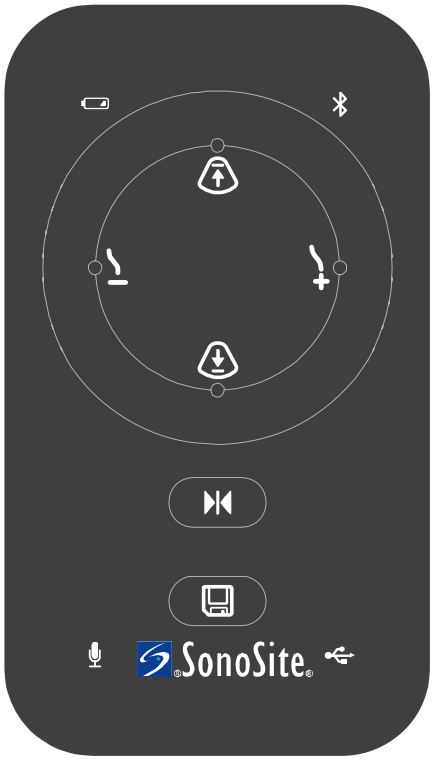
SonoRemote™ Control



User Guide

CE

SonoSite

SonoRemote Control

User Guide

SonoSite, Inc.
21919 30th Drive SE
Bothell, WA 98021
USA
T: 1-888-482-9449 or 1-425-951-1200
F: 1-425-951-1201

SonoSite Ltd
Alexander House
40A Wilbury Way
Hitchin
Herts SG4 0AP
UK
T: +44-1462-444800
F: +44-1462-444801

Caution: Federal (United States) law restricts this device to sale by or on the order of a physician.

M-Turbo, S Series, SonoRemote, SonoSite, and the SonoSite logo are either a registered trademark or trademark of SonoSite, Inc.

Non-SonoSite product names may be trademarks or registered trademarks of their respective owners.

The SonoSite product(s) referenced in this document may be covered by one or more of the following U.S. patents: 5722412, 5817024, 5893363, 6135961, 6203498, 6364839, 6371918, 6383139, 6416475, 6447451, 6471651, 6569101, 6648826, 6575908, 6604630, 6817982, 6835177, 6962566, 7169108, 7449640, D456509, D461895, D509900, D538432, D544962, D558351, D559390, and by the following counterpart foreign patents: AU727381, AU730822, CA2373065, CN98106133.8, CN98108973.9, DE60021552.0, DE60029777.2, DE60034670.6, DE69730563.5, DE6980539.6, DE69831698.3, FR0875203, FR0881492, FR0815793, FR1180970, FR1175713, GB0875203, GB0881492, GB0815793, GB1180970, GB1180971, GB1175713, IT0881492, IT0815793, IT1175713, KR532359, KR528102, NO326202, NZ542968, RCD000897368-0001, SP0881492, SP0815793. Patents pending.

P11771-01 02/2009

Copyright 2009 by SonoSite, Inc.

All rights reserved.

Contents

Introduction 1
Kit contents 1
About the remote control 2
Connecting the remote control 4
Controlling the ultrasound system 5
Using multiple ultrasound systems 8
Using multiple SonoRemote controls 8
Working in a sterile environment 8
Safety 9
Maintenance 11
Specifications 12

Introduction

The *SonoRemote Control User Guide* explains how to use the SonoRemote™ control with the M-Turbo® ultrasound system or S Series™ ultrasound system.

For more information on the ultrasound system, see the ultrasound system user guide.

Conventions

The user guide follows these conventions:

- A **WARNING** describes precautions necessary to prevent injury or loss of life.
- A **Caution** describes precautions necessary to protect the products.
- Numbered steps must be performed in order.
- Single-step procedures begin with ❖.
- Items in bulleted lists do not require a sequence.

See also "Labeling symbols" on page 12.

Customer comments

Questions and comments are encouraged. SonoSite is interested in your feedback regarding the system and the user guide. Please call SonoSite at 888-482-9449 in the US. Outside the US, call the nearest SonoSite representative. You can also e-mail SonoSite at comments@sonosite.com. For technical support, see "Technical support" on page 11.

Kit contents

The SonoRemote control kit contains the following items:

- remote control
- USB cable
- Bluetooth® USB adapter
- Microphone
- Sterile sheath for remote control (5)
- MAC address labels (14)

To apply the MAC address label

The remote control's Media Access Control (MAC) address lets you distinguish your remote control from other Bluetooth devices and make sure that the correct device is connected. To find the MAC address, you connect by Bluetooth technology.

