

Quick Start Guide



Digital Belt Pack Transmitter DBu-LEMO, DBu-LEMO/E01



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Digital Hybrid Wireless®
US Patent 7,225,135

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This guide is intended to assist with
initial setup and operation of your
Lectrosonics product.

For a detailed user manual, down-
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www.lectrosonics.com

18 December 2019

DBu-LEMO, DBu-LEMO/E01

Features and Functions

Programmable Switch

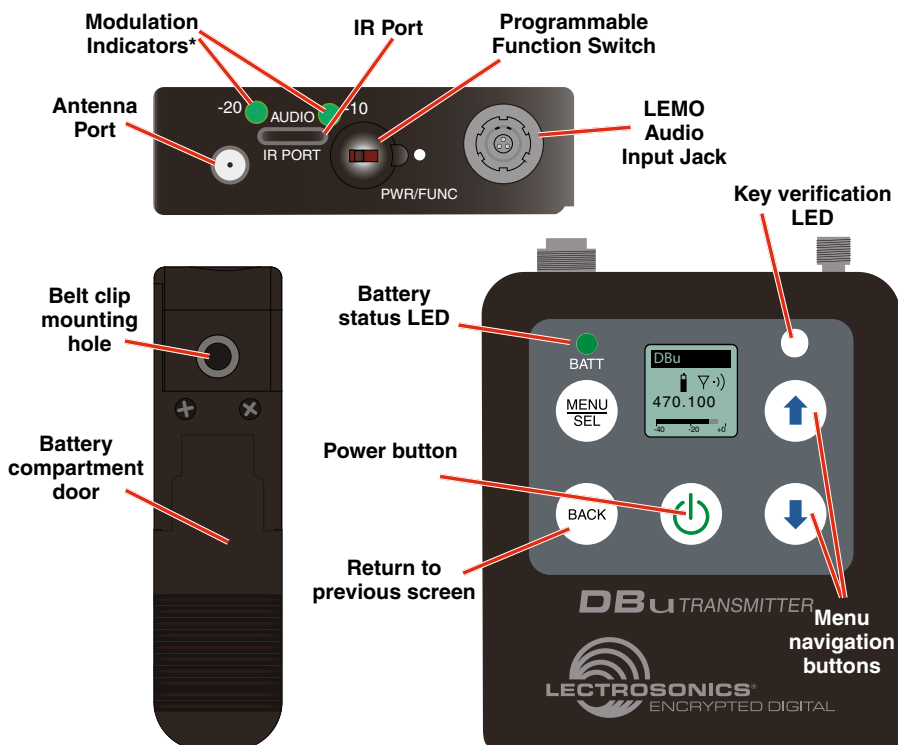
The transmitter can also be configured as a “one button” device by locking the ability to make changes with the keypad, and configuring the top panel switch as either power on/off or a mute function.

Modulation Indicator LEDs

When the transmitter is set to MUTE, the -10 Modulation Indicators LED will glow solid red. Otherwise, the -10 Modulation Indicators LED will glow solid green when transmitter is on.

Menu Settings

Full access to all settings is provided through the keypad and LCD. The transmitter can also be configured as a “one button” device by locking the ability to make changes with the keypad, and configuring the top panel switch as either power on/off or a mute function.





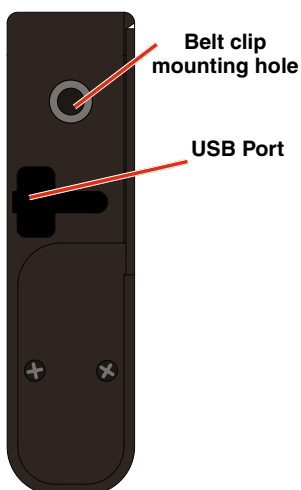
Belt Clips

The wire belt clip may be removed by pulling the ends out of the holes in the sides of the case. Be sure to have a firm grip to avoid scratching the surface of the housing.

An optional spring-loaded, hinged belt clip (model number BCSLEBN) is also available. This clip is attached by removing the plastic hole cap on the back of the housing and mounting the clip with the supplied screw.

IR (infrared) Port

The IR port is available on the top of the transmitter for quick setup using a receiver with this function available. IR Sync will transfer the settings for frequency from the receiver to the transmitter.



Battery Installation

The transmitter is powered by two AA batteries. We recommend using alkaline, lithium, or rechargeable batteries for longest life.

The battery status circuitry compensates for the difference in voltage drop between alkaline and lithium batteries across their usable life, so it's important to select the correct battery type in the menu.

