

Vein Finder

Operation Manual

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Statement:

We reserves the right to interpret the operation manual.

We can revise the content of this operation manual without prior notice. The revised version will be in the new version operation manual.

This Manual is the operation guide only for this Vein Finder (hereinafter refer as “Vein Finder”). We will not be responsible for any loss or hurt if this manual is for other use.

We will be not responsible for any software and equipment which is not provided by us.

We confirm the information in this Operation Manual is correct and reliable but not guarantee the content of this Manual.

Please read this manual carefully before operating the device.

We will only be responsible for the safety, reliability, and performance in the following case:

- Installation, test, upgrade, maintenance is all done by our personnel or authorized person by us.
- All the maintenance spare parts should be from us or accepted by us.
- Please follow the electrical appliance national standard and the instruction of the operation manual.
- Strictly follow the instruction of the operation manual.

Version:

- Operation Manual Version: V1.0
- Software Version: V1.0
- Revised Version: 2021.10

Warranty and Maintenance Service

The warranty is 24month for the device and accessories warranty is 6months, accessories is Power Cord, Battery

If the warranty period is not the same as above mentioned, please contact us. If it is not confirmed with us, please contact to your supplier.

The warranty period starts from the date of the Invoice and it is the only proof to calculate the warranty period. For your sake, please inform us the qualified installation within 30days, or the warranty date will starts from the date on the package over till 30days.

It will be free for after-sales service under warranty. It will be charged in the following case:

- Artificial damage
- Improperly operation
- Grid voltage is out of the ruled range.
- Force majeure
- Maintained by personnel not authorized by HEPHO.
- Use the spare parts which is not provided or confirmed by HEPHO
- Fault which is not caused by the device itself.

After warranty, the service will be charged. If service charge is rejected to pay or not paid on time, then we will have the right to stop servicing until the charge is paid.

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Product Manufacturer and Service Information.....	错误!未定义书签。

Precautions

Note:

This Operation Manual make a detailed introduction for the use, function, and operation instructions. Please read the manual completely prior to using this device. Please carry out inspection and maintenance to the pump periodically according to the manual in order to avoid patient/user injury

The manual is with complete function and features. Please pay attention to the relative model and the relative function and features. Any question, please contact us.

Please put the operation manual beside the device for convenient reference.

Operator

The operation manual is only used by well-trained clinical nurse or doctors.

Others

The figures in the operation manual is only for reference. The settings or data in the figures may be not 100% same as the real ones.

Chapter 1. Safety

1.1. Safety and warning

According to the importance of the prompt information, the manual of the vein finder is divided into two categories: note and warning. The meaning is as follows:

Note: Indicates that the information involves guiding suggestions, and failure to operate according to the caution information may affect the normal use of the product.

Warning: Indicates that the information relates to safety and effectiveness. Failure to follow the warning information may cause injury.

Please read carefully the notices and warnings listed in this manual.

Note:






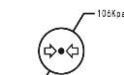




- (1) *Please read the operation manual carefully before operating the device.*
- (2) *This product is used to observe and search for superficial subcutaneous veins and assist medical staff in performing venipuncture operations such as routine infusion and blood draw by professional and well trained hospital medical staff.*
- (3) *This device should be fixed on the stand or handheld use. Before use, please make sure that the device is well installed.*
- (4) *It is recommended not to share a power cord with other electrical equipment, and to ensure a good grounding, please do not touch the power plug with wet hands.*
- (5) *Please check the device and its accessories before use, whether the accessories are damaged, if damaged, do not use it and contact the manufacturer or supplier for repairs to ensure normal and safe work.*
- (6) *When operating this product, make sure that the battery is installed in the device. Otherwise, when the external power supply is interrupted due to power failure or short circuit, the device cannot be used normally. The lithium battery is the original battery. Please fully charge and store the device if it is not used for a long time.*
- (7) *Do not put the battery into a fire or heat it, otherwise it will cause the battery to leak, catch fire or even explode. Do not tear off the battery skin, otherwise it may cause an explosion or dangerous chemical burns.*
- (8) *Do not combine the device in the same room with life support equipment, equipment that has a serious impact on the life of the patient or the treatment effect, low-current measuring equipment or treatment, etc.*
- (9) *This product is a independent device, and it is not clinically expected to be interconnected or used in combination with any other medical devices.*
- (10) *If the device is accidentally dropped or other functional failures occur, it cannot be used continuously. It is recommended to send the device to supplier for detailed inspection of safety and performance indicators, and then continue to use it after it is confirmed to be qualified.*
- (12) *The service life of this product is 5 years. After the service life expires, there are risks in the use of the equipment. It is recommended not to continue using it.*