1. Find the MAC address: Connect by Bluetooth technology. See "To connect by Bluetooth technology" on page 5.

   The MAC address, **BlueHID ##:##** (where ##:## are four unique numbers), appears in the Bluetooth Devices list.

2. Remove a label from its protective backing.
3. Adhere the label to the back of the remote control, in the rectangular area on the bottom.
4. Using a permanent marker, write the MAC address on the label. (You can also write

personal identification information such as name and phone number.)

To display the USB Devices setup page

❖ Do one of the following:

- (M-Turbo) Press the SETUP key, and then select **USB Devices**.
- (S Series) In 2D imaging, click **Setup** on the vertical row of control keys, and then click **USB Devices**.

  Setup may not be on the first page.

About the remote control

The remote control lets you control the ultrasound system from up to 30 feet away. Using six buttons or voice commands, you can perform the following tasks:

- Freeze (or unfreeze) an image
- Save an image
- Adjust the gain
- Adjust the depth
- Review the cine buffer

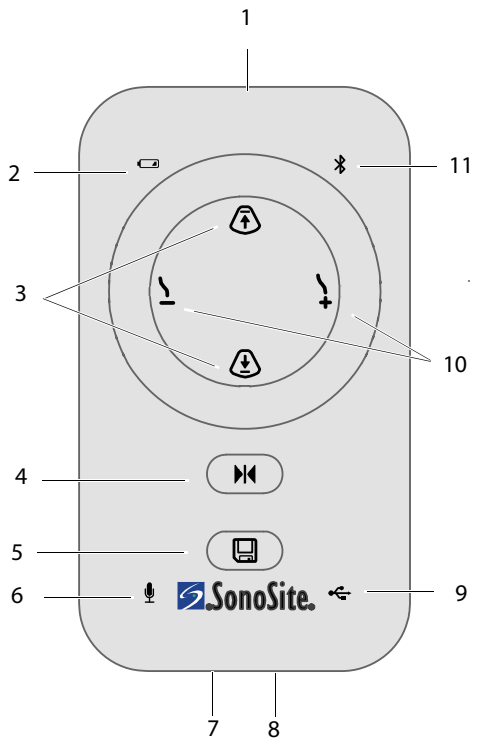


Figure 1 remote control

1	Power switch (on top)	7	Microphone port (on bottom)
2	Power indicator	8	USB port (on bottom)
3	Depth adjustment buttons	9	USB indicator
4	Freeze button	10	Gain adjustment buttons
5	Save button	11	Bluetooth indicator
6	Microphone indicator		

Figure 2 Power switch on upper edge of remote control

Indicators

The indicators have different states for different activity. The indicators are active only if the power is on.

Power indicator

- **Green, solid** Battery is charged. remote control is ready to use.
- **Green, blinking fast** Battery is charging. (See "To charge the battery" on page 3.)
- **Green, blinking slowly** The temperature is too high or low. (See "Temperature and humidity limits" on page 12.)
- **Green, blinking very fast** Battery needs to be replaced. (See "Specifications" on page 12.)
- **Green and yellow, blinking alternately** Battery is charging in power save mode.
- **Yellow, blinking** Battery is low.
- **Yellow, solid** remote control is in power save mode.

Microphone indicator

- **Solid** Microphone is connected.
- **Blinking** remote control is in training. (See "To train the remote control" on page 6.)

Bluetooth indicator

- **Solid** remote control is connected by Bluetooth technology
- **Blinking fast** remote control is trying to establish a connection by Bluetooth technology.
- **Blinking slowly** remote control is searching for Bluetooth devices. (See "To connect the SonoRemote control" on page 5.)

USB indicator

- **Solid** remote control is connected by USB cable.

Turning on power and charging the battery

Before using the remote control, make sure that the battery is charged.

You can charge one remote control while using another that is connected by Bluetooth technology.

The battery is nearly full after three hours of charging although the power indicator may blink for up to five hours until the battery is full.

To turn the remote control on or off

❖ Press the power switch ⏻.

See Figure 1 and Figure 2 on page 2.

To charge the battery

1. Connect the ultrasound system to AC power.
2. Turn on the ultrasound system and the remote control.
3. Connect the remote control by USB cable. (See "To connect by USB cable" on page 4.) Use a USB port that is on the system, not on a dock.

