LECTROSONICS DPRc Digital Plug-On Transmitter Instruction Manual

Contents

LECTROSONICS DPRc Digital Plug-On Transmitter Instruction Manual

General Technical Description

The Lectrosonics DPR digital plug-On transmitter benefits from a fourth generation design with specially developed, high efficiency digital circuitry for extended operating time on two AA batteries. The unique design provides several distinct features for professional ap- plications:

- Outstanding UHF operating range
- Superb audio quality
- On board recording
- Corrosion-resistant housing

The transmitter uses a standard 3-pin XLR input jack for use with any microphone with a mating XLR con- nector. An LCD, membrane switches and multi-color LEDs on the control panel make input gain adjust- ments and frequency selection quick and accurate, without having to view the receiver. The housing is machined from a solid aluminum block to provide a lightweight and rugged package. A special non-corro- sive finish resists salt water exposure and perspiration in extreme environments.

The DSP controlled input limiter features a wide range dual envelope design which cleanly limits input signal peaks over 30 dB above full modulation. Switching power supplies provide constant voltages to the trans- mitter circuits from the beginning (3 Volts) to the end (1.7 Volts) of battery life, and an ultra low noise input amplifier for quiet operation.

Low Frequency Roll-Off

The low frequency roll-off can be set for a 3 dB down point at 25, 35, 50, 70, 100, 120 and 150 Hz to con- trol subsonic and very low frequency audio content in the audio. The actual roll-off frequency will vary slightly depending upon the low frequency response of the microphone.

Excessive low frequency content can drive the trans- mitter into limiting, or in the case of high level sound systems, even cause damage to loudspeaker systems. The roll-off is normally adjusted by ear while listening as the system is operating.

Input Limiter

A DSP-controlled analog audio limiter is employed before the analog-to-digital (A-D) converter. The limiter has a range of more than 30 dB for excellent overload protection. A dual release envelope makes the limiter acoustically transparent while maintaining low distor- tion. It can be thought of as two limiters in series, a fast attack and release limiter followed by a slow attack and release limiter. The limiter recovers quickly from brief transients, with no audible side effects, and also recovers slowly from sustained high levels, to keep audio distortion low and while preserving short term dynamics.

Control Panel

The control panel includes five membrane switches and an LCD screen to adjust the operational settings. Multi-color LEDs are used to indicate audio signal levels for accurate gain adjustment, battery status and en

cryp- tion key function.

Iternate Recording Function

The DPR has a built in recording function for use in situations where RF may not be possible or to work as a stand alone recorder. The record function and trans- mit functions are exclusive of each other – you cannot record AND transmit at the same time. When the unit is transmitting and recording is turned on, the audio in the RF transmission will stop, but the battery status will still be sent to the receiver.

The recorder samples at 48 kHz rate with a 24 bit sample depth. The micro SDHC card also offers easy firmware update capabilities without the need for a USB cable or driver issues.

Encryption

When transmitting audio, there are situations where privacy is essential, such as during professional sport- ing events, in court rooms or private meetings. For instances where your audio transmission needs to be kept secure, without sacrificing audio quality, Lectro- sonics implements AES256 encryption in our digital wireless microphone systems. High entropy encryp- tion keys are first created by a Lectrosonics receiver such as the DSQD Receiver. The key is then synced with the DPR via the IR port. The transmission will be encrypted and can only be decoded if the receiver and transmitter have matching encryption keys. If you are trying to transmit an audio signal and keys do not match, all that will be heard is silence.

Features

LCD Screen

BACK Button

Arrow

From the Main Screen, use the **UP** Arrow to turn the LEDs on and the **DOWN** Arrow to turn the LEDs off.
The LCD is a numeric-type Liquid Crystal Display with several screens that allow settings to be made with the **MENU**/**SEL** and **BACK** buttons, and the **UP** and **DOWN** arrow buttons to configure the transmitter. The transmitter can be turned on in a “standby” mode with the carrier turned off to make adjustments without the risk of interfering with other wireless systems nearby

Power LED

The PWR LED glows green when the batteries are charged. The color changes to red when there is about 20 minutes of life left. When the LED begins to blink red, there are only a few minutes of life.
A weak battery will sometimes cause the PWR LED to glow green immediately after being put into the unit, but will soon discharge to the point where the LED will go red or shut off completely.

Key LED

The blue Key LED will blink if an encryption key is not set and “no key” will blink on LCD. The Key LED will remain on if the encryption is set correctly and will turn off in Standby mode.

Modulation LEDs

The Modulation LEDs provide a visual indication of the input audio signal level from the microphone. These two bicolor LEDs can glow either red or green to indi- cate modulation levels. Full modulation (0 dB) occurs when the -20 LED first turns red

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

MENU/SEL Button

The **MENU/SEL** button is used to display the transmit- ter menu items. Press once to open the menu, then use the **UP** and **DOWN** arrows to scroll menu items. Press **MENU/SEL** again to choose an option from the menu.]
The **MENU/SEL** button is used to display the transmit- ter menu items. Press once to open the menu, the use the

Main/Home Screen Menu Shortcuts

From the main/home screen, the following menu short- cuts are available:
Simultaneous press of **BACK** button + **UP** arrow but- ton: Begin record
Simultaneous press of **BACK** button + **DOWN** arrow button: Stop record
Press **MENU/SEL**: Shortcut to adjust input gain menu
Press the **UP** arrow button to turn the control panel LEDs on; press the **DOWN** arrow button to turn them off

Audio Input Jack

The 3 pin female XLR to AES standard balanced input jack on the transmitter accommodates hand-held, shotgun and measurement microphones. Phantom power can be set at various levels for use with a wide variety of electret microphones.

Antenna

An antenna is formed between the housing and the attached microphone, operating much like a dipole. At UHF

frequencies the length of the housing is similar to 1/4 wavelength of the operating frequency, so the an- ten a is surprisingly efficient, which helps extend the operating range and suppress noise and interference.

IR (infrared) Port

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

Main/Home Screen Menu Shortcuts

From the main/home screen, the following menu short- cuts are available:
Simultaneous press of **BACK** button + **UP** arrow but- ton: Begin record
Simultaneous press of **BACK** button + **DOWN** arrow button: Stop record
Press **MENU**/**SEL**: Shortcut to adjust input gain menu
Press the **UP** arrow button to turn the control panel LEDs on; press the **DOWN** arrow button to turn them off

Audio Input Jack

The 3 pin female XLR to AES standard balanced input jack on the transmitter accommodates hand-held, shotgun and measurement microphones. Phantom power can be set at various levels for use with a wide variety of electret microphones.

