4VET J

USER'S MANUAL

DRAMIŃSKI®
ULTRASOUND SCANNERS

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WARNING! This symbol indicates that failure to follow directions could result in serious injury.

CAUTION: This symbol indicates that failure to follow directions could result in damage to equipment or loss of information.

Part Number 27208-00

DRAMIŃSKI®
ULTRASOUND SCANNERS

The 4VetJ is jointly manufactured by Dramiński S.A., ul. Owocowa 17, 10-860 Olsztyn, Poland and Juniper Systems, Inc. It is distributed by Juniper Systems, Inc. in the U.S.

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CHAPTER 1

Getting Started

Getting Started

System Overview

The Draminski 4VetJ Ultrasound Scanner™ from Juniper Systems is a diagnostic tool used in veterinary medicine. Clear ultrasound images and other parameters can be captured on the resistive touchscreen during an exam and saved.

The compact dimensions and ergonomic design allow the 4VetJ to be used as a mobile or stationary device. Use the 4VetJ to evaluate the physiological condition of specific organs during gynecological and obstetrical exams as well as conduct exams of the musculosketetal system, lungs, etc.

The standard 4VetJ includes the following components:

- Ultrasound scanner
- Endorectal linear probe and cord for obstectrical exams (other probes are available as options)
- Rechargeable Li-Ion battery pack (internal)
- AC power supply and charger
- Stylus and tether
- Durable carrying case

You can also attach a keyboard, mouse, printer, or extra monitor to the 4VetJ using the appropriate connector ports.

The 4VetJ can be used as a stand-alone unit or as part of our EmberEquine Ultrasound Reproduction Solution™.

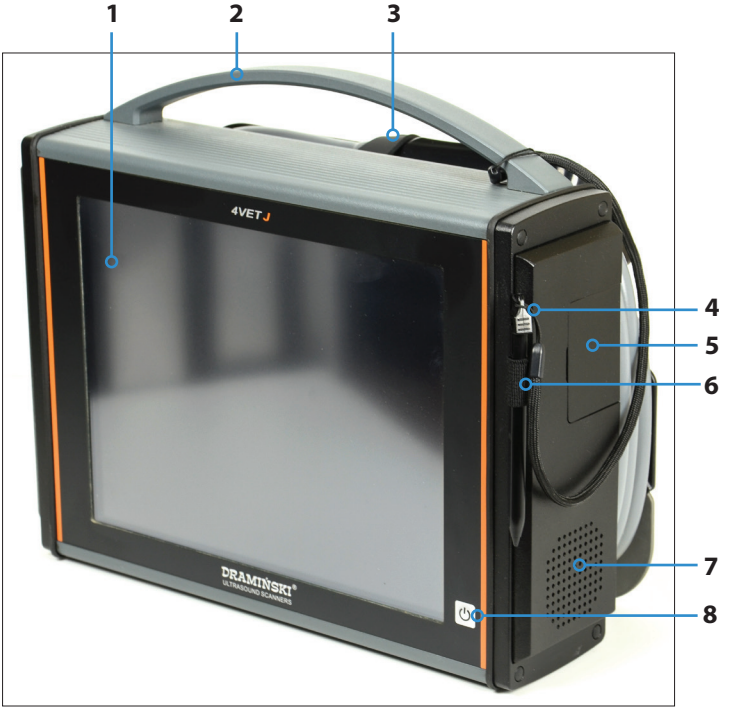
This manual focuses on the 4VetJ Ultrasound Scanner.

EmberEquine Ultrasound Reproduction Solution

An EmberEquine solution includes the 4VetJ and a Mesa 2 Rugged Tablet™ running EmberEquine software. Exams are performed on mares using the 4VetJ ultrasound to view and save images with measurements. This information is transferred to the Mesa 2 running EmberEquine software. Exam records and images are saved on the Mesa 2 and can be pushed to the Microsoft Cloud for secure storage and to provide wide access to animal data.

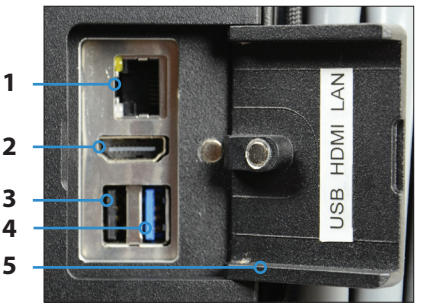
Features of the 4VetJ Ultrasound Scanner

Front View



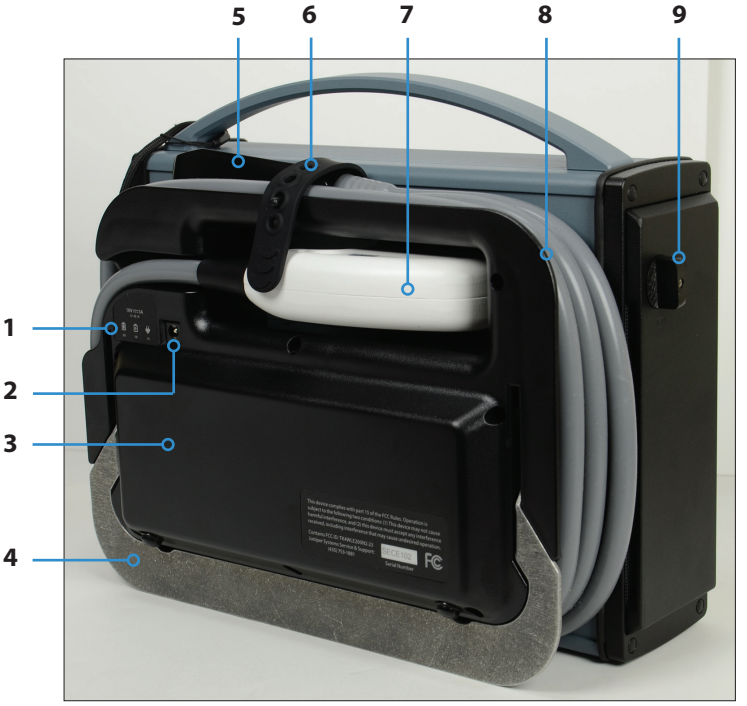
1 Resistive Touchscreen
2 Handle
3 Probe Cord Strap
4 Stylus with Tether
5 Door to Connector Ports
6 Stylus Holder
7 Speaker
8 On/Off Button

Connector Ports



1 Ethernet Port
2 HDMI Port
3 USB 2.0 Port
4 USB 3.0 Port (higher speed)
5 Door to Connector Ports

Back View



1 Battery Charge Indicators
- green = fully charged
- orange = charging
- red = external power applied

2 Power Input Jack

3 Battery Pack (internal)

4 Tilt Stand (adjustable)

5 Probe

6 Cord Strap

7 Probe Connector (attached to socket)

8 Probe Cord Wrap

9 Probe Connector Lock (locked position)

Probes

A standard 4VetJ comes with an endorectal linear probe, 4-9 MHz, for pregnancy and gynecological exams on large animals like cattle or horses.

There is a 7.6 foot long cord with the probe on one end and a probe connector on the other end. The 4VetJ is shipped with the probe connector attached to the probe socket and the cord wrapped around the probe cord wrap.

We also offer the following probes for varying veterinary needs (contact your sales representative):

- Convex, 2–8 MHz
- Microconvex, 4–9 MHz
- Linear, 60 mm 5–10 MHz
- Linear, 40 mm 6–14 MHz

Battery Pack and AC Power Supply

The 4VetJ has an internal, rechargeable, Li-Ion battery pack that lasts 6 + hours. It is not user replaceable. An AC power supply and charger is included. The battery can be charged during use.

CAUTION: *Always use the AC power supply included with the 4VetJ to charge the battery pack or power the unit. The use of any other power supply unit can cause harm to the user or permanently damage the device.*

All maintenance work must be carried out when the power supply is disconnected.

In order to avoid the risk of an electric shock, the device must be connected to a power outlet with protective grounding.

Display and Touchscreen

The high quality LCD display produces clear, high resolution images in a variety of conditions. The resistive touchscreen enables the operation of the 4VetJ software with a gloved hand or a stylus. Many tasks, like measurements, are best performed with the stylus.

Note: If you are using your fingers, make sure you are pressing hard enough on the touchscreen for your selections and measurements to be recognized. Use a light touch when the stylus is used.

Perform Initial Tasks

Before you use the 4VetJ for an exam, perform the tasks described in this section.

Review Documentation

Owner's manuals (4VetJ, EmberEquine, Mesa 2), quick start guides, videos, Windows and Ember license agreements, release notes, and other documents are available on our website at: *www.junipersys.com/emberequine/support.* If you have an EmberEquine system, the manuals are also located on the Mesa 2 Rugged Tablet in the *Ember Help* folder tile located in the Windows Start menu. View, download, and print documents as desired. (You need a PDF reader on the device you are viewing documents with. Options include the Windows 10 Edge browser and Adobe Reader, which is available from Adobe's website at: *www.adobe.com.*)

Documentation will be updated during the lifetime of the products. Compare version numbers on the inside covers to see if a document has changed.

Charge the Battery Pack

When you first receive the 4VetJ, we recommend that you fully charge the internal battery pack. Follow these steps:

1. Turn the 4VetJ off while the battery pack is being charged to shorten the time it takes to reach a full charge.

2. Use the AC power supply included with the 4VetJ to charge the battery pack or power the unit. Plug the AC adapter into a wall socket. Plug the power input end into the DC power input jack on the back of the 4VetJ. Verify that the red and orange battery charge indicators are on.

