapter to adapter jack on the side.

Step 2) Connect SpO2 sensor to upper side.

Step 3) Press the power button.

Step 4) After all LCD indications are lightened up, the measurements are ready.

Step 5) Attach the SpO2 sensor to finger.

Step 6) After receiving data for 3secs, SpO2 results will be indicated.

Note
SPO2 WAVE SIZE is changed automatically.

Part 5 ECG Measurement

ECG Electrodes Placement

1. Electrodes have been placed on the patient following proper skin preparation.

Note
When using “snap” leadwires, attach leadwires to electrodes first, then apply electrodes to the patient. This prevents the gel from spreading and becoming ineffective as you attach the snaps to the electrodes..

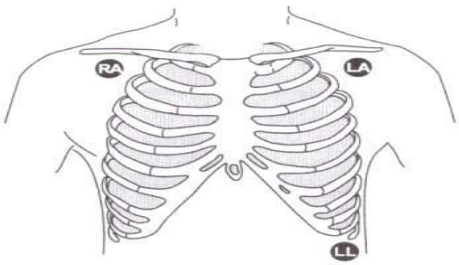
2. Leadwires are attached to electrodes in the patient.

Note
Shall use only the CE certified disposable electrode.

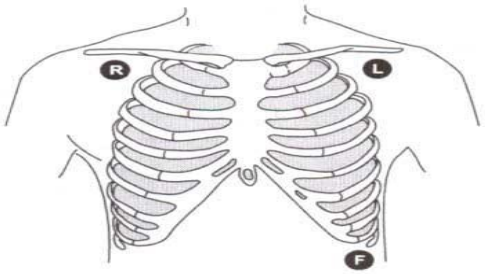
3. Leadwires are connected to patient cable and patient cable is connected to the monitor.

4. Verify the V-lead label is correct if using a 3-leadwire patient cable.
5. ECG setup is adjusted, if necessary. Follow detailed procedures within this chapter.

Position of the ADULT Electrode

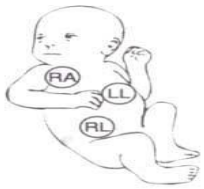


AHA



IEC

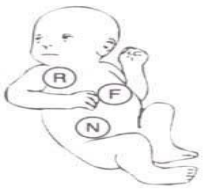
Position of the NEONATE Electrode



Lead II

Lead I

AHA



Lead II

Lead I

IEC

Colors and Standards of Cables

Leadwire	AHA Color code	AHA Label	IEC Color code	IEC Label
Right arm	White	RA	Red	R
Left arm	Black	LA	Yellow	L
Left leg	Red	LL	Green	F

AHA: American Heart Association (U.S.A. Standard)

IEC: International Electrotechnical Commission (European Standard)

Warning
- When using an automated external defibrillator, do not touch the patient or the table, equipment, etc. - Keep electric wires and cables away from the neck area.

Note
- Do not use alcohol as it raises the resistance of skin. - If the placement areas are hairy, shave them clean prior to placement.

Performing ECG Measurement

(1) Fit the product with a battery or connect the power adaptor to the adaptor jack on the side of the unit.

(2) Connect the ECG lead to the ECG cable connector.

(3) Press the power button.

(4) All display features light up on the LCD screen, and the device becomes ready for measurement.

(5) After placing the ECG electrodes on the patient’s body, connect the ECG lead to the electrodes.

(6) The heart rate is displayed after approximately three seconds.

Warning
ECG Wave Display is always on when the cable is connected.

WARNINGS

FALSE CALLS

False low heart rate indicators or false asystole calls may result with certain pacemakers because of electrical overshoots.

MONITORING PACEMAKER PATIENTS

Monitoring of pacemaker patients can only occur with the pace program activated.

PACEMAKER SPIKE

An artificial pacemaker spike is displayed in place of the actual pacemaker spike. All pacemaker spikes appear uniform. Do not diagnostically interpret pacemaker spike size and shape.

PATIENT HAZARD

A pacemaker pulse can be counted as a QRS during asystole in either pace mode. Keep pacemaker patients under close observation.