Antenna

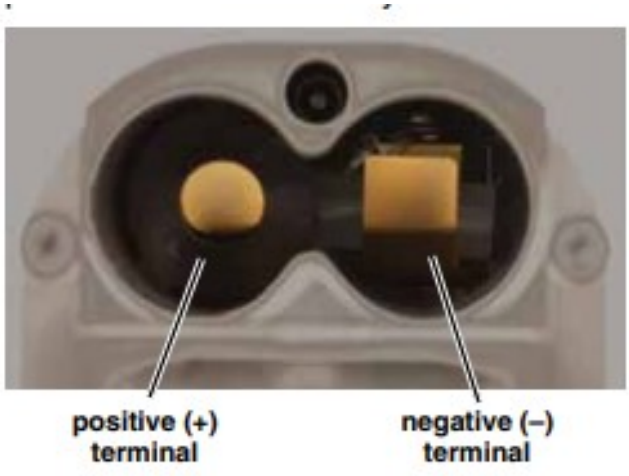
An antenna is formed between the housing and the attached microphone, operating much like a dipole. At UHF frequencies the length of the housing is similar to 1/4 wavelength of the operating frequency, so the an- tenna is surprisingly efficient, which helps extend the operating range and suppress noise and interference.

IR (infrared) Port

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

To install new batteries:

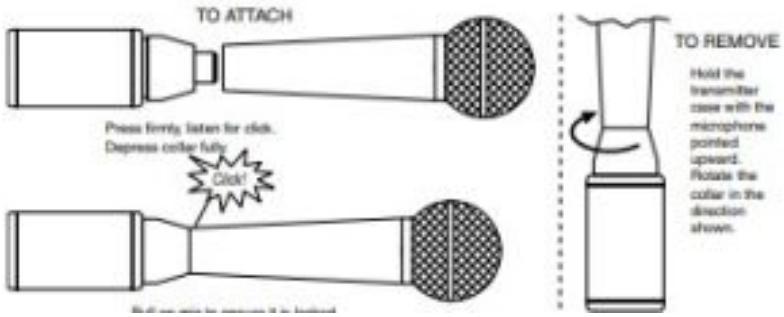
1. Slide open the Battery Cover and remove any oldInsert the new batteries into the housing. One bat- tery goes in positive (+) end first, the other negative (-) end first. Look into the battery compartment to determine which end goes in which side. The side with the circular insulator is the side which accepts the positive end of the battery



2. To install new batteries:Insert the new batteries into the housing. One bat- tery goes in positive (+) end first, the other negative (-) end first. Look into the battery compartment to determine which end goes in which side. The side with the circular insulator is the side which accepts the positive end of the batter Slide open the Battery Cover and remove any old

Attaching/Removing a Microphone

The spring loaded coupler under the XLR jack main- tains a secure fit to the microphone jack with continu- ous pressure applied by an internal spring.
To attach the microphone, simply align the XLR pins and press the microphone onto the transmitter until the coupler retracts and latches. A click sound will be heard as the connector latches.
To remove the microphone, hold the transmitter body in one hand with the microphone pointing upward. Use your other hand to rotate the coupler until the latch releases and the coupler rises slightly.



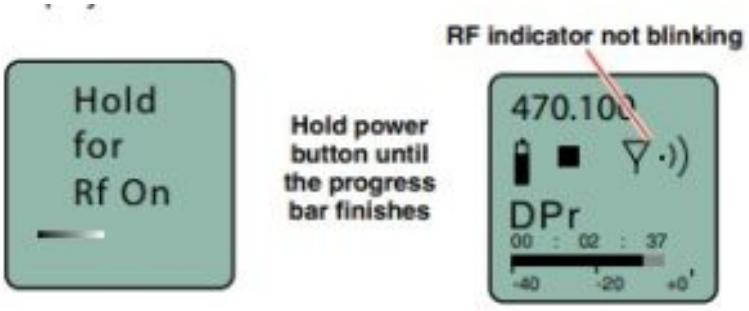
OTE: Do not hold or apply any pressure to the microphone body while trying to remove it, as this may prevent the latch from releasing.

Operating Instructions

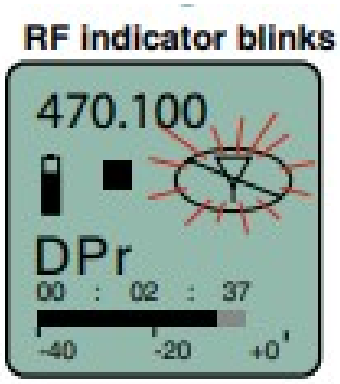
Turning Power ON

Powering On in Operating Mode

Press and hold the **POWER** Button briefly until the progress bar on the LCD finishes
When you release the button, the unit will be operation- al with the RF output turned on and the Main Windo displayed

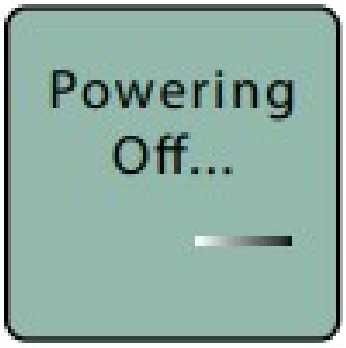


Powering On in Standby Mode



A brief press of the POWER

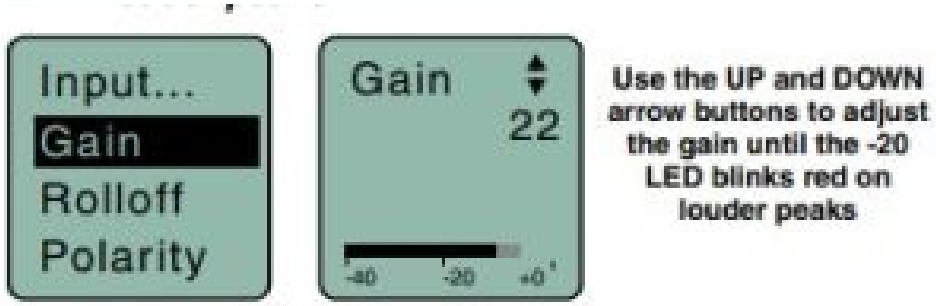
button and releasing it before the progress bar finishes, will turn the unit on with the RF output turned off. In this Standby Mode the menus can be browsed to make settings and adjustments without the risk of interfering with other wireless systems nearby.