3. Charge the battery pack at room temperature (68° F or 20° C) for 6 hours for the first charge.

Power Options

You can operate the 4VetJ while you are charging it, but it takes longer to charge the battery pack. If the 4VetJ is off, a completely discharged battery pack takes about 4 to 5 hours to charge. If the 4VetJ is in use while charging, it takes about 20% longer to fully charge the battery.

Battery Indicators

When the 4VetJ is turned on, the battery charge level shown on the status bar at the top of the display does not report the correct charge until the battery pack is fully charged for the first time. After the battery pack is fully charged, the indicator shows the correct charge.

A low battery message might be shown in the middle of the screen that tells you to charge the battery pack.

There are three battery charge indicators on the back of the 4VetJ that indicate the following:

- Off: The LEDs are always off when the AC power adapter is not applied.

- Red: When the power supply is plugged in, the red LED immediately lights up.
- Orange or Green: Within a few seconds either the orange or green LED lights up. Orange indicates that the battery pack is charging. Green indicates a full charge.

Note: If the 4VetJ is left on when it is not being used and it is not being powered by the AC adapter, the battery pack is completely discharged and the 4VetJ automatically shuts off.

Attach or Remove a Probe

To remove or replace a probe, follow these steps:

1. The 4VetJ can be on or off when a probe is removed or replaced.
2. Unhook the probe and cord strap, and unwind the probe cord from the cord wrap.
3. Unlock the probe by turning the probe connector lock counter-clockwise to a horizontal position (see the symbols near the lock).

CAUTION: *Handle the probe, connector, and cord with care to avoid mechanical damage. Do not drop, hit, or scrub the probe head. Protect the probe connector from dirt and moisture (it is not waterproof).* Avoid excessive force, bending, and pulling of the cord.

4. Pull the probe connector free from the socket. A message saying *Probe OFF* appears on the display.

With the probe removed, certain functions are no longer available.

Note: If you are not going to have a probe attached to the 4VetJ, slide the socket cover closed to keep out debris.

5. Attach the probe connector into the socket for the probe you are attaching.
6. Lock the probe in place by turning the lock clockwise to a vertical position. The probe type is recognized automatically by the system. A message saying *Probe ON* appears on the display.

   Note: It can take a minute or more for the new probe to be recognized. You might need to restart the 4VetJ.

7. Wrap the probe and cord around the probe cord wrap and hold it in place with the cord strap. The probe is ready to be used or stored.

   Note: The cord wrap is designed for the endorectal linear probe. The cord length of other probes requires

the cord to be doubled back near the probe to allow the probe to be held in place under the cord strap.

CAUTION: *The crystals in the probes have a limited life. If the 4VetJ is running but no exam is being done, either turn the unit off or unhook the probe from the probe socket. This helps extend the life of the crystals.*

Clean and Disinfect the 4VetJ and Components

The 4VetJ and probe should be cleaned and disinfected before each use and before they are stored, transported, or sent to our service department for servicing or repairs.

CAUTION: It is important to note that the 4VetJ and the probe connector are not waterproof. Use caution when cleaning or disinfecting them.

In addition to the information below regarding the cleaning and disinfecting of the 4VetJ and components, refer to *Appendix A, Clean, Store, Transport, and Recycle*.

4VetJ

The 4VetJ must be powered off and unplugged for thorough cleaning. Use warm water or a mild cleaning solution on the casing. Remember that the 4VetJ is not waterproof.

Touchscreen

For dry cleaning of the touchscreen, rub it with a soft cloth. Avoid substances that can scratch or damage the screen. For damp cleaning use a spray or foam agent designed for such use, warm water, or a mild detergent.

Probe

Clean and disinfect the probe before each examination. The probe and cord are waterproof. The probe connector (which attaches to the probe socket) is not waterproof, so use caution when you are cleaning or disinfecting the area near it. Do not scrub the head of the probe. Clean it gently with a soft cloth and a mild cleaning solution approved for ultrasound probes. Do not use concentrated, aggressive, or abrasive agents or substances like alcohol or bleach that could deteriorate the probe head.

Prepare the Animal

Preparing animals for ultrasonography varies depending on the animal, the type of exam being done, and the type of probe being used.

WARNING! It is assumed by Draminski and Juniper Systems, Inc. that the user of this equipment is properly trained to safely and correctly perform ultrasonography on animals.

Special, certified gel designed for ultrasound examinations must be used. Using other substances may be dangerous for the animal and cause undesirable effects. It can also have a negative influence on the head of the probe. Proper gelling improves penetration of the signals and helps obtain correct and more legible images.

For external probes, prepare the skin of the animal in the area to be examined. You might need to shave fur and wipe the area with a disinfecting agent. Cover the skin of the patient with the gel.

Safety of Use

Review the following list of safety issues before using the 4VetJ. More safety information is located in *Appendix C, Warnings, Regulatory Information, and Licensing*.

- The 4VetJ ultrasound is only for use on animals. It is not for human use.
- The 4VetJ is a mobile computer with solid construction. Handle the touch panel, probe, and other components carefully to avoid mechanical damage.
- To limit the influence of acoustic energy emitted by the ultrasound probe on the operator and the animal, follow the recommended standards of ultrasound examinations.
- Technical inspection of the 4VetJ by the manufacturer every two years is recommended to help guarantee the highest level of performance and safety.
- Carry out periodic inspections of the probe, cable and the connector. If mechanical damage is found or suspected, it is necessary to send these components to the manufacturer for servicing.

- Do not modify the device.
- The warranty is void if unauthorized repairs are done.
- The 4VetJ should be used for diagnostic purposes only.
- The device is not recommended for esophageal examinations.
- Do not use the 4VetJ near explosive devices.
- Ultrasound exams should not be carried out in conjunction with a defibrillator.
- Avoid exposing the device to strong sunlight or heat for extended periods of time.
- During examinations the device should not be connected to LAN (via Ethernet).
- In order to avoid the risk of electric shock, never mix water and electricity. Install Ground Fault Circuit Interrupters (GFCI). Make sure you're using the right size circuit breakers and fuses.
- Before transporting or shipping the 4VetJ and components, they must be protected against damage. The carrying case offers protection when it is properly packed and securely closed and latched.
- Make sure that nothing is touching the touch panel except for the carrying case lid during shipping or severe screen damage can occur. Put the stylus in the stylus holder and place the stylus tether where it won't touch the screen.

CHAPTER 2

4VetJ Settings and Functions

4VetJ Settings and Functions

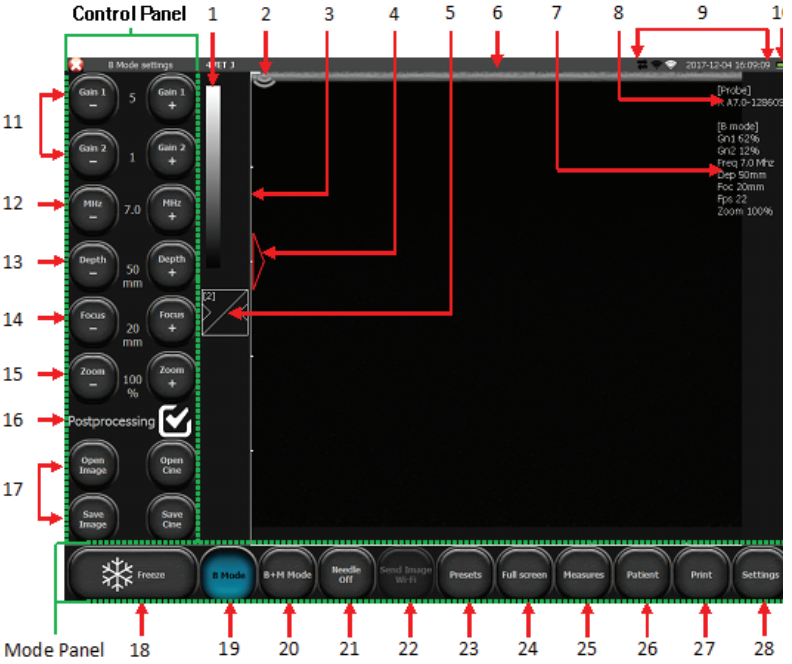
This chapter discusses the 4VetJ settings and functions that can be used for ultrasound examinations.

WARNING! Ultrasound examinations using the 4VetJ and probes must be conducted by qualified and properly trained personnel.

Press and release the on/off button ⏻. It takes about 60 seconds for the system to load, then the basic panel is shown.

Elements of the Basic Panel

During an examination, use the buttons on the basic panel and subsequent screens to set up operating parameters and to complete specific tasks. These settings, indicators, modes, and functions are described in more detail in this chapter.



