



# Wireless Probe Type Ultrasound Scanner

**User's Guide**

# 1. Introduction

The Wireless Bladder Scanner is the new generation instruments for bladder volume calculating with the outstanding feature of wireless.

Different from traditional ultrasound scanner with a cable connecting from probe to main unit, no cable appears at the end of the probe of the Scanner. The probe of a Scanner is highly integrated with ultrasound image processing, power management and a wireless signal provider to be connected by the main unit. The main units different with traditional devices are now changed to be any iPad from Apple Inc. The probe acts as a Wi-Fi Access Point and can be connected by iPad. With the probe be connected through Wi-Fi and the App's running, enjoy your days of working without the trouble making by cables.

This manual is intended to provide a through overview of the Scanner and should be carefully read before starting operating the device.

Thank you for your trust in us to provide for your bladder volume calculating needs.

## 1.1. SPECIALIST

### 1) Intended Use

Measure the volume of bladder

### 2) Physical characteristics

Size	180mm x 60mm x 60mm
Weight	450g

### 3) Environmental

Operating Temperature Range	-10 to 50 °C
Storage Temperature Range	-20 to 65 °C
Humidity Max:	90%

### 4) Electronic

Battery Capacity:	4200mAh
continuous working time:	4hour
Waterproof:	IPX5

### 5) Probe

Frequency:	3.5MHz
Display accuracy:	1ml
Measuring range:	20 – 999ml
Measuring accuracy:	20-99ml: $\leq \pm 10\text{ml}$ 100-999ml: $\leq 10\%$

### 6) Printer

Communication mode:	Bluetooth
---------------------	-----------

### 7) Display

Display main unit:	iPad Series
Display Mode:	B-Mode
Gray Scale:	256 levels

## 2. Getting started

**FOR YOUR PROTECTION**, please read these safety instructions completely before applying power to, or operating the system.

### 2.1. Unpacking

The Scanner is carefully packed to prevent damage during shipment. Before unpacking, please note any visible damage to the outside of the shipping containers.

Items should be checked in order to ensure that all ordered items have been received. The following table lists the items which should be received with each particular system.

**Table 2-1      Items List**

ITEMS	INCLUDED
4D Scan Wireless Ultrasound Probe	✓
USB Cable for Charging	✓
Operators' Manual	✓
Tablet	Optional
Printer	Optional
Portable Wireless Charger	Optional
Cradle(for put probe tablet, printer, charger)	Optional
Trolley	Optional

Each item should be examined for any noticeable defects or damage that may have occurred during shipment although it is packed carefully. If any defect or damage exists, please contact to your local representative immediately to report the problem.

### 2.2. Installing

If the BladderScanner App is not installed in your iPad, Please Get it from App Store or from distributors freely.

## 2.3. Starting probe



Figure 2-1 Wireless Ultrasound Probe

The Wireless Connection Indicator and the Battery Capacity Indicator on the probe may be invisible before the probe is turned on.

Press the button to turn on the probe. The Battery Capacity Indicator will be light to indicate the capacity of the battery. The four grids of the indicator imply the battery capacity. (Probe charging will be described in section 4.1.)

Seconds after the probe turned on, the Wireless Connection Indicator will be light and blinking to notice that the probe is ready for a wireless connection from the iPad.

The probe can be turned off by hold down the button for seconds. When the probe is off, the indicators will be turned off.

The concave(4) is the place for loading pressure by thumb. Suitable pressure is applied to the probe so the probe can couple to body perfectly.

## 2.4. Wireless connection

When the probe is waiting for a wireless connection as described in previously, launch the Settings of iPad, turn on the Wi-Fi (if not on), Find the SSID of the probe. The SSID is like: "WB-1 GMBGBB001", the suffix after "WB-1" is a code generated from Serial Number. Connect to the SSID with the password same as the Serial Number (in lower case). The Serial Number is in the form like "WBPBGBB001" with

the prefix of “WBP”. It can be found on the surface of the probe.