 **Warnings:**

- (1) Do not use in flammable or explosive environments to prevent fire or explosion. Do not use in places with strong light, hot and cold wind, and dust.*
- (2) It is strictly forbidden to use voltages other than those specified on the nameplate of this product, otherwise it may cause damage or even fire.*
- (3) This product is a Type B-type, without waterproof protection design, it is forbidden to spill liquid or spill any part of the product into the liquid. If liquid is spilled into the product during charging or use, please turn off the power immediately and stop using it.*
- (4) Patients who are allergic to the infrared light source in the range of (650~950)nm or have a history of photosensitivity, please use with caution. The clinician or nurse must know whether the patient is allergic to or has photosensitivity before use this device.*
- (5) Electromagnetic waves will affect the performance of this product, so the equipment used near this product must meet the corresponding EMC requirements. Mobile phone, X-ray or MRI equipment are possible sources of interference, so they all emit high-intensity electromagnetic radiation. It is recommended to turn off the device in the above cases.*
- (6) This product can only be operated by professionals who are familiar with this device to avoid patients from operating this equipment by themselves.*
- (7) It is strictly forbidden to disassemble or modify this equipment without authorization. Don't open the shell of the device, otherwise there may be a risk of electric shock. The maintenance and upgrade of the device must be carried out by professionals authorized by the manufacturer.*
- (8) The device should be checked daily. If it is not used for a long time, please confirm that all functions are in good condition before use.*
- (9) When disposing of packaging materials, follow the relevant local laws and regulations or the hospital's waste disposal system. The packaging materials must be placed out of the reach of children.*
- (10) This device is only for medical staff to assist in finding veins or to demonstrate training and teaching for medical staff. It's not the only way to find, and can't completely replace the method of finding blood vessels based on reliable medical judgment and visual and tactile judgment.*
- (11) If there is a problem with this product during use, you should stop using it and shut it down immediately, and contact the supplier or manufacturer in time.*

1.2 Symbol Key

List of Symbols Used in the Instructions

Symbol	Meaning	Symbol	Meaning
	CAUTION: These notes must be observed to prevent any damage to the device		Warnings
	Non-ionizing radiation		Class II with internal power supply
	Manufacturer		Date of manufacture
	UP		Fragile! Handle with care
	Away from rain		Away from sun
	Atmospheric pressure limit		Temperature limit
	Humidity limit		THE OPERATING MANUAL MUST BE READ
	ENVIRONMENT PROTECTION - Waste electrical products should not be disposed of with household waste. Please recycle where possible.		AC POWER
	Projection Brightness		Projection Size
	Projection Color		Projection Mode

 **Note:**

Symbol, ico may from the packing, operation manual, vein finder shell or others.

Chapter 2. Introduction

2.1 Application

It is mainly used by medical institutions to observe, search for superficial subcutaneous veins and assist medical staff in performing venipuncture operations such as routine infusion and blood draw. It is suitable for infants, the elderly, obese people, patients with edema, nephritis, shock and other related people. It can also be used for observation of subcutaneous hemorrhage, evaluation of venous diseases such as varicose veins and spider webs.

2.2. Warnings

Do not apply to the eyes and veins around the eyes.

Don't use it as a diagnostic device or for any therapeutic purpose.

This product can only identify veins and cannot effectively evaluate arteries.

Do not use in areas where there are scars, tattoos, skin diseases, or more hair on the skin surface at the injection or blood draw.

2.3 Working Principle

The vein finder mainly takes the advantage of the blood hemoglobin absorption for near-infrared light stronger than other tissues, it makes the superficial blood vessels visualized through the photoelectric conversion and image processing technology; it is helpful to find, evaluate and position the superficial blood vessels, finally the blood vessels are displayed on the screen for observation and search of superficial subcutaneous blood vessels and auxiliary puncture.

The vein finder can sense the intensity of the infrared light reflected by the skin through a photosensitive chip, display the outline of the blood vessel through a series of digital image processing technology, and then project the image on the skin surface through a micro-projector to restore the blood vessel distributed. Medical staff can observe the displayed blood vessel distribution image to find the blood vessel they need to inject or draw blood. This device can greatly alleviate the fear of venipuncture for patients who have difficulty in venipuncture, and at the same time assist medical staff in performing operations such as intravenous infusion and blood drawing more easily.

2.4. Components

It is mainly composed of main board, display screen, camera, and LED light source. Taking advantage of the different absorption of near-infrared light of different wavelengths by oxygenated hemoglobin in the surrounding tissues and blood vessels, the information is subjected to photoelectric conversion and image processing, and finally the blood vessels are displayed on the screen.

2.5. Packing List

Please check the following before use.

- (1) Vein Finder.....1PC
- (2) Power Adapter.....1PC
- (3) Operation Manual.....1PC
- (4) QC certificate..... 1PC
- (5) Velvet bag.....1PC

- (6) Fixed Slot.....1PC
- (7) Packing List.....1PC

2.6. Technical Specification

2.6.1. Compliance

Protection against electric shocks: Class II, include the internal power supply

Protection against leakage current: No patient contact, no applied part

Working Mode: Continuous working .

