

# **APEX**

**BY REPROSCAN**



# **OPERATOR'S MANUAL**

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## INFORMATION FOR USERS

Please read this manual thoroughly before using the Apexx ultrasound. It is recommended that you save this manual for future reference. If you would like a printed version of this manual, please contact ReproScan. Please keep in mind that the Apexx ultrasound is made for veterinary use only.

For all important legal information, please [click here](#).

## SAFETY CONCERNS AND WARNINGS

ReproScan Technologies, LLC, its representatives, and dealers provide user manuals, training materials, over the telephone and electronic technical support with the purchase of ultrasound equipment from ReproScan or any of its dealers. If at any time during the use of ReproScan equipment the operator is unsure of the safe operation of the ReproScan ultrasound or related equipment, the operator should immediately cease operating the equipment and consult the user manual, training materials, and/or contact the nearest ReproScan representative.

## LIMITED WARRANTY AND REPAIR SERVICE (UNLESS OTHERWISE SPECIFIED)

ReproScan offers the following warranty and repair service from the date of purchase for the ReproScan Apexx and its components unless otherwise noted:

- Twenty-four (24) months for the main ReproScan Apexx unit
- Twenty-four (24) months for the probe
- Six (6) months warranty for other components such as batteries and chargers

To obtain the right to return purchased goods, contact your local ReproScan dealer with your product/part serial number, product model, and reason for repair. Freight charges to and from the service depot will apply.

Within the warranty period, the company will not be responsible for the following situations:

- Malfunction or damage arising from failing to comply with the instructions of this User's Manual
- Malfunction or damage caused by dropping or other physical damage after purchase
- Malfunction or damage caused by exposure to or submersion in liquids not in accordance with this manual
- Malfunction or damage caused by disassembling and assembling, alteration or repair without the prior, written consent of the company
- Malfunction or damage caused by major forces (abnormal power supply, fire, flood, lightning)
- Malfunction or damage caused by use of unapproved ultrasonic coupling gel, or cleaning product
- Malfunction or damage caused by use of a probe not provided by ReproScan
- Malfunction or damage caused by use of a power source not supplied with this ultrasound

ReproScan will offer repair services for equipment that is out of warranty, or repairs that are a result of misuse. Charges for parts, materials, and repair services will apply.

## GETTING TO KNOW YOUR MACHINE

Check out these videos to get you started with your new ultrasound package:

- [Apexx Basics – Unboxing Your Ultrasound](#)
- [Apexx with monitor](#)
- [Apexx with goggles](#)

### PROBE CARE

The probe head is a very expensive and delicate part of your machine. Take good care of the probe head to produce a quality image and reduce the need for repairs/upgrades.

- Always keep a probe cover on the ultrasound probe when you are not using it. If you lose the one that came with your ultrasound, contact your ReproScan representative for a new one, or some alternative ideas.
- IPX0 (please clean your unit with a damp cloth)—We recommend disinfectant wipes. This helps reduce the excess water therefore reducing long term corrosion.
- Keep the machine in freeze mode when not in live scanning mode.

Below is a non-exhaustive list of what you should not do with the probe.

- Do not use the damaged probe as it may cause electric shock to either patient or user.
- Check the probe and cable before and after diagnostic operation. Use of defective probe may cause electric shock.
- Do not drop, strike or hit the probe. The impact may damage the crystals inside the probe.
- Unauthorized disassembly of the probe is prohibited as it may cause electric shock.
- Do not use a probe that has a damaged or scratched surface. Immediately stop using the probe and contact your local representative. There is a risk of electric shock if using a damaged or scratched probe.
- Do not allow the power parts of the instrument or chargers contact the patient. If this instrument or other equipment has a failure, the patient may be at risk of shock.
- Do not open the covers or control panel of the instrument. Short circuits or electric shock may occur.
- Avoid using this instrument with high-frequency electric knives, high-frequency therapy equipment or defibrillators and other electronic devices as electric shock may occur to the patient.

### OPERATING CONDITIONS

It is recommended that you cover your Apexx ultrasound when using the unit in inclement weather. The unit is splash proof and can operate in most normal veterinary conditions. When operating the Apexx in wet conditions though, care must be taken to avoid moisture entering the Apexx. Keeping the Apexx in a backpack and using an external viewing device, is one option for rainy days. On extremely cold days, you may need to take additional precautions. The ideal operating temperature for the Apexx is 10°C or 50°F. As the Apexx generates considerable heat, keeping the Apexx in a backpack and using an external viewing device will allow ideal operation on cold days. When using on warm days, it is important that the heat plate can breathe.