1. Grey scale indicator / change negative - positive
2. Probe marker indicator (direction)
3. Ruler
4. Indicator of focus level
5. Gamma setting button
6. Name of practice or user and currently used preset
7. List of current working parameters
8. Information about the probe that is currently being used
9. Symbols showing communication status between 2 devices, Wi-Fi hotspot and Wi-Fi access status, date and time
10. Battery charge indicator

Control Panel

11. Gain adjustment: Gain 1 – general gain; Gain 2 – far field gain
12. Probe frequency adjustment
13. Scanning depth adjustment
14. Focus level adjustment
15. Zoom level adjustment
16. Postprocessing on/off (adjust this in Settings/Look)
17. Loading and saving images and cine loops

Mode Panel

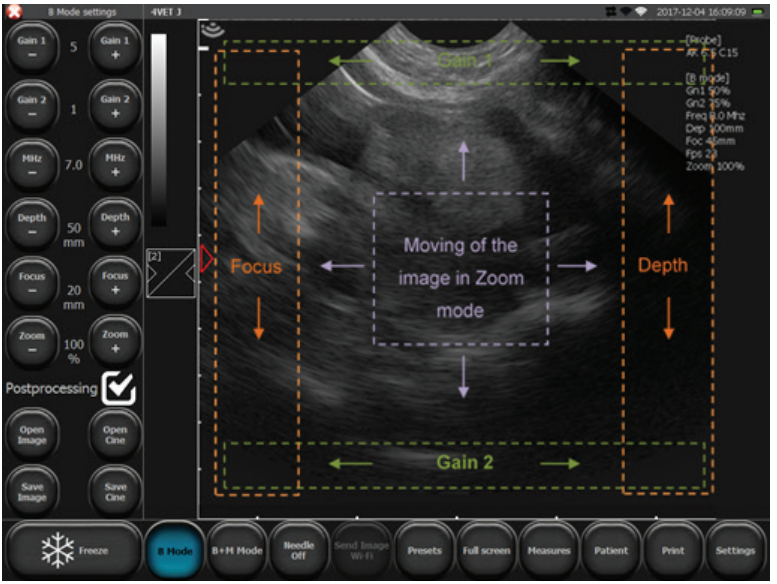
18. Freeze button (freezing/unfreezing of the image)
19. Selection of imaging mode: B, B+B, 4B
20. Selection of imaging mode: M, B+M
21. Needle echo enhancement tool
22. Send Image to the Mesa 2 via Wi-Fi (option)
23. Presets
24. Full screen mode
25. Menu of measurements
26. Patient's data
27. Print images
28. Settings, additional options

Active Fields

Active fields are areas on the image used to change parameter settings with the use of your finger or stylus instead of using buttons located in the control panel.

Within the image sector the following active fields can be changed:

- General gain
- Gain in the far field
- Level of focus
- Depth of scanning

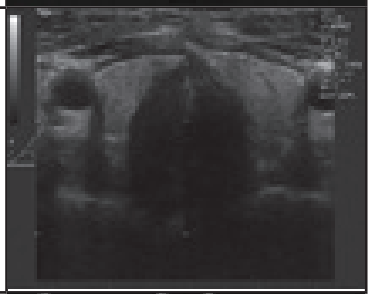
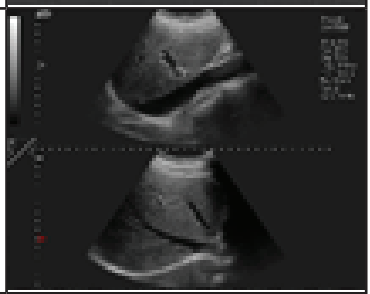
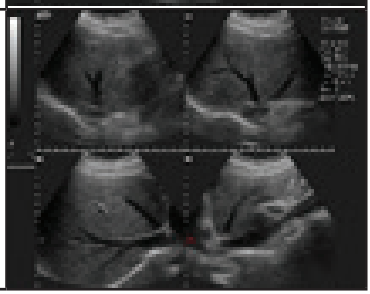


Imaging Modes

The basic activities associated with the operating modes are described in this section.

Modes B, B+B, and 4B

Press the B mode button. From the submenu that appears, select the mode associated with the desired screen view.

Mode	Description	Sample Screen View
B	Starts B mode	
B B	From the submenu, starts B+B mode where windows are next to each other in a horizontal position	
B B	From the submenu, starts B+B mode where windows are next to each other in a vertical position	
BB BB	From the submenu, starts 4B mode	

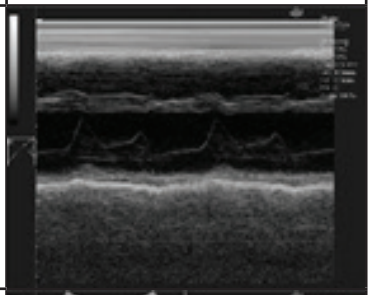
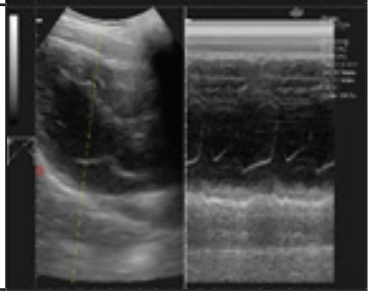
Movement in the Zoom mode

In the B+B and 4B modes active fields are located in each window.

Switching Between Windows in B+B and 4B Modes.
To activate the next window, double click on its window. If this is done during the examination, the previous window is frozen.

When the images in both windows are frozen, switching a window causes the frozen image to relocate from the previously active window to the newly activated window.

Modes B+M and M
Press the B+M mode button. To switch to M mode, from the dropdown menu that appears, select M mode.

Mode	Description	Sample Screen View
B+M	Starts B+M mode	
M	Select from the dropdown menu	

Optimize Image Parameters

To optimize the image parameters, refer to instructions that follow.

Gain Levels

The [Gain 1] and [Gain 2] buttons have adjustment ranges from 1 to 8. Increases of the gain value cause the image to become brighter. Adjust gain levels depending on your needs, the type of the examination, and the depth of penetration of external light conditions.

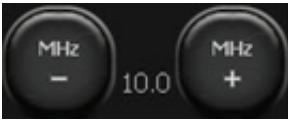
You can also adjust gain levels with your fingers or the stylus. Gain 1 can be adjusted in the active field located at the top of the scanning sector. Gain 2 can be adjusted at the bottom of the sector.

Probe Frequency

The 4Vet operates with broadband probes that are able to emit signals of different frequencies.

The range of available frequencies depends on the type of the probe. Refer to *Appendix D, Specifications*.

To change the signal frequency, use the [MHz -] and [MHZ +] buttons in the control panel.



Penetration Depth
The depth of penetration is set with the help of the [Depth –] and [Depth +] buttons. The depth of scanning is set depending on the location of the examined organs. The depth of the beam penetration depends in its frequency. The higher the frequency is, the lower its range of penetration is.

You can also change the penetration depth by moving a finger or the stylus in the active field at the right edge of the sector of scanning.

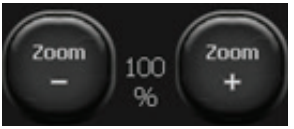
Focusing the Beam
The [Focus -] and [Focus +] buttons are used to set the focus of the ultrasound beam. The image presented on the screen is the sharpest on the level of the beam focusing. The level of focus is indicated by a red triangle located on the left side of the sector. To obtain the best effects, set the focus on the level corresponding to the location of the examined object.

Focus adjustment can also be performed using a finger or the stylus in the vertical active field located on the left side of the sector.

The scanner also has automatic dynamic focusing, so the image is sharp in the whole range of the scanning.

Zoom

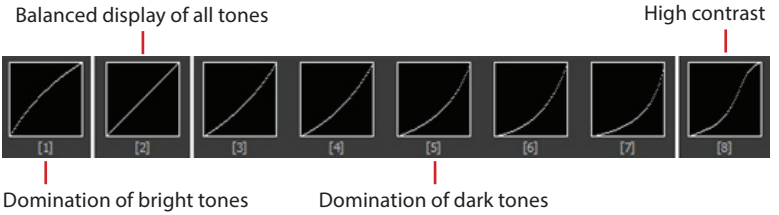
The [Zoom -] and [Zoom +] buttons are used to magnify the image in real time and after it is frozen. The following zoom levels can be used: 120, 140, 160, 180, 200, 220, 240, 260, 280, and 300%. It is also possible to reduce the sector down to 60% and 80% of its standard size.



Gamma Level

The gamma adjustment lets you change the grey scale setting for an image in real time. First it must be frozen or uploaded on the screen from a previously saved image or cine loop.

When you press the [Gamma] setting button, the list of available grey scale settings appears.



Select the desired level by pressing on the appropriate icon. A black and white bar located above the [Gamma] button indicates the current grey scale setting.

Negative (color inversion)

To invert colors from positive to negative, double click the bar showing the grey scale setting.

Freeze

To freeze an image, press the [Freeze] button. The image is frozen in a split second, and the button changes color. To unfreeze the image and return to scanning, press [Freeze] again.

Cine Loops

A cine loop is a video loop which consists of 256 frames. You can play about 14 seconds of an examination.

When an image is frozen, in the lower right portion of the screen [<I] and [I>] buttons are shown. They are used to manage cine loops. To play a cine loop, press and hold the [I>] button. You can wind a loop frame by frame by quickly pressing [I>].

To play or rewind a cine loop frame by frame, press the [<I] button.

Measurements

Next to the sector of scanning, there is a ruler with a scale of 1 cm that shows the size of an object being observed in real time.

Press the [Measures] button on the mode panel to see which measuring options are available.

- [Grid] – The grid provides approximate measurements to an image
- [Narrowing] – This measurement determines the narrowing of an image

- [Volume] – Volume is calculated using three measurements
- [Length] – Length is measured between two indicators
- [Area] – This measurement provides the area and circumference of an object of any shape
- [Ellipse surface] – An ellipse is applied on an object to calculate the surface area and circumference
- [Clear] – This button clears the screen of measuring elements
- [OB/GYN] – A set of measurements used in obstetric examinations; biometric measurements are available for different species of animals

Grid
When you press [Grid], a window that says "Show grid" is shown. Select this option and the sector of imaging is covered by the grid. Approximate measurements are shown (the grid scale is 1 cm).