Because rechargeable batteries run down quite abruptly, using the Power LED to verify battery status will not be reliable. However, it is possible to track battery status using the battery timer function available in the receiver.

Push outward on the battery compartment door and lift it to open.

Slide door out to release catch



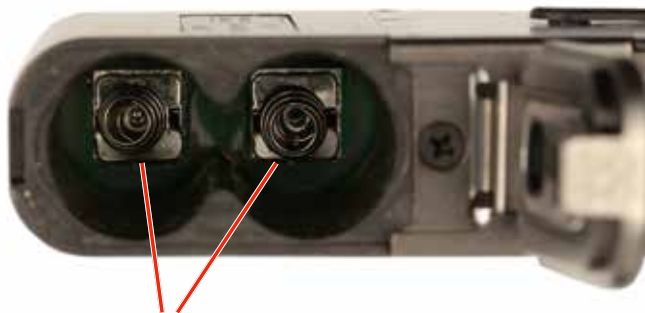
Lift door to open



Insert the batteries according to the markings on the back of the housing.

If the batteries are inserted incorrectly, the door will close but the unit will not operate.

The battery contacts can be cleaned with alcohol and a cotton swab, or a clean pencil eraser. Be sure not to leave any remnants of the cotton swab or eraser crumbs inside the compartment.



Contact springs

Battery Status LED Indicator

Alkaline, lithium or rechargeable batteries can be used to power the transmitter. The type of batteries in use are selectable in a menu on the LCD.

When alkaline or lithium batteries are being used, the LED labeled BATT on the keypad glows green when the batteries are good. The color changes to red when they are nearing the end of life. When the LED begins to *blink* red, there will be only a few minutes remaining.

The Power/Function LED on the top panel will mirror the keypad LED unless the programmable switch is set to Mute, and the switch is turned on.

The exact point at which the LEDs turn red will vary with battery brand and condition, temperature and power consumption. The LEDs are intended to simply catch your attention, not to be an exact indicator of remaining time.

A weak battery will sometimes cause the Power LED to glow green immediately after the transmitter is turned on, but it will soon discharge to the point where it will turn red or the unit will turn off completely.

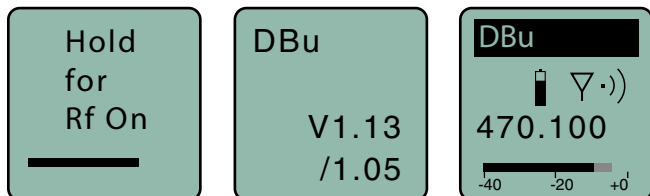
Rechargeable batteries give little or no warning when they are depleted. If you wish to use these batteries in the transmitter, the most accurate way to determine runtime status is by testing the time provided by a particular battery brand and type, then using the **BatTime** function to determine remaining runtime.

NOTE: Refer to the Main Menu and Setup Section for BatTime details.

Operating Instructions

Powering On in Operating Mode

Press and hold the Power Button until a status bar on the LCD is completed.



When you release the button, the unit will be operational with the RF output turned on and the Main Window displayed.

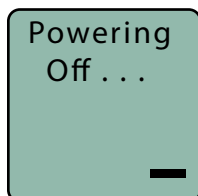
Powering On in Standby Mode

A brief press of the Power Button , and releasing it before status bar has completed, will turn the unit on with the RF output turned off. In this Standby Mode the menus can be browsed to make settings and adjustments without the risk of interfering with other wireless systems nearby.



After settings and adjustments are made, press the power button again to turn the unit off.

Powering Off



From any screen, power can be turned off by selecting Pwr Off in the power menu, holding the Power Button  in and waiting for the status bar to complete, or with the programmable switch (if it is configured for this function).

If the power button is released, or the top panel switch is turned back on again before the status bar is completed, the unit will remain turned on and the LCD will return to the same screen or menu that was displayed previously.

NOTE: If the programmable switch is in the OFF position, power can still be turned on with the power button. If the programmable switch is

then turned on, a brief message will appear on the LCD.