## BUTTON FUNCTIONS

**1 – Freeze:** Press this button to freeze the image on your screen. Press again to go back to live scanning.

**2 – Zoom:** The plus and minus button allows you to zoom in and out on your screen in live scanning mode.

**3 – Wi-Fi:** This button will turn your Wi-Fi on or off. If the green light above the button is on, your Wi-Fi is on. Keep in mind, your machine will be factory set to have Wi-Fi turned off. Turn Wi-Fi on if you are connecting to a tablet. If you are not connecting to a tablet, leaving your Wi-Fi off will increase your battery life.

**4 – Exam:** Your ultrasound is preset with 4 different exams, with custom settings for different types of scanning. This button will toggle through the exams. Note: check your settings chart for a guide to the exams.

**6 – Power Button:** Press this button to turn the machine on/off. Note: you may need to hold the button for a couple seconds to make the machine turn on or off. When the machine is on, the light above the menu button (#5) turns green.



**5 - Menu:** Pressing this button will bring up the right menu, which allows you to adjust image settings like gain, dynamic, frequency, etc. Use the exam +/- button to scroll through the menu, and the +/- buttons to adjust the settings. Press the menu button a second time to bring up the left menu which will allow you to adjust your grid, wireless channel, etc. Press the menu button a third time to exit the menu screen. [Click here to see how to change and save Apexx settings.](#)

## CONNECTING APEXX TO VIEWING DEVICES

Always use care when connecting viewing devices and power to your Apexx ultrasound unit. ReproScan uses rugged connections in the construction of its ultrasound equipment, but care must be taken to prevent accidental damage to the connectors.

- Direct Wired:
  - Turn off the Apexx Module before connecting goggles or monitor.
  - Before trying to connect viewing device to the Apexx module using the LEMO, carefully examine the connector plug on the goggles and the socket on the Apexx module. Identify the red marker on the male connector and the red marker on the Apexx module. See images below.
  - Once you have found these markings, carefully insert the male connector into the socket on the Apexx module. Note that there is a sleeve that slides onto male connector. You will need to gently pull back on this connector to remove the male LEMO connector from the Apexx module's female LEMO connector.



Male LEMO Connector



Female LEMO Connector

- Wireless Options:
  - 5.8 GHz: Apexx can connect to the ReproScan 2.0 monitor wirelessly via 5.8 GHz signal. Ensure both the Apexx and monitor are on the same wireless channel.
  - Wi-Fi: Apexx is viewable on a phone or tablet via the Apexx app. Ensure the Wi-Fi is enabled on your ultrasound, download the Apexx App, connect to the Apexx Wi-Fi on your phone, and open the app. [Click here for the “Connecting via Wi-Fi Signal” video.](#)

## WATERPROOFING

This instrument is not waterproof. Clean without using excessive amounts of water. (Ex: damp cloth or cleaning wipe.) Do not use this instrument in such a way where liquid may enter the interior of the instrument. Never pour any liquid on the instrument; otherwise, there will be danger of electric shock or cause instrument damage. If you accidentally spill liquid on the instrument, turn off the power immediately and contact your local representative.

## CHANGING SETTINGS AND OPERATING APEXX

### DIAGNOSTIC MODE PRESETS


There are preset settings available for each Apexx probe. The settings chart included with your ultrasound will give you a guide for recommended exams for what you are scanning.

## CHARGING

### PROPER CHARGING WARNING

- The grid power (main voltage) may be above or below the optimum range of 110V AC 60Hz to 240 V AC 50Hz in some rural areas. Please ensure that the grid power is suitable for charging electronics. If you are using unstable power such as generators, we recommend a surge protector or line conditioner.
- Always ensure that the battery charger and power adapter are properly grounded. **Never use the power adapter without adequate grounding.**
- Do Not leave your ultrasound plugged in for extended periods of time. When your ultrasound is done charging, unplug it and place it back in the case.
- You must use the power adapter provided by our company; use of any other charger will void the warranty and may cause damage to your ultrasound. [Check out this article in our newsletter for some tips to keep your cords and cables organized!](#)
- Do not operate the Apexx ultrasound unit in extreme weather conditions such as thunderstorms, heavy rainfall, extreme heat and extreme cold. Contact ReproScan Technologies, LLC if you have questions about the safe operation of this equipment.
- Before cleaning the instrument, disconnect the power supply cord from the outlet. Failure to do so may result in system failure and electric shock.
- Do not operate the Apexx ultrasound unit if there is any visible wires or suspected damage to electrical wires or connector cables. Contact ReproScan Technologies, LLC if you have questions about the safe operation of this equipment.

