

# **VEIN FINDER**

## User Manual

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## 1. Warnings and Precautions

Pay attention to the following safety instructions (including, but not limited to those listed below) when using the product, to avoid human-caused damages.

### 1.1 Warnings

- The vein finder helps to find superficial veins, but cannot completely replace medical judgment of finding veins based on vision and touch.
- The vein finder should be used as an auxiliary tool to assist medical practitioners in finding the location of superficial veins.
- The vein finder can only find superficial veins, and due to the physical characteristics of the patient, the depth of the vein search is limited.
- The vein finder is used to find the location of superficial veins, which cannot be used as diagnostic information.
- The vein finder must be kept away from fire to prevent the battery from exploding.
- The vein finder does not contain customer-serviceable parts. All parts and accessories can only be purchased by authorized maintenance agencies.
- Please use the original charging equipment to charge the vein finder, and the use of non-original accessories may cause safety hazards.
- Please use original accessories for the vein finder, and the use of non-original accessories may reduce safety.
- Charge the device with the approved adapter IEC60601-1 only.

### 1.2 Precautions

- The vein finder must be delivered to professionals authorized by the manufacturer for repair.
- Do not expose the beam of the vein finder to human eyes for a long time.
- Keep the instrument clean and avoid vibration.
- Keep the device dry to prevent liquid from entering the vein finder or its adapter.
- Do not perform high-temperature sterilization on the vein finder. Do not use electron beam or  $\gamma$  radiation to sterilize the device.
- Avoid electromagnetic interference or high-frequency interference in the vicinity of the device to ensure that the instrument is not in an environment of strong sources of electromagnetic interference, such as interference from wireless transmitters or mobile phones, etc.
- Check the device every two months. If any obvious damage is found, it is recommended to replace the damaged parts before using it again.
- Safety checks must be performed by people who have been properly trained and have 1 or 2 years of experiences in the testing and inspection procedures specified by the manufacturer.
- Check whether the safety-related labels are easy to identify, and check whether the function of the equipment conforms to the description in the user manual.

## 2. Product Overview

### 2.1 Intended Use








- The vein finder is a portable instrument that assists medical practitioners in finding and locating certain superficial veins.
- The vein finder should not be used as the sole method for locating veins, and should be used by qualified medical practitioners.
- When using the vein finder, medical practitioners should always follow the appropriate medical protocols and practices required by their medical institution, to exercise sound medical judgment.
- The vein finder can be used in the situation when the determination of vein location is necessary. When used properly, the vein finder can assist users find the location of superficial veins in specific medical practices, such as venipuncture.

### 2.2 Product Description

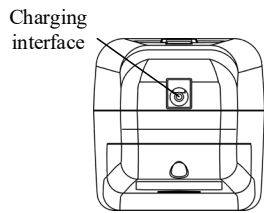
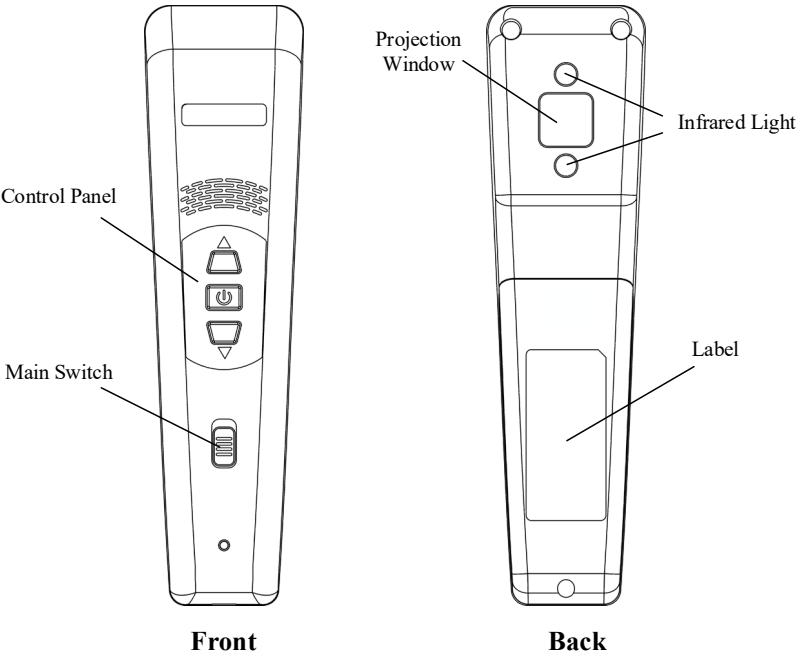
- The vein finder uses near-infrared light to locate veins beneath the skin, then projects the image of the veins on the skin surface directly above the veins.
- Medical practitioners can refer to the projected image to find a vein of the right size and location for venipuncture or other medical procedures.
- The vein finder only displays superficial veins, and the depths of the blood vessel search vary depending on the physical characteristics of different patients.
- The reasons for the different search depths include (but are not limited to) the following: differences in the depth of veins, skin conditions (eczema, tattoos), occlusion of hair, scars or wrinkled skin, obesity, edema, etc.
- It is recommended to place the vein finder directly above the search area, and the projection can accurately display the center position of the vein.
- Due to differences in patients' physiques and vein widths, the projected vein width may be different from the actual width, but the product can accurately display the center line of the vein.

