

1 INTRODUCTION

SF-1 Wireless Scanners is the new generation instruments for backfat and loin depth scanning with the outstanding feature of wireless.

Different from traditional veterinary ultrasound scanner with a cable connecting from probe to main unit, no cable appears at the end of the probe of SF-1 Scanners. The probe of a SF-1 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 cables.

This manual is intended to provide a through overview of the SF-1 Scanner and should be carefully read before starting operating the device.

Thank you for your trust in us to provide for your backfat and loin depth scanner needs.

1.1 SPECIALIST

1) Intended Use

Back fat measurement
Loin Depth measurement

2) Physical characteristics

Size	145mm x 45mm x 40mm
Weight	300g

3) Environmental

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

4) Electronic

Battery Capacity:	3000mAh
continuous working time:	4hour
Waterproof:	IPX5

5) Probe

Frequency:	5MHz
Transducer Length:	40mm

Scanning Depth: 45 – 120mm

Scanning Mode: Linear array

6) **Display**

Display main unit: iPad Series

Display Mode: B-Mode

Gray Scale: 256 levels

7) **Measure Mode**

Measure Mode: auto/manual adjust

2 GETTING STARTED

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

2.1 UNPACKING

The SF-1 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 for SF-1 Scanner

ITEMS	INCLUDED
SF-1 Wireless Ultrasound Probe	✓
USB Cable for Charging	✓
Wrist Strap	✓
SF-1 Wireless Backfat & Lion Depth Scanner Operators' Manual	✓
iPad Waterproof Bag for iPad Mini	Optional
Wireless charging pad	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 APP

If the WirelessScan App is not installed in your iPad, open the App Store and search "WirelessScan", when the App comes, it is free to install the App.

2.3 STARTING PROBE

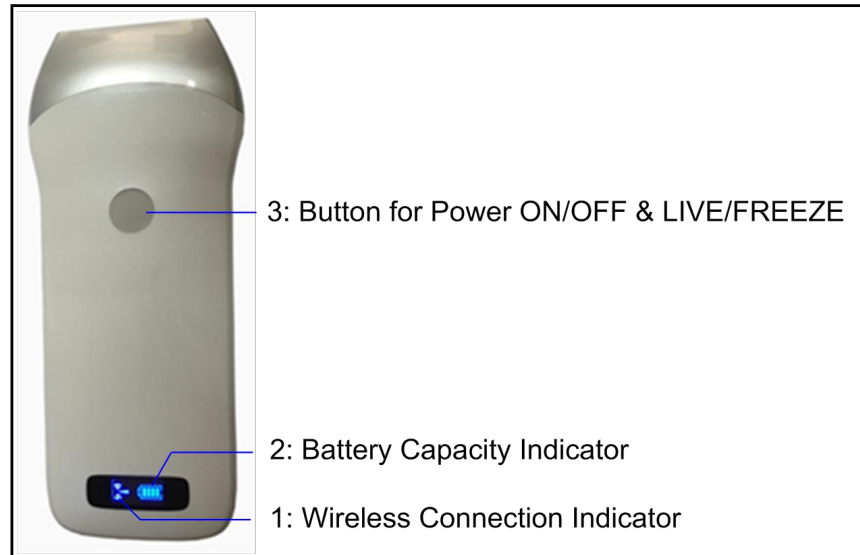


Figure 2-1 SF-1 Wireless Ultrasound Probe

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.)

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.

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: "SF-1 GMBFLA001", the suffix after "SF-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 "WFPBFLA001" with the prefix of "WMP". It can be found on the surface of the probe.

After Wi-Fi is connected, launch the WirelessScan 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 OPERATIONS

