E.I. MEDICAL IMAGING

VETERINARY ULTRASOUND SOLUTIONS

IBEX LITENXT

Ibex LITENXT Ultrasound System

Fast-Track User Reference Guide

Ibex LiteNXT manual can be downloaded at: https://www.eimedical.com/library

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FCC Regulatory Information

Contains FCC ID: Z64-WL18DBMOD

Contains IC: 451I-WL18DBMOD

This device complies with Part 15 of the FCC Rules subject

to the following two conditions

1) This device must not cause interference, and;

2) This device must accept all interference, including

interference that may cause undesirable operation.

WARNING:

Modification of this device without consent of the responsible party may void the users right to operate this device.

CE Declaration of Conformity

Pending

Table of Contents

Overview

Please read all the instructions and warnings before using the Ibex LiteNXT Portable Ultrasound system.

The **Ibex LiteNXT Portable Ultrasound User Guide** provides an overview of the features and functionality of the LiteNXT ultrasound system. This guide offers the information you need to quickly set up, operate, and maintain the LiteNXT.

The **E.I. Medical Imaging Ibex family** of ultrasound scanners are internally battery-powered devices designed for veterinary use. An external AC adapter is provided for charging the internal battery and powering the Ibex scanners. This guide does not cover the theory or science of diagnostic sonography or clinical veterinary practices. It is intended for users who are already familiar with ultrasound techniques.

The **Ibex LiteNXT ultrasound system** represents the 7th generation of portable, highly ruggedized ultrasound systems from E.I. Medical Imaging. The LiteNXT is the result of years of customer feedback and the hard work of our R&D team in Loveland, Colorado.

This **Ibex LiteNXT User Manual** is a short reference guide for the basic use and care of your Ibex LiteNXT ultrasound system.

 It is recommended that the user read <u>all</u> instructions and warnings before using this ultrasound device.

Charging the Battery Pack

1. Ensure that the battery is installed in the Ibex LiteNXT system. Engage the battery door latch to the upright lock position to ensure the system access door is properly sealed.
2. Connect the AC adapter to the Ibex LiteNXT system with the AC adapter connector inside the battery door.
3. Plug the adapter into a 110-240 VAC Outlet.
   During the charge cycle the orange battery light on the keypad illuminates indicating the charging process is underway. As the battery reaches its full charge, the light switches

off which indicates the battery is at full charge.
The total charge time will range between 120 and 180 minutes from a totally drained battery to a fully charged battery.

Only use the supplied 15v power supply to charge your LiteNXT. Failure to do so may cause damage to the system and void your warranty.

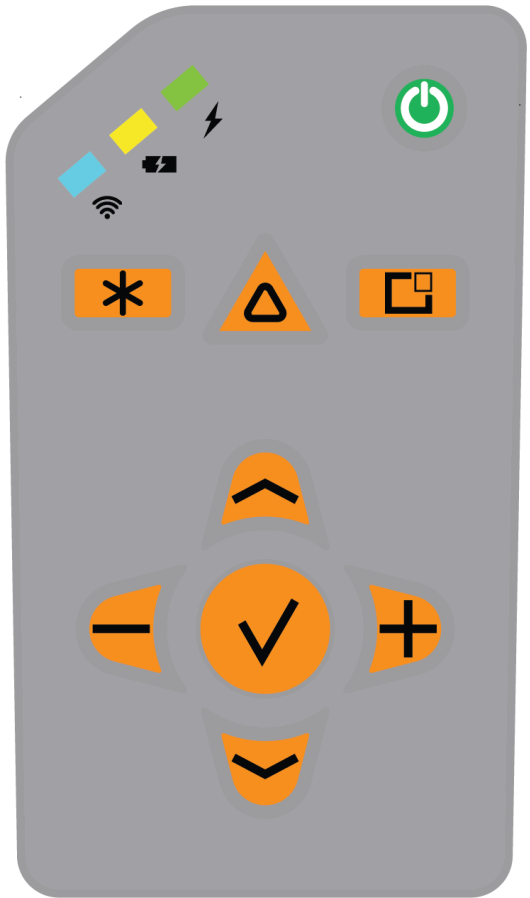
Transducer

The Ibex LiteNXT ultrasound supports the attached eCLi6 hybrid transducer. The eCLi6 transducer is hardwired to the Ibex LiteNXT for increased ruggedness and durability.

Video Headset

The InSite*NXT* video headset can be ordered as an accessory to work with the LiteNXT ultrasound system. Additional models are available. Ask your E.I. Medical Imaging sales representative for more information.

The LiteNXT uses standard DisplayPort over USB-C for connection to the video headset, the connector can be inserted in 2 directions, either will work. It is then secured by screwing the ring on the headset cable to the threaded body of the LiteNXT headset connector.



Ibex LiteNXT Keyboard

The multifunction keyboard on the LiteNXT can be configured to perform different functions.

The basic keys used to operate the LiteNXT system are as follows:

Keys and Functions

Power Button- used to power on/off the LiteNXT system.

 WiFi Indicator- will light **BLUE** when connected to WiFi network

Blinking:

- Slow: setting up the access point in DIRECT mode or connecting to a network in STATION mode.
- Fast: setting up the 5GHz access point, performing DFS scan.
- Fast-Fast-Slow: setting up the access point using a user selected channel

Error codes:

- Slow-slow-fast-fast; Unsupported display connected
- 4-times fast: Display Port link training has failed

 Charge Indicator- will light ORANGE when charging, no light when fully charged or if no battery detected

 Power Indicator- Will light Green when power is ON

POWER- The Power button is a multifunction key.

- Press Power button once to power system on.
- Press and hold Power button for 3 seconds to shut system down.
- Key Lock feature- Press power key three times to toggle keypad lock on and off.

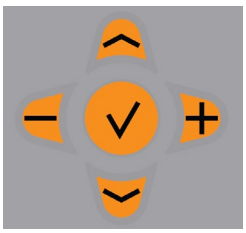
 FREEZE- The FREEZE button performs different functions based on mode:

Normal mode (Full screen): Press the FREEZE key to freeze and unfreeze the active image on the screen.

Menu mode: Back/ cancel

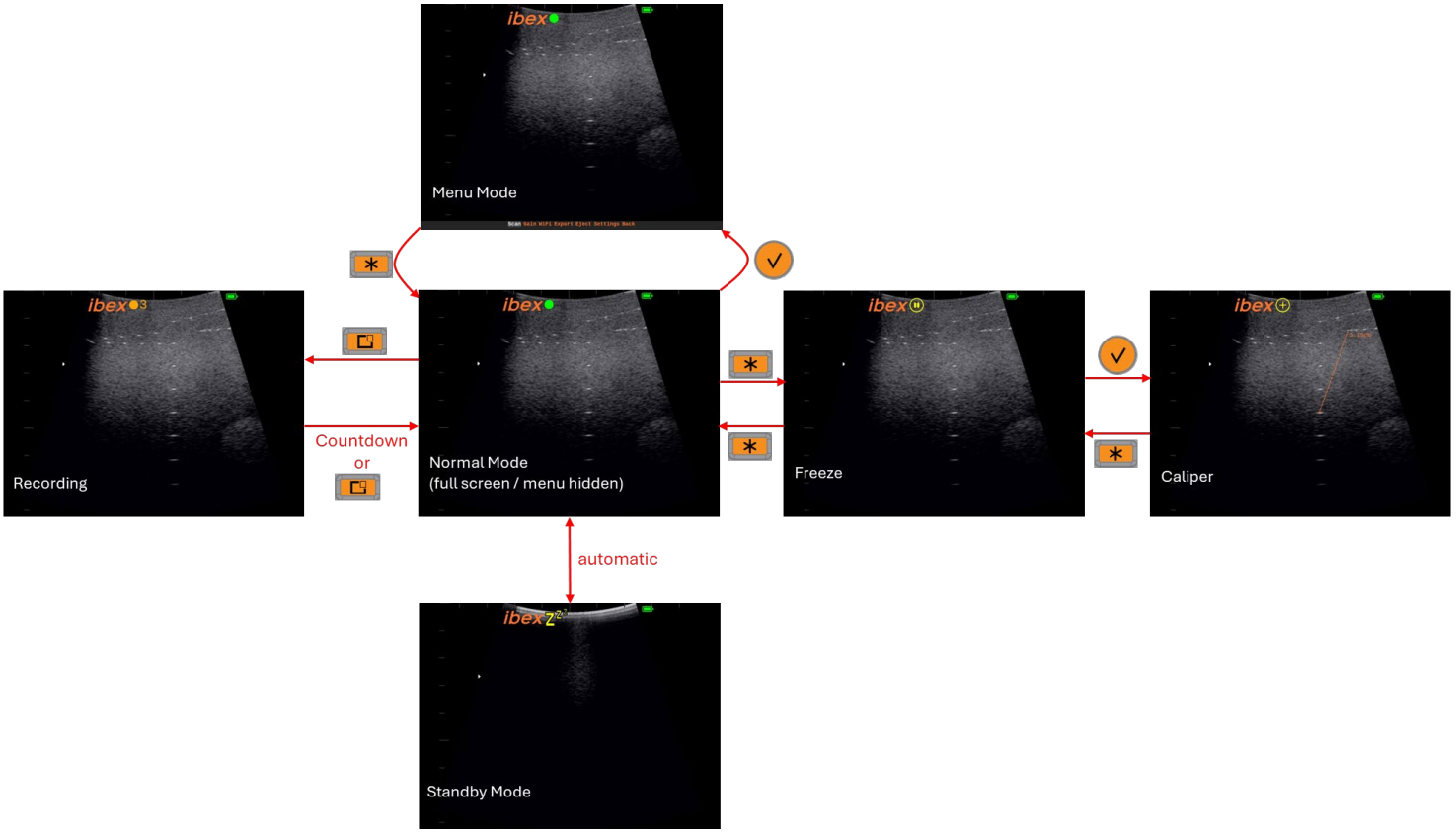
 Triangle- The Triangle/Action key is not configured by default.