2.6.2. Working and Transportation and storage conditions

Temperature: +0°C~+45°C

Relative Humidity: 30~83%, not condensation

Atmospheric Pressure: 70KPa~106Kpa

Transportation and Storage Temperature: -20°C~+55°C

Transportation and Storage Humidity: 10~95%,not condensation

Transportation and Storage Atmospheric Pressure: 50KPa~106Kpa

Transportation and Storage Condition: No corroded air and good ventilated environment

2.6.3. Power Supply

Volt: 100~240V

Power: 50VA

Frequency: 50Hz/60Hz

2.6.4 Battery

Quantity: 1pc

Type: Rechargeable Lithium battery

Capacity: 2200mAh

Rated Voltage: DC7.2V

Operation time: ≤2.5hr after connecting to power adapter and fully charged

2.6.5. Physical Specification

Dimension: 220mm×65mm×65mm

Weight: ≈480g

Display: LCD with high brightness 0.96inch OLED

2.6.6. Basic Parameter

Light Source: Near Infrared

Wave Length: 750~950nm

Infrared radiation value: ≤200μW/m²

Resolution Deviation: ≤0.10mm

Projector Resolution(pixel): 854*480

Projection Size: Large, Medium, Small, Very Small

Projection Color: Black white, green, green background, red, purple, purple background.

Projection Mode: 3 modes

Resolution Speed: 60frames/s

Projection Brightness: 4 level adjustable

Maximum Detection Depth: $\leq 8\text{m}$

Imaging depth of field: 40mm

Best Projection Distance: $200\pm 20\text{mm}$

Minimum Identified Blood Vessel Diameter: $\geq 0.4\text{mm}$;


Display: OLED, DLP

2.6.7. Other functions

With the best projection distance indicator: Yes

Recommendations for the best puncture path and tips for the best vascular perfusion level: Yes