To turn the unit off, hold the **POW- ER** Button in briefly and wait for the progress bar to finish. If the **POWER** button is released before the progress bar finishes, the unit will remain turned on and the LCD will return to the same screen or menu that was displayed previ ously

Transmitter Operating Instructions

- Install battery(s)
- Turn power on in the Standby mode (see previous section)
- Connect microphone and place it in the position where it will be used.
- Have the user talk or sing at the same level that will be used in the production, and adjust the input gain so that the ***-20 LED blinks red on louder peaks..***



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

- Set the frequency to match the
- Set encryption key type and sync with
- Turn the power off and then back on while holding

Recorder Operating Instructions

- Install battery(s)
- Insert microSDHC memory card
- Turn power on
- Format memory card

Connect microphone and place it in the position where it will be used

New microSDHC memory cards come pre-formatted with a FAT32 file system which is optimized for good performance. The DPR relies on this performance and will never disturb the underlying low level formatting of the SD card. When the DPR “formats” a card, it per- forms a function similar to the Windows “Quick Format” which deletes all files and prepares the card for record- ing. The card can be read by any standard computer but if any write, edit or deletions are made to the card by the computer, the card must be re-formatted with the DPR to prepare it again for recording. The DPR never low level formats a card and we strongly advise against doing so with the computer.

To format the card with the DPR, select Format Card in the menu and press **MENU/SEL** on the keypad.
NOTE: An error message will appear if samples are lost due to a poor performing “slow” card.WARNING: Do not perform a low level format (com- plete format) with a computer. Doing so may render the memory card unusable with the DPR recorder.
With a windows based computer, be sure to check the quick format box before formatting the card.
With a Mac, choose MS-DOS (FAT).

Formatting SD Card

New microSDHC memory cards come pre-formatted with a FAT32 file system which is optimized for good performance. The DPR relies on this performance and will never disturb the underlying low level formatting of the SD card. When the DPR “formats” a card, it per- forms a function similar to the Windows “Quick Format” which deletes all files and prepares the card for record- ing. The card can be read by any standard computer but if any write, edit or deletions are made to the card by the computer, the card must be re-formatted with the DPR to prepare it again for recording. The DPR never low level formats a card and we strongly advise against doing so with the computer.
To format the card with the DPR, select Format Card in the menu and press **MENU/SEL** on the keypad.
NOTE: An error message will appear if samples are lost due to a poor performing “slow” card.
WARNING: Do not perform a low level format (com- plete format) with a computer. Doing so may render the memory card unusable with the DPR recorder.
With a windows based computer, be sure to check the quick format box before formatting the card.
With a Mac, choose MS-DOS (FAT).

—

IMPORTANT

The formatting of the SD card sets up contiguous sectors for maximum efficiency in the recording process. The file format utilizes the BEXT (Broadcast Extension) wave format which has sufficient data space in the header for the file information and the time code imprint.

The SD card, as formatted by the DPR recorder, can be corrupted by any attempt to directly edit, change, format or view the files on a computer.

The simplest way to prevent data corruption is to copy the .wav files from the card to a computer or other Windows or OS formatted media ***FIRST. Repeat – COPY THE FILES FIRST!***

Do not rename files directly on the SD card.

Do not attempt to edit the files directly on the SD card.

Do not save ***ANYTHING*** to the SD card with a computer (such as the take log, note files etc) – it is formatted for

DPR recorder use only.

Do not open the files on the SD card with any third party program such as Wave Agent or Audacity and permit a save. In Wave Agent, do not IMPORT – you can OPEN and play it but do not save or Import – Wave Agent will corrupt the file.

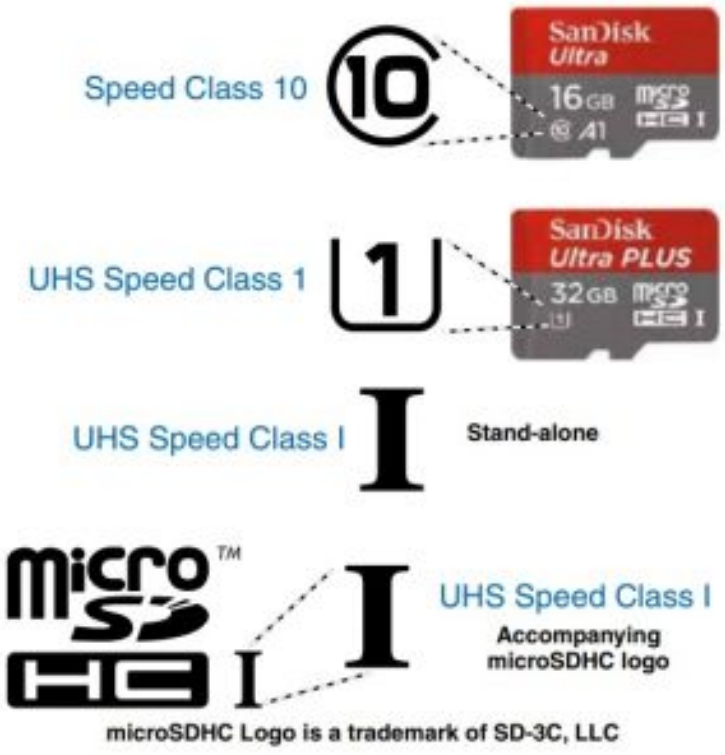
In short – there should be NO manipulation of the data on the card or addition of data to the card with anything other than an DPR recorder. Copy the files to a computer, thumb drive, hard drive, etc. that has been formatted as a regular OS device FIRST – then you can edit freely.

XML HEADER SUPPORT

Recordings contain industry standard iXML chunks in the file headers, with the most commonly used fields filled in.

Compatibility with microSDHC memory cards

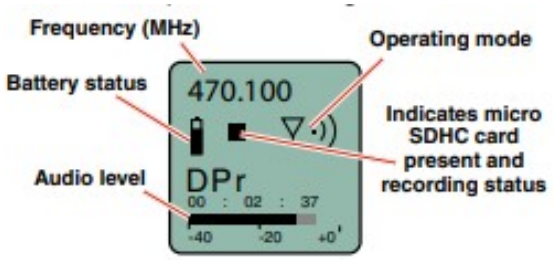
Please note that the DPR is designed for use with ***microSDHC memory cards***. There are several types of SD card standards (as of this writing) based on capacity (storage in GB).
SDSC: standard capacity, up to and including 2 GB – DO NOT USE!
SDHC: high capacity, more than 2 GB and up to and including 32 GB – USE THIS TYPE.
SDXC: extended capacity, more than 32 GB and up to and including 2 TB – DO NOT USE!
SDUC: extended capacity, more than 2TB and up to and including 128 TB – DO NOT USE!
The larger XC and UC cards use a different format- ting method and bus structure and are NOT compat- ible with the recorder. These are typically used with later generation video systems and cameras for image applications (video and high resolution, high speed photography).
ONLY microSDHC memory cards should be used. They are available in capacities from 4GB to 32GB. Look for the Speed Class 10 cards (as indicated by a C wrapped around the number 10), or the UHS Speed Class I cards (as indicated by the numeral 1 inside a U symbol). Also note the ***microSDHC*** Logo.
If you are switching to a new brand or source of card, we always suggest testing first before using the card on a critical application.
The following markings will appear on compatible memory cards. One or all of the markings will appear on the card housing and the packaging.



