Quick Start Guide

Wireless Microphone Transmitters and Recorders

SMWB, SMDWB, SMWB/E01, SMDWB/E01, SMWB/X, SMDWB/X

Digital Hybrid Wireless® US Patent 7,225,135

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Serial Number:

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

For a detailed user manual, download the most current version at:

www.lectrosonics.com

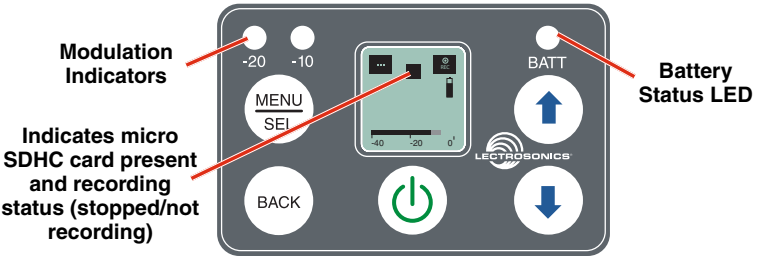
13 March 2020

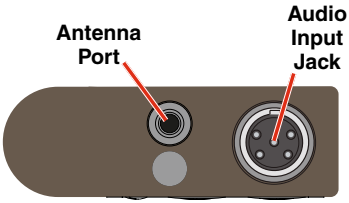
SMWB Series

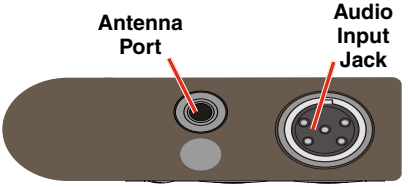
The SMWB transmitter delivers the advanced technology and features of Digital Hybrid Wireless® and combines 24-bit digital audio chain with an analog FM radio link to eliminate a compandor and its artifacts, yet preserves the extended operating range and noise rejection of the finest analog wireless systems. DSP "compatibility modes" allow the transmitter to also be used with a variety of analog receivers by emulating the compandors found in earlier Lectrosonics analog wireless and IFB receivers, and certain receivers from other manufacturers (contact the factory for details).

Plus, the SMWB 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 transmit functions are exclusive of each other - you cannot record AND transmit at the same time. The recorder samples at 44.1kHz rate with a 24 bit sample depth. (the rate was selected due to the required 44.1kHz rate used for the digital hybrid algorithm). The micro SDHC card also offers easy firmware updates capability without the need for a USB cable.

Controls and Functions







Battery Installation

The transmitters are powered by AA battery(ies). We recommend using lithium for longest life.

Because some 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 Lectrosonics Digital Hybrid Wireless receivers.

The battery door opens by simply unscrewing the knurled knob part way until the door will rotate. The door is also easily removed by unscrewing the knob completely, which is helpful when cleaning the battery contacts. 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.

A small pinpoint dab of silver conductive grease* on the thumbscrew threads can improve battery performance and operation. Do this if you experience a drop in battery life or an increase in operating temperature.

Insert the batteries according to the markings on the back of the housing. If the batteries are inserted incorrectly, the door may close but the unit will not operate.

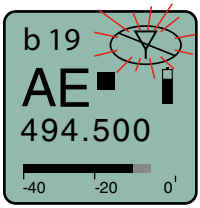
*if you are unable to locate a supplier of this type of grease - a local electronics shop for example - contact the factory for a small maintenance vial.

Turning Power ON

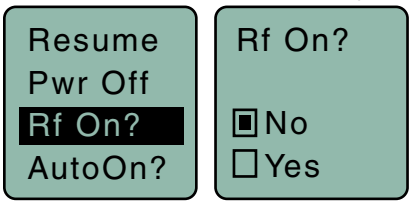
Short Button Press

When the unit is turned off, a short press of the power button will turn the unit on in the Standby Mode with the RF output turned off.

RF indicator blinks

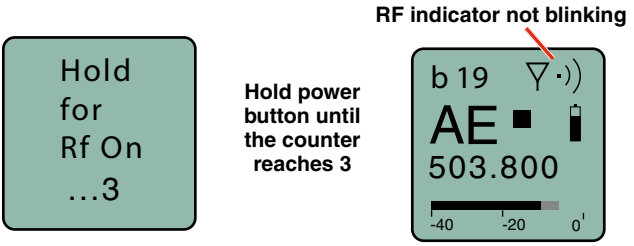


To enable the RF output from the Standby Mode, press the Power Button, select Rf On? option, then select yes.