RATE METERS

Keep pacemaker patients under close observation. Rate meters may continue to count the pacemaker rate during cardiac arrest and some arrhythmias. Therefore, do not rely entirely on rate meter alarms.

CAUTION

FDA POSTMARKET SAFETY ALERT

The United States FDA Center for Device and Radiological Health issued a safety bulletin October 14, 1998. this bulletin states “that minute ventilation rate-adaptive implantable pacemakers can occasionally interact with certain cardiac monitoring and diagnostic programmed rate.”

The FDA further recommends precautions to take into consideration for patients with these

types of pacemakers. These precaution for patients with these types of pacemakers. These precautions include disabling the rate responsive mode and enabling an alternate pace mode. For more information contact:

Office of Surveillance and Biometrics, CDRH, FDA
1350 Piccard Drive, Mail Stop HFZ-510
Rockville, MD 20850
U.S.A

NOTE

ECG monitoring with patients in non-invasive transcutaneous pacemakers may not be possible due to large amounts of energy produced by these devices. Monitoring ECG with an external device may be needed.

Part 6 NIBP Measurement

Automatic noninvasive blood pressure monitoring uses the oscillometric method of measurement.
This function is to measure minimum, maximum and average blood pressure by using air pressure.

Warning
Noninvasive blood pressure monitoring is not recommended for patients with hypotension, hypertension, arrhythmias, or extremely high or low heart rate. The software algorithm cannot accurately compute NIBP on patients with these conditions.

NIBP Cuff Placement

Step 1) When measuring via the patient's arm or leg, the location of measurement must be on the same level as the heart.

Step 2) The cuff should be closed as shown below. Wrapping too tightly or too loosely can result in measurement error.

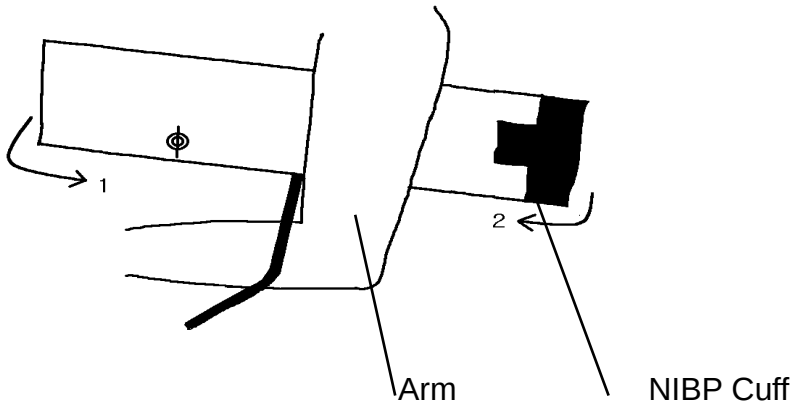


Fig. NIBP Cuff Placement

Warning
- When using on an infant or small child, do not apply excessive pressure.

Caution
- Before measuring blood pressure, select and use the cuff type that is appropriate to the patient. - If the patient is receiving an intravenous injection or has a catheter inserted in a vein, blood pressure measurement cannot be done in the upper body. Doing so could cause damage to the tissue surrounding the catheter.

Check the following list devise to operates properly and safety at all times.

1. Check for proper cuff size.
2. Check for residual air left in the cuff from a previous measurement.

3. Make sure cuff is not too tight or too loose.

4. Make sure cuff and heart are at same level, otherwise hydrostatic pressure will offset the NIBP value.

5. Minimize patient movement during measurement.

6. Watch for pulses paradoxus.

7. Check for leak in cuff or tubing.

8. Patient may have a weak pulse.

Performing NIBP Measurement

(1) Fit the product with a battery or connect the power adaptor to the adaptor jack on the side of the unit.

(2) After connecting the NIBP cuff and NIBP hose, connect the hose to the NIBP hose connector located on the left side of the product.

(3) Press the power button.

(4) All display features light up on the LCD screen, and the device becomes ready for measurement.

(5) Close the NIBP cuff around the patient's arm.