Main Window

Main Window Indicators

The Main Window displays the operating frequency, Standby or Operating mode, battery status, if an SDHC card is presnt/recording, and audio level.



Turning Control Panel LEDs ON/OFF

From the main menu screen, a quick press of the **UP** arrow button turns the control panel LEDs on. A quick press of the **DOWN** arrow button turns them off. The buttons will be disabled if the **LOCKED** option is e- lected in the Setup menu.

The control panel LEDs can also be turned on and off with the **LED Off** option in the Setup menu.

Helpful Features on Receivers

To aid in finding clear frequencies, several Lectroson- ics receivers offer a ***SmartTune*** feature that scans the tuning range of the receiver and displays a graphical report that shows where RF signals are present at different levels, and areas where there is little or no RF energy present. The software then automatically selects the best channel for operation.
Lectrosonics receivers equipped with an ***IR Sync*** func- tion allow the receiver to set frequency on the transmit- ter via an infrared link between the two units

Input Menu

Adjusting the Input Gain

The two bicolor Modulation LEDs on the control 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

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 ***Turning Power ON and OFF***).
2. Navigate to the Gain setup screen.

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

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
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
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 instruc- tions, and do not change it to adjust the audio output level of the

   NOTE: Input Gain may also be accessed by holding down MENU/SEL from the home/mai

Selecting the Low Frequency Roll-off

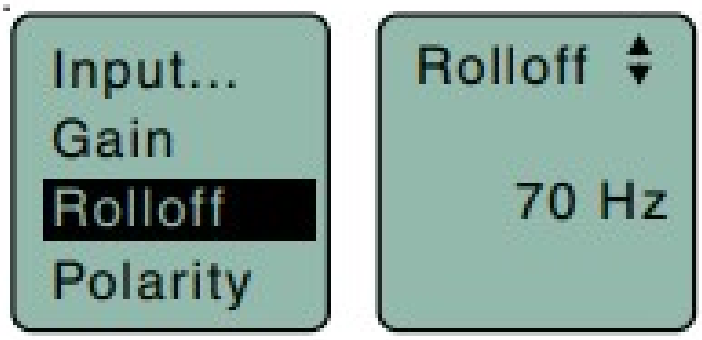
It is possible that the low frequency roll-off point could affect the gain setting, so it's generally good practice to make this adjustment before adjusting the input gain. The point at which the roll-off takes place can be set to:

- 25 Hz • 100 Hz
- 35 Hz • 120 Hz
- 50 Hz • 150 Hz
    - 70 Hz

The roll-off is often adjusted by ear while monitoring the audio

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.



The transmitter input jack can provide phantom power for the attached microphone if needed, with voltages at 5, 15 or 48. Phantom power will consume a slight amount of battery power, so it can also be turned off.

Selecting Phantom Power Supply

The transmitter input jack can provide phantom power for the attached microphone if needed, with voltages at 5, 15 or 48. Phantom power will consume a slight amount of battery power, so it can also be turned off.

Xmit Menu

Selecting Frequency

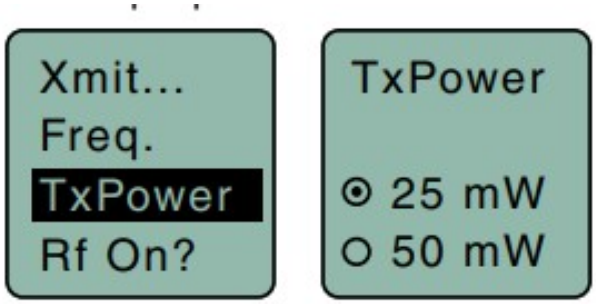
The setup screen for frequency selection offers two ways to browse the available frequencies
Press the **MENU**/**SEL** button to select each field. Use the and arrow buttons to adjust the frequency.
Each field will step through the available frequencies in a different increment.

Setting Transmitter Output Power

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

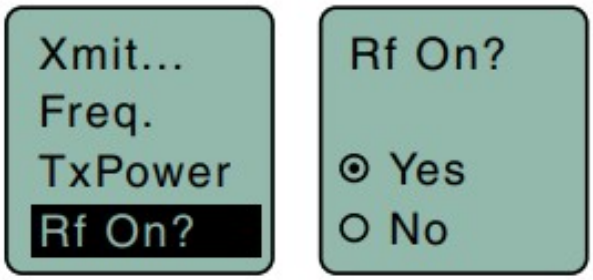
Turning Rf Output On

It’s best to set frequency and other settings in the standby mode (Rf off) so that no audio will enter the sound system or recorder during adjustment. Use this menu item to turn the Rf carrier on and off.



Turning Rf Output On

It’s best to set frequency and other settings in the standby mode (Rf off) so that no audio will enter the sound system or recorder during adjustment. Use this menu item to turn the Rf carrier on and off.

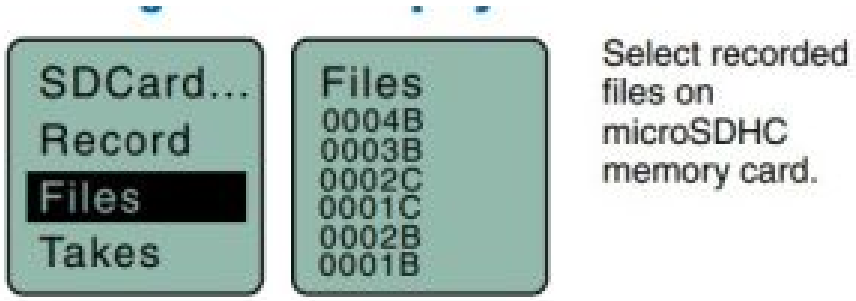


NOTE: See previous section, *Turning Power ON and OFF* for instructions on turning transmitter on with the Rf carrier disabled (Standby Mode).

SDCard Menu

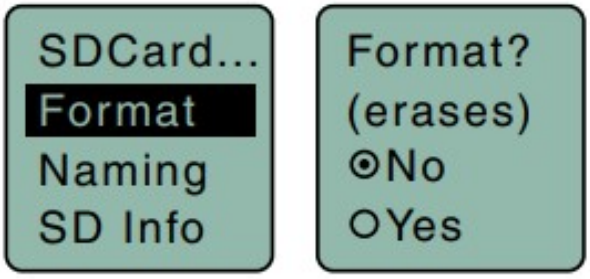
Record or Stop

Begins recording or stops recording. (See Recorder Operating Instructions.)