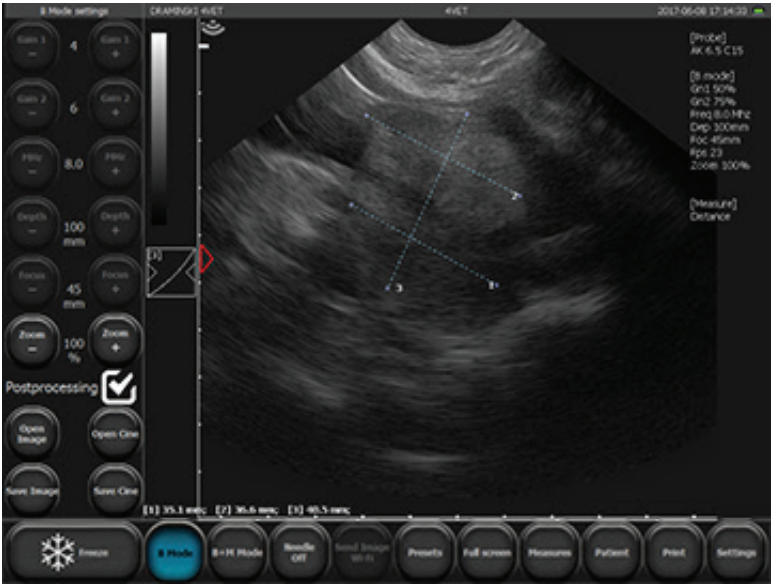
Narrowing
In order to determine narrowing, obtain a longitudinal section of the narrowing object. Put two measurement sections between the boarders of the object – one before the narrowing, the other in the place of the biggest narrowing. The result is presented automatically as a percentage.

Volume
In order to carry out proper volume measurement, it is necessary to measure the length, depth and width of the object. To do it, you need to obtain sections in planes: longitudinal and lateral. To obtain two planes in one image, use B+B mode.

Put three measuring sections in the image. The scanner automatically calculates the volume of the object on the basis of these measurements. The result is presented in cm3.

Length

When an image is frozen, the ability to measure length becomes available. Up to five lengths can be measured on one image.



Some measurements are shown beneath the imaging sector

After pressing point A and then point B, a line appears connecting these two points. A number identifies each measurement.

The magnifying glass facilitates the measurement of small ares. It appears at the indicated measuring point when you press and hold your finger on the screen. When you remove your finger from the screen, the magnifying glass disappears and another measuring point appears.

Results of the measurements are shown below the imaging sector in mm with an accuracy of up to 0.1 mm.

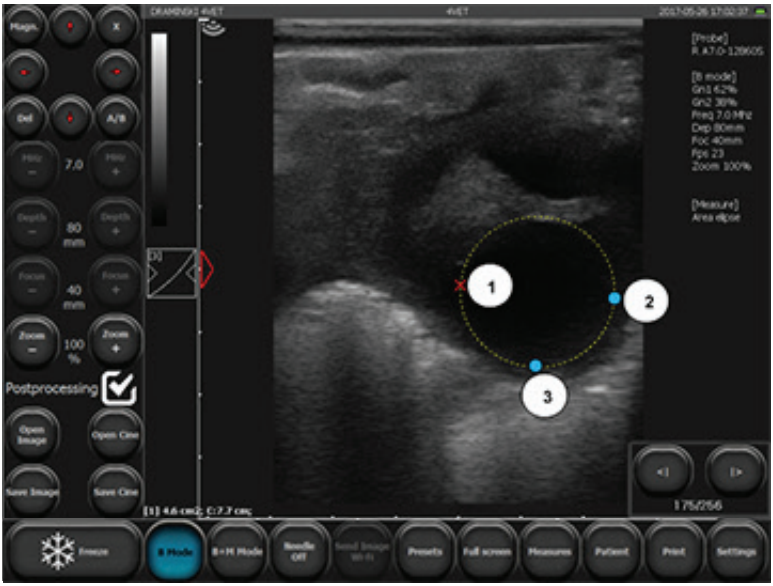
Area

Measure the area and circumference of an object by outlining the object with a finger or the stylus without removing it until the shape is closed and you tap on the

point where you started the line. The result is shown in sq. cm below the imaging sector.

Ellipse Surface

Apply an ellipse on the object in three points. The first two points should be located on the poles of the long axis with the third one on one of the poles of the short axis. This measurement provides the information needed to calculate the surface area and the circumference. The result is given in sq. cm for the surface area and in cm for the circumference.



Gynecological and Obstetrical Measurements

Age of Fetus

To estimate the age of a fetus, press [Measures] and select [Ob./GYN]. Then select [Aging tables], Select the proper measurement, and mark measuring points on the screen. The scanner automatically calculates an approximate age of the fetus in days.

Horse Fetus Measurements

[Horse DC] - Head diameter in mm and days. Available between the 90th and 200th day of pregnancy.

[Horse DO] - Eye diameter in mm and days. Availabile between the 90th and 330th day of pregnancy.

[Horse DSG] - Size of the gestational sac in mm and days. Availabile between the 9th to 45th day of pregnancy.

Sheep Fetus Measurements
[SHEEP LCC] – Crown (rump length) in mm and days. Availabilite from the 30th to 70th day of pregnancy.

Lama Fetus Measurements
[LAMA DBP] – Biparietal diameter in mm and days. Available between the 75th and 240th day of pregnancy.

Pig Fetus Measurements
[SOWS LCC] – Crown (rump length) in mm and days. Available from the 20th to the 50th day of pregnancy.

Cow Fetus Measurements
[COW DBP] – Biparietal diameter (the head diameter is measured along the fontanelle) in mm and days. Available from the 65th to the 200th day of pregnancy.

[COW LCC] – Crown (rump length) in mm and days. Available from the 30th to the 80th day of pregnancy.

Dog Fetus Measurements
[DOG GS small] – Gestational sac of a small dog in mm and days. Available from the 24th to the 40th day of pregnancy.

[DOG GS medium] – Gestational sac of middle size dog in mm and days. Available from the 24th to the 40th day of pregnancy.

[DOG BPD small] – Biparietal diameter of a small dog in mm and days. Available after the 40th day of pregnancy.

[DOG BPD medium] – Biparietal diameter of a middle size dog in mm and days. Available after the 40th day of pregnancy.

Cat Fetus Measurements
[Cat >30 HD] – Head diameter in mm and days. Available after the 30th day of pregnancy. Measure in the same plane as for CRL. Over the 35th day of pregnancy, measure in the same plane as for biparietal diameter.

[Cat >30 BD] – Abdomen diameter in mm and days. Available after the 30th day of pregnancy. The measurement should be performed on the level of the liver.

[Cat <30 CRL] – Crown (rump length) in mm and days. Available from the 26th to the 30th day of pregnancy.

[Cat <30 GSD] – Gestational sac in mm and days. Available starting the 16th day of pregnancy.

Cardiology

[HR] – Number of Heart Beats Per Minute

The measurement is performed in the M mode. Mark a section on the screen that covers two full cycles of the heart rate. The scanner automatically calculates the number of heart beats per minute in bpm.

[LA/Ao] – Left Atrium Diameter to Aorta Diameter Ratio

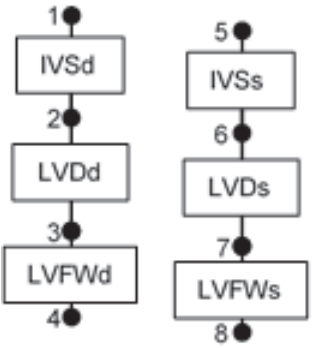
The measurement can be carried out in the B or M mode. Mark two sections on the screen:

1. Ao – aorta diameter (measured in diastole)
2. LAd – left atrium size (measured in systole)

[LV] – Left Ventricle Parameters

These measurements are carried out in the B+M mode:
- End-diastolic volume of the left ventricle EDV
- End-systolic volume of the left ventricle ESV
- Fractional shortening FS
- Ejection fraction EF

In the diagram, find the place where the left ventricle is in diastole.



Mark the first two measuring points determining the width of the interventricular septum (IVSd), Start with the border between the right ventricle and the wall of the septum.

Next, mark the point determining the left ventricle lumen. The 4VetJ automatically determines the section between the interventricular septum and the

wall of the septum, allowing LVDd to be obtained. The last measuring point is located on the exterior border of the free wall of the left ventricle. The 4VetJ automatically determines the section corresponding to left the ventricular free wall in diastole (LVFWd).

Repeat the same activities on the diagram in the location of systole.

When all the eight measuring points are marked, the scanner automatically provides results for EDV, ESV, FS and EF.

The result of EDV is calculated on the basis of the equation $EDV = (7 \times LVIDd^3)/(2.4 + LVIDd)$ and is given in ml.

The result of ESV is calculated on the basis of the equation $ESV = (7 \times LVIDs^3)/(2.4 + LVIDs)$ and is given in ml.

[V Simpson's LVAM-LVAP method] – Left ventricle volume measured by Simpson's method based on LVAM and LVAP. The measurement is carried out in the B (4B) mode.
Make the left ventricle more visible on the longitudinal and cross sections on the level of the mitral valve, with the cross section on the level of the papillary muscles.

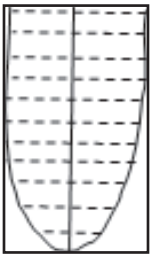
Mark the measurements in the following order:

1. Left ventricle length in longitudinal section (LVL),
2. Surface area (in the form of the ellipse) in a cross section on the level of the mitral valve (LVAM),
3. Surface area (in the form of the ellipse) in a cross section on the level of papillary muscles(LVAP).

The result is calculated on the basis of the equation $V = (LVL / 3) \times (LVAM + (LVAM+LVAP)/2 + LVAP/3)$ and is given in ml.

[V Simpson's single plane method] – Left Ventricle Volume Measured by Simpson's Single Plane Method

The measurement is carried out in the apical four-chamber view.



Move your finger or the stylus to counter the lumen of the left ventricle.

The scanner automatically connects the initial and the final points of the counter.