   Note: If you connect to a dock instead of to the system and if the system enters power save mode, the remote control does not charge.

The ultrasound system ignores the Power Delay setting for three hours, allowing the battery to charge. If the system enters power save mode, the battery continues to charge. If the system turns off, the battery does not charge.

Power save mode

The remote control beeps three warning beeps and enters power save mode after the following period of inactivity:

- (Microphone connected) 15 minutes without a voice command
- (Microphone disconnected) 5 minutes without a button press

All indicators but the power indicator turn off.

To wake from power save mode

❖ Press a button, or speak a voice command.

Connecting the remote control

You can connect the remote control either by USB cable or wirelessly by Bluetooth technology.

When the system is connected, the USB indicator or Bluetooth indicator is on, and the remote-control icon appears on the ultrasound image.

Connecting by USB cable

WARNING: To avoid electrical shock, inspect the USB cable for damage. Do not use the USB cable if it is damaged.

Caution: To avoid exceeding emissions limits, use only the USB cable provided by SonoSite. Other USB cables may exceed emissions limits.

To avoid damaging the USB cable, do not excessively bend or twist it. Bending or twisting the USB cable can cause a failure or intermittent operation.

To avoid disconnecting the USB cable, maintain slack in the cable, and do not pull on the remote control.

To connect by USB cable

1 Turn on the ultrasound system and remote control. (See "Turning on power and charging the battery" on page 3.)

2 Connect the smaller end of the USB cable to the USB port on the remote control. (See "remote control" on page 2 for location of the USB port.)

3 Allowing slack in the USB cable, connect the other end of the USB cable to a USB port on the ultrasound system.

Connecting by Bluetooth technology

WARNING: Before using the remote control, make sure that it is connected to your ultrasound system and not to another system. (See "To connect by Bluetooth technology.") Press a button on the remote control, and make sure that the ultrasound system responds as expected.

To avoid [[what?]], keep the ultrasound system at least 8 inches (20 cm) from the patient when using Bluetooth technology. The Bluetooth dongle can [[cause what problem?]]

To avoid injury, make sure to disconnect the remote control after use.

You connect by Bluetooth technology through the ultrasound system's USB Devices setup page. Only one system can connect to the remote control at a time.

If you disconnect or otherwise lose the connection, the remote control beeps three warning beeps, and the Bluetooth indicator blinks quickly.

To connect by Bluetooth technology

1 Turn on the system.

2 Insert the Bluetooth USB adapter into a USB port on the system.

3 Display the USB Devices setup page:

- (M-Turbo) Press the SETUP key, and then select **USB Devices**.

- (S Series) In 2D imaging, click **Setup** on the vertical row of control keys, and then click **USB Devices**.

  Setup may not be on the first page.

4 On the USB Devices setup page, select **Bluetooth**.

  Bluetooth is available about a minute after you insert the Bluetooth USB adapter.

5 Turn on the remote control. (See "Turning on power and charging the battery" on page 3.)

  The Bluetooth indicator blinks fast.

6 Simultaneously press ⏭ and 💾 on the remote control until the beep, and then release.

  The Bluetooth indicator blinks slowly.

7 Select **Search** in the lower lefthand corner of the ultrasound system screen.

  The ultrasound system searches for Bluetooth devices. The process can take several minutes.

8 Select the remote control (BlueHID ##:##) in the **Bluetooth Devices** list, and then select **Connect** at the bottom of the screen.

  In the Bluetooth Devices list, the remote control's status changes to Connected.

To disconnect the remote control

1 On the ultrasound system's USB Devices setup page, select **Bluetooth**. (See "To display the USB Devices setup page" on page 1.)

2 Select the remote control (BlueHID ##:##) in the **Bluetooth Devices** list, and then select **Disconnect** at the bottom of the screen.

  If Disconnect is not available, select **Search**, and then select **Disconnect**.

  Note: On the USB Devices setup page, the connected remote control is listed twice: as Remote and as Keyboard.

Controlling the ultrasound system

You can control the ultrasound system by pressing the six buttons on the remote control or using six voice commands.

Buttons

The buttons on the remote control perform the following commands.

	Decreases the depth
	Increases the depth
	Increases the gain (live image) Reviews the cine buffer (frozen image)
	Decreases the gain (live image) Reviews the cine buffer (frozen image)
⏭	Freezes (or unfreezes) the image
💾	Saves the image

See also "Reviewing the cine buffer" on page 7.