Long Button Press

When the unit is turned off, a long press of the power button will start a countdown to turn the unit on with the RF output turned on. Continue to hold the button until the countdown is complete.



If the button is released before the countdown is completed, the unit will power up with the RF output turned off.

Power Button Menu

When the unit is already turned on, the Power Button is used to turn the unit off, or to access a setup menu.

A long press of the button begins a countdown to turn the unit off.

A short press of the button opens a menu for the following setup options. Select the option with the UP and DOWN arrow buttons then press MENU/SEL.

- **Resume** returns the unit to the previous screen and operating mode
- **Pwr Off** turns the unit off
- **Rf On?** turns the RF output on or off
- **AutoOn?** selects whether or not the unit will turn on automatically after a battery change
- **Remote** enables or disables the audio remote control (dweedle tones)
- **Bat Type** selects the type of battery in use
- **Backlit** sets the duration of the LCD backlight
- **Clock** sets the Year/Month/Day/Time
- **Locked** disables the control panel buttons
- **LED Off** enables/disables control panel LEDs
- **About** displays the model number and firmware revision

Menu Shortcuts

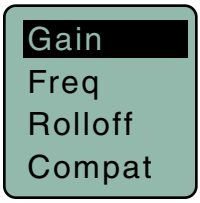
From the Main/Home Screen, the following shortcuts are available:

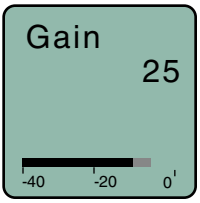
- **Record:** Press the MENU/SEL + UP arrow simultaneously
- **Stop Recording:** Press the MENU/SEL + DOWN arrow simultaneously

NOTE: The shortcuts are only available from the main/home screen AND when a microSDHC memory card is installed.

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***.





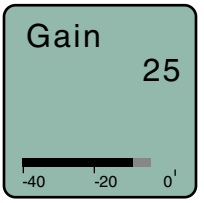
Use the UP and DOWN arrow buttons to adjust the gain until the -20 LED blinks red on louder peaks

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 and compatibility mode to match the receiver.
- Turn the RF output on with the ***Rf On?*** item in the power menu, or by turning the power off and then back on while holding the power button in and waiting for the counter to reach 3.

Record Operating Instructions

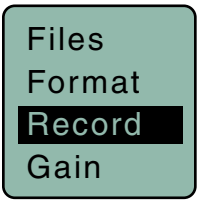
- Install battery(s)
- Insert microSDHC memory card
- Turn power on
- Format memory card
- Connect microphone and place it in the position where it will be used.
- Have the user talk or sing at the same level that will be used in the production, and adjust the input gain so that the ***-20 LED blinks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

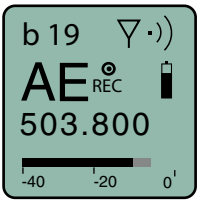


Use the UP and DOWN arrow buttons to adjust the gain until the -20 LED blinks red on louder peaks

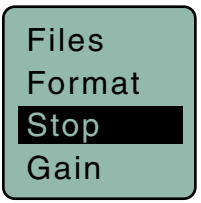
Signal Level	-20 LED	-10 LED
Less than -20 dB	Off	Off
-20 dB to -10 dB	Green	Off
-10 dB to +0 dB	Green	Green
+0 dB to +10 dB	Red	Green
Greater than +10 dB	Red	Red

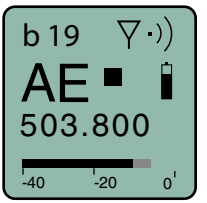
- Press MENU/SEL and choose Record from the menu





- To stop recording, press MENU/SEL and choose Stop; the word SAVED appears on the screen