 SAVE - Either takes a still image or start/stops a recording. This function can be changed in the Settings ➔ Miscellaneous menu.



Navigation Cluster- These keys are used to activate controls used in various functions. The Center Checkmark button is the SELECT key. The SELECT key has generic functionality depending on menus and functions on the screen. During normal mode, the left/right keys are used to decrease/increase the overall gain.

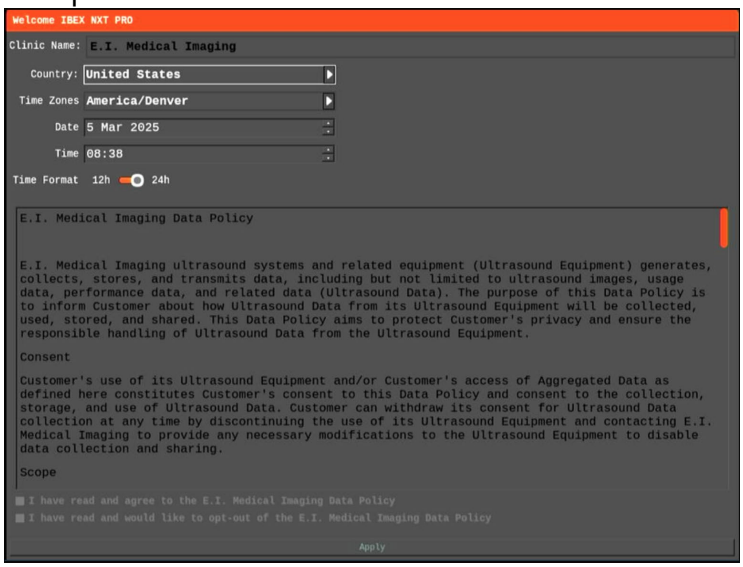
Up/Down will change the exam type.



Basic System Operation

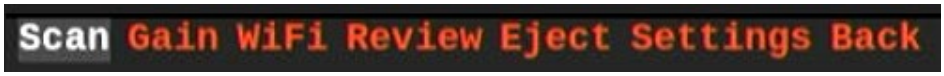
Welcome Screen

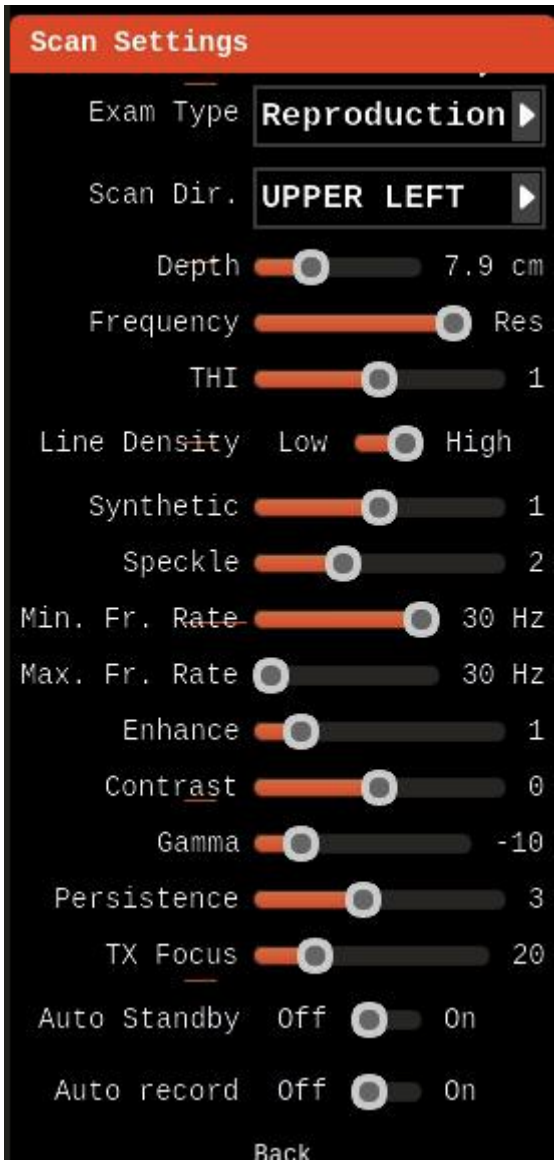
When you power on your LiteNXT system for the first time, you will find the Welcome Screen. On this screen you will be able to set your Clinic Name, Country of use, Time Zone, Date, Time and preferred time format. Also found here is a copy of the E.I. Medical Imaging Data Policy.



Use the directional arrows and Select key to input your selections.

Main Menu





Scan-

The Scan Settings menu provides access to advanced system controls.
There are various system presets with optimal settings for a specific exam type. For example, Reproduction. Some exam types incorporate Extended View for best performance.

Scan Settings Control Menu:

- Exam Type-
  This feature allows for a series of preset scanning configurations depending on the use case. The three preset Exam Types are:

    - Reproduction
    - Fetal Sexing
    - Arms Free
- Scan Direction-
  Allows the user to select the direction in which the system is scanning. The ibex logo ibex indicates the scan direction i.e. front edge of the transducer.
- Depth-
  Allows the user to control the scan depth.
- Frequency-
  Allows the user to control the transmit frequency of the transducer which will influence resolution at different desired depths.
- THI-
  Feature allowing for a cleaner image with better contrast and less artifact. THI doubles the image acquisition time, reducing the frame rate.
- Line Density-
  Adjusts the number of vertical scan lines that make up the image. A higher setting provides a finer image but increases the image acquisition time, reducing the frame rate.
- Synthetic-
  Adjusts beam sharpening to provide a sharper image with better resolution.
- Speckle-
  Adjusts image speckle pattern for a smoother image appearance.
- Minimum Frame Rate-
  Set the minimum frame rate. To achieve the minimum frame rate, the LiteNXT reduces the image width.
- Maximum Frame Rate-
  Set the maximum frame rate.
- Enhance-
  This setting can help sharpen edge detection of the active image by enhancing strong echoes.
- Contrast-
  Higher number, greater contrast, fewer grays. Only affects ultrasound image; not screen.
- Gamma-
  Used in conjunction with Contrast, Gamma helps adjust the grayscale intensities of the active image.
- Persistence-
  Persistence is a frame averaging feature which allows you to manipulate images based on application requirements. As a rule of thumb, when persistence is low, the image is faster

and grainier. When persistence is high, the image is smoother and slower; smearing is possible.

- Transmit Focus (TX Focus)-
  Used to set the transmit focus position. This is indicated by a white arrow on the left side of the image.
- Auto Standby-
  Allows the system to go into sleep mode when the transducer is not in contact with tissue to maximize battery life. The system comes out of standby when tissue contact is detected.
- Auto Record-
  Allows the system to automatically begin recording when the system detects probe contact.

Gain

OVERALL GAIN:
To adjust the overall gain, press the Left/Right arrow keys. Use the left and right arrow keys to decrease/increase the brightness of the entire field.

When adjusting specific GAIN or TGC values, a yellow bar will appear to indicate the area to be adjusted.

NEAR GAIN:
The near GAIN control is used to lighten or darken the intensity of the echoes in the near field of the image (the area closet to the transducer). Use the same technique to adjust near GAIN as it is used for overall GAIN (mentioned above).