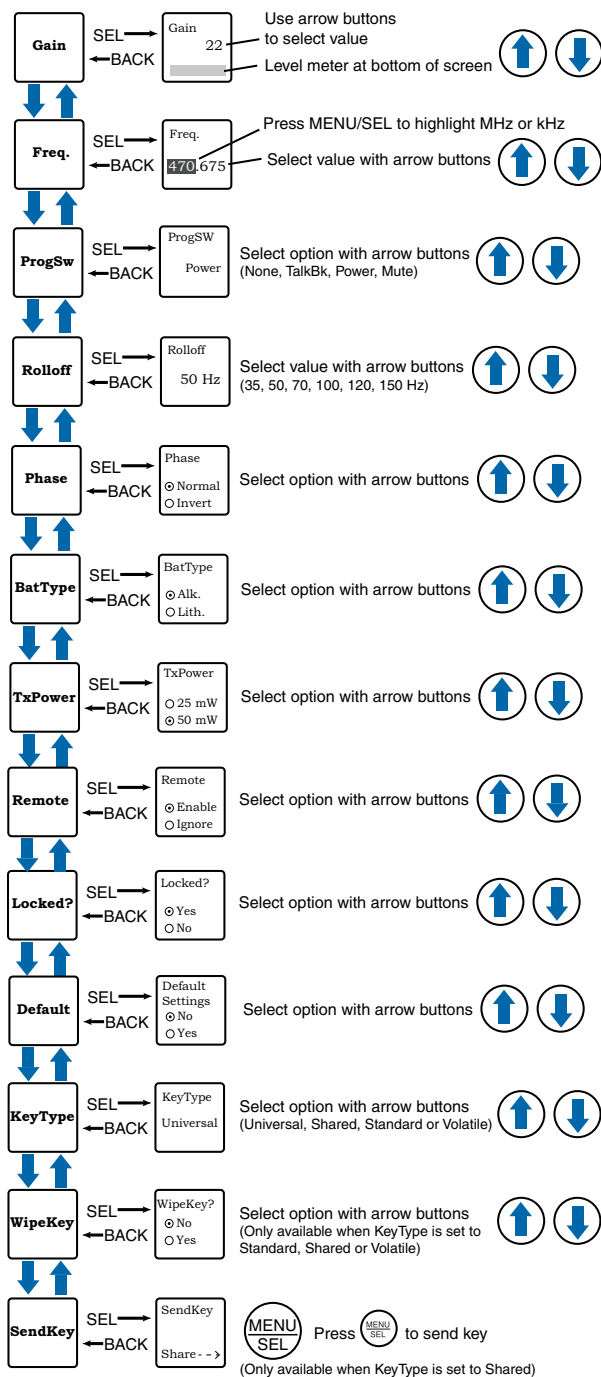
Power Menu Options

Entering the Power Menu

With the unit turned on, press the power button  once briefly from any menu or screen and a menu will appear with several options. Use the  and  arrow buttons to highlight menu items. Then press MENU/SEL to execute the item or enter a setup screen. The following options are available:

- **Resume** - returns to the previous mode and screen
- **Pwr Off** - turns the unit off irrevocably
- **Rf On?** - enters a screen to enable the operating or standby modes
- **AutoOn?** - allows the unit to automatically turn back on after a power failure or when fresh batteries are installed (works in the operating mode only)
- **Backlit** - adjusts the duration of the LCD back light to 5 seconds or 30 seconds, or to remain on
- **About** - displays model number and firmware

version



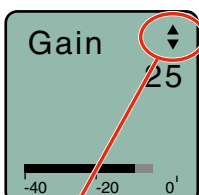
NOTE: The settings will be stored when the BACK button is pressed.

LCD Menu Map

Main Menu and Setup Screen Details

Entering the Main Menu

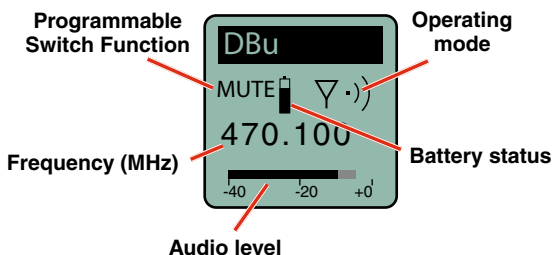
The LCD and keypad interface makes it easy to browse the menus and make the selections for the setup you need. When the unit is powered up in either the operating or the standby mode, press MENU/SEL on the keypad to enter a menu structure on the LCD. Use the  and  arrow buttons to select the menu item. Then press the MENU/SEL button to enter the setup screen.



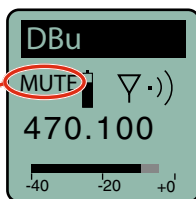
The prompt in the upper right corner may display one or both arrows, depending upon what adjustment can be made. If the changes are locked, a small padlock symbol will appear.