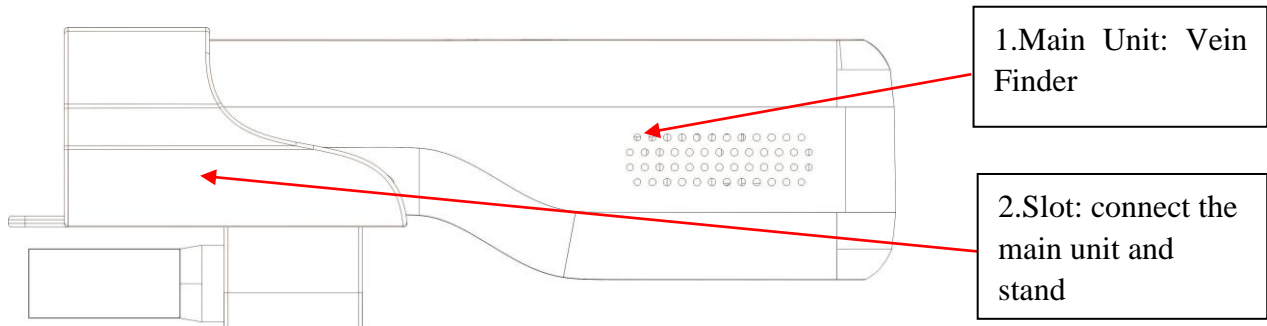
External vascular image enhancer: Yes

 **Notice!**

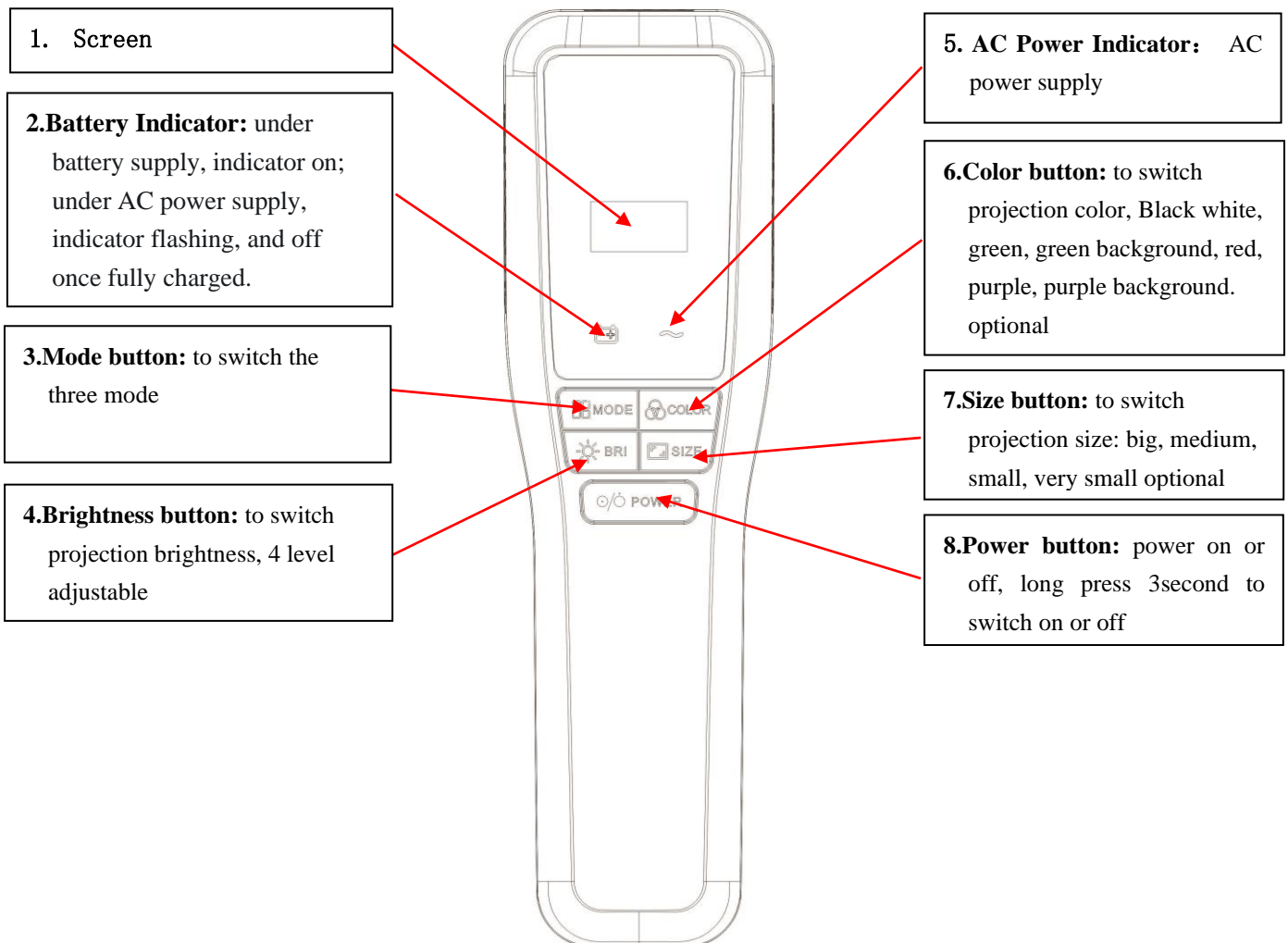
This specification and use instructions will not be notified if there are any changes not involved safety.

2.7. Shell components

2.7.1. Main Unit



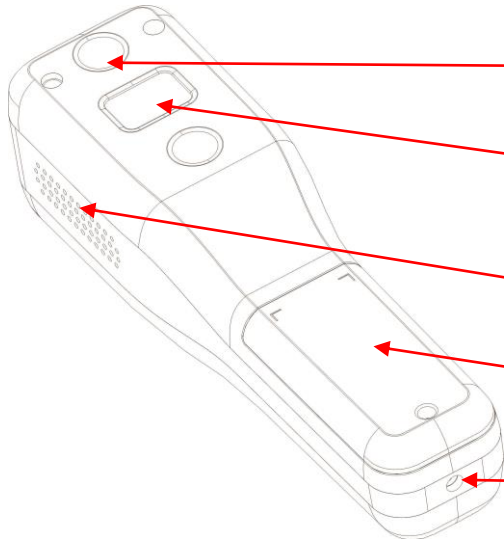
2.7.2. Front Introduction



Note:

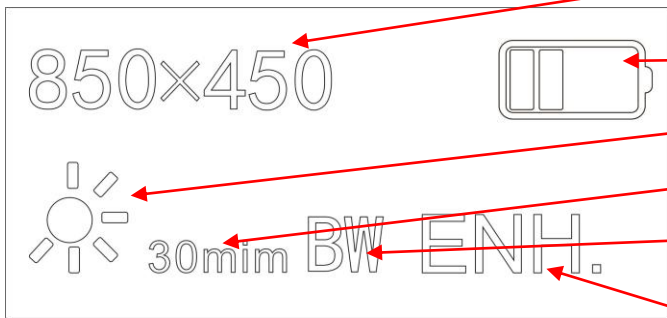
- (1) Press any key to cancel the sleep function;
- (2) The depth mode can prompt the blood vessel depth display;
- (3) Very small size is recommended for infants and small kids.

2.7.3. Back Shell



- 1. **Infrared light:** emit near-infrared light to patient's skin
- 2. **Projection window:** project the processed image onto the surface of the patient's skin
- 3. **Cooling hole:** Dissipate the heat generated by the device
- 4. **Battery cover:** battery cover and labeling
- 5. **Power Cord:** Power cord and battery charger

2.7.4. Display Introduction



- 1. Projection Resolution
- 2. Battery Volume
- 3. Projection Brightness
- 4. Sleeping Function
- 5. Projection Color: 6 colors
- 6. Mode: Normal, Enhanced, Depth

⚠ Notice!