- The vein finder is powered by a built-in battery and approved for continuous operation.
- The vein finder has no waterproof protection. Please prevent water ingress during use and storage.
- No training is required to operate the vein finder.
- The vein finder requires no routine or preventative maintenance, but needs regular cleaning.

2.3 Symbol Definitions

	Material can be recycled
	DC power
	Caution
	Date of manufacture
	Must not be directly discarded in the household trash can (The EU Directive Mark on Waste Electrical and Electronic Equipment)
	Refer to operating instructions
	Serial number

2.4 Product Diagram



**Bottom**

**Imaging Unit**



## 2.5 Accessories

- Optional supports are available for purchase for VEIN FINDER. The mobile and fixed supports can be used to support the device.

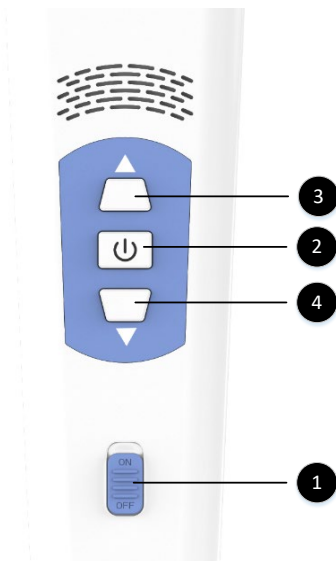
## 2.6 Package List

No.	Name	Quantity
1	Imaging unit	1
2	Power adapter	1
3	User manual	1

### 3. Instructions for Use

No installing or setting is required before using the vein finder.

#### 3.1 Operating Instructions



**❶ Main Switch:** Switch to “OFF” to turn the device off. Switch to “ON” and press Power button to turn the device on. Select the corresponding button to realize a specific function.

**❷ Power:** Power button.

**Power-on:** Press Power button for about 0.5 seconds till two beeps are heard, then the VEIN FINDER will be power-on.

**Off:** Press and hold Power button for more than 2 seconds till two beeps are heard and the light of Power button goes out, then the device shuts down.

**Standby:** When device is power on and the projector is light-up, short press the Power button (no more than 0.5 seconds) to enter the standby mode and the projector will be turned off.

**Wake Up:** When device is in standby mode, short press the Power button (no more than 0.5 seconds), the device will beep and the projector will be light-up.

- ③ **Upper Button:** Short press this button to switch among different function item: brightness, size, color, inverse and mode functions. The corresponding name of function item will appear in the lower left corner of the projected image.

Long press this button to get back to the default setting.

- ④ **Lower Button:** Short press this button to adjust the specific status of each function item in a cycle.

1) **Brightness:** Short press lower button to change the brightness.

2) **Size:** Short press lower button to change the projection size.

3) **Color:** Short press lower button to choose the color.

4) **Inverse:** After pressing this button, the part of vein in the image will become brighter while the surrounding tissues become dimmed. The projection of the vein is dim by default.