Choosing Files for Replay

Use **UP** and **DOWN** arrows to toggle and **MENU/SEL** to play back



Setting Scene and Take Number

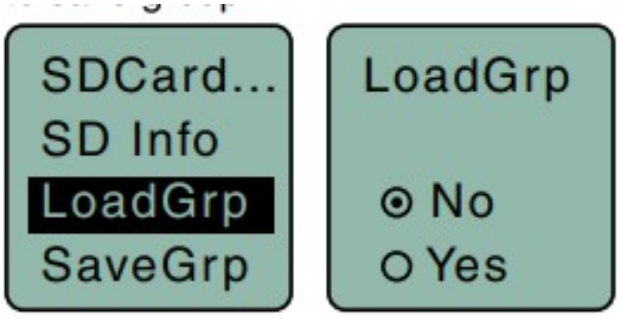
Use **UP** and **DOWN** arrows to advance Scene and Take and **MENU/SEL** to toggle. Press the **BACK** but- ton to return to menu

microSDHC Memory Card Info

Information regarding the microSDHC memory card including space remaining on card

Load Tuning Group

The tuning groups feature allows groups of frequen- cies to be created, stored and used to constrain tun- ing. When a tuning group is assigned, the frequency control is limited to the frequencies contained in the tuning group. The groups are created using Lectroson- ics DSQD receiver or via Wireless Designer, then the groups are shared with the DPR via IR sync or microS- DHC Memory Card transmission.
Ue **UP** and **DOWN** arrows to toggle and **MENU/SEL**



TCode Menu
TC Jam (jam timecode)

When TC Jam is selected, ***JAM NOW*** will blink on the LCD and the unit is ready to be synced with the timecode source. Connect the timecode source and the sync will take place automatically. When the sync is successful, a message will be displayed to confirm the operation

Timecode defaults to 00:00:00 at power up if no time- code source is used to jam the unit. A timing reference is

logged into the BWF metadata

Setting Frame Rate

The frame rate affects embedding of the timing refer- ence in the .BWF file metadata and display of time- code. The following options are available:

- 30 • 23.976l
- 29.97 • 30DF
- 25 • 29.97DF
    - 24

NOTE: While it is possible to change the frame rate, the most common use will be to check the frame rate which was received during the most recent timecode jam. In rare situations, it might be useful to alter the frame rate here, but be aware that audio tracks many not line up correctly with mismatched frame rates.

Use Clock

Choose to use the clock provided in the DPR as op- posed to a timecode source. Set the clock in the Set- tings Menu, Date & Time.
Rio Rancho, NM
NOTE: The DPR time clock and calendar (RTCC) cannot be relied on as an accurate time code source. Use Clock should only be used in projects where there is no need for the time to agree with an external time code source.

KeyType

The DPR receives an encryption key via the IR port from a key generating receiver (such as the Lectroson- ics DCHR and DSQD receivers). Begin by selecting

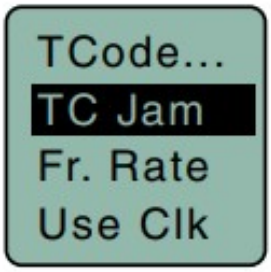
a key type in the receiver and generating a new key. Set the matching KEY TYPE in the DPR and transfer the key from the receiver (SYNC KEY) to the DPR via the IR ports. A confirmation message will display on the receiver display if the transfer is successful. The transmitted audio will then be encrypted and can only be decoded if the

receiver has the matching encryption key.

The DPR has three options for encryption keys:

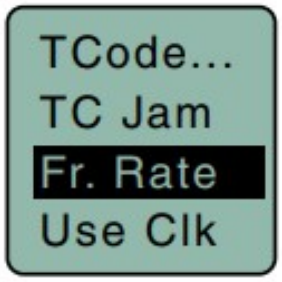
- **Universal:** This is the most convenient en- cryption option available. All encryption-capable Lectrosonics transmitters and receivers contain the Universal Key. The key does not have to be generated by a receiver. Simply set the DPR and a Lecrosonics receiver to Universal, and the encryp- tion is in place. This allows for convenient encryp- tion amongst multiple transmitters and receivers, but not as secure as creating a unique
- **Shared:** There are an unlimited number of shared keys available. Once generated by a re- ceiver and transferred to the DPR, the encryption key is available to be shared (synced) by the DPR 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

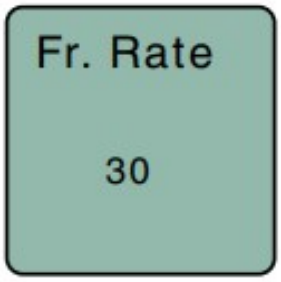
Standard: This is the highest level of security. The encryption keys are unique to the receiver and there are only 256 keys available to be transferred to a transmitter. The receiver tracks the number of keys generated and the number of times each key is transferred.



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 DPR to receive a new key.



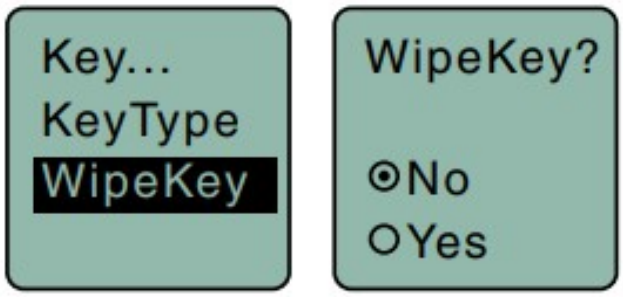


SendKey

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.

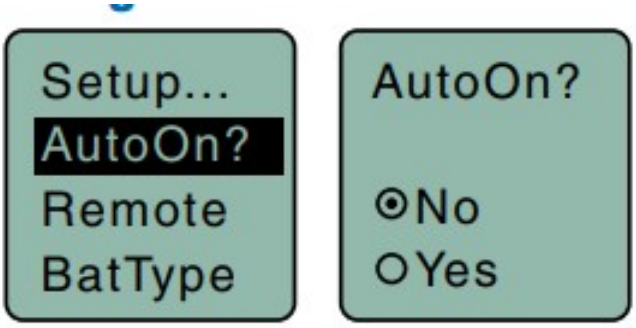
Setup Menu

Setting Auto On



Selects whether or not the unit will turn on automati- cally after a battery change

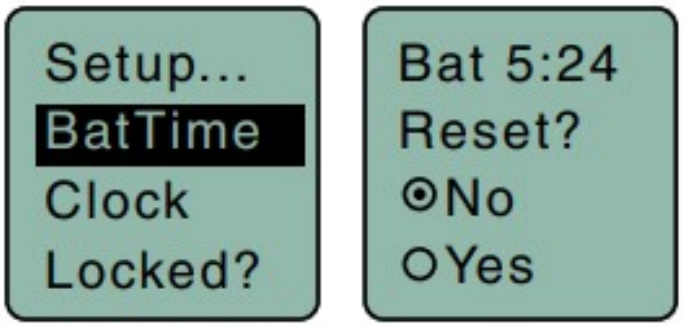
Enabling Remote Function



The DPR can be configured to respond to “dweedle tone” signals from the LectroRM smart phone app or to ignore them. Use the arrow buttons to toggle between “yes” (remote control on) and “no” (remote control off). (See section **on LectroRM**.)