FAR GAIN:
The far GAIN control is used to make adjustments to the electronic amplification of the echoes in the image area that are farthest away (far field) from the transducer. Again, use the same technique to adjust far GAIN as is mentioned in the overall GAIN section above.

WiFi

There are two modes of connecting the LiteNXT to WiFi enabled devices: Direct and Station.

DIRECT mode

Allows the LiteNXT to connect and stream images directly to a WiFi enabled device such as a phone or tablet.

STATION mode

Allows the LiteNXT to connect to an existing WiFi network.

Export

Allows the user to offload stored images and loops to the removeable USB flash drive.

Eject

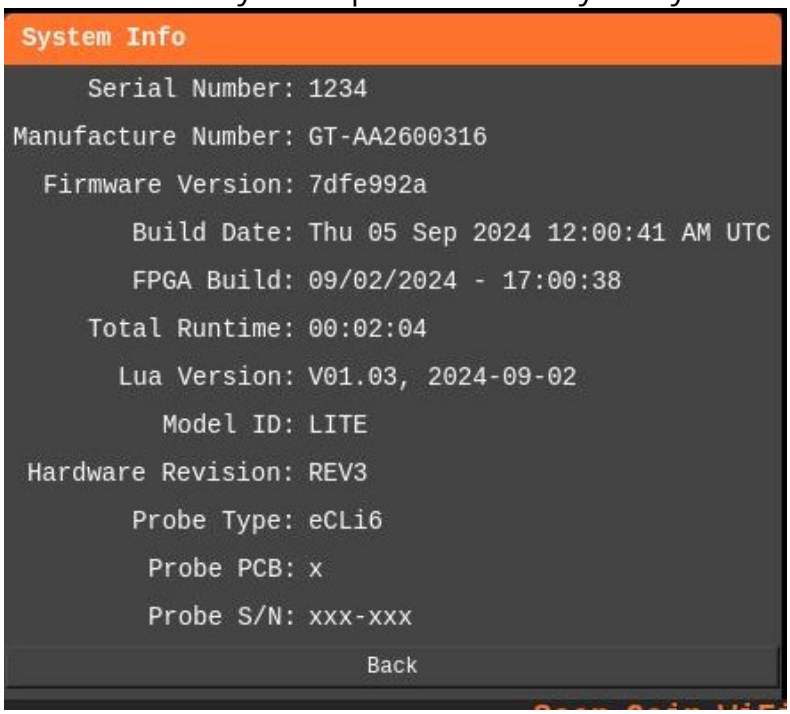
Allows the user to safely remove the USB flash drive.

Settings

The Settings tab has a drop-down menu with additional system settings and controls.

System Info

This screen provides the user with pertinent information for the LiteNXT system. This information may be requested should your system require maintenance.



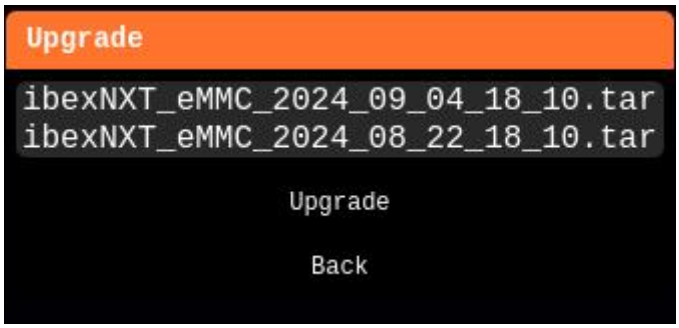
System

In the Maintenance menu the user can perform advanced system operations. This includes upgrading the system firmware when available to keep your LiteNXT operating at its best.

System Options

1. Upgrade- This is where the system firmware can be updated.
   The system firmware contains all operating software for the system. E.I Medical Imaging recommends you keep your system updated to the latest version of the firmware to take

advantage of new features and enhancements. Firmware file names have a .tar extension. For example: 01.03.00002.tar

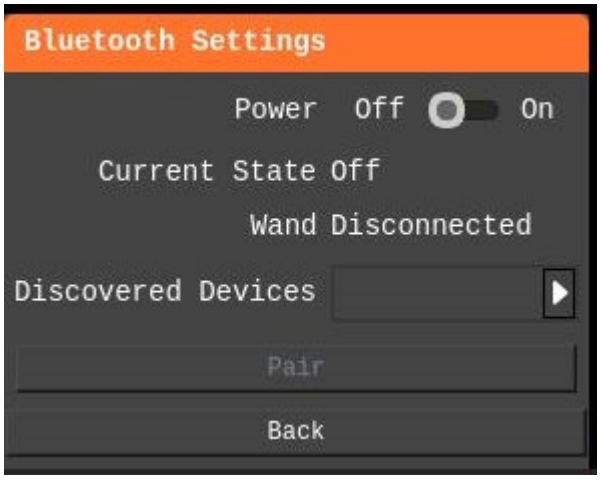


2. Backup- Automatically creates a backup image of the current firmware and all saved images/videos to USB flash drive. A progress bar will display while backup is being created.
3. Restore- Reloads the saved backup version.
4. System Reset- Restores the system to factory defaults and erases all saved images.
5. Reboot- Restarts system.

***System automatically backs up and images are restored when performing an Upgrade.

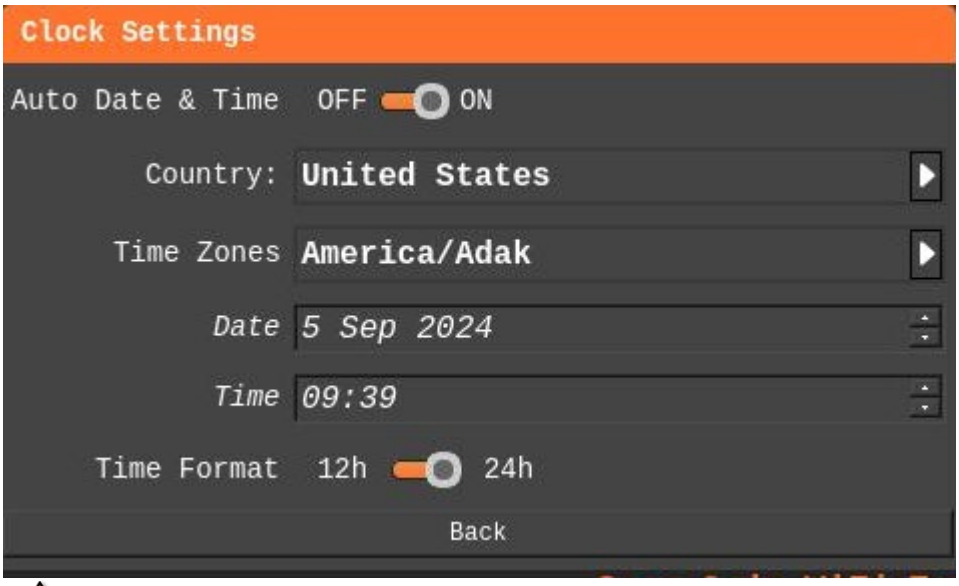
Bluetooth®

The LiteNXT utilizes Bluetooth® to connect with RFID readers and applicable remote-control devices.



Clock

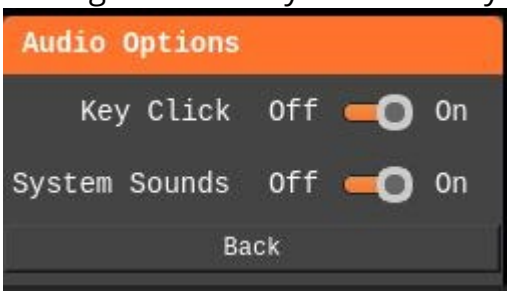
Use this menu to set/adjust your system's date and time settings.



Note- Auto Date & Time is OFF by default. In order to enable Auto Date & Time the LiteNXT must be connected to the internet.

Audio Settings

To change audio settings on the LiteNXT, enter the Audio Options menu:
Settings include Key Clicks and System Sounds.