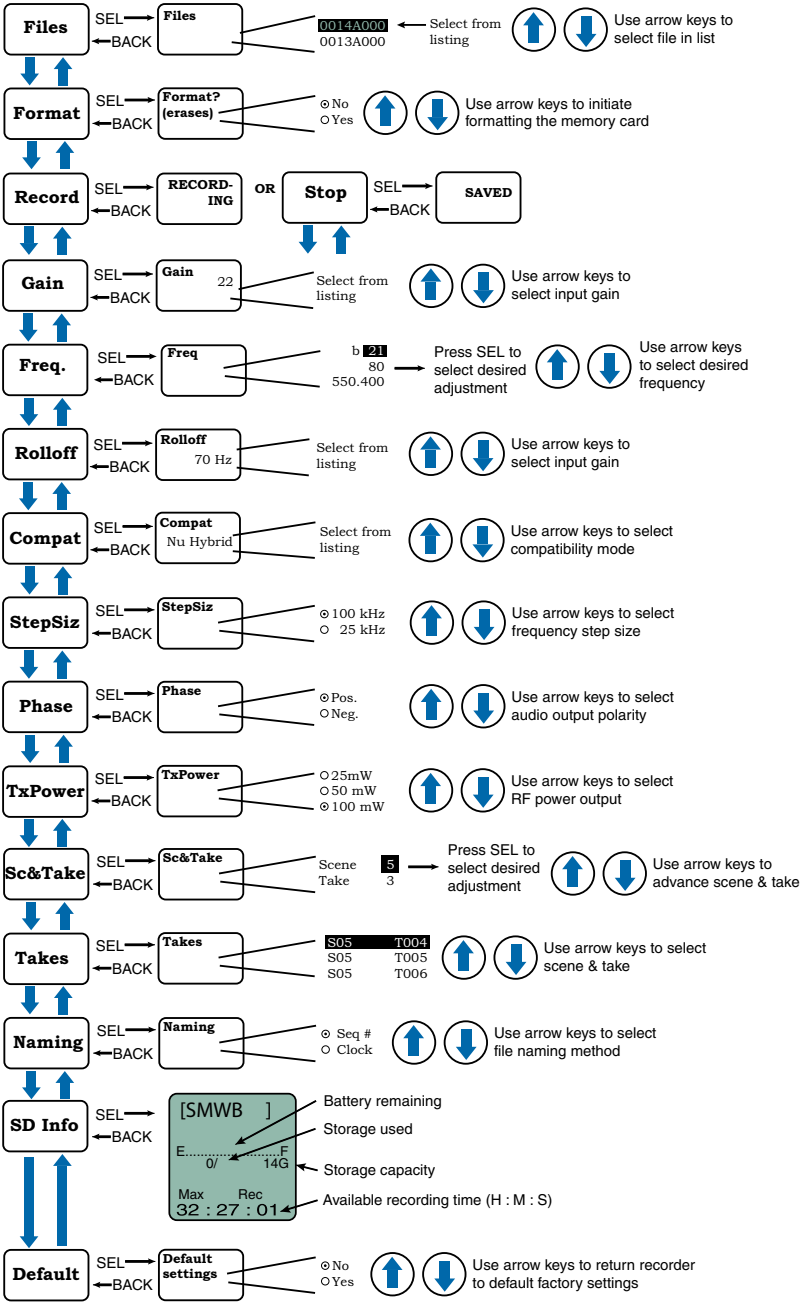




To play back the recordings, remove the memory card and copy the files onto a computer with video or audio editing software installed.

SMWB Main Menu

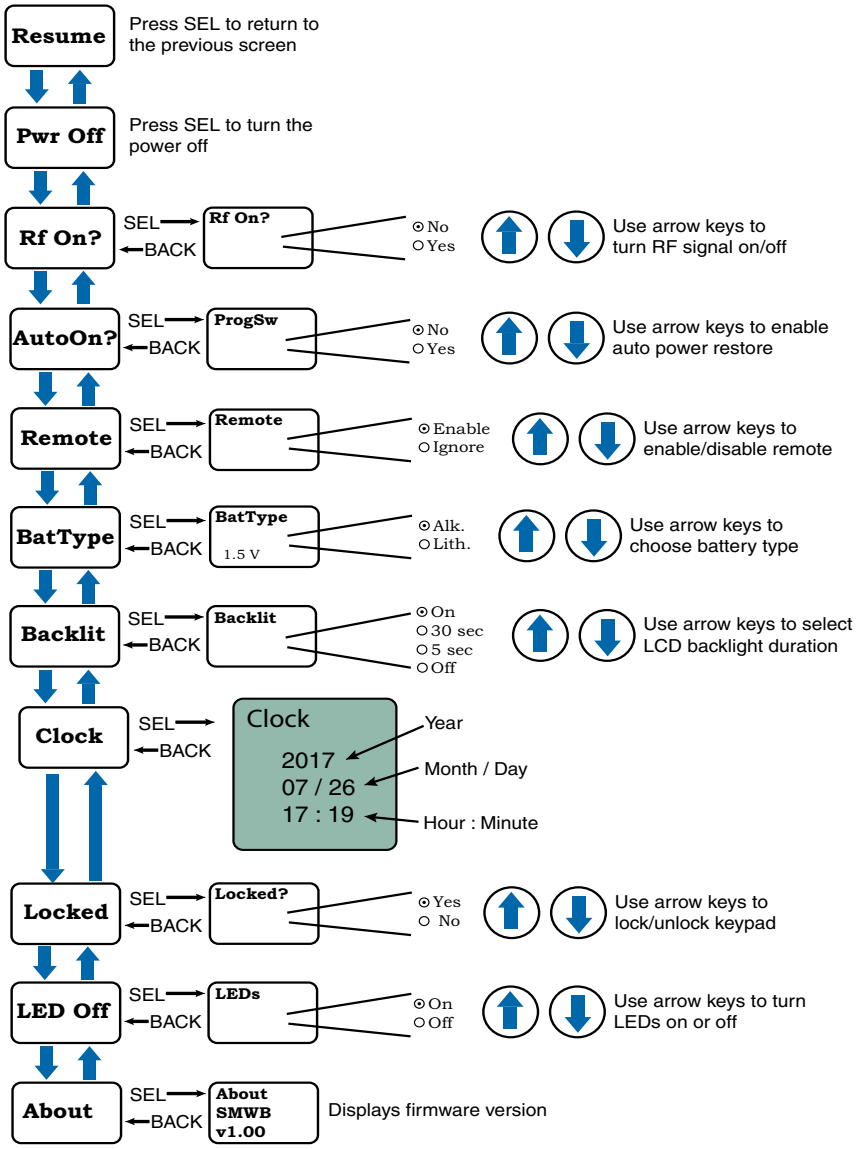
From the Main Window press MENU/SEL.
Use the UP/Down arrow keys to select the item.