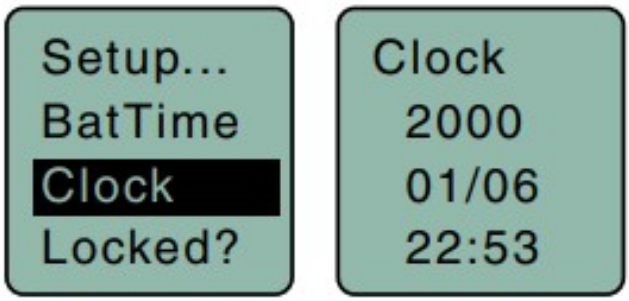
Setting Battery Type

Choose either Alkaline (recommended) or Lithium AA battery type. The voltage of the installed battery pair will be shown at the bottom of the display.



Setting Date and Time (Clock)

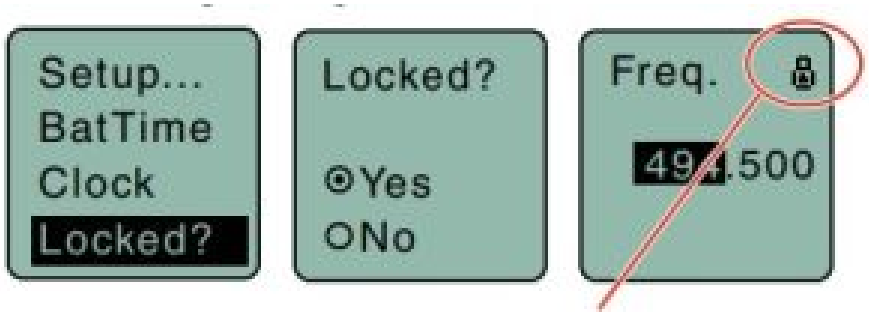
To set the date and time, use the **MENU/SEL** button to toggle through the fields and the **UP** and **DOWN** arrow buttons to choose the appropriate number



NOTE: LEDs can also be turned off/on from the control panel. From the main screen, a quick press of the **UP** arrow button turns the control panel LEDs on. A quick press of the **DOWN** arrow button turns them off. Restoring Default Settings\

Locking/Unlocking Settings

Changes to the settings can be locked to prevent inad- vertent changes being made.



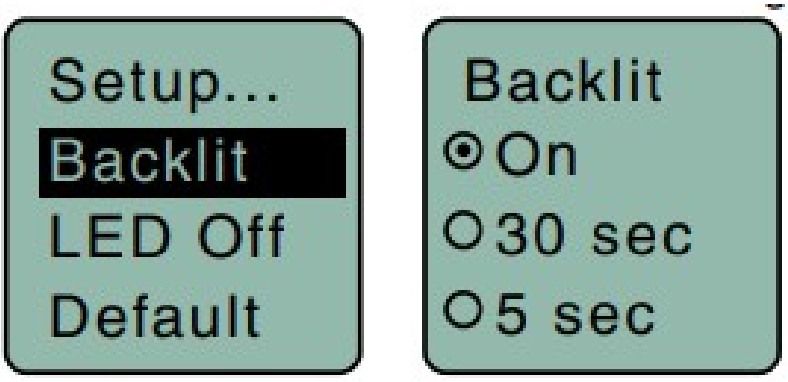
A small padlock symbol will appear on adjustment screens when changes have been locked.

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

- Settings can still be unlocked
- Menus can still be browsed

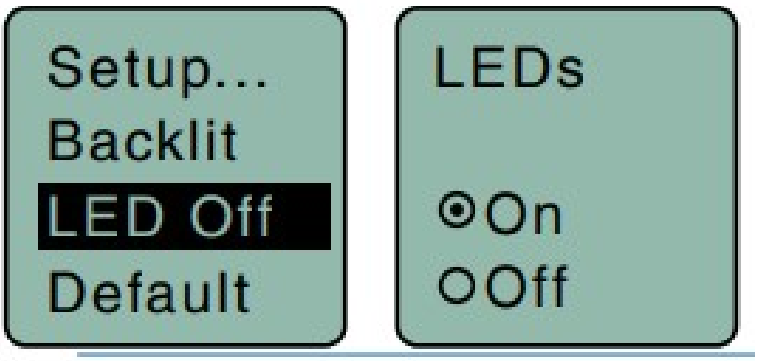
Backlit Settings

Sets the duration of the LCD backlight.



Turn LEDs On/Off

Enables/disables control panel LEDs.

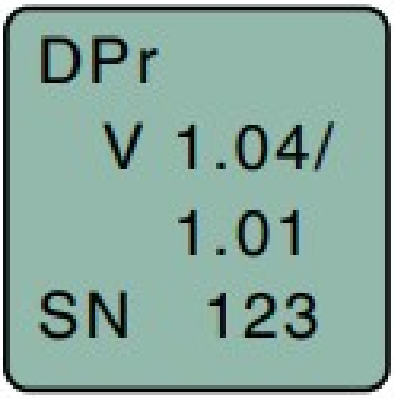


Restoring Default Settings

This is used to restore the factory settings

About

Displays the DPR model number, firmware versions and serial number.



LectroRM

By New Endian LLC

LectroRM is a mobile application for iOS and Android operating systems. Its purpose is to remotely control Lectrosonics Transmitters, including:

- SM Series
- WM
- L Series
- DPR

The app remotely changes settings on the transmit- ter through the use of encoded audio tones, which when received by the attached microphone, will alter the configured setting. The app was released by New Endian, LLC in September 2011. The app is available for download and sells for $25 on the Apple App Store and Google Play Store.

LectroRM's remote control mechanism is the use of an audio sequence of tones (dweedles) that are interpret- ed by the transmitter as a configuration change. The settings available in LectroRM are:

- Audio Level
- Frequency
- Sleep Mode
- Lock Mode

User Interface

The user interface involves selecting the audio se- quence related to the desired change. Each version has an interface for selecting the desired setting and the desired option for that setting. Each version also has a mechanism to prevent accidental activation of the tone.