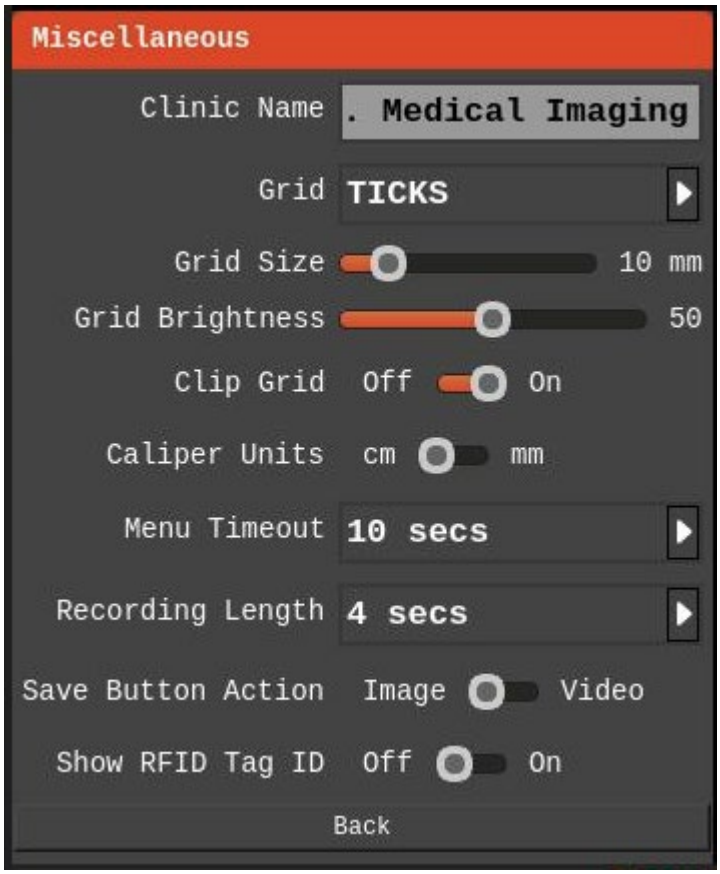


Video

Video setting options allow the user to control the appearance of the image in the headset.

Miscellaneous

Various system settings for additional user customization.



Clinic Name

Set the name of your clinic here. This will appear at the bottom of jpegs and avi's saved on your system.

Grid

Adjust this setting to add measurement rules to the background. These scale appropriately as you adjust the depth.

TICKS – Ruler style tick marks display along the top and left edges of the image area.
FULL– A full grid display allows for visual area estimation without drawing a bounding region. User can adjust brightness and size of the grid.
CIRCLES- Concentric circles display allowing for visual area estimation without drawing a bounding region.
NONE– No grid lines displayed.
MENU TIMEOUT- Adjusts the duration menus appear on the screen.

Recording Lenth

Sets the recording length when the record button is pressed. For 2,4,8 seconds, the recording will automatically stop. For Start/Stop, the recording begins when the record button is pressed and stops when the button is pressed again.

Save Button Action

Sets the default function of the button from Image to Video.

Keyboard

Settings in the Keyboard Settings menu allows the user to change the orientation/ functionality of the keyboard.

Flip Left/ Right- Depending on the orientation of the LiteNXT in use, the user may want to flip the keys to reflect use.

Flip Up/Down- Depending on the orientation of the LiteNXT in use, the user may want to flip the keys to reflect use.

Triangle Key-

- Caliper: Allows the user to switch from normal mode (fullscreen/menu hidden) with a single key click, instead of the normal key sequence Freeze Select
- Snapshot: Allows you to save still images
- None: No action

Manipulating Images

Freezing Images

The Ibex LiteNXT systems allow you to freeze any active image for further analysis.

Pressing the **Freeze** key gives you the ability to:

- Save images.
- Take measurements of structures in images.

Saving Videos/ Images

1. By default, the  **FILE** key records a 4 second clip when live scanning. This can be configured to other desired video lengths (2,4,8 seconds, start/stop).
2. When the system is in the FREEZE state, the FILE key saves a .jpg image.
3. These default settings can be changed in Settings ➔ Miscellaneous

There are two different ways to configure your LiteNXT to save images. From live scanning, complete the following:

Configure the SAVE key option set to images in the Settings ➔ Miscellaneous menu
Or
Configure the TRIANGLE key set to Snapshot in Keyboard Settings

Press the SAVE  or TRIANGLE  key.
The Ibex LiteNXT saves images in the .JPG (Joint Photographic Group) file format. (for example: eCLi6-<EXAM-TYPE> -<DATE>-<TIME>.jpg

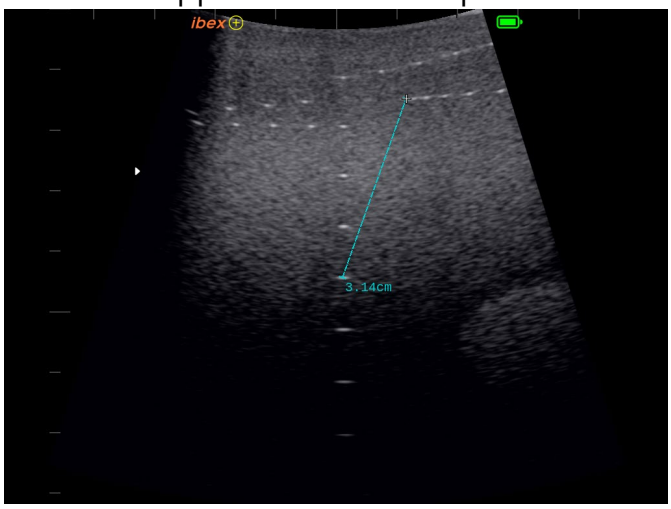
Auto Record

Auto Record- Allows the system to automatically begin recording when the system detects probe contact.

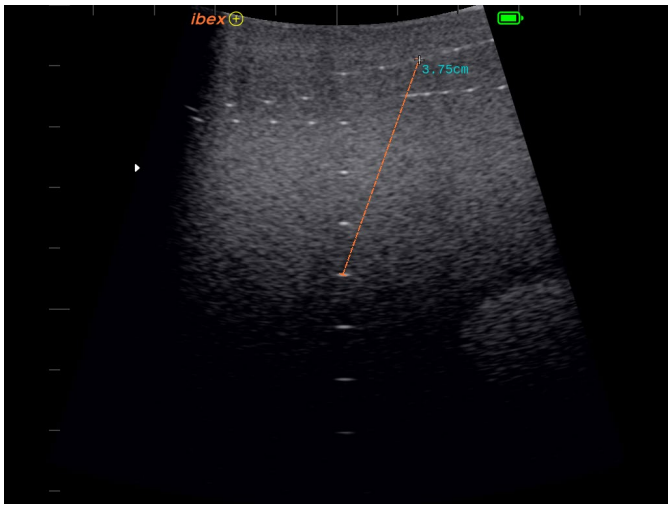
Calipers and Measurements

Distance Measurements

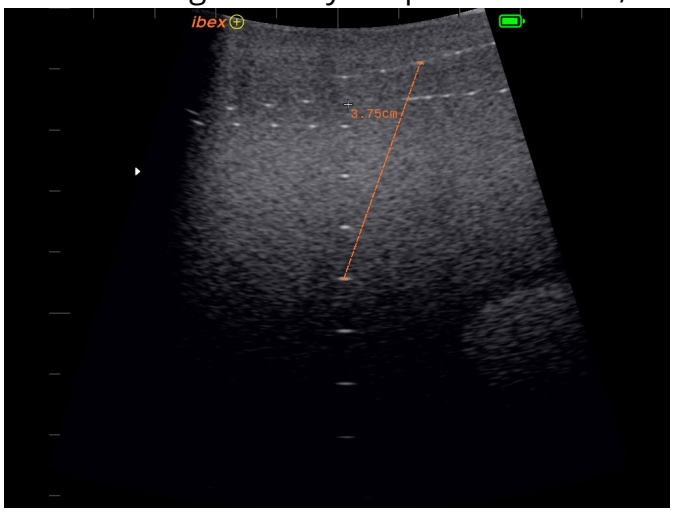
- Move the cursor (navigation keys) to the start point➔ hit Select ➔move the cursor, a light blue label appears at the start point with the current distance in cm.



- When at the end point hit Select, the measurement line color changes to orange.

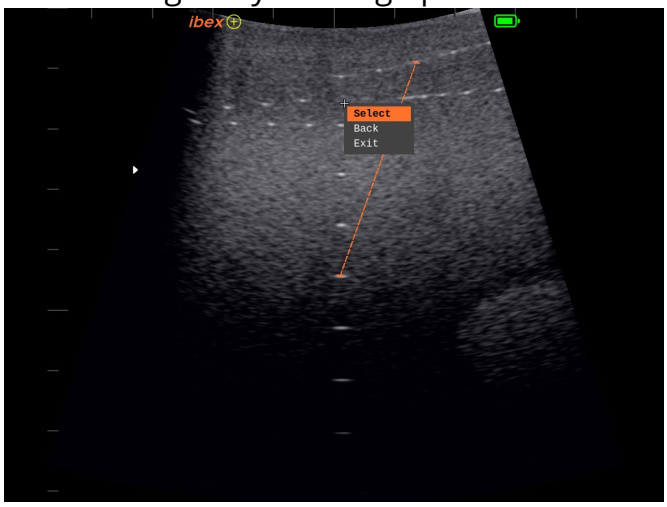


- Use the navigation keys to place the label, hit Select when done, the label turns orange.