When the brightness is displayed, the brightness icon displays 2 dots for level 1, 4 dots for level 2, 6 dots for level 3, 8 dots for level 4, level 1 is the darkest, level 4 is the brightest, and the default level is level 3.

Chapter 3. Operation Guidance

3.1 Preparation

3.1.1. Package Open Inspection

Before package open, please check the package carefully and confirm whether any parts are broken. If any, please contact the forwarder or supplier immediately.

If all is ok, then please open it properly and take out the device and other spare parts. Check the parts list and make sure all is well. If any question, please contact us.

Note :

- *Please put packing material where the child can't be reached. Follow the local regulation or hospital regulation when disposing the packing material.*
- *Keep the packing material in stock for future use.*

3.1.2. Environment Standard

Please keep the device away from the noisy, shaking, dusty, corrosive, flammable, explosive environment. Please keep at least 5cm distance from the device to make good loss of heat and good air recycle.

When the device is moved to other environment, it may have condensation due to the temperature difference, in which case, please don't start the device until the condensation finish.

3.1.3. AC Power Supply Standard

Please run the device under the AC Power range on the label only.

 **Note !**

- *Use the proper AC Power supply based on the power voltage setting. Or it will make damage to the device or cause fire.*

3.1.4. Power Cord Installation

Connect the Power Cord into the socket in the side of the device and connect to the AC Power. Press and hold the power button for 3 seconds and turn on the power switch. After the self-testing, the device can start to work in about 3-5 seconds.

 **Note !**

Please make sure the power cord connecting well.

3.2 Installation and Setting

3.2.1. Fix the vein finder on the stand.

Fix the vein finder on the stand as following:

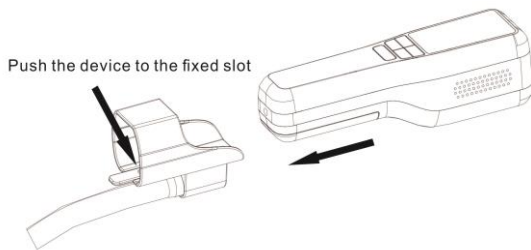


Benchtop

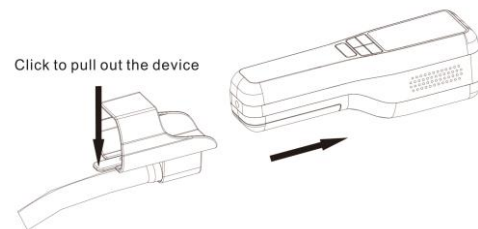


Mobile Stand

3.2.2. Vein Finder Fixed Slot



Click to pull out the device



Device removal from fixed slot figures

Press the lock button down as shown in the figure below to take device out of the fixed slot on the gooseneck. When the device is inserted again, push the device forward slightly, and then the device snap into the fixed slot.

3.2.3. Handheld

The user can use the hand to hold the rear of the vein finder for operation, but it is recommended to use a qualified and stable stand.

3.3. Paramter Setting

3.3.1 Power ON

Connect the power adapter to the AC power, press the Power button to power on. After about 3-5 seconds, then it starts working around 3-5seconds.

3.3.2. Color Setting

The vein finder defaults to gray and white color when powered on

Projection Color includes: Black white(B-W), green(G), green background(G-BG), red(R), Purple (P) , Purple background(P-BG).

3.3.3 Size Setting

The defaulted projection Size is Large, Medium, Small, Very Small. The nursing staff can select based on real needs.



Note

It is recommended to select small or very small size for the infants or small kids.

3.3.4 Mode Setting

The defaulted mode is enhanced mode (ENH Mode), which is suitable for different group. Press Mode button to select the Enhanced mode (ENH), normal mode (NOR), and depth mode (DEPTH). Medical staff can select the mode based on the real needs.

The depth mode can display three depths: deep, medium, and shallow. Green means that the blood vessel is 6-8mm under the skin, blue means that the blood vessel is 4-6mm under the skin, and red means that the blood vessel is 2-4mm under the skin.



Note

The depth mode can only be used as a reference during puncture. In actual use, the operator should perform the puncture according to the condition of the patient.

3.3.5 Brightness Setting (BRI Setting)

The defaulted brightness is 3 levels. There are four levels adjustable of brightness. Press the BRI button to select the levels. Medical staff can select the mode in real site.

3.3.6. Standby Mode

In the case of no operation, the device will enter the standby mode after 30 minutes, and the projection and screen will turn off, and press any button to start. There is a countdown display on standby mode.

3.3.7 Finish

Press Power button to power off after use.



Note

When it is not in use for a long time, please fully charge the device and store it properly and ensure it is charged every two months.

Chapter 4 Failure Analysis and Elimination

4.1 Cannot POWER ON

No display when power on:

Possible cause: The power cord is not connected well or no voltage.

Solution: Check whether the power adapter and the device is well connected, if the connection is normal, the power indicator is on.