After Wi-Fi is connected, launch the BladderScanner App, after the connection from the app to the probe is confirmed, the Wireless Connection Indicator on the probe will be light with no blinking.

Every connection steps are done. The operations of using the system to finish ultrasonography task will be described in the next section.

## 3. APP operation

### 3.1. Ultrasound scan

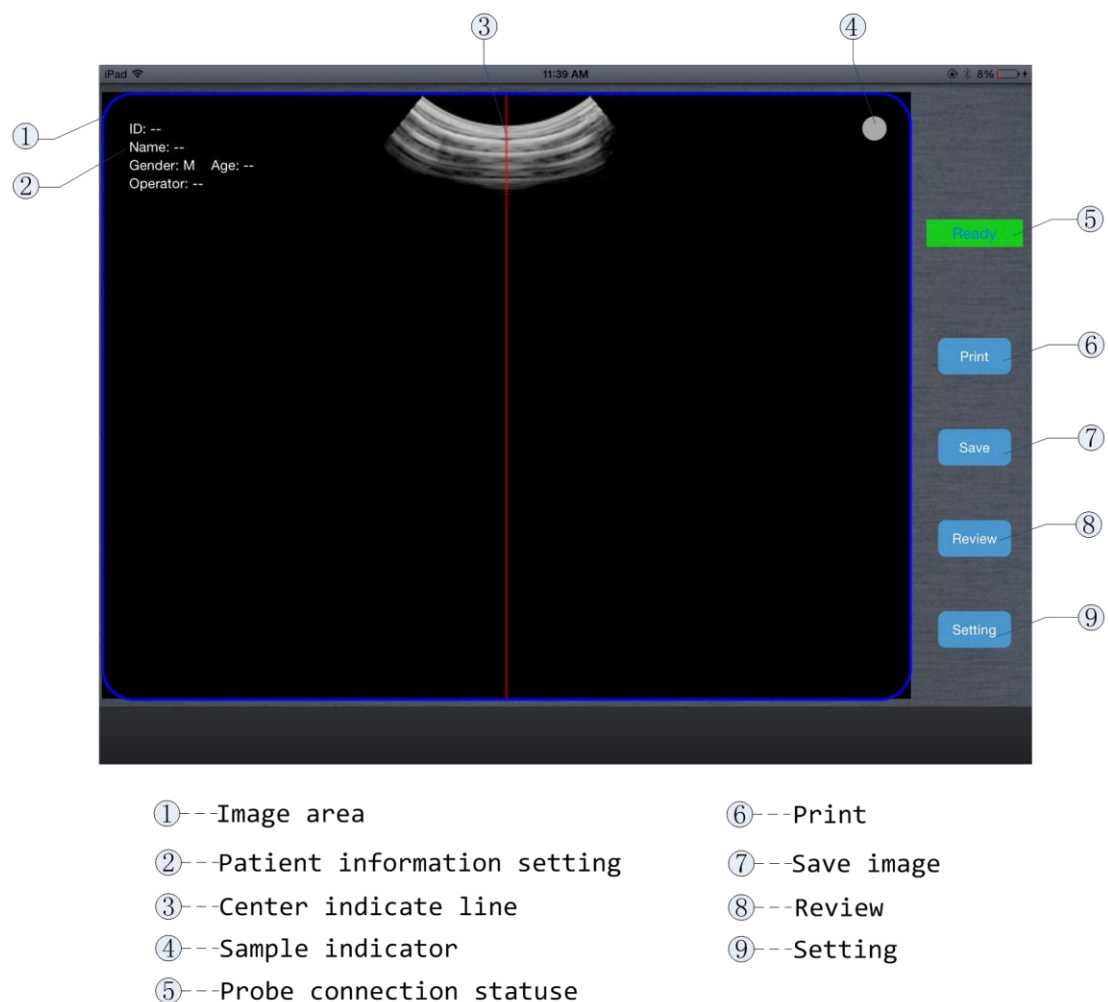


Figure 3-1 main menu

After the probe is connected, launch the App, the Main Screen will show similar in Figure 3-1. (No image is visible when the App is firstly launched.)