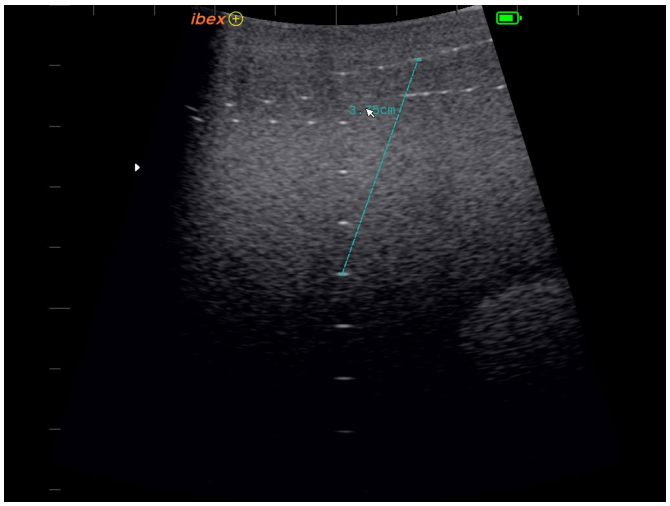


Editing Measurements

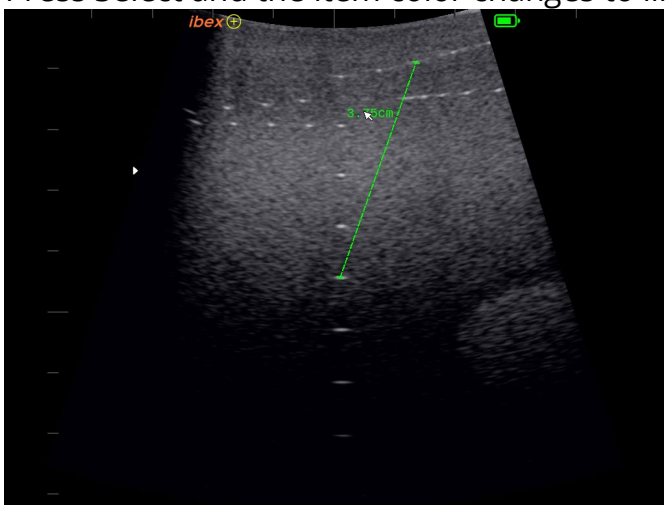
- Press triangle key to bring up the Edit menu.



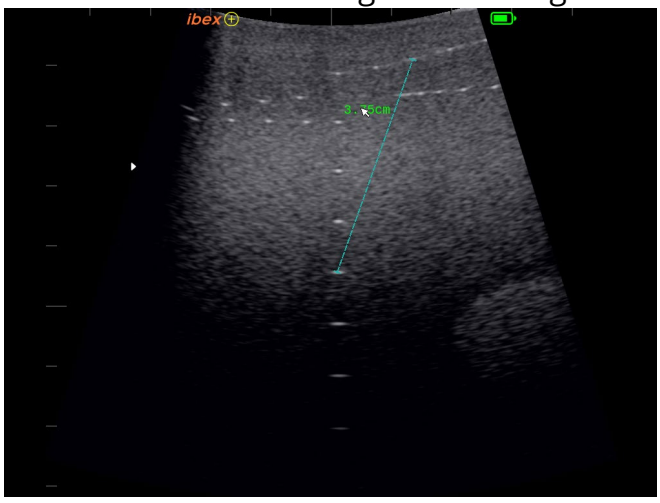
- Choose select, the cursor changes from the crosshair to an arrow. Move the arrow to the item you want to edit. When the cursor is hovering over the item, it will change to light blue.



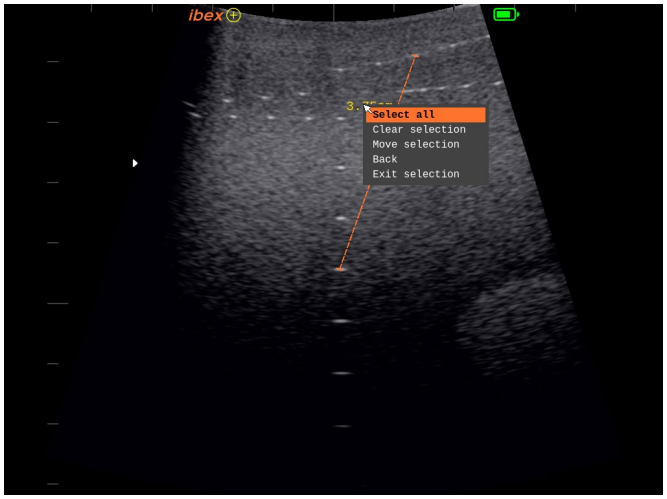
- Press Select and the item color changes to lime.



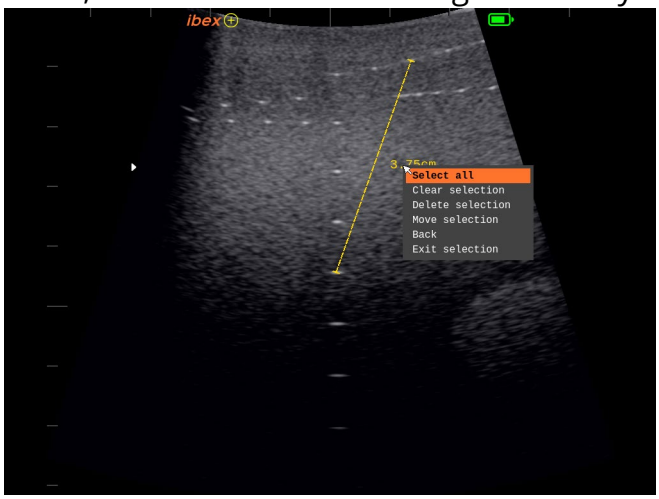
- If you want to select the label only, hit select again, the label stays in lime color. The measurement line changes back to light blue.



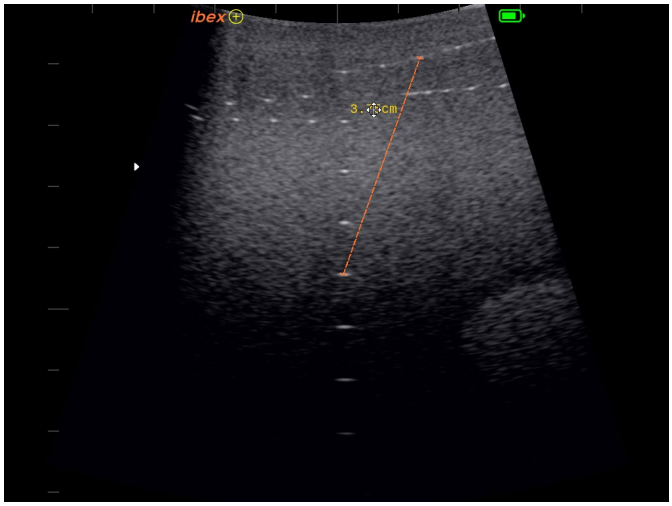
- Press Triangle to display the menu if only a label is selected.



- If not, the selected items change color to yellow.



- Move selection, the cursor changes to the arrow crosshair and the navigation keys will move the selection



- When finished editing, hit Select and the cursor will change back to an arrow to show selection mode. To abort, hit Freeze.
- To get out of selection mode, hit Freeze.
- More measurements can now be made.
- User can change measurements between cm and mm.

Gestational Tables

The Ibex NXT is pre-loaded with several gestational tables- based upon species. Once a gestation table is selected, the system will automatically calculate gestation age once a measurement is taken.

Using WiFi on your LiteNXT Ultrasound System

IbexStream™—Sharing Live Images

IbexStream lets you share the live video feed to an iOS or Android™ device. It will connect up to 4 devices at a time.

There are two ways of connecting to a LiteNXT from your wireless device.

- Configure your phone and LiteNXT to connect to the same WiFi network
- Or configure the LiteNXT to supply its own WiFi [**WiFi Direct**] and have your device connect to that network.

Connecting Over WiFi DIRECT

1. Power on the LiteNXT.
2. Enable **WiFi**.

To access the **WiFi** settings:

3 By default, **WiFi** is disabled. In the WiFi Mode menu, select DIRECT

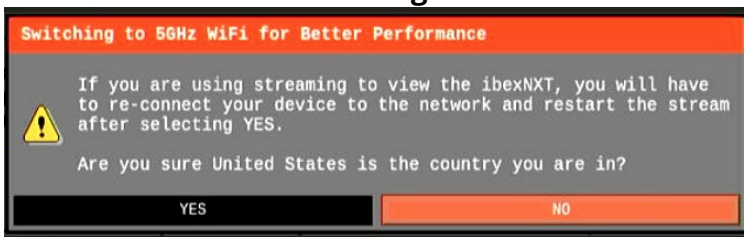
4 The LiteNXT will then automatically create an access point for connection.