The iPhone version keeps each available setting on a separate page with the list of options for that setting. On iOS, the "Activate" toggle switch must be enabled to show the button which will then activate the audio. The iOS version's default orientation is upside-down but can be configured to orient right-side up. The purpose for this is to orient the device's speaker, which is at the bottom of the device, closer to the transmitter microphone.

Android

iOS

The Android version keeps all settings on the same page and allows the user to toggle between the activation buttons for each setting. The activation button must be long pressed to activate. The Android version also allows users to keep a configurable list of full sets of settings.

Activation

For a transmitter to respond to remote control audio tones, the transmitter must meet certain requirements:

- The transmitter must not be turned off; it can however be in sleep
- The transmitter microphone must be within
- The transmitter must be configured to enable remote control activation.

Please be aware this app is not a Lectrosonics product. It is privately owned and operated by New Endian LLC, [www.newendian.com.](http://www.newendian.com)

Supplied Accessories

40073 Lithium Batteries

DCR822 is shipped with four (4) batteries. Brand may vary.

Replacement leather pouch with clear plastic screen cover, rotating belt clip and snap closure. Included with transmitter at purchase.

PHTRAN3

55010

Flash Memory Card, microSDHC memory card to SD Adapter Included. Brand and capacity may vary.

Optional Accessories

21750 Barrel Adapter

This polarity reversing adapter may be needed to correct for asymmetrical current draw in some P48 powered condenser microphones, including older Neumann 100 Series, Rode NTG3 and others. If your microphone does not power on correctly when used with these transmitters, insert the adapter between the transmitter and microphone.

MCA-M30 Barrel Adapter

This adapter may be needed if you are experiencing noise or distortion with measurement microphones, particularly the Earthworks M30. The adapter has a common mode choke for suppressing RF noise. If your microphone signal exhibits the problems listed above when connected to a UH400, HM or DPR transmitter, insert the adapter between the microphone and the transmitter.Mic adapter for Earthworks M30 microphone with HM, DPR and UH400a/TM transmitters.

Insert the adapter between the transmitter and micro- phone to alleviate the problems listed above.

MCA5X

This is an optional adapter for connecting a lavaliere microphone to the DPR or HM transmitters. TA5M to XLR3-M connectors. Passes transmitter phantom power to bias the electret lavaliere microphone. Includes zener protection to limit bias voltage to protect the microphone if transmitter phantom power is set too high.

MCA-TPOWER

This cable adapter is to be used with the UH200D, UH400, HM and DPR plug-on transmitters with T-powered microphones. It will protect a T-power mic against the 48V phantom power setting in the transmitter while allowing normal operation. The
transmitter should be set to the 15V position for best operation and minimum battery drain

Specifications and Features

Transmitter

Operating Frequencies: US: 470.100 – 607.950 MHz E01: 470.100 -614.375 MHz

Frequency Selection Steps: 25 kHz

RF Power output: Selectable 25/50 mW

Frequency stability: ± 0.002%

Digital modulation: 8PSK

Spurious radiation: US: Compliant with

ETSI EN 300 422-1 v1.4.2

E01: Compliant with

ETSI EN 300 422-1 v2.1.2

Equivalent input noise: –125 dBV (A-weighted)

Input level: Nominal 2 mV to 300 mV, before limiting

Greater than 1V maximum, with limiting

Input impedance: 1K Ohm

Input limiter: Dual envelope type; 30 dB range

Gain control range: 55 dB in 1 dB steps; digital control

Modulation indicators: • Dual bi-color LEDs indicate modulation of -20, -10, 0, +10 dB referenced to full modulation

- LCD bar graph

Encryption: AES 256-CTR

(per FIPS 197 and FIPS 140-2)

Audio Performance:

Frequency Response: 25 Hz to 20 kHz, (+0, -3dB)

Low frequency Roll-off: Adjustable for -3dB @ 25, 35, 50, 70,

100, 120 and 150 Hz

Input Dynamic Range: 110 dB (A), before limiting 125 dB (with full Tx limiting)

Controls & Indicators: • LCD w/membrane switches

- LED audio level indicators

Audio Input Jack: Standard 3-pin XLR (female)

Phantom Power: 5V @ 18 mA max., 15V @ 15 mA max. and 48 V @ 4 mA max., plus “OFF”

IR (infrared) port: For quick setup by transferring settings from an IR enabled receiver

Antenna: Housing and attached microphone form the antenna.

Battery: Two 1.5 Volt AA (lithium recommended)

Battery Life: AA Lithium, 48v phantom power engaged:

- SCHOEPS CMIT 5U: 7h 25m
- SCHOEPS CMC6-U/MK41: 7h 20m
- SANKEN CS-1: 8h 0m

Weight: 7.8 ozs. (221 grams)

Dimensions: 4.21” L [excluding antenna: DPR-A] x 1.62” W x 1.38” H

(106.9 L x 41.1W x 35.0 H mm)

Emission Designator: 170K

Recorder

Storage media: microSDHC memory card (HC TypeFile format: .wav files (BWF)

A/D converter: 24-bit

Sampling rate: 48 kHz

Recording modes/Bit rate: HD mono: 24 bit – 144 kb/s Input:

Type: Analog mic/line level compatible; servo bias preamp for 2V and 4V lavaliere microphones

Input level:

- Dynamic mic: 0.5 mV to 50 mV
- Electret mic: Nominal 2 mV to 300 mV
- Line level: 17 mV to 1.7 V

Input connector: TA5M 5-pin male Timecode:

Connector: 3.5 mm TRS

Signal voltage: 0.5 Vp-p to 5 Vp-p

Input impedance: 10 k Ohms

Format: SMPTE 12M – 1999 compliant Audio Performance:

Frequency response: 25 Hz to 20 kHz; +0.5/-1.5 dB

Dynamic range: 110 dB (A), before limiting 125 dB (with full Tx limiting)

Distortion: < 0.035% Operating temperature range:

Celsius: -20 to 50

Fahrenheit: -5 to 122

Firmware Update

Firmware updates are made using a microSDHC memory card. Download and copy the following firm- ware update files to a drive on your computer.

- ***hex and dprMXXX_e01.hex*** are micro- controller files, where “X” is the revision number.
- ***mcs*** is the FPGA file, common to both DPr and DPr/E01, where “XXX” is the revision num- ber.
- (See warning below before updating the bootload- er) ***hex*** is the bootloader file, common to both DPr and DPr/E01, where “X” is the revision number.

The firmware update process is managed by a bootloader program – on very rare occasions, you might need to update the bootloader.

WARNING: Updating the bootloader can corrupt your unit if interrupted. Don’t update the bootloader unless advised to do so by the factory.