If the remote control is connected, you can press the buttons, even if the microphone is connected.

Voice commands

WARNING: To avoid patient injury during the ultrasound procedure, use buttons if the ultrasound system does not respond to voice commands.

To avoid breaking the sterile field when using voice commands, always test them before using the remote control in an ultrasound procedure. See "To test the voice commands" on page 7.

You can control the ultrasound system by speaking commands into a microphone connected to the remote control. Before using voice commands, you train the remote control to recognize your voice.

Whenever you connect the microphone, the remote control is automatically ready for voice commands. It beeps three warning beeps if not trained.

If the remote control does not respond to voice commands during an ultrasound procedure, use the buttons instead.

See also "Reviewing the cine buffer" on page 7.

To train the remote control

WARNING: To avoid unexpected responses from the increase-depth and freeze buttons, disconnect the microphone if you are interrupted while training, and then restart the training.

You can train the remote control with custom phrases instead of the default phrases in this procedure. See "Using custom phrases" on page 7.

Allow enough time for training. If you are interrupted while training, disconnect the microphone and begin again.

1. Set up the equipment and environment:
   - **a** In a quiet area, turn on the remote control. (See "Turning on power and charging the battery" on page 3.)
   - **b** Connect the microphone cable to the remote control.

     The microphone indicator turns on. If you hear three warning beeps, ignore them.
   - **c** Attach the microphone to your clothing, near your mouth.
   - **d** If you wear a mask during ultrasound procedures, put on a mask.
2. Start training mode: Press for more than three seconds, and release. If the remote control beeps three times, clear the memory by pressing for more than three seconds. You hear a long beep, and the microphone indicator starts blinking. (If these responses do not occur, turn off the remote control and restart the procedure.)

   The remote control beeps about every two seconds in training mode.
3. Say and then repeat each phrase in the following table, in order, and wait for the response.

   Saying each phrase in order ensures that it is associated with the correct response from the ultrasound system.

Use the same volume and clarity that you use during ultrasound procedures.

If the remote control beeps only once when expected to beep twice, repeat the phrase until it beeps twice.

	Say:	Wait for:	Repeat:	Wait for:
1	*Depth up*	beep	*Depth up*	2 beeps
2	*Gain down*	beep	*Gain down*	2 beeps
3	*Gain up*	beep	*Gain up*	2 beeps
4	*Depth down*	beep	*Depth down*	2 beeps
5	*Freeze*	beep	*Freeze*	2 beeps
6	*Save*	beep	*Save*	long beep

The long beep indicates that the training is complete.

4 Test the voice commands.

To test the voice commands

1 Set up the equipment and environment:

a Turn on the ultrasound system and the remote control. (See "Turning on power and charging the battery" on page 3.)

b Connect the following:

- The microphone to the remote control: Insert the microphone connector into the microphone port.
- The remote control to the ultrasound system (See "Connecting the remote control" on page 4.)

c Attach the microphone to your clothing, near your mouth.

d If you wear a mask during ultrasound procedures, put on a mask.

e If you plan to wear the microphone under a smock in ultrasound procedures, put the microphone under a smock.

2 Speak each phrase that you used to train the remote control, and make sure that the ultrasound system responds as expected.

If the ultrasound system does not respond as expected, retrain the remote control, or use the buttons. See also "Troubleshooting" on page 11.

Using custom phrases

When training the remote control, you can use custom phrases. With some voices, the remote control responds to custom phrases better than to the default phrases. Make sure to say the custom phrases in order. Phrases do the following:

Phrase 1 Decreases depth

Phrase 2 Decreases gain

Phrase 3 Increases gain (live image), reviews the cine buffer (frozen image)

Phrase 4 Increases depth (live image), reviews the cine buffer (frozen image)

Phrase 5 Freezes (or unfreezes) the image

Phrase 6 Saves the image

Choose phrases that are easy to remember, sound different from each other, and sound different from other phrases used during ultrasound procedures. Longer phrases typically work better than shorter phrases because they contain more sound information. Also, try to vary the length of phrases.

Reviewing the cine buffer

When the image is frozen, you can review the cine buffer by using the same buttons and voice commands that adjust the gain on a live image.

To review the cine buffer

1 Freeze the image.

2 Do any of the following:

- (Buttons) Press to move forward or to move backward.
- (Voice commands) Speak the increase-gain command to move forward. Speak the decrease-gain command to move backward.

To return to the live image, unfreeze the image.