(6) Press the blood pressure measurement button.

(7) The measured blood pressure is displayed after approximately 30 seconds.

Part 7 Temperature Measurement

Temperature Sensor Placement

Place the temperature sensor on the patient's body at the location at which temperature is to be measured.

Warning
Temperature probe is correctly positioned and fixed to do not disconnect on the

patient.
Temperature cable is attached to the monitor.

Performing Body Temperature Measurement

(1) Fit the product with a battery or connect the power adaptor to the adaptor jack on the side of the unit.

(2) Connect the temperature sensor to the temperature sensor connector.

(3) Press the power button.

(4) All display features light up on the LCD screen, and the device becomes ready for measurement.

(5) Place the temperature sensor on the patient's body.

(6) The body temperature is displayed after approximately three seconds.

Warning
The minimum measuring time required to obtain accurate readings at the specific body site is at least 3 minutes.

Part 8 Setup Menu Usage

※Pressing the blood pressure measurement button during setting of menu items returns the screen to the measurement screen.

Returning to Previous Screen

Step 1) Press the Up button (▲) or Down button (▼) in each screen to move the arrow (➔) to "EXIT", as shown below.

Step 2) Pressing the MENU button returns to the previous screen.

Entering the SETUP Screen

Step 1) Pressing the MENU button enters the SETUP screen.

SETUP	➔	EXIT
		SPO2
		ECG
		NIBP
		TEMP
		CONFIG
		TIME

< SETUP Screen >

SETUP Item	Description
EXIT	Exit the SETUP screen
SPO2	Sets the SPO2 (oxygen saturation) function
ECG	Sets the ECG (electrocardiogram) function
NIBP	Sets the NIBP (non-invasive blood pressure) function
TEMP	Sets the TEMP (body temperature) function
CONFIG	Sets the device functions
TIME	Sets the year, month, day, hour, and minute

Setting the SPO2 Function

Step 1) Press the Up button (▲) or Down button (▼) in the SETUP screen to move the arrow (➔) to "SPO2", as shown below.

Step 2) Pressing the MENU button enters the SPO2 screen.

SPO2	➔	EXIT

AVERAGE: 4 WAVEFORM: LINE SPO2 ALARM: ON PR ALARM: ON FUNCTION: ON ALARM LIMIT

< SPO2 Screen >

■ AVERAGE, WAVEFORM, SPO2 ALARM, PR ALARM, FUNCTION Settings

Step 1) Press the Up button (▲) or Down button (▼) in the SPO2 screen to move the arrow (➔) to the desired item.

Step 2) The Left button (◀) and/or Right button (() can be used to adjust setting values.

SPO2 Item	Value Range	Description
AVERAGE	4, 8, 16	Sets the number for SPO2 value averaging
WAVEFORM	LINE, FILL	Sets the SPO2 wavelength FILL / and LINE
SPO2 ALARM	ON, OFF	Sets the SPO2 (oxygen saturation) warning alarm ON/OFF
PR ALARM	ON, OFF	Sets the PR (pulse rate) warning alarm ON/OFF
FUNCTION	ON, OFF	Sets SPO2 function usage ON/OFF

■ ALARM LIMIT Setting

Step 1) Press the Up button (() or Down button (() in the SPO2 screen to move the arrow (() to "ALARM LIMIT".

Step 2) Pressing the MENU button enters the ALARM LIMIT screen.

ALARM	➔	EXIT SPO2 HIGH LIMIT: OFF SPO2 LOW LIMIT: 90 P R HIGH LIMIT: 120 P R LOW LIMIT: 50

< ALARM LIMIT Screen >

Step 3) Press the Up button (▲) or Down button (▼) in the ALARM LIMIT screen to move the arrow (➔) to the item to be set.

Step 4) The Left button (◀) and/or Right button (▶) can be used to adjust setting values.

Also, pressing and holding down the Left button (◀) or Right button (▶) for more than about one second automatically increases or decreases values, respectively.