The counter is automatically applied with the lines parallel to its base and the long axis of the ventricle.

The scanner calculates the left ventricle volume on the basis of the long axis of the ventricle, the number of perpendicular lines, and their size. The result is given in ml.

[V Bullet] – Left Ventricle Volume Measured by Bullet Method.

The measurement is carried out in the B+B mode.

Obtain cross sections of the left ventricle in the long axis and the short axis on the level of the mitral valve.

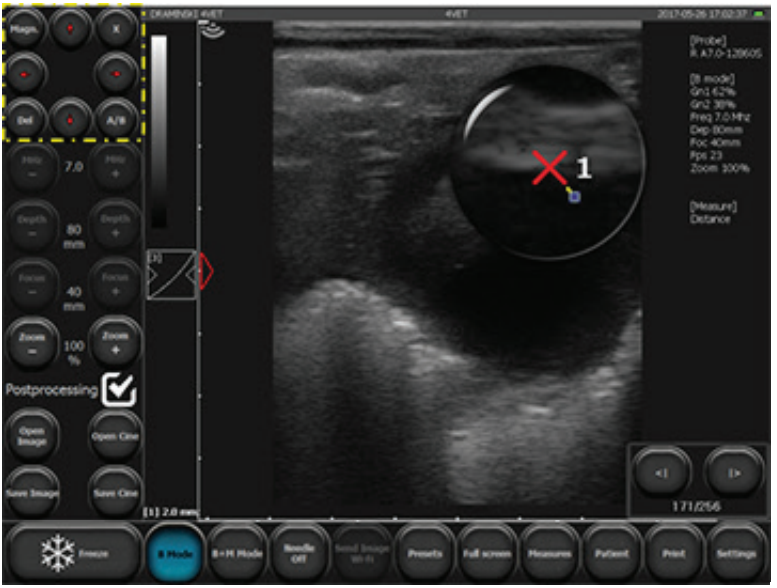
Mark these measurements:

1. Distances in the long axis of the left ventricle (LVL),
2. Surface area of the left ventricle (ellipse) in the cross section on the level of the mitral valve (LVAM).

The result is calculated on the basis of the equation V = (5 / 6) x LVL x LVAM and is given in ml.

Editing Measurements

You can change the location of the marked measuring points.



When measuring points are being set, a window with navigation buttons appears in the upper left-hand corner of the screen (see the yellow dotted line in the image shown above).

You can use these buttons to change the location of the point marked with a red cross in the example.

To switch to the next measuring point, press [A/B].

Press [Magnifying glass] to turn this function on or off.

To delete a single measurement select [Del]. A previous measurement is activated.

Press [X] to turn the navigation buttons off.

The measurement panel can be moved to any place on the screen by selecting the middle of the window with your finger or the stylus and moving it to the desired location.

Clear

When [Clear] is pressed, all of the elements of a measurement and the results are removed from the screen.

Measurement elements are also deleted when you unfreeze an image in the B mode or switch to the B mode from the other modes.

Optimization of B+M and M modes

Selection of the sweep speed in M mode

To select the sweep speed, press the [B+M Mode] button. Above the button a submenu appears where you can select one of the following values: 1s, 2s, 3s, 4s.

Moving the M line

The M line is applied on the B mode image. To change its location, drag it with a finger to the desired location.

Switching between M and B+M mode

After pressing [B+M mode], a submenu appears on the screen. The button [M/B+M] is used to switch between the B+M and M modes.

Saving and Uploading Images and Cine Loops

This function saves frozen images and cine loops to the internal memory of the scanner.

Animal data and descriptions can also be added and saved.

Notice: Remember to download the images and cine loops to external memory devices regularly and clear the memory of the scanner.

Saving an Image or Cine Loop

To save an image or cine loop, first freeze it from the basic panel using the [Freeze] button then press [Save Image] or [Save Cine].

A dialogue box appears with a virtual keyboard. You can enter patient data when saving an image or cine loop.

The button [Clear data] clears fields which are filled with data copied from the previous exam.

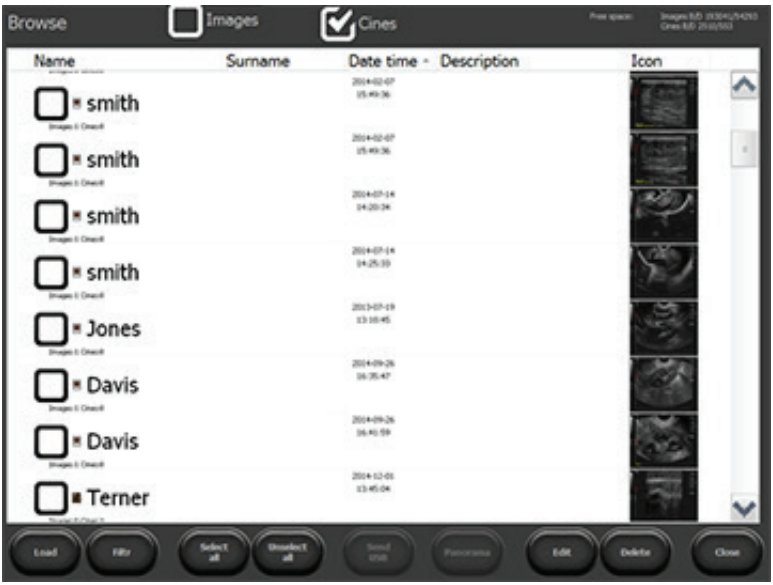
The [Save] button saves your information and [Cancel] deletes it.

You can enter data into the patient record before an examination starts. See *Patient Data Function* later in this chapter.

Uploading an Image or Cine Loop

To upload an image or cine loop saved in the scanner's memory to the basic panel or external data storage media, press the [Open Image] or [Open Cine] button on the basic panel. Press the box for Images and/or Cines at the top of the screen until a check mark appears. A screen with a list of the saved images and/or cine loops is shown with functions along the bottom. Select the desired image or cine loop by pressing the box next to it until a check mark appears, then press the[Load] button in the bottom left corner.

Note: This process can be used to transfer images and records from the 4VetJ to a Mesa 2 running EmberEquine software via Wi-Fi. Cine Loops cannot be sent via Wi-Fi.



Manage saved images and cine loops using the following functions:

- [Load] – Loads the image or cine loop to the basic panel
- [Filter] – Switches on the search by name function
- [Select all] – Selects all of the images from the list
- [Unselect all] – Deselects all of the images from the list
- [Send Image Wi-Fi] - Sends images and records to a Mesa 2 (communication and software must be set up first)
- [Send USB] – Allows data to be exported to external data storage media (the button is activated as soon as external memory is connected to the scanner)
- [Edit] – Allows editing of the description and patient data associated with the saved image
- [Delete] – Deletes the selected image from the computer memory
- [Close] – Returns to scanning

Quick Filtering of Saved Data

You can change the order of the files displayed in the list of images or cine loops by name, surname, date, or description. Press on the title of the field you want to change. If you select Surname, for example, data are displayed in alphabetical order on the basis of the patients' surnames. Press on the same field again and the entries are shown in reverse order.

Send Image to the Mesa 2 Via Wi-Fi (Option)

This function allows you to transfer images and records (not cine loops) from the 4VetJ to the Mesa 2 Rugged Tablet. You need to have an EmberEquine solution to do this. For details on how to set up Wi-Fi and make a transfer. refer to the EmberEquine manual located on the Mesa 2 in the *Ember Help* folder tile located in the Windows Start menu or on our website at *www.junipersys.com/emberequine/support*.

Export Data to External Storage Media

Images and cine loops can be transferred to a USB storage media like a thumb drive or external hard drive. Follow these steps:

1. Connect the storage media to the 4VetJ's USB port.

2. On the basic panel press the [Open Image] or [Open Cine] button.
3. A screen with a list of the saved images or cine loops is shown (see previous graphic).
4. To select an image, go to the first column, Name, and press on the box next to the name of the item you want to export. A check mark appears next to the selection. Press the [Send USB] button. A window showing export progress is shown.
5. When exporting finishes, choose one of these options:

    a. [Close] – Closes the window, but does not disconnect the external memory, so further exporting is possible.

    b. [Close and eject] – closes the window and allows you to safely disconnect the external memory from the system.

Notice: When exporting files, the system creates a folder called"BF32 save" on the external drive along with a folder with the date exporting occurred. Separate folders are created for exported images and cine loops.

Export Images and Cine Loops into DICOM files

You can export data into DICOM files. From the basic panel press the [Settings] button, then the /DICOM/ tab.

Press either the [Save USB cine in DICOM] or [Save USB image in DICOM] button. Going forward, data is exported onto USB storage devices in a DICOM file format.

Patient Data Function

You can enter data into the patient record before an examination starts. All the data that is entered is automatically assigned to the saved images and cine loops.

Press the [Patient] button from the basic panel. The following dialogue box with a virtual keyboard is shown.

Enter the desired patient data.

The [Save] button saves your information and [Cancel] deletes it.

By selecting the option [Always ask about patient's data], this dialogue box appears every time you save an image or cine loop. If this option is not selected, this dialogue box does not appear and saved images are attributed to previously entered data.

Importing Data From the DICOM the Modality Work List
Open the patient record by pressing on the [Patient] button on the basic panel. Press /Dicom MWL/. The Modality Work List with patients expecting to be examined opens. Select a particular patient on the list, and press [Load].

Note: To import patient data from the Modality Work List, the scanner has to be configured correctly to work with a DICOM printer. See DICOM *under* Advanced Settings *later in this chapter.*

Needle Echo Enhancement Tool

This function is only available when a linear probe is connected. It enhances the echo of the needle in a patient's body. This function is useful with the "in plane" method.