Using multiple ultrasound systems

WARNING: Using only one remote control per ultrasound system is the best way to ensure that you do not inadvertently connect to another system.

If you choose to use multiple ultrasound systems with one remote control in emergency settings, make sure to set up your remote control before entering the workplace. Plan enough time to train and connect it.

To avoid injury caused by connecting to--and consequently controlling--the wrong system, always disconnect the remote control from the ultrasound system after use. See "To disconnect the remote control" on page 5.

If you use multiple ultrasound systems with one remote control, take precautions to ensure that you do not connect to the wrong system:

- Before the ultrasound procedure, press a button on the remote control to make sure that the ultrasound system responds.
- Always disconnect the remote control from the ultrasound system after use. See "To disconnect the remote control" on page 5.

Using multiple SonoRemote controls

If you use more than one SonoRemote control with the same ultrasound system, make sure to:

-
-
-

Working in a sterile environment

WARNING: To avoid contamination after encasing the remote control in a sterile sheath, inspect the sterile sheath for holes or tears.

Some transducer sheaths contain natural rubber latex and talc, which can cause allergic reactions in some individuals.

If you work in a sterile environment, consider including the following tasks when setting up:

- If you use voice commands, put on the microphone before putting on the smock.
- Encase the remote control in the recommended sterile sheath. Or, if you use voice commands, put the remote control under the smock in a pocket or in a holster designed for mobile devices.

- If connecting by USB cable, encase the USB cable in a sterile sheath. See “Sterile sheaths” on page 10.
- If you use voice commands and if the remote control will be outside the sterile field, make sure to turn it on before setting up the sterile field. Otherwise, you may have to leave the sterile field to turn it on.

  Be aware of time limitations regarding power save mode. See “Power save mode” on page 3.

Safety

Battery safety

Keep a used battery away from children, and dispose of it promptly. Do not dissemble a used battery or put it in fire.

Clinical safety

WARNING: To avoid injury to the patient or user, inspect the remote control for damage before use. If the remote control is damaged, do not use it.

Electrical safety

WARNING: To avoid electrical shock, use only accessories that are recommended by SonoSite with the remote control.

Radio device regulatory notices

For more information on electromagnetic compatibility, including electromagnetic emission and electromagnetic immunity limits, see the ultrasound system user guide.

US: FCC notice

The remote control has been tested and found to comply with the limits for a Class A digital device pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in an industrial installation. This device 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 and can affect the performance of other electrical equipment in the vicinity.

Operation conditions

Operation is subject to the following two conditions:

- This device may not cause harmful interference
- This device must accept any interference received, including interference that may cause undesired operation.

FCC RF safety requirement

The radiated output power of the wireless LAN and Bluetooth adapter is far below the FCC radio frequency exposure limits. Nevertheless, the remote control and these adapters shall be used in such a manner that the potential for human contact during normal operation is minimized as follows:

- Users are requested to follow the RF safety instructions on wireless option devices that are included in the user’s manual of each RF option device.

  Caution: To comply with FCC RF exposure compliance requirements, a separation distance of at least 8 inches (20 cm) must be maintained between wireless adapters and the all persons.
- This device is restricted to indoor use due to its operation in the 5.15 to 5.25 GHz frequency range. FCC requires this product to use indoors for the frequency range 5.15 to 5.25 GHz to reduce the potential for harmful interference to co-channel Mobile Satellite systems.

- High power radar are allocated as primary users of the 5.25 to 5.35 GHz and 5.65 to 5.85 GHz bands. These radar stations can cause interference with and/or damage this device.
- An improper instillation or unauthorized use may cause harmful inference to radio communications.
- Changes or modifications not expressly approved by the manufacturer could void the user's authority, which is granted by the FCC, to operate this device.

Canada: Low-power license-exempt radio communication devices (RSS-210)

This Class A digital apparatus complies with Canadian ICES-003.

- Common information

  Operation is subject to the following two conditions:

  - This device may not cause interference.
  - This device must accept any interference, including interference that may cause undesired operation of the device.
- Operation in 2.4 GHz band

  To prevent radio interference to the licensed service, this device is intended to be operated indoors and installation outdoors is subject to licensing.
- Operation in 5 GHz band

  The device for the band 5150-5250 MHz is only for indoor usage to reduce potential for harmful interference to co-channel Mobile Satellite systems.