ALARM Item	Value Range	Description
SPO2 HIGH LIMIT	50~100, OFF	Sets the SPO2 (oxygen saturation) upper body value
SPO2 LOW LIMIT	OFF, 50~100	Sets the SPO2 (oxygen saturation) upper body value
P R HIGH LIMIT	15~300, OFF	Sets the PULSE RATE (heart rate) upper body value
P R LOW LIMIT	OFF, 15~300	Sets the PULSE RATE (heart rate) lower body value

Setting the ECG Function

Step 1) Press the Up button (▲) or Down button (▼) in the SETUP screen to move the arrow (➔) to “ECG”.

Step 2) Pressing the MENU button enters the ECG screen.

ECG	➔	EXIT
		LEAD: Ⅱ
		SIZE: x1.00
		SPEED: 25mm/s
		PACE PULSE: ON
		HR ALARM: ON
		FUNCTION: ON
		ALARM LIMIT

< ECG Screen >

■ LEAD, SIZE, SPEED, PACE PULSE, HR ALARM, FUNCTION Settings

Step 1) Press the Up button (▲) or Down button (▼) in the ECG screen to move the arrow (➔) to the desired item.

Step 2) The Left button (◀) and/or Right button (▶) can be used to adjust setting values.

ECG Item	Value Range	Description
LEAD	Ⅰ, Ⅱ, Ⅲ	Sets the ECG channel
SIZE	x0.25, x0.50, x1.00, x2.00	Sets the ECG signal size
SPEED	25mm/s, 50mm/s	Sets the ECG wavelength speed
PACE PULSE	ON, OFF	Sets the Pacemaker signal display ON/OFF
HR ALARM	ON, OFF	Sets the HR (heart rate) warning alarm ON/OFF
FUNCTION	ON, OFF	Sets ECG function usage ON/OFF

■ ALARM LIMIT Setting

Step 1) Press the Up button (▲) or Down button (▼) in the ECG screen to move the arrow (➔) to “ALARM LIMIT”.

Step 2) Pressing the MENU button enters the ALARM LIMIT screen.

ALARM	➔	EXIT

H R HIGH LIMIT: 120 H R LOW LIMIT: 50

< ALARM LIMIT Screen >

Step 3) Press the Up button (▲) or Down button (▼) in the ALARM LIMIT screen to move the arrow (➔) to the item to be set.

Step 4) The Left button (◀) and/or Right button (▶) can be used to adjust setting values.
Also, pressing and holding down the Left button (◀) or Right button (▶) for more than about one second automatically increases or decreases values, respectively.

ALARM Item	Value Range	Description
H R HIGH LIMIT	15~300, OFF	Sets the HR (heart rate) upper limit
H R LOW LIMIT	OFF, 15~300	Sets the HR (heart rate) lower limit

Setting the NIBP Function

Step 1) Press the Up button (▲) or Down button (▼) in the SETUP screen to move the arrow (➔) to “NIBP”.

Step 2) Pressing the MENU button enters the NIBP screen.

NIBP	➔	EXIT
		MODE: MANUAL
		REPEAT TIME: 10min
		ALARM: ON
		FUNCTION: ON
		ALARM LIMIT

< NIBP Screen >

■ MODE, REPEAT TIME, ALARM, FUNCTION Settings

Step 1) Press the Up button (▲) or Down button (▼) in the NIBP screen to move the arrow (➔) to the desired item.

Step 2) The Left button (◀) and/or Right button (▶) can be used to adjust setting values.

NIBP Item	Value Range	Description
MODE	MANUAL, AUTO, STAT	MANUAL: Manual measurement, AUTO: Automatic Measurement STAT: Continuous measurement over a period of 5 minutes
REPEAT TIME	1, 2, 3, 4, 5, 10, 15, 30, 60, 90, 120, 240, 480, 960 min	Sets the time interval for automatic NIBP measurements
ALARM	ON, OFF	Sets the blood pressure warning alarm ON/OFF
FUNCTION	ON, OFF	Sets NIBP function usage ON/OFF

■ ALARM LIMIT Setting

Step 1) Press the Up button (▲) or Down button (▼) in the NIBP screen to move the arrow (➔) to “ALARM LIMIT”.