In the computer:

- Perform a ***Quick Format*** of the card. On a Win- dows-based system, this will automatically format the card to the FAT32 format, which is the Windows On a Mac, you may be given several options. If the card is already formatted in Win- dows (FAT32) – it will be greyed out – then you do not need to do anything. If the card is in another format, choose Windows (FAT32) and then click “Erase”. When the quick format on the computer is

complete, close the dialogue box and open the file browser.

- Copy the files to the memory card, then safely eject the card from the computer.

In the DPR:

- Leave the DPR turned off and insert the microS- DHC memory card into the slot.
- Hold down both the **UP** and **DOWN** arrow buttons on the control panel and turn the power on.
- The transmitter will boot up into the firmware up- date mode with the following options on the LCD:
  - **Update** – Displays a scrollable list of the files on the card.
  - **Power Off** – Exits the update mode and turns the power

NOTE: If the unit screen shows ***FORMAT CARD?***, power the unit off and repeat step 2. You were not properly pressing **UP**, **DOWN** and **POWER** at the same time.

- Use the arrow buttons to select Use the **UP** and **DOWN** arrow buttons to select the desired file and press **MENU/SEL** to install the update. The LCD will display status messages.
- When the update is complete, the LCD will display this message: ***UPDATE SUCCESSFUL REMOVE*** Remove the memory card.
- Power the unit back on. Verify the update by opening the Top Menu and navigating to
- If you re-insert the update card and turn the pow- er back on for normal use, the LCD will display a message prompting you to format the card:

Format Card? (files lost)

- ***No***
- Yes

If you wish to record audio on the card, you must re-format it. Select ***Yes*** and press **MENU/SEL** to format the card. When the process is complete, the LCD will return to the Main Window and be ready for normal operation. If you choose to keep the card as is, you may remove the card at this time.

Recovery Process

In the event of a battery failure while the unit is re- cording, a recovery process is available to restore the recording in proper format. When a new battery is installed and the unit is turned back on, the recorder will detect the missing data and prompt you to run the recovery process. ***The file must be recovered or the card will not be usable in the DPR.*** First it will read

You will have the choice of ***No*** or ***Yes*** (No is selected as the default). If you wish to recover the file, use the DOWN arrow button to select ***Yes***, then press **MENU/ SEL**.
The next window will give you the option to recover all or part of the file. The default times shown are the best guess by the processor where the file stopped record- ing. The hours will be highlighted and you can either accept the value shown or select a longer or shorter time. If you are unsure, simply accept the value shown as the default.
Press **MENU/SEL** and the minutes are then highlighted. You can increase or decrease the time to be recovered. In most cases you can simply accept the values shown and the file will be recovered. After you have made your time choices, press **MENU/SEL** again. A small ***GO!*** symbol will appear next to the **DOWN** arrow button.Pressing the button will initiate the file recovery. The recovery will happen quickly and you willsee: ***Recovery Successful***

Special Note:

Files under 4 minutes long may recover with additional data “tacked on” to the end of the file (from previous recordings or data if the card had been used previ- ously). This can be effectively eliminated in post with a simple delete of the unwanted extra “noise” at the end of the clip. The minimum recovered length will be one minute. For example, if the recording is only 20 seconds long, and you have selected one minute there will be the desired 20 recorded seconds with an additional 40 seconds of other data and or artifacts in the file. If you are uncertain about the length of the recording you can save a longer file – there will simply be more “junk” at the end of the clip. This “junk” may include audio data recorded in earlier sessions that were discarded. This “extra” information can be easily deleted in post produc- tion editing software at a later time.

Service and Repair

If your system malfunctions, you should attempt to correct or isolate the trouble before concluding that the equipment needs repair. Make sure you have followed the setup procedure and operating instructions. Check the interconnecting cables and then go through the **Troubleshooting** section in this manual.
We strongly recommend that you **do not** try to repair the equipment yourself and **do not** have the local repair shop at- tempt anything other than the simplest repair. If the repair is more complicated than a broken wire or loose connection, send the unit to the factory for repair and service. Don’t attempt to adjust any controls inside the units. Once set at the factory, the various controls and trimmers do not drift with age or vibration and never require readjustment. **There are no adjustments inside that will make a malfunctioning unit start working**.
LECTROSONICS’ Service Department is equipped and staffed to quickly repair your equipment. In warranty repairs are made at no charge in accordance with the terms of the warranty. Out-of-warranty repairs are charged at a modest flat rate plus parts and shipping. Since it takes almost as much time and effort to determine what is wrong as it does to make the repair, there is a charge for an exact quotation. We will be happy to quote approximate charges by phone for out-of-warranty repairs.

Returning Units for Repair

For timely service, please follow the steps below:

1. DO NOT return equipment to the factory for repair without first contacting us by email or by We need to know the nature of the problem, the model number and the serial number of the equipment. We also need a phone number where you can be reached 8 A.M. to 4 P.M. (U.S. Mountain Standard Time).
2. After receiving your request, we will issue you a return authorization number (R.A.). This number will help speed your repair through our receiving and repair departments. The return authorization number must be clearly shown on the **outside** of the shipping container.
3. Pack the equipment carefully and ship to us, shipping costs prepaid. If necessary, we can provide you with the proper packing materials. UPS is usually the best way to ship the Heavy units should be “double-boxed” for safe transport.
4. We also strongly recommend that you insure the equipment, since we cannot be responsible for loss of or dam- age to equipment that you Of course, we insure the equipment when we ship it back to you.

Lectrosonics USA: **Mailing address:**	**Shipping address:**	**Telephone:**
Lectrosonics, Inc.	Lectrosonics, Inc.	(505) 892-4501
PO Box 15900	561 Laser Rd., Suite 102	(800) 821-1121 Toll-free
Rio Rancho, NM 87174 USA	Rio Rancho, NM 87124 USA	(505) 892-6243 Fax
Web: www.lectrosonics.com	**E-mail:** sales@lectrosonics.com	
Lectrosonics Canada:		
Mailing Address:	**Telephone:**	**E-mail:**
720 Spadina Avenue,	(416) 596-2202	Sales: colinb@lectrosonics.com
Suite 600 Toronto, Ontario M5S 2T9	(877) 753-2876 Toll-free (877-7L ECTRO) (416) 596-6648 Fax	Service: joeb@lectrosonics.com

For body worn operation, this transmitter model has been tested and meets the FCC RF exposure guidelines when used with the Lectrosonics accessories supplied or

designated for this product. Use of other accessories may not ensure compliance with FCC RF exposure guidelines. Contact Lectrosonics if you have any questions or need more information about RF exposure using this product..
This device complies with FCC radiation exposure limits as set forth for an uncontrolled environment. This device should be installed and operated so that its antenna(s) are not co- located or operating in conjunction with any other antenna or transmitter.

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 liablility 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.