## CONNECTING THE POWER SUPPLY TO THE APEXX MODULE

- When an icon “” appears in the middle of the screen, it indicates that the battery power is too low, and you need to charge the unit to continue use. [Click here to learn more about your Apexx battery.](#)
- Make sure that the adapter is an approved ReproScan 12.8 VDC, 3.0 Amp approved power supply.
  - Turn off the Apexx Module before connecting the power adapter to the Apexx.
  - Lift the protective cover over the 2.5 mm female jack on the Apexx module.
  - Insert the 2.5 mm jack from the power adapter into the Apexx module.
- Your Apexx ultrasound can be used while it is connected to the power supply.

## MAINTENANCE OF THE REPROSCAN APEXX

Please pay careful attention to the maintenance of your ReproScan Apexx ultrasound unit. You will get many years of reliable service from your Apexx ultrasound unit if recommended maintenance is completed, and some precautions are taken.

If you have questions about the proper use, care, and maintenance of your Apexx, contact your ReproScan representative.

Please send the Apexx ultrasound unit to an approved ReproScan service technician for service and inspection. The length of time between inspections will vary with the amount of use that a particular Apexx unit is receiving. Service checks, not more than 2 years apart, are recommended. During these inspections, the service technician will look for corrosion, loose connections, and assess the ultrasound unit. Contact the ReproScan office or your ReproScan dealer prior to sending in your Apexx for a service check.

## MAINTENANCE OF THE APEXX RECHARGEABLE BATTERY PACK

- During long term storage, the Apexx should be charged once every 3 months to ensure that the battery does not go completely dead as this will affect long term battery life.
- Replace the Apexx battery when the run time is less than 4 hours. Call the ReproScan office or your ReproScan dealer to order another battery.
- The ReproScan Apexx contains an interchangeable 11.1 VDC 6800 mAh Lithium-Ion battery.
  - The lifespan of this battery will vary depending on the use of the Apexx ultrasound. In general, this battery will last between 300 and 500 discharges.
  - Always store the Apexx with some charge in the battery.
  - The 11.1 VDC 6800 mAh Lithium-Ion battery will power the Apexx for 5-6 hours when the battery is new.
    - The charging time for the internal 11.1 VDC 6800 mAh Lithium-Ion battery from complete discharge to completely charged is approximately 6 hours.
    - To save battery life, turn off the unused signals (WiFi/Wireless) when not in use.
    - The Apexx ultrasound unit may be used while it is charging. Take extra safety precautions when operating the Apexx while the power adapter is connected to 110 to 240 VDC power.



## GENERAL CLEANING OF THE APEXX UNIT AND PROBE

- In most situations, general cleaning of the Apexx unit and the probes can be done with a soft cloth or sponge and a mild liquid detergent.
- Always allow the Apexx, the probes, and in particular, the probe and goggle connectors to completely air dry before putting in a storage container. The internal electronics of the Apexx may corrode if exposed to moisture and excessive humidity.

## DISINFECTION OF THE APEXX UNIT AND PROBE

- If there is a risk of infection due to the health of the veterinary patient, environment or disease situation, wear disposable gloves and take precautions associated with prevention and spread of infectious diseases.
- Use a soft disposable cloth or sponge and mild soap to clean the Apexx and probes before disinfecting.
- To achieve a high level of disinfection, use the following disinfectants and techniques. Refer to the specific instructions for each disinfectant type.

Glutaraldehyde-based disinfectant:

Chemical Name	Reagent Name	Step
Glutaraldehyde (2.4%)	Cidex Glutaraldehyde disinfectant	Refer to the instructions of the solution for details.

Non-glutaraldehyde-based disinfectant:

Chemical Name	Reagent Name	Step
Phthalaldehyde solution (0.55%)	Cidex OPA	Refer to the instructions of the solution for details.