Main Window Indicators

The Main Window displays programmable switch function, Standby or Operating mode, operating frequency, audio level and battery status.

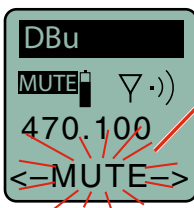


Mute function enabled but not active



If the programmable switch function is set for Mute, the Main Window will indicate that the function is enabled.

When the switch is turned on, the mute icon appearance will change and the word MUTE will blink at the bottom of the display. The -10 LED on the top panel will also glow solid red.



Main Window will blink the word MUTE when the audio is muted

Connecting the Signal Source

Microphones, line level audio sources and instruments can be used with the transmitter. Refer to the section entitled **Input Jack Wiring for Different Sources** for details on the correct wiring for line level sources and microphones to take full advantage of the Servo Bias circuitry.

Adjusting the Input Gain

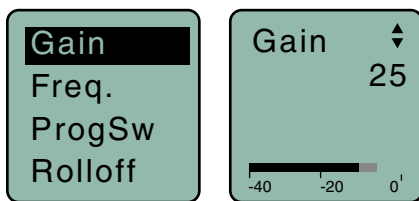
The two bicolor Modulation LEDs on the top panel provide a visual indication of the audio signal level entering the transmitter. The LEDs will glow either red or green to indicate modulation levels as shown in the following table.

Signal Level	-20 LED	-10 LED
Less than -20 dB	● Off	● Off
-20 dB to -10 dB	● Green	● Off
-10 dB to +0 dB	● Green	● Green
+0 dB to +10 dB	● Red	● Green
Greater than +10 dB	● Red	● Red

NOTE: Full modulation is achieved at 0 dB, when the “-20” LED first turns red. The limiter can cleanly handle peaks up to 30 dB above this point.

It is best to go through the following procedure with the transmitter in the standby mode so that no audio will enter the sound system or recorder during adjustment.

- 1) With fresh batteries in the transmitter, power the unit on in the standby mode (see previous section **Powering On in Standby Mode**).
- 2) Navigate to the Gain setup screen.



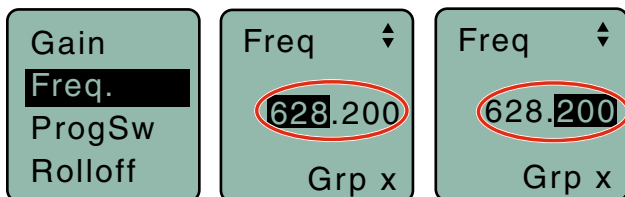
- 3) Prepare the signal source. Position a microphone the way it will be used in actual operation and have the user speak or sing at the loudest level that occur during use, or set the output level of the instrument or audio device to the maximum level that will be used.
- 4) Use the ⬆ and ⬇ arrow buttons to adjust the gain until the **-10 dB** glows green and the **-20 dB** LED starts to flicker red during the loudest peaks in the audio.
- 5) Once the audio gain has been set, the signal can be sent through the sound system for overall level adjustments, monitor settings, etc.
- 6) If the audio output level of the receiver is too high or low, use only the controls on the receiver to make adjustments. Always leave the transmitter gain adjustment set according to these instructions, and do not change it to adjust the audio output level of the receiver.

Selecting Frequency

The setup screen for frequency selection offers two ways to browse the available frequencies.

Frequency groups are also able to be received via IR (Infrared) port sync. The group options are set by the receiver, and will show at the bottom of the screen as No Grp, Grp x, Grp w, Grp v, or Grp u.

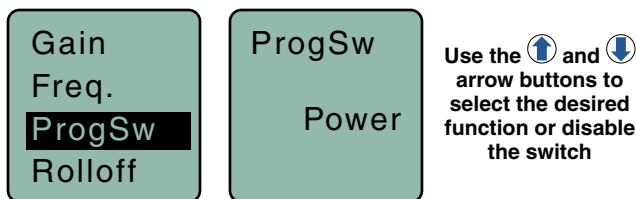
Use the **MENU/SEL** button to toggle between options and **UP** and **DOWN** arrows to adjust.



Selecting Programmable Switch Functions

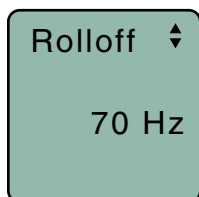
The programmable switch on the top panel can be configured using the menu to provide several functions:

- **(none)** - disables the switch
- **Mute** - mutes the audio when switched on; LCD will blink a message and -10 LED will glow solid red.
- **Power** - turns the power on and off
- **TalkBk** - switches the audio output on the receiver to a different channel for communication with the production crew. Requires a receiver with this function enabled.