In order to activate this option, press [Needle OFF]. The button changes its name into [Needle in plane right]. The ultrasound beam steers to the right side of the imaging sector. This option improves the visibility of the needle inserted from the right side of the image.

Pressing the button again activates the option [Needle in plane left], which improves the visibility of the needle inserted from the left side of the image.

To switch this function off, press [Needle in plane left]. The button changes to [Needle OFF].

Full Screen

This function hides the control panel and the mode panel, allowing the image to fill the full screen. Press the [Full screen] button on the basic panel.

In full screen mode you can:

- Use active fields of gain, focus and depth of scanning
- Change gamma settings
- Freeze an image
- Save images and cine loops
- Perform measurements

Printing Images

To print images, you need to install the proper printer drivers.

The scanner has default printer drivers for a Mitsubishi P95D.

If multiple printers have been set up to use with the scanner, select a printer from the list before printing.

Printing During the Examination

To print an image during the examination, freeze the image and then press [Print] from the basic panel.

In the right bottom corner of the screen a window with *print preview* appears.

Press [Print] in the print preview window to print the image, or [Clear] to decline printing.

Printing Saved Images

To print the previously saved image, upload it on the screen then press [Print].

In the right bottom corner of the screen a window with *print preview* appears.

Press [Print] to print the image or [Clear] to decline printing.

Printing Multiple Images on One Sheet

You can print up to four images on one sheet of paper by following these steps:

Freeze the image -> press [Print] -> unfreeze the image and continue the examination -> freeze the image -> press [Print]. Repeat this activity until a relevant number of images appear in the print preview window. When you are ready, press the [Print] button located in the print preview window.

Presets

Presets Activation

The 4VetJ scanner has presets for the liver, kidneys, abdominal cavity, aorta, thyroid gland, superficial blood vessels, lungs, musculoskeletal system and hips examinations.

To activate preset, press the [Presets] button on the basic panel. A list of available presets appears. Press on the desired preset name, and the preset is activated.

You can also activate presets from the Preset Management window using the [Load preset] button.

Saving Presets

This function lets you save your favorite settings under the user name. It can also be used to save optimal settings for examination of a particular organ.

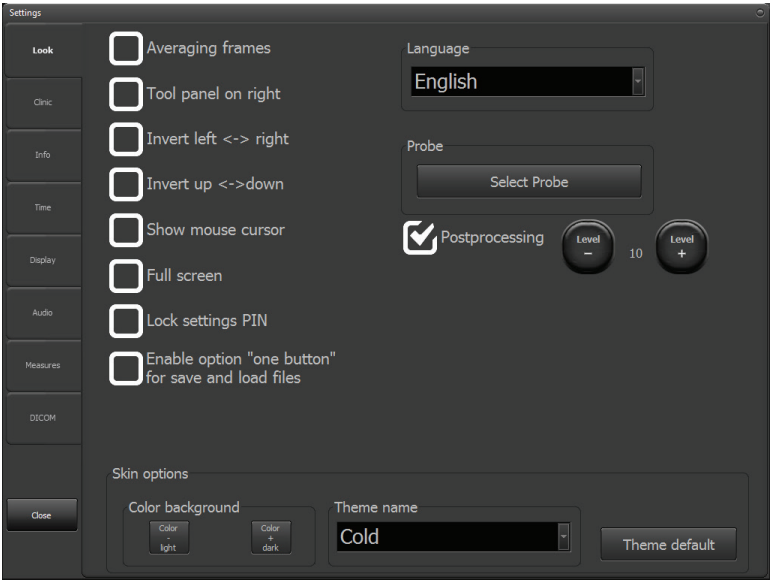
To add a new preset, first optimize the settings of the scanner (gain 1 and 2, frequency, depth of scanning, focus, zoom and gamma). Then press the [Presets] button and select [Manage presets]. A dialogue box appears for adding, deleting, editing and switching on presets.

On the right side of the window, the current settings of the scanner appears. To save it, press [New preset]. A window appears where you can enter the name of the preset. Press [OK]. The preset is saved and appears on the list in the Manage Presets window.

To delete the preset, open the Manage Presets window and select the name of the preset, then press [Delete preset].

Settings

You can perform extra functions in [Settings]. Press the [Settings] button on the basic panel. The row of tabs shown vertically along the left side provide the options that follow.



Look

In the /Look/ tab there are tools used to modify the appearance of the basic panel.

Select or deselect the following options by pressing on the button before the option or from a list:

- Averaging frames
- Tool panel on right
- Invert left <-> right, Invert up <-> down (changing orientation of the image up-bottom, right-left; change of the image orientation is signalled by moving the marker which corresponds to the marker on the probe)
- Show mouse cursor
- Full screen
- Lock Settings PIN
- Enable option “one button” to save and load files

- Language: select from the pull-down list
- Probe: select from a list of probe options
- Postprocessing on or off
- Postprocessing Level- or Level+
- Skin options: Select Color background (Color light, Color dark), Theme name, and Theme default

Enable Option "One Button" to Save and Load Files
When this option is activated, the buttons [Load image] and [Load cine] change their function depending on the probe's activity.

During an examination, the buttons load an image or cine loop.

When an image or cine loop is frozen, the same buttons save the image or the cine loop.

On the tool panel, buttons for [Print] and [Quick save] are available.

[Quick save] is used to save a frozen image directly onto external memory storage like a USB drive.

Postprocessing
Turn this on for speckle reduction, contrast enhancement, and edge sharpening. You can adjust it with the Level- and Level+ buttons.

Clinic
The /Clinics/ tab on the right side of the appearance settings screen lets you enter the name of the practice or the doctor's name. The name appears on the basic panel in the upper information bar above the image window.

Info
The /Info/ tab shows information about the software, hardware, network, and license. The following functions can also be performed:

- Update the software of the scanner
- Select the printer from the list of connected printers

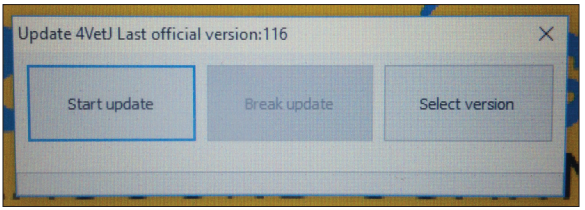
- Select the style of name creation for the files exported to external memory storage
- Reset the ultrasound scanner system

Update the Scanner Software

Over time, the 4VetJ software could be updated. We recommend that you use updates that are tested by us to avoid potential problems. Follow these steps:

1. The 4VetJ software update that was last tested is listed on our website at: *www.junipersys.com/emberequine/downloads*.

   Example: February 2018 4VetJ software update 116
2. To see which software version is currently running on the 4VetJ, On the 4VetJ, press [Settings]. On the Settings screen, press the /Info/ tab.
3. An update screen appears.



   The software version loaded on the 4VetJ is shown at the top. Example: Update 4VetJ Last official version: 116
4. If this number matches the number shown in step 1, no update is needed. If a lower number is shown, you can update the software.
5. Connect the 4VetJ to the internet using Wi-Fi or connect a LAN cable to the socket on the scanner.
6. Press /Select version/ as shown in step 3. A list of software versions available is shown. Select the version you want to update to, then press /Update selected onLine/ at the top of the screen.
7. The system starts loading the update. After the software is loaded, the new version is automatically installed. Wait until the software starts before you do anything.

Select a Printer
If drivers are installed for more than one printer, select the printer you are going to use. Select the /Info/ tab. In the field "Set printer" select the printer connected to the scanner from the pull down list.

If you want to be asked which printer to use before each printing, in the field "Set printer" select "Select printer while printing."

Selection of Name Creation Style of the Exported Files
The system automatically gives names to exported files.

By default files are named in accordance with the date of the examination, e.g. 20140112_14081415837, where 20140112 is a date, and 14081415837 is the time.

File names can be set up in the following styles:

- <Date_Time>
- <Date_Time><Surname><Name>
- <Date_Time><Name><Surname>
- <Date_Time><Surname><Name><Description>
- <Date_Time><Name><Surname><Description>

To select the style of name creation of the exported files, press [select the /Info/ tab. In the field "Save filename format" select the desired format for names from the pull down list. The scanner saves the settings for the style automatically.

Time
Press [Settings]. The /Time/ tab is used to update the date and time for the system.

Press [Set Date and Time] to enter the current date and time.

Display
In the /Display/ tab there are options to set the brightness of the display and calibration of the touch panel.

Touch Panel (Touchscreen) Calibration
The 4VetJ touchscreen has a default calibration.

If the system malfunctions, it is possible that the touchscreen has become uncalibrated. You can suspect that this is the case if the accuracy is low when a measurement is made, for example.

To calibrate the panel, enter the Settings menu and choose the /Display/ tab. Press the [Calibration touch panel] button.

The system shows the message: "Do you want to allow this app to make changes to your device?." Follow these steps:

1. Press [Yes]. A window with the touch panel settings is shown.
2. A Touch Panel Device List is shown. On the left of the window, buttons for Device Addition, Basic Setting, Touch Setting, Mouse Setting, and Tool Setting are shown. List Update, and Monitor configuration options are shown beneath the Device List. Select the bookmark [Basic settings] on the left of the window.
3. In the section "Calibration" press the button [4Point].
4. The software shows four points in a sequence, which should be touched in the middle.
5. When the last point is touched, an [OK] button appears. Press it to end calibration.
6. Close the calibration software by pressing [Exit] in the bottom left corner of the window.

Audio
The /Audio/ tab is used to set the level of the sound volume.

To test the level of sound volume, press [Test Doppler].