The probe connection status label(5) indicates the status of the connection between the probe and the main unit(like iPad).If the connection is well the label is green and prompt “ready” otherwise the label is gray and the prompt is”probe”.

There is a center indicate line (3) in the middle of the image area .

Touch the patient information area (2) to enter the patient interface to edit or create a new case. Please refer to section 3.2 for detail information.

Press the Run/Freeze Button to run and Freeze the probe. When the Image come to shown on the Image Area (1), the sample indicator (4) will turn green from gray if the proper image has been obtained( please refer to section 3.3 for detail information).

When the image is frozen, the 12 sections images and the calculating volume value will be shown on the screen. Users can press “print” (6)( please refer to section 3.4 for detail information) button to print the current result.

Users can use the Save image button (7) to save the image and patient information, Review button(8) to review the stored images( please refer to section 3.5 for detail information)..

Press the Setting button (9) to set the parameters, including gain and channel( please refer to section 3.6 for detail information).

Note: In all interfaces, if the button is blue means that the prompt operate is effective .if the button is gray indicates it is an invalid operate.

## 3.2. Patient information

The screenshot displays the 'Patient Information' interface on an iPad. At the top, a medical image is shown with a red vertical line indicating the center. Below the image, a white dialog box titled 'Patient Information' contains the following fields: ID (Cheney), Name (Hahn), Gender (M/F), Age (March 16 2016), Operator (Thy), and Phantom Mode (toggle). A 'Create New Case' button is located at the bottom of the dialog. On the right side of the screen, there are buttons for 'Ready' (green), 'Print', 'Save', 'Review', and 'Setting' (gray). The top status bar shows 'iPad', signal strength, time '10:33', and battery '69%'.

Figure 3-2 patient information

Touch the patient information area (2) (Figure3-1)to enter the patient interface ,then touch the boxes after the labels, the ID, Name, Gender, Age and the Operator can be input or chosen.

When you touch “Create New Case”, all the information will be cleared.

The Phantom Mode is default as closed.

After all the information has been set ,you can touch “OK” to save or “Cancel” to

give up, then the patient information interface will be closed.

## 3.3. Scanning

### 3.3.1 Prepare probe



Figure 3-3 pre-Scanning

Before scanning, please use some acoustic gel on patient abdomen and place the probe. The thumb is placed on the concave and the button can be pressed by thumb pulp. For good coupling between the probe and abdomen, suitable pressure should be applied to the probe by thumb.

#### 3.3.1. Pre-scanning mode

Pre-scanning helps the operator to locate the bladder correctly to obtain accurate results. If the connection is done, press the button once on the probe to start pre-scanning and the real-time B-mode ultrasound image displays on the screen.

When the mode is pre-scanning and the bladder is in the center of the image, the cycle ((4) Figure 3-1) on the right upper will be green.