Step 2) Pressing the MENU button enters the ALARM LIMIT screen.

ALARM ➔	EXIT
	SYS HIGH LIMIT: 160
	SYS LOW LIMIT: 90
	DIA HIGH LIMIT: 90
	DIA LOW LIMIT: 50
	MEAN HIGH LIMIT: 110
	MEAN LOW LIMIT: 60

< ALARM LIMIT Screen >

Step 3) Press the Up button (▲) or Down button (▼) in the ALARM LIMIT screen to move the arrow (➔) to the item to be set.

Step 4) The Left button (◀) and/or Right button (▶) can be used to adjust setting values.
Also, pressing and holding down the Left button (◀) or Right button (▶) for more than about one second automatically increases or decreases values, respectively.

ALARM Item	Value Range	Description
SYS HIGH LIMIT	30~270, OFF	Sets the SYS (max. blood pressure) upper limit
SYS LOW LIMIT	OFF, 30~270	Sets the SYS (max. blood pressure) lower limit
DIA HIGH LIMIT	10~220, OFF	Sets the DIA (min. blood pressure) upper limit
DIA LOW LIMIT	OFF, 10~220	Sets the DIA (min. blood pressure) lower limit
MEAN HIGH LIMIT	20~235, OFF	Sets the MEAN (avg. blood pressure) upper limit
MEAN LOW LIMIT	OFF, 20~235	Sets the MEAN (avg. blood pressure) lower limit

Setting the TEMP Function

Step 1) Press the Up button (▲) or Down button (▼) in the SETUP screen to move the arrow (➔) to “TEMP”.

Step 2) Pressing the MENU button enters the TEMP screen.

TEMP	➔	EXIT
		UNIT: C
		ALARM: ON
		FUNCTION: ON
		ALARM LIMIT

< TEMP Screen >

■ UNIT, ALARM, FUNCTION Settings

Step 1) Press the Up button (▲) or Down button (▼) in the NIBP screen to move the arrow (➔) to the desired item.

Step 2) The Left button (◀) and/or Right button (▶) can be used to adjust setting values.

TEMP Item	Value Range	Description
UNIT	C, F	Sets the temperature units
ALARM	ON, OFF	Sets the body temperature warning alarm ON/OFF
FUNCTION	ON, OFF	Sets TEMP function usage ON/OFF

■ ALARM LIMIT Setting

Step 1) Press the Up button (▲) or Down button (▼) in the TEMP screen to move the arrow (➔) to “ALARM LIMIT”.

Step 2) Pressing the MENU button enters the ALARM LIMIT screen.

ALARM	➔	EXIT
		TEMP HIGH LIMIT: 39.0
		TEMP LOW LIMIT: 36.0

< ALARM LIMIT Screen >

Step 3) Press the Up button (▲) or Down button (▼) in the ALARM LIMIT screen to move the arrow (➔) to the item to be set.

Step 4) The Left button (◀) and/or Right button (▶) can be used to adjust setting values.
Also, pressing and holding down the Left button (◀) or Right button (▶) for more than roughly one second automatically increases or decreases values, respectively.

ALARM Item	Value Range	Description
TEMP HIGH LIMIT	15.0~45.0℃(59.0~113.0℉), OFF	Sets the TEMP (body temperature) upper limit
TEMP LOW LIMIT	OFF, 15.0~45.0℃(59.0~113.0℉)	Sets the TEMP (body temperature) lower limit

CONFIG Setting

Step 1) Press the Up button (▲) or Down button (▼) in the SETUP screen to move the arrow (➔) to “CONFIG”.

Step 2) Pressing the MENU button enters the CONFIG screen.

CONFIG	➔	EXIT
		ALARM VOLUME: 7
		PULSE VOLUME: 4
		CONTRAST: 4
		BACKLIGHT: ON
		PULSE SOURCE: ECG
		WAVE SOURCE: ECG
		PATIENT: ADULT

< CONFIG Screen >

Step 3) Press the Up button (▲) or Down button (▼) in the CONFIG screen to move the arrow (➔) to the desired item.