4.2 No display under battery supply

Possible cause: The battery is exhausted or the storage environment is humid.

Solution: Charge the battery with the power adapter, the battery indicator will be on and off when the battery is full, or use the external power supply to charge. If it still cannot be turned on, the device may be abnormal, please contact the supplier or manufacturer.

4.3 It can be turned on normally but the projection is poor, the projection is blurred or with obvious spots

Possible cause: The lens of the light exit port is dirty.

Solution: Please wipe and clean the light exit with lens paper. Put a few drops of absolute ethanol on the lens paper and gently wipe the surface of the lens along one direction of the lens. If the near-infrared light source does not work normally or exceeds its service life, please contact the supplier or manufacturer, and don't open the case without authorization.

4.4 The power indicator shows on, but the LCD screen does not show

Possible cause: Check the LCD screen for damage.

Solution: If all the above checks are normal, please contact the supplier or manufacturer.

4.5 Battery life too short

Possible cause: The battery is not fully charged or the battery life is naturally reduced

Inspection: Connect the power adapter, if the battery indicator flashes, it means the battery is not fully charged. If the battery indicator is off, it means that the battery is fully charged. The battery life is reduced due to the increase in the number of charging and discharging of the battery, and the endurance of the battery is naturally reduced.

Solution: If the battery life is too short and the battery needs to be replaced, please contact the supplier or manufacturer.

4.6 The device occasionally freezes or frozen

Possible Causes: The working time is too long, and the internal parts is overheated.

Solution: Turn off and wait for the device to cool down for a while.



Warnings

If the device breaks down during use, the fault still not solved after corresponding inspections according to the above methods, please contact the supplier or manufacturer, and the user should not open the case without authorization.

4.7 Low battery

Possible Causes: The battery capacity is low.

Solution: Connect to the AC power supply to charge the battery

Chapter 5 Product daily check, storage, and transportation

For product maintenance requirement, we can provide the board circuit, components, reference chart, calibration instructions or other technical instructions. Please use the mention below material and method to clean or sterilize the device. We will be not responsible for the damage or accident caused by other material and method clean or sterilization. The listed chemical and method is only for control the infection. We will not bear any responsibility for its validity.

Please enquiry the hospital Infection Prevention Department or local epidemiological expert for the infection control method.

5.1 Inspection

First time use, continuous use for 6-12 months, and after repairing or upgrading, a comprehensive inspection should be carried out to ensure the normal operation of the device.

Inspection items include:

- The environment and power supply meet the requirements;
- The power adapter cord has no abrasion and good insulation performance;
- There is no mechanical damage to the device and accessories;
- Check the accuracy of the camera's alignment accuracy control.

If you there is any abnormalities, please stop use, and contact the supplier or manufacturer.

5.2 Maintenance and cleaning

Please follow the materials and methods listed in this chapter to maintain the device. Any damages or accidents caused with other materials or methods is not guaranteed by our company.

Projector cleaning:

Medical staff should clean the device regularly. The main unit and stand should be cleaned without connecting AC power. Use a dry cloth dipped in 75% medical alcohol or pure water to wipe is accepted.

Please wipe and clean the light outlet with lens paper. Put a few drops of absolute ethanol on the lens paper and gently wipe the surface of the lens along one direction of the lens.

To prevent damage to the device, the following regulations must be observed:

- Do not immerse the device in liquid;
- Do not pour liquid on the device or accessories;
- Do not make liquid into the the device;
- Do not use abrasive materials (such as steel wire balls or silver polish) and solvents like xylene and acetone to clean to avoid damage to the housing.

Warnings

- (1) Before cleaning, power off and disconnect the power cord from the socket;
- (2) Accidentally pouring liquid on the device or accessories and cause the device work abnormally, please stop the use and contact the supplier or manufacturer immediately.
- (3) The device should be maintained regularly. In areas with serious environmental pollution or heavy sandstorms, the frequency of maintenance should be increased.
- (4) Do not use gas (Eto) or formaldehyde for cleaning.

5.3 Regular maintenance plan

To ensure safe use, please arrange regular maintenance and inspections. The inspection schedule is shown as following table:

Maintenance schedule:

Item	Frequency	Method
Check appearance	Before use	refer to 5.3.1
Check the power adapter	Before use	refer to 5.3.2
Check image projection accuracy	Every 3 months	refer to 5.3.3

5.3.1 Check appearance

Visual inspection: no cracks or damage.

Button operation: The button is smooth and effective.

Please wipe and clean the light exit of the device with lens paper. Put a few drops of absolute ethanol on the lens paper and gently wipe the surface of the lens along one direction of the lens. It is necessary to clean the surface of the device thoroughly before or after storage for a long period of time.