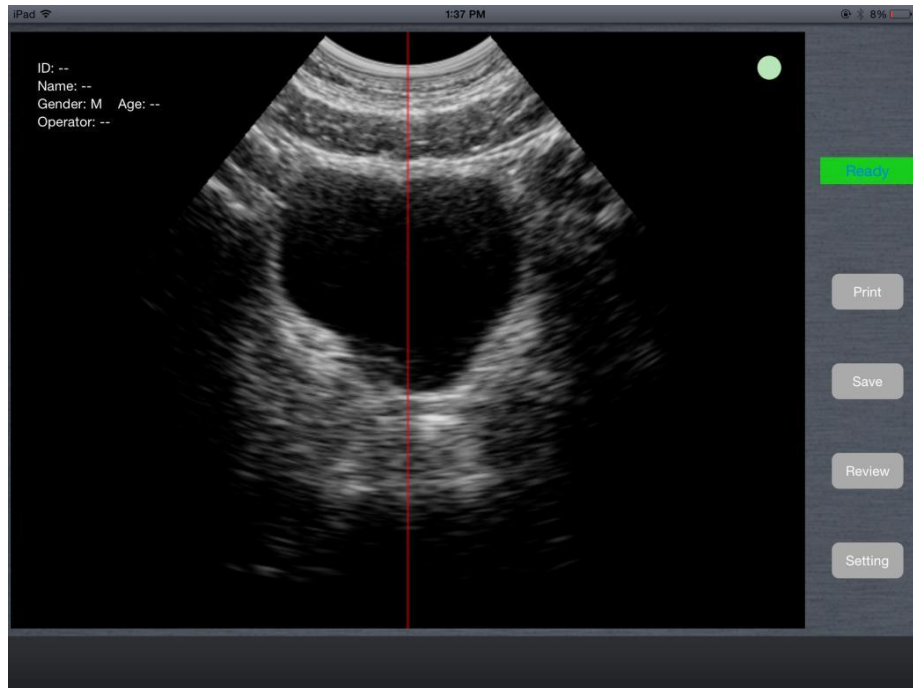


Figure 3-4 pre-Scanning

### 3.3.2. Scanning mode

When the cycle is green, press the button again to enter scanning mode. The device will obtain and deal with images. When the probe stops vibrating it means the scanning is finished. The 12 scanning images and the measurement result will be displayed on the screen (see Figure 3-3 scanning result menu).



Figure 3-5 scanning result menu



On the scanning result menu, there are 12 section images. The serial number of the image is shown on the left upper of the single image. You can touch one single image to be full-screen to see the details, and swipe left/right to see the previous/next image and touch again shift back to total scanning result menu.

### **3.4. Print a case report**

#### **3.4.1. Reload a thermal paper roll**

The Bluetooth printer uses the thermal paper roll, follow the steps to reload a roll:



Figure3-6 reload a paper roll

- 1) Turn off the printer;
- 2) Open the housing cover;
- 3) Take out the old roll(if have),put in a new one;
- 4) Pull the paper out 1cm off the housing and close the cover(there will be a creaking)
- 5) Try printing a case report to check if the paper roll was reloaded rightly.

Note: if the printer doesn't work rightly, please reload the roll.

#### **3.4.2. Printer connection**

Before you print the case report, you should connect the printer, named as "MPT-II-4" to the main unit by Bluetooth.

Turn on the printer, open the Bluetooth settings of the main unit, then connect the printer. The "power" LED will be red if the connection is well otherwise the LED will be red and blinking. The printed case report is shown as Figure3-5

ID:20160317 Name: Jenny Age:17 Gender:M Operator:Doc Wang  <b>Vol:403.32ml</b>
--

Figure3-7 printed case report

Note: if the printer is not used the POWER LED will be blinking between red and blue.

Note: if you charge the printer, the FEED LED will be blue and blinking.

### 3.5.Storage and Review the image

Press the button "Save" to save the images and the patient information(including ID, Name etc) .The saved data can be recalled by touch the button "Review"

Note: Not only the scanning result menu can be stored but also a single picture in the menu.

When you touch "Review" button, there will be a small dialog box, as shown in Figure 3-6, then you can choose any photo you need to review.