NOTE: The programmable switch will continue to operate whether or not keypad changes are locked.

Selecting the Low Frequency Roll-off

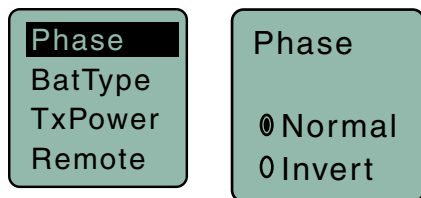


The low frequency audio roll-off is adjustable to optimize performance for ambient noise conditions or personal preference.

Low frequency audio content may be desirable or distracting, so the point at which the roll-off takes place can be set to 20, 35, 50, 70, 100, 120 or 150 Hz.

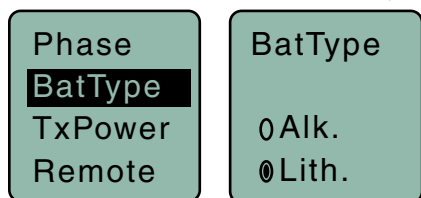
Selecting Audio Polarity (Phase)

Audio polarity can be inverted at the transmitter so the audio can be mixed with other microphones without comb filtering. The polarity can also be inverted at the receiver outputs.



Selecting Battery Type

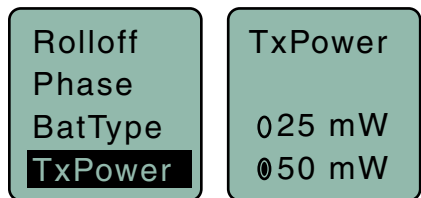
The voltage drop over the life of different batteries varies by type and brand. Be sure to set the correct battery type for accurate indications and warnings. The menu offers alkaline or lithium types.



If you are using rechargeable batteries, it is better to use the timer function on the receiver to monitor the battery life rather than the indicators on the transmitter. Rechargeable batteries maintain a fairly constant voltage across the operating time on each charge and stop working abruptly, so you will have little or no warning as they reach the end of operation.

Setting Transmitter Output Power

The output power can be set to 25 mW or 50 mW.

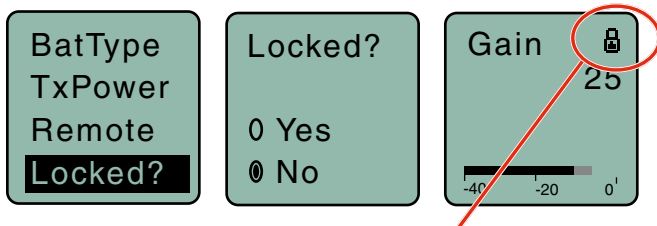


Remote

Remote control “dweedle” tones from a smart phone can be used to control the transmitter.

Locking/Unlocking Changes to Settings

Changes to the settings can be locked to prevent inadvertent changes being made.



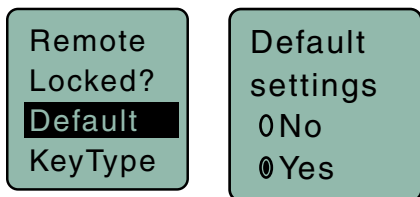
A small padlock symbol will appear on adjustment screens when changes have been locked.

When changes are locked, several controls and actions can still be used:

- Settings can still be unlocked
- Menus can still be browsed
- Programmable switch still works (Mute and On/Off)
- Power can still be turned off by using the power menu or removing the batteries.

Restoring Default Settings

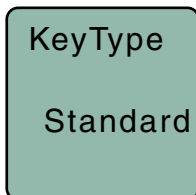
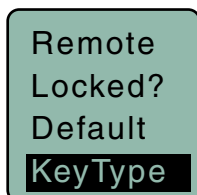
This is used to restore the factory settings.



KeyType

The DBu, DBu/E01 receives an encryption via the IR port from a key generating receiver. Begin by selecting a key type in the receiver and generating a new key (key type is labeled KEY POLICY in the DSQD receiver). Set the matching KEY TYPE in the DBu, DBu/E01 and transfer the key from the receiver (SYNC KEY) to the DBu, DBu/E01 via the IR ports. A confirmation message will display on the receiver display if the transfer is successful. The transmitted audio will then be encrypted and can only be listened to if the receiver has the matching encryption key.