Measurements
The /Measures/ tab is used to modify the list of the displayed parameters in the Aging tables.

To stop displaying these measurement, deselect the field.

DICOM

The /DICOM/ tab lets you configure and save information regarding a DICOM printer, MWL, and storage. See the details that follow.

DICOM Printer Configuration

In the DICOM Printer section, enter the following information:

- Host – name of the DICOM server that the printer is connected to
- Port – the port number on the DICOM server that the scanner is to be connected to
- AET – name of the service on the DICOM server (this field can be empty, unless the service name is not directly determined on the server.

Once the information is entered, press the "Enable DICOM printer" option. Confirm the entered changes with the [Save DICOM Settings] button at the bottom of the screen.

DICOM Modality Worklist Configurations

In the DICOM Modality Worklist (MWL) section, enter information similar to *DICOM Printer Configuration*.

In the field "Codepage" select the code served by the DICOM server from the pull down list. You must get this information from your DICOM service provider.

Once the information is entered, press the "Enable Modality Worklist" option. Confirm the entered changes with the [Save DICOM Settings] button at the bottom of the screen.

Data Storage Configuration

In the DICOM Storage section, enter the same information you entered in the *DICOM Modality Worklist (MWL)* section.

Once the information is entered, press the "Enable DICOM Storage" option. Confirm the entered changes with the [Save DICOM Settings] button at the bottom of the screen.

Wi-Fi

The /Wi-Fi/ tab displays information about hosted network Wi-Fi (portable Wi-Fi hotspot) with options to start, stop, set up passwords, and auto start. A list of available Wi-Fi access points is also shown that you can connect to, disconnect from, or forget. Auto connect can be selected.

Note: Details on how to use Wi-Fi to link the 4VetJ with a Mesa 2 running EmberEquine software are given in the EmberEquine manual, which is available on the Mesa 2 in the *Ember Help* folder tile located in the Windows Start menu. *It is also located on our website at www.junipersys.com/emberequine/support.*

Troubleshooting

Problem	Basic Check
The 4VetJ ultrasound won't start when I push the on/off button.	▪ If you are operating it with the battery, verify that the battery reached a full charge before operation. ▪ If you are using the AC power supply, check the cable and make sure it is property connected to a wall outlet and the 4VetJ. The red battery LED should be on. You can also try disconnecting the unit from external power and powering it on using battery power.
The device starts, but the operating system does not start	▪ See if an external storage device like a USB flash drive is connected to the USB port. If a device is connected, disconnect it, switch the 4VetJ off, and switch it on again. ▪ If you are running on battery power, plug in the AC power supply. The battery could be deeply discharged.
The proper image is not shown or the image is disturbed	▪ Make sure that the probe is properly connected to the unit. Disconnect and connect it again. ▪ Make sure that the probe connector lock is in the vertical, locked position. ▪ The probe type should be recognized automatically by the system. See if the probe symbol and number on the information bar on the display corresponds to the symbol and number on the connected probe.

Problem	Basic Check
The image is too bright or too dark	▪ Check the level of gain and gamma and make sure that they are set correctly.
There are visible, moving spots on the image	▪ If you are running the 4VetJ on battery power, try running it using the AC power supply. ▪ If you are running the 4VetJ using the AC power supply, try plugging the power supply into another socket or unplug the AC power supply and run the 4VetJ on battery power.
The charge indicator does not come on when the AC power supply is plugged in	▪ Check the AC power supply. Make sure the cords, the connector that goes into the 4VetJ, and the power plug that goes into the wall socket are in good condition. ▪ Make sure that the wall outlet works. Try a different outlet.
The 4VetJ only runs for a short amount of time when using battery power	▪ The battery might not be fully charged. Make sure that the green battery LED on the 4VetJ comes on before unplugging the unit from the AC power supply. ▪ The operating environment temperature is too low. The operating temperature range is: +50°F to +113°F (+10°C to +45°C).
A message on the screen says "Probe OFF" which is disturbing an examination	▪ Make sure that the probe is properly connected to the unit. Disconnect and connect it again. ▪ Make sure that the probe connector lock is in the vertical, locked position. The message "Probe ON" should appear.

Problem	Basic Check
Messages on the screen are disturbing an examination	▪ Turn the device off and on again.
The 4VetJ casing, elements, probe, or connecting cables could have mechanical damage	▪ Perform a thorough visual inspection, then contact our service department and follow their recommendations.

If none of the basic activities solves the issues you are having or other problems appear, contact our service department (see *Appendix B, Warranty and Repair Information* for details).

APPENDIX A

Clean, Store, Transport, and Recycle

Clean, Store, Transport, and Recycle

Follow the instructions in this chapter to properly clean, store, transport, and recycle the 4VetJ and components.

Clean and Disinfect

The 4VetJ and probe should be cleaned and disinfected before each use and before they are stored, transported, or sent to our service department for servicing or repairs. They can get contaminated while being used, including by infectious agents.

CAUTION: The 4VetJ is not waterproof. During wet cleaning and disinfecting, be cautious and pay special attention to openings like the connector and battery charging ports and the probe socket. The device should be powered off and unplugged during a thorough cleaning and disinfecting. Use an agent approved to disinfect medical devices. The personnel performing disinfection on the equipment should wear protective gloves and clothes.

4VetJ Ultrasound Scanner

Clean the body of the 4VetJ after use with a soft cloth or a paper towel using warm water or a mild cleaning solution to avoid mechanical damage.

The surface of the device should be disinfected with an agent approved to disinfect medical devices. Foam or spray agents are recommended,

After wet cleaning or disinfecting of the 4VetJ, dry it with a soft cloth.

Touchscreen

When you clean or disinfect the touchscreen, it is important to use substances that will not damage the surface of the screen. Use a soft cloth and avoid rubbing it with anything abrasive that could scratch it.

Probe

Clean and disinfect the probe before each examination. The probe and cord are waterproof. The probe connector (which attaches to the probe socket) is not waterproof, so use caution when you are cleaning or disinfecting the probe and cord to avoid getting the probe connector wet. Do not scrub the head of the probe. Clean it gently with an approved substance, warm water, or a mild cleaning solution. Do not use concentrated, aggressive, or abrasive agents or substances like alcohol or bleach that could permanently damage the head of the probe.

Store

To store the 4VetJ and components when they are not in use, charge the battery pack at least 50% or keep it plugged into AC power using the power supply provided with the 4VetJ. Store it in a cool, dry location away from dirt or moisture and where the touch panel, probe socket, probe connector, and probe are not damaged. The storage temperature range is +41°F to 113°F (+5°C to +45°C).

If the 4VetJ is not charged while it is powered down and the battery is discharged, the unit turns off.

Note: Data and programs are secure as long as they have been saved, even if the battery pack becomes discharged. The 4VetJ does not depend on the battery to store data for extended periods.

Charge the 4VetJ before you use it after a storage period.

Transport or Ship

Before transporting or shipping the 4VetJ and components, they must be protected against damage. The carrying case offers protection when it is properly packed and securely closed and latched.

Special protection is required for the ultrasound probe and the touchscreen. Protect them from impact, pressure, or abrasive substances that could cause damage.

Make sure that nothing is touching the touchscreen during shipping (except for the protective case). Put the stylus in the holder on the 4VetJ and place the stylus tether where it won't touch the screen.

Make sure that the 4VetJ is turned off.

Attach the probe to the 4VetJ and lock it. Wrap the cord around the probe cord wrap.

Note: Some probes might not fit into the shipping container when stored around the cord wrap. They can be removed and placed in the accessory slots inside the case.

WARNING! The 4VetJ cannot be shipped on a commercial airline. The internal Li-Ion battery is 259Wh, which is greater than what is allowed by TSA or airline regulations. You must ship it using a ground carrier.

Recycle

When the 4VetJ and the AC power supply are no longer usable, they must not be disposed of with municipal waste. It is your responsibility to dispose of your waste equipment by handing it over to a designated collection point for the recycling of waste electrical and electronic equipment. Inform them that there is an internal Li-Ion battery pack inside the 4VetJ.

APPENDIX B

Warranty and Repair Information

Warranty and Repair Information

Limited Product Warranty

Two Year Warranty

Juniper Systems, Inc. ("JS") warrants that the Draminski 4VetJ Ultrasound Scanner, internal battery, and probe shall be free from defects in materials and workmanship, under normal intended use, for a period of 24 months from the date of shipment.

Ninety Day Warranty

JS warrants that accessories shall be free from defects in materials and workmanship, under normal intended use, for a period of ninety (90) days from the date of shipment:

Warranty Exclusions

This warranty shall not apply if:

(i) the product has been set up improperly or has been improperly installed or calibrated,

(ii) the product is operated in a manner that is not in accordance with the user documentation,

(iii) the product is used for a purpose other than for which it was designed,

(iv) the product has been used in environmental conditions outside of those specified for the product,

(v) the product has been subject to any modification, alteration, or change by or on behalf of customer (except and unless modified, changed or altered by JS or under direct supervision of JS),

(vi) the defect or malfunction results from misuse or accident,

(vii) the serial number on the product has been tampered with or removed, or

(viii) the product has been opened or tampered with in any way

Parts that are excessively worn are not covered under warranty. These may include, but are not limited to, the touchscreen.

This warranty is exclusive and JS will not assume and hereby expressly disclaims any further warranties, whether express or implied, including, without limitation, any warranty as to merchantability, fitness for a particular purpose, non-infringement or any warranties arising from the course of performance, dealing, or usage of trade. JS specifically makes no warranties as to the suitability of its products for any particular application. JS makes no warranties that

- Its products will meet your requirements or will work in combination with any hardware or products provided by third parties
- The operation of its products will be uninterrupted or error free
- All defects in the product will be corrected.