Figure 3-8 review menu

## 3.6. Set parameter

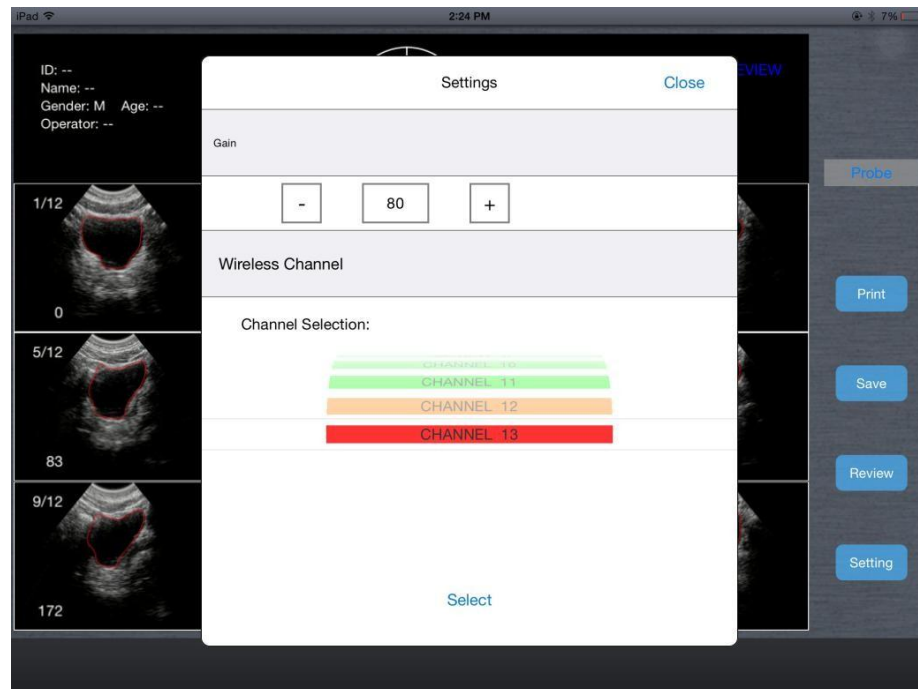


Figure 3-9 setting menu

### 1) Gain

When a new gain is needed, the add and subtract button can be used to change the gain from 30 to 105 dB

### 2) Wireless Channel

When the system is used in an environment where the Wi-Fi channel is crowded, a new channel can be selected for the probe by picking a channel from the picker and tapping the Select button. After 2 seconds, please restart the probe to make the new channel available and the user also has to reconnect the probe with a different SSID.

## 4. Maintenance

### 4.1. Battery Charge

When the battery is low, it is necessary to recharge the probe. There are two charging methods you can take.

#### 1) Charging with USB Cable

Pull the insertion at the end of the probe, then connect the USB Charger and USB Cable with the probe to charge the probe as shown in the left picture of Figure 4-1.



Figure 4-1 Charge the Probe

## 2) Wireless Charging

Applying power to the wireless charging pad, put the probe on the portable wireless charger as shown in the right picture of figure 4-1. If the relative position is right, there will be a notification tone and the capacity indicator on the probe will be light.

When in charging, the battery indicator will be blinking and the grids indicate the capacity of the battery charged.

If four grids all light and the indicator not blinking means the battery is fully charged. Unplug the USB cable and the insertion should be carefully plugged to make the probe able to keep out water.

## 4.2. Cleaning and Sterilization

To clean the probe, Use a soft cloth dampened with isopropyl alcohol (or an appropriate hospital cleaning agent) to wipe the Probe until it is thoroughly cleaned.

If you use a detergent solution to clean the instrument, remove all residual detergent. Dry the instrument with a clean, soft cloth.

Alternatively, dampen a soft cloth in any glutaraldehyde-based hospital disinfectant solution such as Cidex. Wipe the instrument with the dampened cloth.

To remove all traces of disinfectant solution, wipe the instrument with a clean soft cloth dampened in sterile water or potable tap water. Wiping the device three separate times to remove all residual disinfectant is recommended.

Thoroughly dry the instrument with a clean, soft cloth before using.

## 4.3. Storage

When not in use, it is recommended that the equipment should be put in the case. While stored the equipment should be protected from temperature extremes.

## 4.4. Caution

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

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

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

## 4.5. TROUBLE SHOOTING

Inspect: check if the probe and the host is properly connected.

Fault handling:

Serial number	problem	Solution method
1	No response after pressing the power switch	Check wires and plugs
2	Display on the screen to show the band or snowflake like interference	1.Check if any other device is started 2.Check the electric field or magnetic field in the surrounding environment.
3	The image area is dark.	1.adjusting brightness

After-sale service

Sonostar Technologies Co., Ltd.customer service contact information service in Guangzhou City.

Address:504#, C Building, #27 Yayingshi Road, Science Town, Guangzhou, Guangdong, 510665, P.R.China

zip code:510665

Telephone:020-82108565

Fax:020-62614030