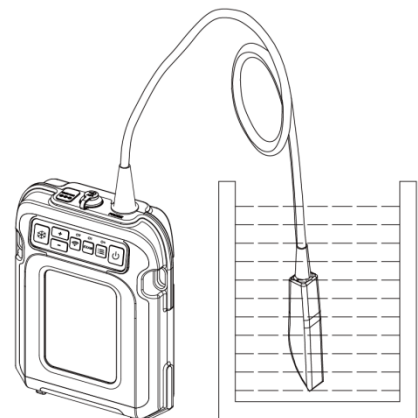
## SOAKING THE PROBE

The soaking time for a probe in the disinfectant is limited to the minimum time recommended by disinfectant manufacturer (e.g., Cidex OPA manufacturer recommended minimum 12 minutes). Follow local laws and regulations when choosing a disinfectant.





After disinfection, rinse the probe with sterile water to remove the residual chemicals. You may follow the recommended method by the disinfectant manufacturer for the rinse. After finishing the rinse, use a sterilized cloth or gauze to wipe the water off the surface of probe. Do not dry the probe by heating it.

Failure to disinfect as required can cause internal short circuits and burnout of the board.

For the depth of immersion during disinfection, please refer to the image to the right:





	Attention	Always turn off your Apexx unit, disconnect from power, and close the port covers before cleaning.
	Attention	Allow the Apexx unit to dry completely before putting into a closed case or container. This will reduce the chance of corrosion to the internal electronics. (Tip: Leave your case open to allow unit to dry completely)
	Attention	Do not rinse or submerge the ultrasound.
	Attention	The 4.0 MHz convex rectal Probe and the 6.5 MHz linear rectal Probe are waterproof and may be completely submerged

## APEXX CONFIGURATIONS

The Apexx by ReproScan can be set up in a variety of ways. It can be used with goggles, a monitor wirelessly or direct wired, or your phone or tablet via Wi-Fi. For set up ideas, check out our [YouTube Page \(ReproScanCows\)](#) or the [Applications page](#) on our website.

Our team is here to serve you! Call with questions or to discuss the best mounting options for you.

## APEXX FEATURES, SPECIFICATIONS, AND SETTINGS

### FIXED PROBE OPTIONS

The Apexx can be ordered with one of the following probe configurations:

- 4.0 MHz C60 probe (convex)
  - Frequency range 2.0-5.0 MHz
  - R60 curvature radius
  - 128 elements
  - IPX7
- 6.5 MHz L64 probe (linear)
  - 5.5-9.0 MHz frequency range
  - 128 elements
  - IPX7

### POWER SUPPLY

Adapter ratings - Input	100-240V~,	50-60Hz
Adapter ratings - Output	DC12.8V 3.0A	3.0A
Main device rating	DC12.8V 3.0A	3.0A
Internal supply voltage	DC11.1V±10%	5500 mAmpH – lithium ion

AC100-240V ± 10% Frequency: 60/50Hz±1Hz.

### BATTERY LIFE

A large capacity (5500mAh) lithium battery can support the machine to work for 4-5 hours. Turning unused signals (Wi-Fi or Wireless) off can extend the run time of your battery.

## OPERATION ENVIRONMENT

Ideal Ambient Temperature	10°C - 33°C (50° F - 104° F)	Use in colder temperatures with a covering such as a backpack. When working in hot temperatures, the heat plate must be able to breathe.
Relative humidity	30%-75%	Use in moister conditions with a covering. Always allow the Apexx to dry completely between uses.

## STORAGE AND TRANSPORTATION

Ideal Ambient Temperature	-20°C - 40°C (-4° F - 91° F)	Warm/cool to room temperature before starting
Ideal Relative humidity	30%-93%	Allow Apexx to dry out after exposure to moisture.

## UNIT SPECS

- Dimensions: 196mm long, 150mm wide 50mm thick
- 1.2 kg (2.6lbs) including battery

## OUTPUT SIGNALS

The Apexx has multiple signal options for different viewing devices:

- Direct Wired VGA signal via LEMO connection
- 5.8GHz Wireless
  - To utilize the wireless 5.8GHz option, your monitor must receive the 5.8GHz signal. The Apexx wireless range is 10-12 feet (4 meters) without significant obstacles.
- Wi-Fi connection via the ReproScan Apexx app.