5) **Mode:** There are two modes to choose, universal mode and fine detail mode.

**Note:** In the universal or fine detail mode, Inverse and image size can be selected. If one mode is selected, the former mode will be replaced immediately.

**Note:** Universal mode: Standard image for all patients.

**Note:** Fine detail mode: Finer image with more details to find smaller and deeper veins.

## 3.2 Focus

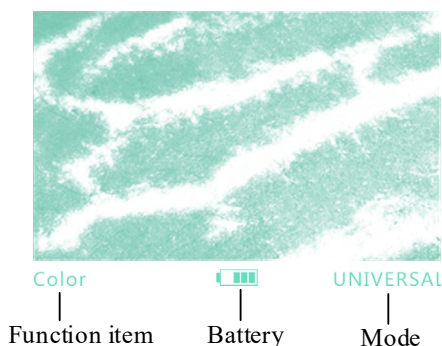
- Hold the imaging unit and place it directly over the observation area from about 7.87 inches (200mm) away.
- Adjust the position of the imaging unit to ensure that the projection window is perpendicular to the observation area.
- Fine-tune the relative distance till the text on the edge of the image appears the clearest and sharpest, and then the focusing process is complete.

**Note:** The projected vein width might be thicker or thinner than the actual width due to factors such as the distance between the VEIN FINDER to the skin, the patient's physical features and even the different observation modes.

It is recommended to prioritize the judgment of medical practitioners through standard procedures and professional experiences before making a drug injection.

## 3.3 Projected Image Description

An example of the projected image is shown below. Information such as current mode, battery status, etc. are shown in texts or graphics.



### 3.4 Software Version

Short press the Upper and Lower buttons to display the software version information, an example is shown below.



Press the Power button to exit this mode.

## 4. Cleaning and Maintenance

### 4.1 Cleaning

- Don't clean VEIN FINDER when it is fixed to the supports. Please remove it from the supports before cleaning.
- Please unplug power cable and make sure VEIN FINDER is turned off before cleaning.
- We suggest cleaning the lens window for every month. Please use dust-free cloth and alcohol of a 95% concentration to wipe it, then air dry naturally or wipe it with a dust-free cloth.
- It is recommended that the body of the imaging unit be cleaned every two months. Use a dust-free cloth dipped in 70% alcohol to wipe it, then air dry naturally or wipe it with a dust-free cloth.

**Note:** Please follow the instruction to clean the device and avoid scratching the lens window.

**Note:** Please follow the above precautions when cleaning the VEIN FINDER, otherwise the device may be damaged.

**Note:** VEIN FINDER needs regular examination. Please follow the requirement of your institution to clean and sterilize the device every time before using.

### 4.2 Maintenance

- Please do not immerse the device in any liquid or leave liquid on it.
- Do not try to sterilize the device by heating or pressurizing.
- Do not use other organic solvents or rough cleaning tools to wipe any parts of the device to avoid damage.

**Note:** If there is abrasion or dirt on the lens window, please don't use the VEIN FINDER. If the window is damaged or broken, please contact the authorized dealer or manufacturer for repair.

## 5. Battery

### 5.1 Build-in Battery

- The build-in battery is inside the imaging unit.
- Before using device for the first time, please charge the battery fully.
- Avoid completely discharging of the battery, and recharge in time when the battery is not completely used up.
- When the battery enters the protection mode because of output short circuit or over-discharge, the battery needs to be charged to recover.
- Check the battery every 2 months to see if the charging and discharging work properly. If there is any abnormality, please contact the dealer or manufacturer in time.
- The used batteries should be properly disposed of according to local regulations.
- Please use the original adaptor to charge the battery.

**Note:** When the battery is less than 3%, the device beeps continually. Short press any button (about 0.5 seconds) will stop the beep. If device is rebooted in low battery, the “beep” sound will start again before the battery is charged.