Optionally you can specify:

- The frequency to be used, either 2.4GHz or 5GHz.
- The channel to be used. This is help full if you are working in an environment with multiple WiFi networks to select the least congested channel for the best performance.
- The SSID (**S**ervice **S**et **Id**entifier) the name of the network that will show on your WiFi compatible device.
- The Passphrase to secure your network.

At this point your EVO is configured to stream over **WiFi Direct**.

Note: When using 5GHz channel, a country must be selected as different countries have security measures in place for this frequency band. Country would have been selected on the Welcome screen during initialization. However, if this needs to be changed when travelling, this can be found in Clock Settings.

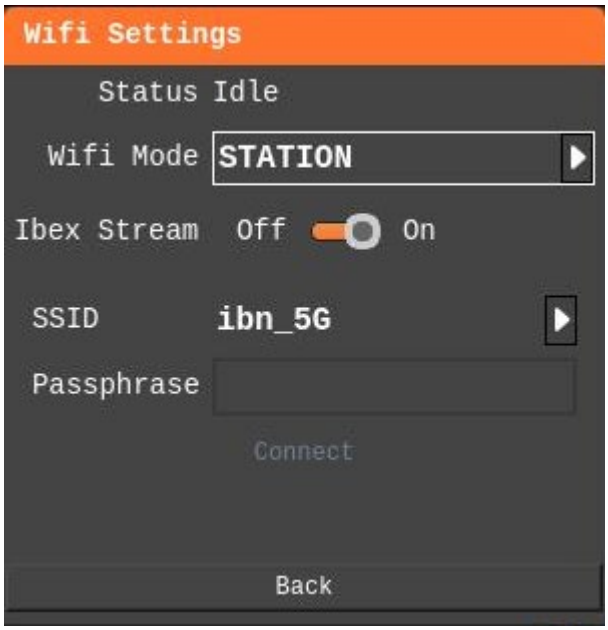


Connecting Over WiFi STATION

1 Power on the LiteNXT.

2 Enable **WiFi**.

To access the **WiFi** settings:



3 In the WiFi Mode dropdown menu, select STATION
4 Enter the Passphrase to secure your network.

At this point your EVO is configured to stream over WiFi STATION.

Configuring iPhone® or iPad®

Download **IbexStream™ App** from *Apple App Store*.

1. Click **Settings** on your iPhone or iPad.
2. Select **WiFi**; this should bring up a list of networks.
3. You should see **LiteNXT** [unless you changed the SSID in step 3 above] from that list. Select it.
4. You'll be prompted for the network passphrase [**ibexlite_1**, unless changed]. Once you have entered the correct passphrase, your iPhone or iPad should connect to the LiteNXT network. Exit **Settings**.
5. Launch the **IbexStream App**.
6. It should auto-detect the unit and start display the video stream from the LiteNXT .

Maintenance and Cleaning of Your Ibex LiteNXT Ultrasound

Make sure you clean your Ibex LiteNXT ultrasound system and transducer after every use. Routine cleaning and maintenance will help ensure the prolonged life of your system. While the Ibex LITENXT ultrasound is a ruggedized ultrasound device, certain precautions should be used in the care of the system. Do not use any abrasive cleaners on either your Ibex LiteNXT ultrasound system or associated transducers.

Ibex LiteNXT:

 **Caution –** Connect the headset to ensure the most water-resistant seal for the connector.

- Close and LOCK the door before cleaning.
- It is NOT recommended that water be directly sprayed into the Ibex LiteNXT hinge section!
- For disinfecting the system, Sporicidin ® is recommended
- Allow the system to air dry or wipe down with a clean, dry towel
- Ibex LiteNXT can be gently washed down with a hose and cloth

InSite NXT Headset:

- Use a damp cloth to wipe down any excess debris from the headset
- Allow the headset to air dry or wipe down with a clean, dry towel

Transducer Care and Maintenance:

- Submerse only the transducer end in water and clean with a dry towel.
- Do not use any coarse cleaning tools (wire brush, scrub brush, etc.) on the face of the transducer (light gray area)
- DO NOT use mineral oil on the Ibex LiteNXT transducer.
- To disinfect the Linear probe, use a Sporicidin® sterilant.

Failure to observe above proper maintenance and care instructions may void your limited warranty

Warranty

E.I. Medical Imaging builds quality products with a solid reputation. We offer the following warranties:
One Year Limited Warranty
Extended Warranties Available

Limited Warranty
This Limited Warranty is provided only to you as the original retail purchaser of the shipped E.I. Medical Imaging IBEX® Diagnostic Ultrasound Scanner (the Product), and to no other person. E.I. Medical Imaging warrants to you that for your warranty period with respect to labor and for your specific warranty period with respect to parts, the Product will be free from defects in materials and/or workmanship.

The InSite® video headsets are covered under this limited warranty from date of purchase, provided the headsets are used in accordance with the safety instructions outlined in the User manuals and have not been abused or misused in any way as determined by the technical staff upon inspection of the headsets. The final determination of coverage under this limited warranty will be made at the E.I. Medical Imaging's manufacturing facility.

Your Exclusive Remedy
E.I. Medical Imaging's entire liability and your exclusive remedy under this Limited Warranty shall be, at E.I. Medical Imaging's option, either repair or replacement of the Product within the specified warranty period. IN NO EVENT DOES THIS WARRANTY COVER DEFECTS OR MALFUNCTIONS DUE DIRECTLY OR INDIRECTLY TO ACCIDENT, MISUSE, OR NEGLECT OF THE PRODUCT, TAMPERING WITH OR ANY INDICATION THAT THE SYSTEM HAS BEEN OPENED BY ANY NON-E.I. MEDICAL IMAGING APPROVED INDIVIDUAL OR SERVICE CENTER, OR AN ACT OF GOD.

Disclaimer of All Other Warranties
Except as specifically provided above, there are no express warranties, or claims or representations made by E.I. Medical Imaging regarding the Product. Any implied warranties, including implied warranties against claims that the product infringes on property rights of third parties, patent rights, implied warranties of fitness for a particular purpose or use and implied warranties of merchantability, shall terminate one (1) year from the date of purchase.

Limitation of Liability
To the maximum extent allowed by applicable law, in no event will E.I. Medical Imaging nor anyone else who has been involved in the creation, production or delivery of the product be liable to you or any other person for any direct, indirect, consequential or incidental damages, or any special or punitive damages (for example, damages for loss of profits or business interruption) arising out of the use of or inability to use the Product, a defect in the Product, or

the failure of the product to perform, even if E.I. Medical Imaging has been advised of the possibility of such claims or damages. In no event will E.I. Medical Imaging be liable, regardless of the basis of the claim or action, for any amount exceeding the purchase price actually paid for the Product. Some states do not allow the exclusion or limitation of incidental or consequential damages, so the above limitations or exclusions may not apply to you.

Repair Warranty
Any repair work performed by E.I. Medical Imaging shall be warranted with respect to parts and labor to be free from defect in materials or workmanship for a period of (90) ninety days.

Obtaining Warranty Service
All Warranty repair work shall be performed by E.I. Medical Imaging's employees at the factory or by an Authorized Service Center. In the event that the Product requires service, please contact E.I. Medical Imaging, or other authorized service provider, to obtain a Service Issue (SI) number. This number must accompany your Product upon return in order to obtain service on your unit. YOU, THE PURCHASER, ARE RESPONSIBLE FOR ALL FREIGHT CHARGES ASSOCIATED WITH RETURNING YOUR EQUIPMENT FOR WARRANTY SERVICE.

This Limited Warranty gives you specific legal rights; you may also have other rights which vary from state to state.

To make a warranty claim, call 1.866.365.6596.