3.1 ULTRASOUND SCAN

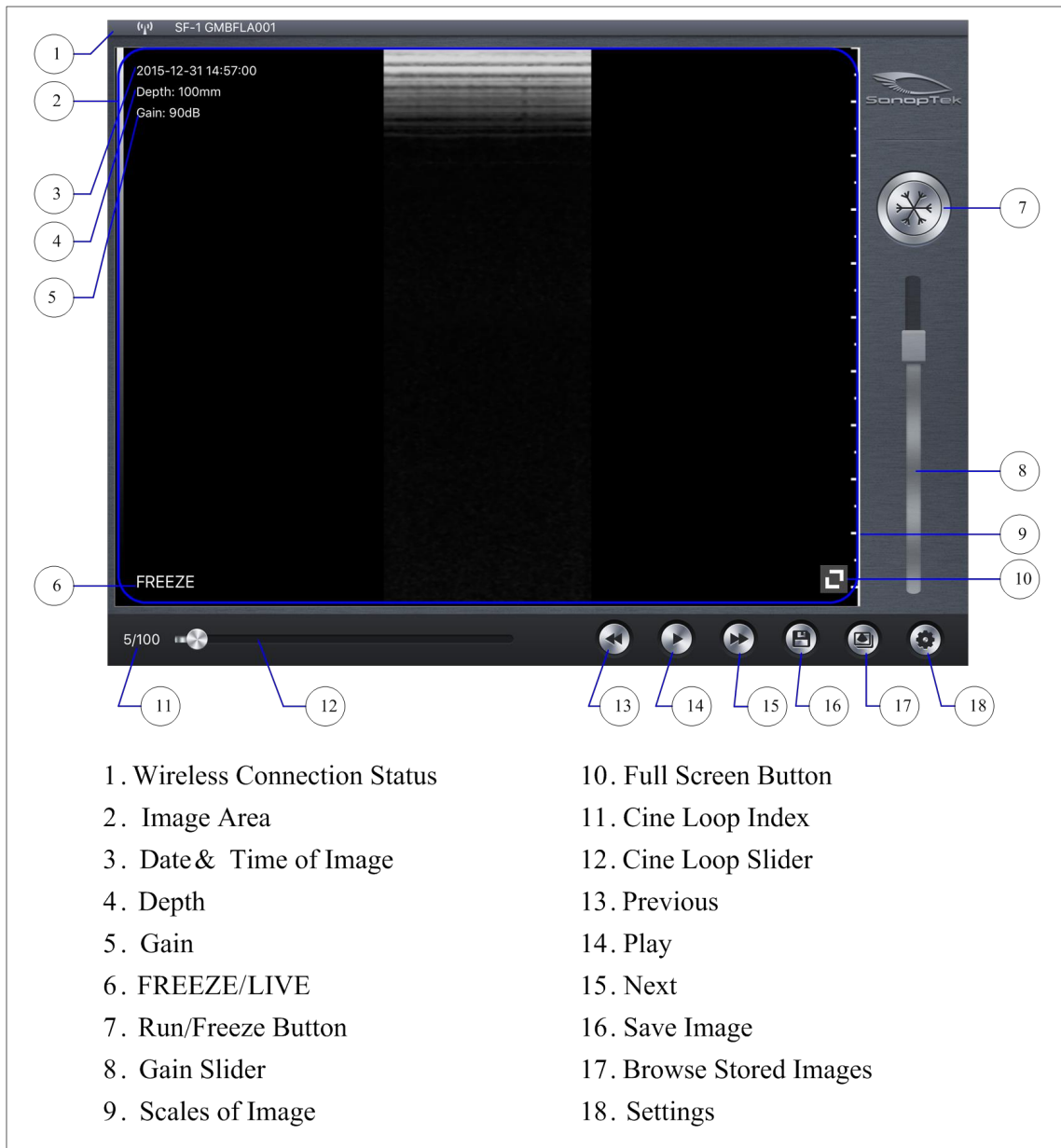


Figure 3-1 Main Screen

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 Wireless Connection Status indicates the SSID of the Wi-Fi of the connected probe.

Press the Run/Freeze Button (7) to run and Freeze the probe. This button has the same function as the button on the probe in running or freezing the image. When running, Gain Slider (8) can be slide up/down to adjust the gain of the image. When the Image come to shown on the Image Area (2), the Imaging Date & Time (3), the Depth of Image (4) and the Gain (5) will be shown together with the ultrasound image. When the probe is running, label (6) will be shown as "LIVE", or it will be shown as "FREEZE". Scan depth of the ultrasound image can be adjusted by swipe down/up in image area when running.

When the image is frozen, Label 11 shown the count of image in the cine loop and the index of current image of the cine loop. Users can use the Cine Loop Slider (12) to select the image in the cine loop. Three buttons (13,14,15) on the right of the slider can also be used to select the images in the cine loop.

By press the Full-Screen-Button in the lower right corner of the Image Area, the Image Area will occupy the whole screen. In Full-Screen Mode, press the button to shift back Non-Full-Screen Mode. The Full-Screen-Button will hide after seconds automatically. Tap in image area to make it visible. In Full Screen mode, the button on the probe can be used to run or freeze the image.

3.2 MEASUREMENT OF DATA

When the image is frozen, you can double-click the image area to obtain a measuring data as figure 3-2. There will appear three horizontal lines and one vertical line on the screen automatically (for example).

The first horizontal line indicates the setting standoff value in the setting menu (see 3.4 settings). The second horizontal line indicates the back fat echo position while the third line indicates the loin echo position. The values of them are shown on the top left corner of the screen at the same time.

Note: If the software identifies a particular echo in error, or the user judges the echo position not correct, the measurement data can be adjusted by dragging back fat or the loin line to the correct position respectively.

The vertical line is used to assist the operator to understand and adjust the image.