## SETTINGS THAT CAN BE CHANGED

- Right Menu Settings:
  - Depth range selection: 8 options ranging from 71-239mm (probe dependent)
  - Total gain: 0 ~ 127dB
  - Far and near field gain:
    - Near field: 0 ~ -31dB
    - Far field: 0 ~ 31dB
  - Dynamic range: 27 ~ 90dB
  - Frequency conversion: 4 frequency conversions per probe:
  - Adjustable focus
  - Frame average: 0, 1, 2, 3
  - Image post-process: 0, 1, 2, 3
  - Edge enhancement: 0, 1, 2, 3
  - Probe Orientation: Left/Right

- Left Menu Settings:
  - Language: English, French, Russian, Spanish, Portuguese, Polish
  - TV mode: PAL/NTSC
  - Main Interface Status: On/Off
  - RF switch: On/Off
  - RF channel: 8 Note: If the signal does not receive properly, try a different channel
  - Grid Set: 3 options - Off, point, line
  - Grid Space: 2 kinds of spacing – 10mm or 20mm

## IMAGE STORAGE


- Image management: store, open, browse and display images in the APP software.
- If an image renders incorrectly, there is not enough storage left of the device.

## WARNING SYMBOLS AND DEFINITIONS

The Apexx by ReproScan uses the following warning labels to indicate important items. Please remember these labels and safety classifications and understand their meaning.

### HEAT PLATE

This ultrasound uses the following warning label to indicate the heat plate. The heat plate is on the front of your Apexx and is designed to expel heat from the machine. It is normal for this area of the ultrasound to get warm. Make sure that this area of the Apexx is not covered and is able to breathe. Please remember this label and understand its meaning.

Label	Description
	<p>Warning: This is a heat plate to allow heat to be released from the ultrasound. <b>Remove this label before using.</b></p>



## **SAFETY CLASSIFICATIONS**

- Classified according to electric shock protection type: Class I, internally powered equipment
- Classified according to electric shock protection degree: Type B applied part
- Classified according to the degree of protection against ingress of liquid: Apexx unit IPX0
- Classified according to safety of operation in the presence of a flammable anesthetic mixture with air or oxygen or nitrous oxide: It is neither Category AP equipment nor Category APG equipment
- Classified according to mode of operation: Continuous operating equipment
- Classified according to the protection of radio services: Group I, Class A equipment

## **INTELLECTUAL PROPERTY INFORMATION**

ReproScan Technologies, LLC has the copyright of this Apexx user's manual. This user's manual shall be used for the purpose of operating, maintaining, and servicing of ReproScan products. This user's manual and intellectual property rights (including copyright) within are the property of ReproScan Technologies, LLC. No persons may use, disclose, or allow a third party to obtain by any means any of the information contained herein without prior written consent of ReproScan. No persons may reproduce this user's manual, in whole or in part, including but not limited to photography, photocopy, reprint or translation into any other language without prior written consent of ReproScan.

Apexx and ReproScan are registered trademarks of ReproScan Technologies, LLC. ReproScan Technologies, LLC is the sole authority for the interpretation of this user's manual. ReproScan Technologies, LLC may revise this manual without prior notice. ReproScan Technologies, LLC may revise its technical processes without prior notice. ReproScan Technologies, LLC may modify specifications of the product without prior notice.

## **LIABILITY AND DISCLAIMER STATEMENT**

This user's manual contains warnings for predictable dangers. ReproScan Technologies, LLC shall not be liable for the damages and losses arising out of neglecting to follow the operation instructions described herein. There are unpredictable dangers associated with electronic equipment and livestock handling. ReproScan Technologies, LLC shall not take responsibility for any unpredictable dangers associated with livestock handling around electronic devices.

ReproScan Technologies, LLC shall be responsible for the safety, reliability, and proper performance of this equipment on condition that the assembly, readjustment, modification, or service of the equipment as describe here within is done by technical personnel authorized or approved by ReproScan Technologies, LLC. The electric equipment is consistent with relevant national standards and the equipment shall be operated in compliance with the operation guidance given in this manual.

ReproScan Technologies, LLC does not guarantee the safety, reliability, and proper performance of the product in case of the following conditions: 1-Equipment or equipment parts are disassembled, reassembled, extended, or readjusted without proper authorization. 2-The users of the equipment fail to properly operate the equipment in accordance with the requirements specified in this user's manual.

## MANUFACTURER'S INFORMATION

Apexx is manufactured for ReproScan Technologies, LLC

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We are here to serve you, if you have any questions, please contact us!