5.3.2 Check the power adapter

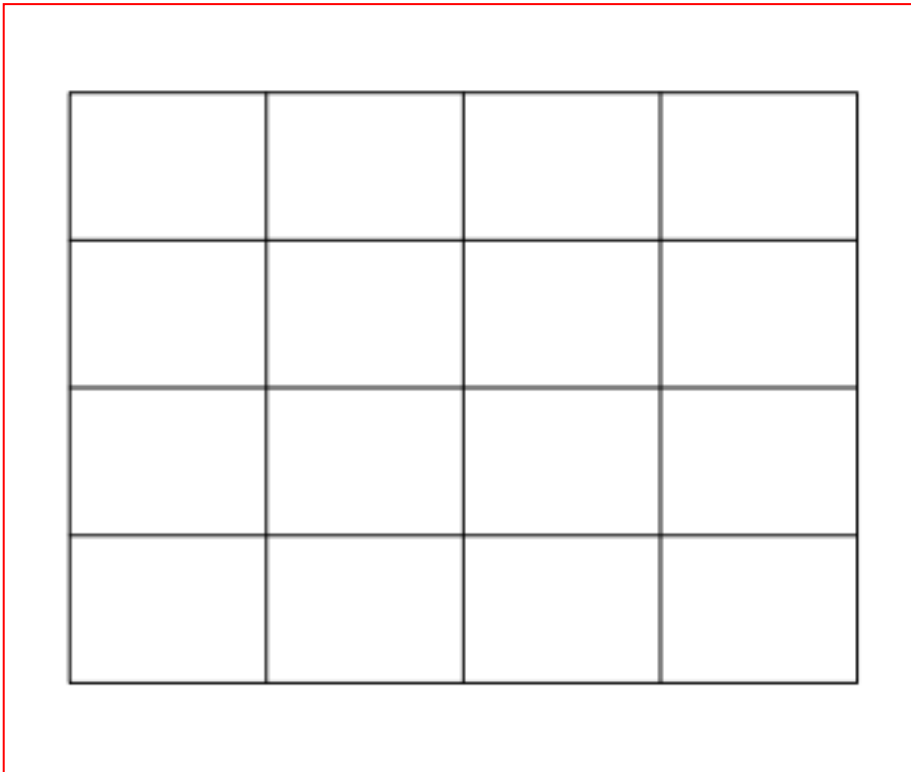
Check the appearance of the power adapter. If the skin is damaged or the contact between the plug and the socket is poor, please contact the supplier or manufacturer for replacement in time.

If there is no display on the device if it is connected to AC power, please contact the manufacturer or the manufacturer's authorized dealer for repairs.

5.3.3 Check the image alignment accuracy

Medical staff should use the accuracy test card to verify the accuracy of the instrument after the first start-up or after each assembly or transport of the instrument.

Verification method: Place the accuracy test card in the projection area of the host. When the deviation between the projected image and the original image is greater than 1mm at the best imaging position, please stop using it immediately and contact the supplier or manufacturer in time.



Warnings

- (1) Only when the image registration accuracy is $\leq 0.10\text{mm}$, the imaging device can be regarded as qualified, otherwise, please contact the supplier or manufacturer for repair in time.
- (2) The power adapter is damaged, please contact the supplier or manufacturer in time for replacement.

5.4 Pollution-free treatment and recycling

The normal service life of this product is about 5 years. The device that has exceeded its service life should be scrapped. Please contact the supplier or manufacturer for more information.

You can proceed as follows:

1. The device sensor that has been scrapped can be sent back to the supplier or manufacturer for recycling.
2. The disused imaging device shall be disposed of in accordance with the corresponding local laws and regulations.

5.5 Transportation and storage

After cleaning according to the previous instructions, transport and store the device in the following environment:
Ambient temperature: $-20^{\circ}\text{C} \sim + 55^{\circ}\text{C}$; relative humidity: 10%~95%; atmospheric pressure: 50KPa~106KPa.

It is forbidden to store in the following environments:

- Places exposed to direct sunlight/strong light.
- Places directly blown by cold and humid (hot) air currents such as fans, air conditioners, electric stoves, heaters, humidifiers, etc.
- The place of chemical warehouse or harmful gas.
- Places where there is water seepage, splashing, too much dust, too much vibration, and uneven floors.
- The stacking level cannot exceed 5 levels.

5.6 Battery

The camera has a built-in rechargeable battery (hereinafter referred to as the "battery") to ensure that the camera can still be used normally when the hospital is powered off. When the device is connected to AC power, the device will charge the battery. In the event of a sudden power failure, the device will continue to be used normally with battery power. When the camera is stored for a long time, the battery cannot be unplugged; the built-in battery of the camera will self-discharge. If it is not charged once every two months, the battery life will be reduced and there is a risk of damage.

5.6.1 Charging

1. If the battery is low, it needs to be connected to AC power, and the camera will automatically charge.
2. If you use it for the first time or re-use after a long period of storage, please connect the AC power to charge first:
3. When the battery is exhausted, it needs to be charged for more than 4 hours to be fully charged.
4. The battery is only for backup use, please connect the device to AC power during normal use

Warning !