High power radars are allocated as primary users (meaning they have priority) of 5250-5350 MHz and 5650-5850 MHz and these radars could cause interference and/or damage to LELAN (License-Exempt Local Area Network) devices.

European Union (EU): Declaration of Conformity for EU countries

SonoSite declares that this remote control device is in compliance with the essential requirements and other relevant provision of Directive 1999/5/EC.

R&TTE Directive 1999/5/EC as attested by conformity with the following harmonized standard:

- Article 3.1(b) EMC
  - EN301 489-1 V1.8.1
  - EN301 489-17 V1.3.2
- Article 3.2 Spectrum Usages
  - EN300 328 V1.7.1

Applicable countries:
EU member states as of May 2004 are Belgium, Denmark, Germany, Greece, Spain, France, Ireland, Italy Luxembourg, the Netherlands, Austria, Portugal, Finland, Sweden, United Kingdom, Estonia, Latvia, Lithuania, Poland, Hungary, Czech Republic, Slovak Republic, Slovenia, Cyprus, and Malta. Usage allowed in the countries of EU as well as Norway, Switzerland, Iceland, and Liechtenstein. This device must be used in strict accordance with the regulations and constraints in the country of use. For further information, contact the local office in the country of use.

Maintenance

If the remote control needs repair or service, return it to SonoSite. Contact SonoSite Technical Support for instructions. (See "Technical support" on page 11.)

Troubleshooting

Unexpected beeps during training If the remote control does not beep as expected during training, it may not detect your voice. Try any of the following:

- Speak more loudly.
- Place the microphone nearer to your mouth.
- Make sure that the microphone is oriented toward your mouth.
- Use different phrases. See "Using custom phrases" on page 7.
- Make sure to follow the training instructions exactly, including clearing the memory.

Ultrasound system does not respond If the ultrasound system appears connected but stops responding, restart the remote control.

If connecting by Bluetooth technology, make sure that the remote control is connected to the ultrasound system that you are using and not to another one.

If connecting by USB cable, check cable connections.

System behaves unexpectedly If the system behaves unexpectedly (for example, the image unexpectedly freezes or changes), make sure that it is not connected to another remote control. The ultrasound system can respond from up to 30 feet away to the remote control it is connected to.

??? When the battery needs to be replaced, the [[???]] blinks more quickly than usual. Contact SonoSite Technical Support.

Technical support

For technical support, contact SonoSite as follows:

SonoSite Technical Support

Phone (US or Canada):	877-657-8118
Phone (Outside US and Canada):	425-951-1330 Or call your representative.
Fax:	425-951-6700
E-mail:	service@sonosite.com
Web site:	www.sonosite.com Click Resources > Support & Service.

Europe Service Center

Phone:	+44-(0)1462-444-800
E-mail:	uk.service@sonosite.com

Cleaning and disinfecting

Caution:	To avoid damaging the remote control, do not spray liquids on it. Use only damp cloth or paper tissues to clean it.

To clean and disinfect the remote control

1. Clean the surface using a soft cloth lightly dampened in a mild soap or detergent cleaning solution.

   Apply the solution to the cloth rather than the surface.

2. Wipe the surfaces with a recommended disinfectant.
3. Air dry or towel dry with a clean cloth.

Recommended disinfectants

Disinfectant	Country of Origin	Type	Active Ingredient
Caviwipes	USA	Wipe	Isopropyl
Sani-Cloth Plus	USA	Wipe	Quat. Ammonia
Virox 5	CAN	Wipe	Hydrogen Peroxide

Specifications

Sterile sheaths

The recommended sheath is as follows:

- remote control only

  Sterile 15.2 x 25.4 cm (6" x 10") polyethylene cover, CIVCO brand

  - Package of 5: CIVCO 610-1049
  - Package of 24: CIVCO 610-1050
- remote control with USB cable

  Sterile 10.2 x 147 cm (4" x 58") CIV-Flex cover, CIVCO brand

  - Package of 24: CIVCO 610-1000

One package of 5 sheaths for covering the remote control is included. Contact CIVCO for additional sheaths.

Labeling symbols

The following labeling symbols are on the product and packaging.

Label	Definition
	Device complies with relevant FCC regulations for electronic devices.
	Non-ionizing radiation.
This device contains a transmitter:	This device contains a transmitter:

Dimensions

Width: 61.1 mm

Height: 111.1 mm

Depth: 20.4 mm

Temperature and humidity limits

-35 to 65° C

15 to 95% RH

SonoSite

P11771-01