Appendix- Fetal Tables

Alpaca Biparietal

Source: Prediction of Gestational Age by Ultrasonic Fetrometry in Llamas (Lama glama) and Alpacas (Lama pacos): Francisca J. Gazitua, Paulina Corradini, German Ferrando, Luis A. Raggi, Victor H. Parraguez - Animal Reproduction Science 66 (2001) 81-92

mm	days
8	32
9	37
10	42
11	47
12	51
13	56
14	61
15	65
16	70
17	75
18	80
19	84
20	89
21	94
22	99
23	103
24	108
25	113
26	117
27	122
28	127
29	132
30	136
31	141
32	146
33	150
34	155
35	160
36	165
37	169
38	174
39	179
40	184
41	188
42	193
43	198
44	202
45	207
46	212
47	217
48	221
49	226
50	231
51	236
52	240
53	245
54	250
55	254
56	259
57	264
58	269
59	273
60	278
61	283
62	287
63	292
64	297
65	302
66	306
67	311
68	316
69	321
70	325
71	330
72	335

Alpaca Thoracic Height

Source: Prediction of Gestational Age by Ultrasonic Fetrometry in Llamas (Lama glama) and Alpacas (Lama pacos): Francisca J. Gazitua, Paulina Corradini, German Ferrando, Luis A. Raggi, Victor H. Parraguez - Animal Reproduction Science 66 (2001) 81-92

mm	days
10	34
11	39
12	44
13	49
14	55
15	60
16	65
17	71
18	76
19	81
20	86
21	92
22	97
23	102
24	108
25	113
26	118
27	124
28	129
29	134
30	139
31	145
32	150
33	155
34	161
35	166
36	171
37	176
38	182
39	187
40	192
41	198
42	203
43	208
44	213
45	219
46	224
47	229
48	235
49	240
50	245
51	250
52	256
53	261
54	266
55	272
56	277
57	282
58	287
59	293
60	298
61	303
62	309
63	314
64	319
65	324
66	330
67	335

Bovine Crown Rump Length

Source: Sonographic Fetometry in the Bovine: W. Kahn - Theriogenology May 1989 VOL.31 NO.5 pages 1105-1121

mm	days
8	31
10	32
11	33
12	34
14	35
15	36
16	37
18	38
20	39
21	40
23	41
24	42
26	43
28	44
30	45
31	46
33	47
35	48
37	49
39	50
41	51
43	52
45	53
47	54
49	55
52	56
54	57
56	58
59	59
61	60
63	61
66	62
68	63
71	64
73	65
76	66
79	67
81	68
84	69
87	70
90	71
92	72
95	73
98	74
101	75
104	76
107	77
110	78
113	79
117	80
120	81
123	82
126	83

Bovine Biparietal Diameter - External

Source: Fetometry & Fetal Heart Rates Between Day 35 & 108 in Bovine Pregnancies Resulting from Transfer of Either MOET, IVP-co-culture or IVP-SOF Embryos: S.P. Breukelman, J.M.C. Reinders, et al. - Theriogenology:61 (2004) 867-882

mm	days
7	40
8	42
9	44
10	46
11	48
12	50
13	52
14	54
15	56
16	58
17	59
18	61
19	63
20	65
21	67
22	69
23	71
24	73
25	75
26	77
27	79
28	80
29	82
30	84
31	86
32	88
33	90
34	92
35	94
36	96
37	98
38	100
39	102
40	103
41	105
42	107
43	109
44	111
45	113
46	115
47	117
48	119
49	121
50	123
51	124
52	126
53	128
54	130
55	132
56	134
57	136
58	138
59	140
60	142
61	144
62	146
63	147
64	149
65	151
66	153
67	155
68	157
69	159
70	161
71	163
72	165
73	167
74	168
75	170
76	172
77	174
78	176
79	178
80	180
81	182
82	184
83	186
84	188
85	189
86	191
87	193
88	195
89	197
90	199
91	201
92	203
93	205
94	207
95	209

Bovine Eye Orbit

Source: Ultrasonic Imaging and Animal Reproduction: 1998 Cattle Book 3: O.J. Ginther page 190-191

mm	days
4	60
5	65
6	70
7	75
8	80
9	85
10	90
11	95
12	100
13	105
14	110
15	115
16	120
17	125
18	130
19	140
20	150
21	155
22	160
23	170
24	180
25	195
26	210
27	240

Bovine Trunk Diameter

Sonographic Fetometry in the Bovine: W. Kahn - Theriogenology May 1989 VOL.31 NO.5 pages 1105-1121

mm	days
3	31
4	33
5	34
6	36
7	37
8	39
9	41
10	42
11	44
12	45
13	47
14	48
15	50
16	51
17	53
18	54
19	56
20	57
21	59
22	60
23	61
24	63
25	64
26	66
27	67
28	68
29	70
30	71
31	72
32	74
33	75
34	76
35	78
36	79
37	80
38	82
39	83
40	84
41	85
42	87
43	88
44	89
45	90
46	92
47	93
48	94
49	95
50	96
51	98
52	99
53	100
54	101
55	102
56	104
57	105
58	106
59	107
60	108
61	109
62	110
63	112
64	113
65	114
66	115
67	116
68	117
69	118
70	119
71	121
72	122
73	123
74	124
75	125
76	126
77	127
78	128
79	129
80	130
81	131
82	132
83	133
84	134
85	135
86	136
86	137
87	138
88	139
89	140
90	141
91	142
92	143
93	144
94	145
95	146
96	147
97	148
98	149
99	150
100	151
101	152
102	153
103	154
104	155
106	156
107	157
108	158
109	159
110	160
111	161
112	162
113	163

Buffalo (Bubalus bubalis) Amnionic Vesicle Diameter

Source: Ultrasonographic Fetometry and Determination of Fetal Sex in Buffaloes (Bubalus bubalis): A. Ali & S. Fahmy - Animal Reproduction Science 106 (2008) pages 90-99

mm	days
13	35
15	36
16	37
17	38
19	40
21	41
22	42
23	43
24	45
25	46
26	47
27	49
28	50
29	52
30	56
31	57

Buffalo (Bubalus bubalis) Biparietal Diameter

Source: Ultrasonographic Fetometry and Determination of Fetal Sex in Buffaloes (Bubalus bubalis): A. Ali & S. Fahmy - Animal Reproduction Science 106 (2008) pages 90-99

mm	days
12	56
13	60
14	63
15	67
16	70
18	74
19	77
21	81
22	84
24	88
25	91
27	95
29	98
31	102
33	105
35	109
37	112
40	116
42	119
45	123
47	126
50	130
52	133
55	137
58	140

Buffalo (Bubalus bubalis) Crown Rump Length

Source: Ultrasonographic Fetometry and Determination of Fetal Sex in Buffaloes (Bubalus bubalis): A. Ali & S. Fahmy - Animal Reproduction Science 106 (2008) pages 90-99

mm	days
9	28
11	30
12	32
13	34
14	35
15	37
16	39
17	41
18	42
20	44
21	46
22	48
24	49
25	51
27	53
28	55
29	56
31	58
33	60
34	62
36	63
38	65
40	67
41	69
43	70

Canine Less than 40 days Crown Rump Length

Source: Performing Ultrasound to Evaluate Pregnancy: CVC Proceedings Baltimore, MD - April 1, 2009 [veterinarycalendar.dvm360.com/avhc/content/printContentPopup.jsp?id=600754]

mm	days
11	30
13	31
16	32
20	33
23	34
27	35
30	36
33	37
37	38
40	39
43	40

Canine
Less than 40 days
Gestational Sac
Diameter

Source:
Performing Ultrasound to Evaluate Pregnancy: CVC Proceedings Baltimore, MD - April 1, 2009 [veterinarycalendar.dvm360.com/avhc/content/printContentPopup.jsp?id=600754]

mm	days
10	26
12	27
14	28
15	29
17	30
19	31
20	32
22	33
24	34
25	35
27	36
29	37
30	38
32	39

Canine
More than 40 days
Head Diameter

mm	days
13	40
14	41
15	43
16	44
17	46
18	47
19	49
20	50
21	52
22	53
23	55
24	56
25	58
26	59
27	61
28	62
29	64
30	65

Cat
More than 40 days
Body Diameter

mm	days
17	40
18	41
19	42
20	43
21	44
22	45
23	46
24	47
25	49
26	50
27	51
28	52
29	53
30	54
31	55
32	56
33	57
34	58
35	60
36	61
37	62
38	63
39	64
40	65
41	66

Cat
More than 40 days
Head Diameter

mm	days
15	41
16	43
17	46
18	48
19	51
20	53
21	56
22	58
23	61
24	63
25	66

Fallow Deer Chest Depth

Source: Current Therapy in Large Animal Theriogenology 2: Robert S. Youngquist& Walter R. Threlfall - Saunders/Elsevier Publishers 2007 page 961

mm	days
12	50

Fallow Deer Crown Rump Length

Source: Current Therapy in Large Animal Theriogenology 2: Robert S. Youngquist& Walter R. Threlfall - Saunders/Elsevier Publishers 2007 page 961

mm	days
32	50
118	65

Fallow Deer Head Length

Source: Current Therapy in Large Animal Theriogenology 2: Robert S. Youngquist& Walter R. Threlfall - Saunders/Elsevier Publishers 2007 page 961

mm	days
17	50
28	65

Equine Biparietal

Source: Maternal Age and Parity Influence Ultrasonographic Measurements of Fetal Growth in Dutch Warmblood Mares: W.K. Hendriks, B Colenbrander, et al. - Animal Reproduction Science 115 (2009) 110-123

mm	days
12	100
13	105
14	110
15	120
16	125
17	135
18	140
19	150
20	160
21	165
22	175
23	185
24	195
25	205
26	220
27	230
28	250
29	270
30	290
31	330