JS shall not be responsible for software, firmware, information, or memory data contained in, stored on, or integrated with any products returned to JS for repair, whether under warranty or not.

Remedy

In the event a defect in materials or workmanship is discovered and reported to JS within the specified warranty period, after evaluation by a technician at a certified repair center, JS will, at its option, repair the defect or replace the defective part or product. Replacement products may be new or reconditioned. JS warrants any replaced or repaired product for a period of ninety (90) days from the date of return shipment, or through the end of the original warranty period, whichever is longer.

Limitation of Liability
To the fullest extent allowed by law, the obligation of JS shall be limited to the repair or replacement of the product. JS shall in no event be liable for special, incidental, or consequential, indirect, special or punitive damages of any kind, or for loss of revenue or profits, loss of business, loss of information or data, or other financial loss arising out of or in connection with the sale, installation, maintenance, use, performance, failure, or interruption of any product. Any responsibility and/or liability of JS shall, in connection with a warranted product, be limited in the maximum amount to the original purchase price.

Governing Law
This warranty is governed by the laws of Utah, U.S.A. and excludes the United Nations Convention on Contracts for the International Sale of Goods. The courts of Utah shall have exclusive personal jurisdiction in case of any disputes arising out of or in connection with this warranty.

Warranty Status
You can check the warranty status of the 4VetJ on our website at *www.junipersys.com/Juniper-Systems-Rugged-Handheld-Computers/support/Warranty/Check-Warranty-Status*.

Warranty Repairs
Warranty information for the 4VetJ Ultrasound is located on our website at *http://www.junipersys.com/Juniper-Systems-Rugged-Handheld-Computers/support/Warranty/Standard-Terms-and-Conditions*.

Standard repair orders and are valid for 30 days from the date issued. If you will not be sending the product to us immediately, please wait to request a repair until closer to the time when you are ready to send us the product.

Services and Materials Provided Under Warranty
- Analysis of problem by service technician
- Labor and materials required to fix defective parts
- Functional analysis performed after repair

- Shipping costs to return device to customer

JS strives to provide full repair services for our products. However, in some rare cases (depending on the repair need), it may not be possible to perform a repair due to an unforeseen discontinuation or lack of supplied parts from third-party vendors. Our policy is that we will do what is best and most beneficial for our customers and company.

Repairs, Upgrades, and Evaluations

CAUTION: *Do not attempt to repair the 4VetJ yourself. This action voids the warranty.*

We recommend that you have the service department perform a technical review of the 4VetJ every two years to help guarantee the safety of the patients (animals).

Information about repairs, upgrades, and evaluations is located on our website at *www.junipersys.com/Juniper-Systems-Rugged-Handheld-Computers/support/Repairs/Repair-Policies-Instructions*. You can locate a repair center, submit a repair order, check repair status, view terms and conditions, get shipping instructions, and view lead times. For warranty repairs, make sure you are within the applicable warranty period.

Before returning a unit, please get permission by submitting a repair order form on our website at *www.junipersys.com/design/junipersys/rma_request.php* and waiting for confirmation. An RMA is generated and shipping instructions are sent to you. You can also contact a repair center directly. Be prepared to provide the following information:

- 4VetJ serial number) printed on the label on the back of the unit)
- Name and shipping address of company
- Best contact method (phone, fax, email, cell/mobile)
- Clear, highly-detailed description of the repair or upgrade

- Credit card/ purchase order number and billing address (for a repair or upgrade that is not covered by the standard warranty or an extended warranty policy)

You must clean and disinfect the 4VetJ and probe before returning them to our service department. Refer to *Appendix A, Clean, Store, Transport, and Recycle* for details.

WARNING! The 4VetJ cannot be shipped on a commercial airline. The internal Li-Ion battery is 259Wh, which is greater than what is allowed by TSA or airline regulations. You must ship it using a ground carrier. See *Appendix A, Transportation, Storage, Maintenance, and Recycling* for details on how to package and ship the 4VetJ.

APPENDIX C

Warnings, Regulatory Information, and Licensing

Warnings, Regulatory Information, Licensing

⚠ Product Warnings!

Follow the warnings listed below to use the 4VetJ, battery, and AC power supply safely. Please review additional warnings shown towards the end of *Chapter 1, Getting Started*.

4VetJ and Internal Battery Pack

The 4VetJ cannot be shipped on a commercial airline. The internal Li-Ion battery is 259Wh, which is greater than what is allowed by TSA or airline regulations. You must ship it using a ground carrier.

The 4VetJ contains a lithium-ion rechargeable battery pack. It is not user replaceable.

To reduce the risk of fire or burns, do not disassemble, crush, puncture, short external contacts, or expose the unit to fire.

Do not disassemble or open, crush, bend or deform, puncture or shred the unit.

Do not modify or remanufacture the unit, attempt to insert foreign objects, immerse or expose to water or other liquids, expose to fire, explosion or other hazard.

Only use the unit with a charging system that has been qualified with the system per this standard. Use of unqualified components or accessories may present a risk of fire, explosion, leakage, or other hazard.

The battery must be replaced by a service center only with another battery that has been qualified with the system.

Avoid dropping the unit. If it is dropped, especially on a hard surface, and you suspect damage, send it to a service center for inspection.

Improper battery use may result in a fire, explosion or other hazard.

AC Power Supply

To reduce the risk of personal injury, electrical shock, fire or damage to the equipment, follow this information:

Only use the power supply provided with the 4VetJ. Using other power supplies could be a fire hazard as well as damage the device and void the warranty.

Plug the AC power supply into an electrical outlet that is properly grounded and easily accessible at all times.

Do not place anything on the AC power supply or any of the other cables. Arrange them so that no one can accidentally step on or trip over them.

Do not pull on a cord or cable. When unplugging the wall charger from the electrical outlet, pull on the plug, not the cord.

There are no user serviceable parts inside.

The input power plug is the disconnect device to remove power.

This product is intended for continuous operation.

This product is not suitable for operation in the presence of a flammable anesthetic mixture with air or with oxygen or with nitrous oxide.

This product is not protected against the ingress of water.

To clean and disinfect the unit, wipe the surface with a cloth slightly dampened with mild detergent or normal hospital bactericides. Do not immerse the unit. Do not clean the unit with isopropyl alcohol or other solvents.

Certifications and Standards

United States

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

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

In compliance with the FCC rules, 47 CFR 15.105(b), the user must be notified that 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.

In compliance with the FCC rules, 47 CFR 15.21, the user must be notified that changes or modifications to the 4VetJ that are not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Only approved accessories may be used with this equipment. In general, all cables must be high quality, shielded, correctly terminated, and normally restricted to two meters in length. Wall chargers approved for this product employ special provisions to avoid radio interference and should not be altered or substituted.

Radio Frequency Safety

This equipment complies with radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

APPENDIX D

Specifications

4VetJ Specifications

Note: Specifications are subject to change without notice.

FEATURE	SPECIFICATION
Imaging Modes	▪ B, B+B, 4B, B+M ▪ English, French, German, Spanish, Brazilian Portuguese are built in; other languages are available for download
Probes and Frequencies	▪ Convex, 2-8 MHz ▪ Microconvex, 409 MHz ▪ Linear, 50 mm, 5-10 MHz ▪ Linear, 40 mm 5-14 MHz ▪ Endorectal, 4-9 MHz
Image Management	▪ Dynamic focus ▪ Image freezing ▪ Zoom 50-300%, 20% per step ▪ Full screen viewing
Image Adjustment	▪ Gain 1 and 2 ▪ Frequency ▪ Depth ▪ Focus ▪ Gamma ▪ Frame averaging ▪ Negative
Presets	▪ Customizable ▪ Needle visualization enhancement (linear probes) ▪ Mare pregnancy and uterus ▪ Equine tendons ▪ Cat abdomen ▪ Small/Medium/Large dog abdomen
Grayscale	▪ 256 shades
Processing	▪ Speckle reduction ▪ Contrast enhancement ▪ Edge sharpening
User Interface	▪ Languages: English, Spanish, French, Arabic, Croatian, German, Korean, Polish, Russian

Measurements	■ Basic: Area, distance,k elipse, grid, stenosis, volume ■ Obstretric: Horse DC; horse DO; horse DSG; sheep LLC; Lama DBP; Sow LCC; cow DBP; cow LLC; small/medium dog GS; dog BPD medium; cat>30 HD, BD, CRL, and GSD
Operating System	■ Windows 10
Monitor and Functions Control	■ Resistive touch panel ■ LCD display
Memory and Images	■ 100 GB ■ Images and cine loops include description, date, and patient data
Data Transfer Standard	■ DICOM 3.0
Data Export	■ Wi-Fi 802.11 b/g/n 2.4 GHz ■ USB
External Ports	■ USB 3.0 ■ USB 2.0 ■ LAN ■ HDMI
Power Supply	■ AC adapter ■ Input: 50-60Hz, 90-264 VAC ■ Output: 18V DC/5A ■ Li-Ion battery pack (not user removeable), 14.4V, 259Wh, 18Ah ■ Operates 6+hours on one charge ■ Full charge in 5 hours, 70% charge in 3-4 hours ■ Low-battery indicator graphic ■ Led Indicators
Temperature Specifications	■ Operating Temperature: +50°F to +113°F (+10°C to +45°C). ■ Storage Temperature: +41°F to 113°F (+5°C to +45°C)

Components Included	■ 4VetJ ultrasound ■ Probe with cord wrap ■ Rechargeable Li-Ion battery pack (internal) ■ AC Power supply ■ 4-position tilt stand ■ Durable transport case ■ Stylus

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