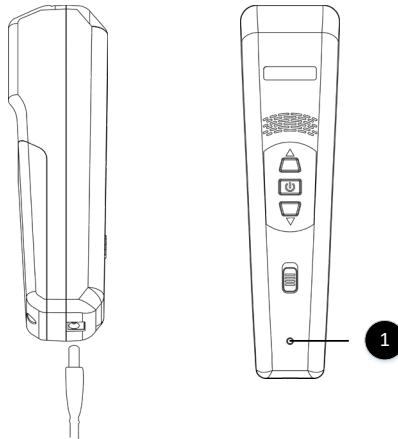
### 5.2 Charging

The battery indicator is on the bottom right corner of projected image. The device needs to be charged when battery is low. The charging procedures are as follows:

- (1) Connect the imaging unit with the power adapter.
- (2) Switch the main switch on the imaging unit to "OFF".
- (3) The indicator light is blue, when the device is charging.

**Note:** During charging, do not put your hand or any part of your body on the adapter for more than 1 minute as the high temperature may cause burns.

- (4) Determine the charging status by color of the indicator light.



When the indicator light ❶ is blue, the battery is not fully charged, and needs to continue charging.

When the indicator light ❶ turns green, the battery is fully charged.

When the indicator light ❶ flash, the battery temperature may be abnormal or the battery may be over-discharged. Please check the imaging unit.



## 6. Storage and Transportation

- For storage and transportation of the device, don't place it in an environment where the temperature and humidity is too high or too low, or that is dusty.
- Please comply with the storage and transportation conditions specified as follows: humidity: 10-90% RH (non-condensing), temperature: -20°C to 50°C.
- Please keep the device away from flammable and explosive gas source and handle with care to avoid impact or vibration when transporting.

## 7. Technical Specifications

### 7.1 Classification

Item	Category
Protection against electric shocks	ME equipment with built-in power supply, without application parts
Protection against harmful ingress of water or particulate matter	IPX0
Method(s) of sterilization	By methods validated and described by the manufacturer
Mode of operation	Continuous operation

## 7.2 Specifications

Parameter	Specification
Weight (the imaging unit)	460g
Dimensions (the imaging unit)	60x60x240mm
Battery	Lithium-ion Battery, 3.6V, 4.3Ah
Battery working time	4 hours
Charging time	3 hours
Adapter specifications	Model: FJ-SW328U0502000N Rated Input :100-240VAV, 50-60Hz, 0.4A Rated Output: 5VDC, 2A
Peak wavelength of infrared light	About 850nm
Valley wavelength of visible light	About 530nm
Atmospheric Pressure (working and storage)	700hPa to1060hPa
Working environment humidity	10-90% (non-condensing)
Working environment temperature	10°C to 30°C
Storage humidity	10-90% RH(non-condensing)
Storage temperature	-20°C to 50°C

8. Common Faults and Solutions

Fault	Reason	Solution
No boot display	Low battery	Charge battery
	Power error	Reboot by main switch
Boot failure	System error	Power off and reboot
		Reboot by main switch
No image display	Operation error	Reboot by main switch

**Note:** If you find other faults that cannot be solved, please contact the manufacturer to provide essential circuit diagrams, list of components, descriptions, and calibration instructions to assist the service person in parts repair.

9. Disposal

- The service life for the device is five years (from the manufacture date). To properly dispose of used device after the expiry date, please contact the dealer or the manufacturer and follow local regulations.
- The proper disposal of packaging materials should follow local regulations and the country's environmental protection law.

## 10. Warranty

### 10.1 Warranty

- The working temperature range of VEIN FINDER is 10°C ~ 30°C. Malfunction may occur outside of this range.
- When the VEIN FINDER does not work properly, please turn off the device.
- If any unknown fault appears, please stop using the VEIN FINDER immediately. Then turn off the device and contact the dealer or manufacturer for support.
- Any damage caused by disassembling the machine without the permission of the manufacturer is not covered by the warranty.

**Note:** The warranties do not cover damages caused by misuse, abuse or force majeure.

### 10.2 Liability Statement

- In no circumstance shall either our company or the customer be held liable to the other for any incidental, indirect, special or collateral damages (including but not limited to loss of profits or loss of business opportunities).
- Regardless of how such liabilities may be claimed, including contract breach, tort (including negligence) or any other ways, the above restrictions still apply.