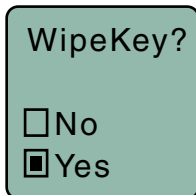
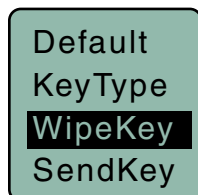
The DBu, DBu/E01 has three options for encryption keys:



- **Standard:** This is the highest level of security. The encryption keys are unique to the receiver and there are only 256 keys available to be transferred to a transmitter. The receiver tracks the number of keys generated and the number of times each key is transferred.

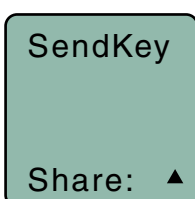
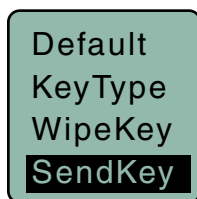
- **Shared:** There are an unlimited number of shared keys available. Once generated by a receiver and transferred to the DBu, DBu/E01, the encryption key is available to be shared (synced) by the DBu, DBu/E01 with other transmitters/receivers via the IR port. When a transmitter is set to this key type, a menu item named SEND KEY is available to transfer the key to another device.
- **Universal:** This is the most convenient encryption option available. All encryption-capable Lectrosonics transmitters and receivers contain the Universal Key. The key does not have to be generated by a receiver. Simply set the DBu, DBu/E01 and a Lectrosonics receiver to Universal, and the encryption is in place. This allows for convenient encryption amongst multiple transmitters and receivers, but not as secure as creating a unique key.

WipeKey



This menu item is only available if Key Type is set to Standard or Shared. Select Yes to wipe the current key and enable the DBu, DBu/E01 to receive a new key.

SendKey



This menu item is only available if Key Type is set to Shared. Press Menu/Sel to sync the Encryption key to another transmitter or receiver via the IR port.

Whip Antennas

Because the transmitter tunes across such a broad frequency range, it is best to use the appropriate antenna for maximum operation. Three antennas are included with the transmitter, and are shipped from the factory pre-cut and fully assembled. Each antenna covers three blocks. Use the chart below to determine which antenna best fits your needs.

Block	Frequency Range MHz	Cap Color	Antenna
470	470.100 - 495.600	Black	AMM19
19	486.400 - 511.900	Black	AMM19
20	512.000 - 537.500	Black	AMM19
21	537.600 - 563.100	Red	AMM22
22	563.200 - 588.700	Red	AMM22
23	588.800 - 614.300	Red	AMM22

Encryption Key and Settings Transfer

A cable between the receiver and the micro USB port on the side of the transmitter is used to transfer the encryption key from the receiver to the transmitter. This connection can also be used to send the transmitter settings stored in the receiver to the transmitter.

The interface cable, P/N DRKEYCABLE, is used to make this connection.



NOTE: Reference the DSW System Instruction Manual for instructions on Encryption Key settings and software.

LIMITED ONE YEAR WARRANTY

The equipment is warranted for one year from date of purchase against defects in materials or workmanship provided it was purchased from an authorized dealer. This warranty does not cover equipment which has been abused or damaged by careless handling or shipping. This warranty does not apply to used or demonstrator equipment.

Should any defect develop, Lectrosonics, Inc. will, at our option, repair or replace any defective parts without charge for either parts or labor. If Lectrosonics, Inc. cannot correct the defect in your equipment, it will be replaced at no charge with a similar new item. Lectrosonics, Inc. will pay for the cost of returning your equipment to you.

This warranty applies only to items returned to Lectrosonics, Inc. or an authorized dealer, shipping costs prepaid, within one year from the date of purchase.

This Limited Warranty is governed by the laws of the State of New Mexico. It states the entire liability of Lectrosonics Inc. and the entire remedy of the purchaser for any breach of warranty as outlined above. NEITHER LECTROSONICS, INC. NOR ANYONE INVOLVED IN THE PRODUCTION OR DELIVERY OF THE EQUIPMENT SHALL BE LIABLE FOR ANY INDIRECT, SPECIAL, PUNITIVE, CONSEQUENTIAL, OR INCIDENTAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THIS EQUIPMENT EVEN IF LECTROSONICS, INC. HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES. IN NO EVENT SHALL THE LIABILITY OF LECTROSONICS, INC. EXCEED THE PURCHASE PRICE OF ANY DEFECTIVE EQUIPMENT.

This warranty gives you specific legal rights. You may have additional legal rights which vary from state to state.



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