Step 4) The Left button (◀) and/or Right button (▶) can be used to adjust setting values.

Caution
Take care in setting alarm volume as the user will not be able to ascertain the occurrence of any patient emergency if the alarm volume is set to 0. Thus, if the alarm volume is set to 0, make sure to check the patient’s status frequently.

Warning
The alarm may not be audible if the speaker at the rear of the product is blocked or obstructed by any object. Make sure not to affix the product to or near a wall or floor,

and to keep it in a standing position.

CONFIG Item	Value Range	Description
ALARM VOLUME	1~7	Sets the alarm volume
PULSE VOLUME	0~7	Sets the heart rate (pulse) tone
CONTRAST	1~9	Sets the LCD screen contrast
BACKLIGHT	ON, OFF	Sets LCD screen backlight usage ON/OFF
PULSE SOURCE	ECG, SPO2, AUTO	Sets the heart rate (ECG) and/or pulse (SPO2) to be audible; the heart rate (ECG) tone is set as default when in AUTO mode
WAVE SOURCE	ECG, SPO2, AUTO	Sets the ECG and/or SPO2 wavelengths to be displayed on screen; ECG is set as default when in AUTO mode
PATIENT	ADULT, PEDIATRIC, NEONATE	Automatically changes ALARM LIMIT values according to the specified patient age range

※ALARM LIMIT Values According to Patient Settings

1) Adult

LIMITS	HR	PR	SYS	DIA	MEAN
HIGHER	120	120	160	90	110
LOWER	50	50	90	50	60

2) Pediatric

LIMITS	HR	PR	SYS	DIA	MEAN
HIGHER	160	160	120	70	90
LOWER	75	75	70	40	50

3) Neonatal

LIMITS	HR	PR	SYS	DIA	MEAN
HIGHER	200	200	90	60	70

LOWER	100	100	40	20	24

TIME Setting

Step 1) Press the Up button (▲) or Down button (▼) in the SETUP screen to move the arrow (➔) to “TIME”.

Step 2) Pressing the MENU button enters the TIME screen.

TIME	➔	EXIT
		YEAR: 2007
		MONTH: 01
		DAY: 01
		HOUR: 12
		MINUTE: 00

< TIME Screen >

Step 3) Press the Up button (▲) or Down button (▼) in the TIME screen to move the arrow (➔) to the desired item.

Step 4) The Left button (◀) and/or Right button (▶) can be used to adjust setting values. Also, pressing and holding down the Left button (◀) or Right button (▶) for more than about one second automatically increases or decreases values, respectively.

TIME Item	Value Range	Description
YEAR	2000~2099	Sets the year
MONTH	1~12	Sets the month
DAY	1~31	Sets the day
HOUR	0~23	Sets the hour
MINUTE	0~59	Sets the minute

TREND Setting and Display

■ TREND Display

Step 1) Press the Up button(▲)or Down button(▼) to move(➔)"DATA VIEW"item.

Step 2) Pressing the menu enters the Trend Data screen.

YY / MU	07/01	07/01	07/01
DD / HH	01/01	01/01	01/01
MI / SS	11:00	10:50	10:40
HR	86	84	84
SPO2	98	98	98
PR	86	84	84
TEMP	36.8	36.8	36.7
SYS	120		
DIA	80		
MEAN	90		

< TREND DATA SCREEN >

■ Button Name

Button Name	Description
Right Button(▶)	Shows the trend for the current time
Up Button(▲)	Increases the time with respect to the current time and shows the trend.

Down Button(▼)	Decreases the time with respect to the current time and shows the trend
Left Button (◀)	Prints out the patient measurements for the recent trend.

Part 9 Basic Troubleshooting

Here are some basic troubleshooting hints. There may be times when the product does not work as it is supposed to and you may not know how to proceed. Try the following steps to work through the problems.

▣ General

Situation	Cause
The power will not come on.	-Make sure the product is plugged in. -Make sure the battery is fully charged.
The screen is dim and hard to read.	-Turn on LCD backlight.
I can't hear the alarm or the pulse sounds.	-Make sure the alarm is not turned off.