If you do not use the product for a long time, please charge and discharge the battery every 2 months to avoid damage to the battery.

5.6.2 Testing of battery performance

When the battery of this device can be used in the default mode, it can be used for no less than 4 hours without AC power. The performance of the battery may decline over time, and battery performance checks should be performed regularly.

Please refer to the following steps to check the battery;

- a. Connect the device to AC current and charge continuously for more than 4 hours;
- b. Disconnect the AC power supply, and continue to use the device in the default mode until the battery is exhausted and shut down;
- c. If the use time exceeds 60 minutes, the battery is in good condition;
- d. If the use time is 30-60 minutes, the battery is approaching the end of its service life;
- e. If the use time is less than 30 minutes, the battery has reached the end of its service life;
- f. After the battery check is completed, the battery must be recharged for the next use.

Warning !

- (1) *If the battery is obviously damaged (swollen, deformed, leaking) or the battery cannot store power, the battery should be replaced in time and reasonably and legally recycled according to local laws and regulations.*
- (2) *After the battery is damaged, the charging is not completed, or the battery is aging, it may not be possible to maintain the battery life setting of not less than 4 hours.*

5.6.3 Replacing the battery

The service life of the battery depends on the frequency of use and the operating environment. If used and maintained properly, its service life is about 2 years; otherwise, its service life may be shortened, and the battery should be replaced every 2 years. If the battery is obviously damaged (swollen, deformed, leaking) or the battery capacity is exhausted, it should be replaced in time and reasonably recycled. When disposing of used batteries, they should be recycled reasonably and legally in accordance with local laws and regulations.

Steps to replace the battery:

- a. After disconnecting the AC power, loosen the screw on the battery cover of the camera, open the cover, pull out the connector, and take out the battery.
- b. Put in a new battery, insert the connector, close the battery cover, and fix it with screws.

Warning !

- (1) *Do not disassemble the battery, throw it into fire or short-circuit it. Burning, explosion, or leakage of the battery may cause personal injury.*
- (2) *Batteries must not be disposed of as domestic garbage*
- (3) *The battery is a consumable item and must be replaced when it is exhausted*
- (4) *If you want to replace the battery, please contact the supplier or manufacturer, you must replace the original battery*
- (5) *This camera can only use the battery specified by the manufacturer. Using batteries other than those specified by the manufacturer may cause serious damage to the camera or even fire.*
- (6) *If there are signs of damage or leakage of the battery, please replace it immediately*
- (7) *Do not apply defective batteries to this device*

Appendix

Toxic and hazardous substance or element name and content identification table

Part Name	Toxic and hazardous substance or element					
	Lead (Pb)	Mercury (Hg)	Cadmium (Cd)	Hexavalent Chromium (Cr6+)	Polybrominated Biphenyls (PBB)	Polybrominated diphenyl (PBDE)
Machine Parts	O	O	O	O	O	O
Printed circuit parts(PCA)	×	O	O	O	O	O
Cables, Connectors	O	O	O	O	O	O
Display technology/ Lamp tube	O	O	O	O	O	O
Display technology/lamp tube	O	O	O	O	O	O
Power supply equipment	O	O	O	O	O	O
Mechanical parts-bracket	O	O	O	O	O	O
Mechanical parts—others	O	O	O	O	O	O
Accessories	O	O	O	O	O	O

*: Printed circuit components include all printed circuit boards (PCB) and their respective discrete components, ICs, connectors, etc.

O: Indicates that the content of this toxic and hazardous substance in all homogeneous materials of this part is below the limit requirement of the SJ/T11363-2006 standard.

×: Indicates that the content of the toxic and hazardous substance in at least one of the homogeneous materials of the part exceeds the limit requirement of the SJ/T11363-2006 standard; the parts marked with “×” in the above table cannot be replaced due to technical reasons. The follow-up will gradually improve.

Appendix 1 Electromagnetic Compatibility

Note !

Please install and operate the device based on the Electromagnetic Compatibility information with the device packing.

Portable and mobile RF communication equipment may affect the performance of the device, avoiding to use the device near strong electromagnetic interference, such as mobile phones, microwave ovens, etc.

Warnings

- The device or system should not be used close to or stacked with other devices. If it must be used close to or stacked, please pay attention to the normal working under the configuration during use.
- Class A equipment is intended for use in industrial environments. Due to conducted disturbances and radiated disturbances by the device, it may be potentially difficult to ensure electromagnetic compatibility in other environments.
- In addition to the transducers and cables sold by the manufacturer of the device or system as spare parts for internal components, the use of additional accessories, transducers, and cables may result in increased emissions or immunity to the device or system.
- Use of accessories, transducers, or cables outside of the regulations with equipment and systems may result in increased emissions or immunity to emissions from equipment or systems.

SN	item	Length (m)	Hide or not	Note
1	Power cord	3.0	no	/