Equine Amnion

Source: Developed by E.I. Medical Imaging.

mm	days
14	14
15	14
16	15
17	15
18	15
19	15
20	16
21	16
22	17
23	17
24	18
25	18
26	19
27	20
28	21
29	22
30	23
31	24
32	25
33	27
34	28
36	30
37	31
38	32
39	32
40	33
41	33
42	34
43	34
44	35
45	35
46	36
47	36
48	36

mm	days
49	37
50	37
51	37
52	37
53	38
54	38
55	39
56	39
57	39
58	40
59	40
60	40
61	41
62	41
63	41
64	42
65	42
66	42
67	43
68	43
69	43
70	44
71	44
72	44
73	45
74	45
75	45
76	

Goat

Anglo-Nubian Crown Rump Length

Source: Determination of Early Pregnancy & Embryonic Growth in Goats by TRANSRECTAL Ultrasound Scanning: M.F. Martinez, P. Bosch, & R.A. Bosch - Theriogenology 49:1555-1565 1998

mm	days
5	21
6	22
8	23
9	24
10	25
12	26
13	27
14	28
15	29
17	30
18	31
19	32
21	33
22	34
23	35
25	36
26	37
27	38
28	39
30	40

Goat -Dairy

Biparietal

mm	days
8	41
9	43
10	45
11	46
12	48
13	50
14	52
15	54
16	55
17	57
18	59
19	61
20	63
21	65
22	66
23	68
24	70
25	72
26	74
27	75
28	77
29	79
30	81
31	83
32	85
33	86
34	88
35	90
36	92
37	94
38	95
39	97
40	99
41	101
42	103

mm	days
43	105
44	106
45	108
46	109

Goat - Pygmy Biparietal

Source: Ultrasonic Biparietal Diameter of Second Trimester Pygmy Goat Fetuses: J.K. Reichle & G.K. Haibel - Theriogenology April 1991 VOL.35 NO. 4 pages 689-694

mm	days
6	36
7	38
8	40
9	42
10	44
11	46
12	48
13	50
14	52
15	54
16	56
17	59
18	61
19	63
20	65
21	67
22	69
23	71
24	73
25	75
26	77
27	79
28	81
29	84
30	86
31	88
32	90
33	92
34	94
35	96
36	98
37	100

Goat - Toggenburg Biparietal

Source: Current Therapy in Large Animal Theriogenology 2: Robert S. Youngquist& Walter R. Threlfall - Saunders/Elsevier Publishers 2007 pages 550-551

mm	days
5	36
6	38
7	39
8	41
9	43
10	44
11	46
12	48
13	49
14	51
15	53
16	54
17	56
18	57
19	59
20	61
21	62
22	64
23	66
24	67
25	69
26	71
27	72
28	74
29	75
30	77
31	79
32	80
33	82
34	84
35	85
36	87
37	89
38	90
39	92
40	94
41	95
42	97
43	98
44	100

Llama

Biparietal BPD

Source: Prediction of Gestational Age by Ultrasonic Fetrometry in Llamas (Lama glama) and Alpacas (Lama pacos): Francisca J. Gazitua, Paulina Corradini, German Ferrando, Luis A. Raggi, Victor H. Parraguez - Animal Reproduction Science 66 (2001) 81-92

mm	days
7	30
8	34
9	39
10	43
11	47
12	52
13	56
14	60
15	64
16	69
17	73
18	77
19	82
20	86
21	90
22	95
23	99
24	103
25	107
26	112
27	116
28	120
29	125
30	129
31	133
32	138
33	142
34	146
35	150
36	155
37	159
38	163
39	168
40	172
41	176
42	181
43	185
44	189
45	193
46	198
47	202
48	206
49	211
50	215
51	219
52	224
53	228
54	232
55	237
56	241
57	245
58	249
59	254
60	258
61	262
62	267
63	271
64	275
65	280
66	284
67	288
68	292
69	297
70	301
71	305
72	310
73	314
74	318
75	323
76	327
77	331
78	335

Llama
Thoracic Height

Source:Prediction of Gestational Age by Ultrasonic Fetrometry in Llamas (Lama glama) and Alpacas (Lama pacos): Francisca J. Gazitua, Paulina Corradini, German Ferrando, Luis A. Raggi, Victor H. Parraguez - Animal Reproduction Science 66 (2001) 81-92

mm	days
7	30
8	34
9	39
10	44
11	48
12	53
13	58
14	62
15	67
16	72
17	76
18	81
19	86
20	91
21	95
22	100
23	105
24	109
25	114
26	119
27	123
28	128
29	133
30	137
31	142
32	147
33	152
34	156
35	161

mm	days
36	166
37	170
38	175
39	180
40	184
41	189
42	194
43	199
44	203
45	208
46	213
47	217
48	222
49	227
50	231
51	236
52	241
53	245
54	250

Sheep Booroola
Merino Biparietal

Source: Real-time Ultrasound Imaging for Predicting Ovine Fetal Age: L Sergeev, D.O. Kleemann, et al. - Theriogenology September 1990 VOL. 34 NO.3

mm	day
16	50
17	52
18	54
19	56
20	58
21	60
22	62
23	64
24	66
25	68
26	70
27	72
28	73
29	75
30	77
31	79
32	81
33	83
34	85
35	87
36	89
37	91
38	93
39	95
40	97
41	99
42	101
43	103
44	105
45	107

mm	day
46	109
47	111
48	113
49	115
50	117
51	119

Sheep Booroola Merino Thoracic Depth

Source: Real-time Ultrasound Imaging for Predicting Ovine Fetal Age: L Sergeev, D.O. Kleemann, et al. - Theriogenology September 1990 VOL. 34 NO.3

mm	day
20	50
21	51
22	52
23	53
24	54
25	56
26	57
27	58
28	59
29	60
30	61
31	63
32	64
33	65
34	66
35	67
36	69
37	70
38	71
39	72
40	73
41	75
42	76
43	77
44	78
45	79
46	81
47	82
48	83
49	84
50	85
51	87
52	88
53	89
54	90
55	91
56	93
57	94
58	95
59	96
60	97
61	99
62	100
63	101
64	102
65	103
66	105
67	106
68	107
69	108
70	109
71	111
72	112
73	113
74	114
75	115
76	117
77	118
78	119

Sheep Finn Biparietal

Source Real Time Ultrasonic Biparietal Diameter of Second Trimester Suffolk & Finn Sheep Fetuses: G.K. Haibel & N.R. Perkins - Theriogenology November 1989 VOL.32 NO. 5 pages 863-869

mm	days
8	36
9	38
10	40
11	42
12	44
13	45
14	47
15	49
16	51
17	53
18	55
19	57
20	58
21	60
22	62
23	64
24	66
25	68
26	70
27	71
28	73
29	75
30	77
31	79
32	81
33	82
34	84
35	86
36	88
37	90
38	92
39	94
40	95
41	97

Sheep - Hair Crown Rump Length

mm	days
12	29
14	30
20	31
23	32
24	33
30	34
34	35
38	36
41	37
44	38
49	39
52	40
54	41
60	42
63	43
64	44
71	45

Sheep - Suffolk Biparietal

Source: Real Time Ultrasonic Biparietal Diameter of Second Trimester Suffolk & Finn Sheep Fetuses: G.K. Haibel & N.R. Perkins - Theriogenology November 1989 VOL.32 NO. 5 pages 863-869

mm	days
10	41
11	42
12	44
13	46
14	48
15	50
16	51
17	53
18	55
19	57
20	59
21	61
22	62
23	64
24	66
25	68
26	70
27	71
28	73
29	75
30	77
31	79
32	80
33	82
34	84
35	86
36	88
37	89
38	91
39	93
40	95
41	97
42	99
43	100

Swine Crown Rump Length

Source: Current Therapy in Large Animal Theriogenology 2: Robert S. Youngquist& Walter R. Threlfall - Saunders/Elsevier Publishers 2007 page 755

mm	days
20	25
28	30
35	35
50	40
65	45
88	50
110	55
131	60
152	65
159	70
166	75
186	80
206	85
223	90
240	95