▣ Measuring the SpO2

Situation	Cause
The red sensor light does not come on.	-The probe is not connected properly. -The probe is broken.
I can't see the SB(signal bar).	- The probe is not connected properly.

▣ During ECG Measurement

Issue	Cause

The measured value is not shown in the heart rate (HR) display.	- The ECG Lead connection may be faulty.

▣ During NIBP Measurement

Issue	Cause
NIBP measurement failed.	- The NIBP cuff connection is faulty. - The cuff used is not the type suited to the patient. - The positioning and/or measurement location on the patient's body is incorrect.

Part 10 Product Specifications

DISPLAY

Type	Mono Graphic LCD
Resolution	240 x 64 pixels
Waveform Type	ECG leadsI,II,III, Pleth
Indicator	AC power or battery operated indicators
Display data	SpO2, HR(PR), SYS, DIA, MEAN, TEMP, Battery status, PI ECG channel, alarm status

INTERFACE

S/W Upgrade	RS-232

PERFORMANCE

ECG	
Leads	3-lead(I,II,III)
Display Sensitivity	1.0 cm/mV ±10%
Gain Selection	x0.25, x0.5, x1, x2
Frequency Response	0.5 to 40Hz
Sweep Speed	25mm/sec, 50mm/sec
Pacemaker Detection	Yes
Heart Rate Range	0 to 300bpm
Heart Rate Accuracy	±3% or ±3bpm

Pulse Oximetry(SpO2)		
Measurement Range	SpO2	0 to 100%
	Pulse Rate	15 to 300bpm
Accuracy	SpO2	70 to 100% : ±2%, 0 to 69% : unspecified
	Pulse Rate	15 to 300 bpm : ±3bpm

Temperature	
Measurement Range	15 to 45℃(59 to 113℉)
Accuracy	±0.1℃(25 to 45℃) ±0.2℃(15 to 24℃)
Probe type	Compatible with YSI 400 series

NIBP			
Technique	Oscillometric		
Measurement Range	Adult	SYS	30 to 270mmHg
		DIA	10 to 220mmHg
		MEAN	20 to 235mmHg
	Pediatric	SYS	30 to 235mmHg
		DIA	10 to 220mmHg
		MEAN	20 to 225mmHg
	Neonate	SYS	30 to 135mmHg
		DIA	10 to 110mmHg
		MEAN	20 to125mmHg
Cuff Pressure Range	0 to 280mmHg		
Pressure Accuracy Static Clinical Pulse rate measuring range	±2% or ±3 mmHg, whichever is greater ±5 mmHg average error 8 mmHg standard deviation 40 to 240bpm		
Inflation time for cuff	Less than 40 sec. (standard adult cuff)		
Total cycle time	20 to 45 seconds typical (dependent on heart rate and		

	motion artifact)
Intervals for AUTO measurement time	1,2,3,4,5,10,15,30,60,90,120,240,480,960 minutes
Overpressure Protection Adult Pediatric Neonate	Hardware and software double protections 315 : ±10 mmHg 265 : ±10 mmHg 155 : ±10 mmHg

ELECTRICAL RATINGS

AC Power	
Input Voltage	100-240VAC, 50/60Hz
Output Voltage	12VDC, 3.5A
Battery	
Type	NI-MH
Battery Run Time	2 hours

ENVIRONMENTAL CONDITIONS

Temperature	
Operating	5 to 40℃(41 to 104℉)
Storage	-20 to 60℃(-4 to 140℉)
Humidity	
Operating	15 to 95% , non-condensing
Storage	10 to 95% , non-condensing

PHYSICAL DIMENSIONS

Weight	1300g
Size	85mm(H) x 245mm(W) x 84mm(D)

ALARMS

- Audible and visual alarms(SpO2,PR,HR,SYS,DIA,MEAN,TEMP)
- Low battery, ECG lead off, SpO2 finger off, system error
- Silence : 2 minutes
- Volume : 0(off) to 7

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