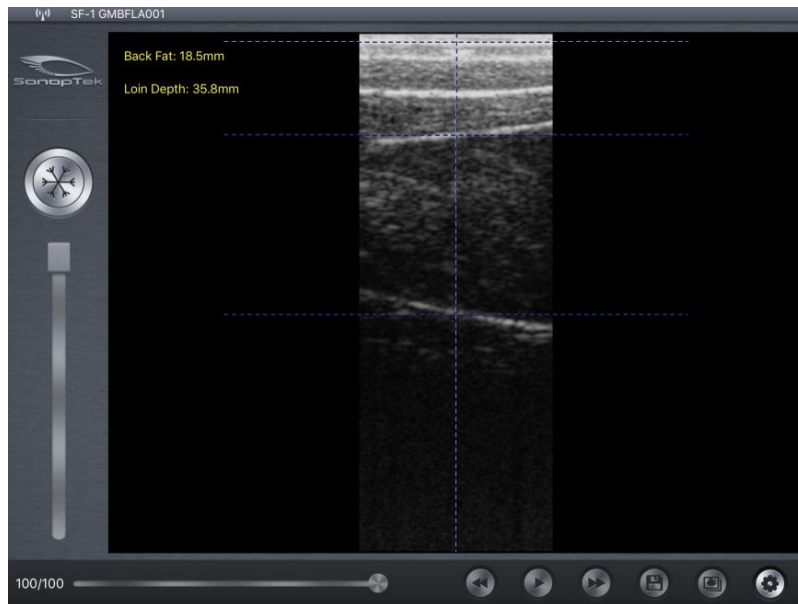


Figure 3-2 measurement menu

When you confirm the measurement data, you can double-click to switch to the reading menu as Figure 3-3 below. You can either storage the image(see 3.3 STORAGE OF IMAGES) or swipe left-bottom to remove the data.



Figure 3-3 reading menu

Note: If you want to measure the back fat only, you can select the 45mm scan depth to display.

3.3 STORAGE OF IMAGES

When image is showing in image area, Save Image Button (16) can be pressed to save the image to the album of the iPad.

By pressing the Browse Stored Image Button (17), users can select a stored image and show it on the image area.

The stored images can be exported with same method as photos exporting using iTunes or other equivalent methods.

3.4 SETTINGS

1) Operation

If users hold the probe on the right hand, and want to operate the software by the left hand, the software provides settings to adjust the interface.

Press the setting button (18), settings screen will appear as Figure 3-4 below.

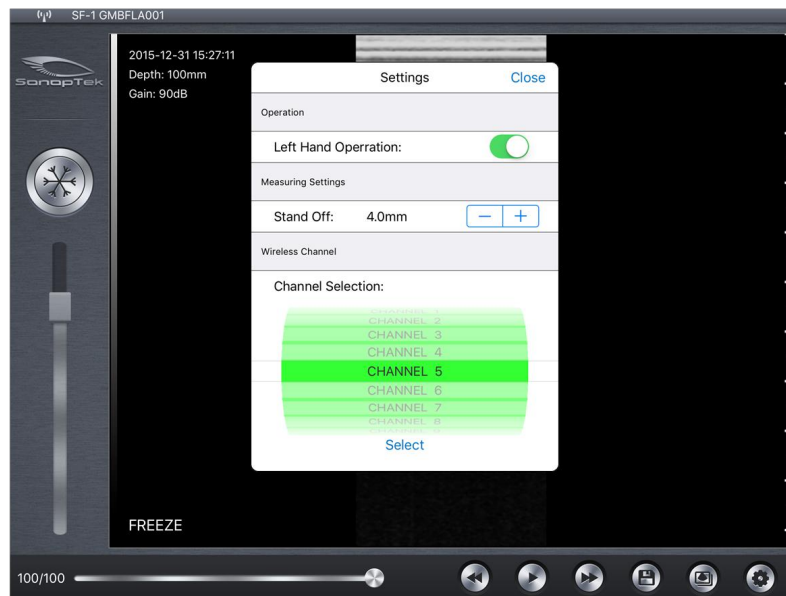


Figure 3-4 Settings Screen

Switch ON/OFF the 'Left Hand Operation' to adjust the screen to convenience operators.

2) Measurement settings :

Set the stand off value before you start measuring.

Note: The user should select the appropriate value for measurement bias based on different animal. The measurement bias is recommended 2mm. The value can be changed from

0-10mm. For example, the stand off value is 2mm, the pre-biased backfat depth is 15mm, then the displayed value on the screen is $15-2=13$ mm.

3) Wireless Channel

When the system is using in an environment where the WiFi channel is crowd, a new channel can be selected for the probe by pick a channel from the picker and tap Select button. After 2 seconds, please restart the probe to make the new channel available and the user also have to reconnect the probe with a different SSID.

4 MAINTANCE

4.1 PROBE CHARGING

When 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, the standby LED light will be green. Put the probe on the pad as shown in the right picture of figure 4-1. The LED light on the charging pad will turn blue from green and start charging.

Note: The charging position on the charging pad is the center circle while on the probe is the wireless flag.

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 WATERPROOF IPAD

A waterproof bag is provided by local repository. Users can use it to protect the iPad when it is used in humidity or dirty fields.

4.3 CLEANING

Periodic cleaning of the probe is all that is usually required. The probe can be cleaned by soft cloth or paper or **water directly at the head**. The probe with the waterproof **level of IPX5** can be washed using clean water but users should NOT soak the probe in water.

4.4 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.