SMWB Power Button Menu

From the Main Window press the power button.

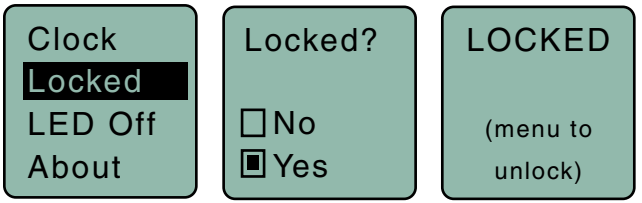
Use the UP/DOWN arrow keys to select the item.



Setup Screen Details

Locking/Unlocking Changes to Settings

Changes to the settings can be locked in the Power Button Menu.

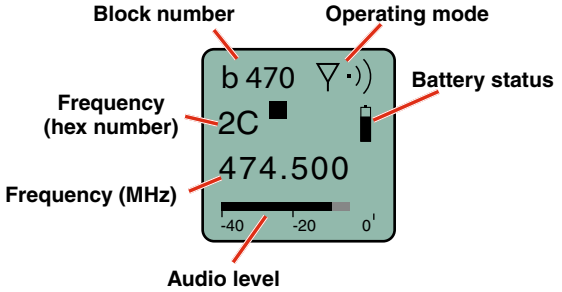


When changes are locked, several controls and actions can still be used:

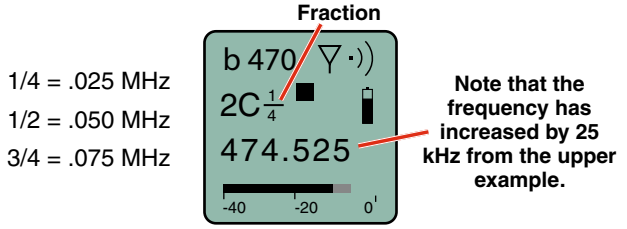
- Settings can still be unlocked
- Menus can still be browsed
- When locked, **POWER CAN ONLY BE TURNED OFF** by removing the batteries.

Main Window Indicators

The Main Window displays the block number, Standby or Operating mode, operating frequency, audio level, battery status and programmable switch function. When the frequency step size is set at 100 kHz, the LCD will look like the following.

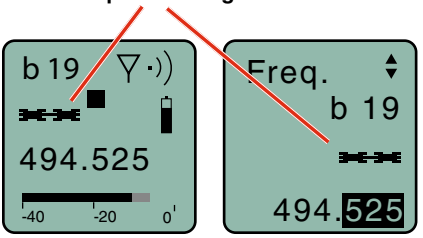


When the frequency step size is set to 25 kHz, the hex number will appear smaller and may include a fraction.



Changing the step size never changes the frequency. It only changes the way the user interface works. If the frequency is set to a fractional increment between even 100 kHz steps and the step size is changed to 100 kHz, the hex code will be replaced by two asterisks on the main screen and the frequency screen.

Frequency set to fractional 25 kHz step, but step size changed to 100 kHz.



Connecting the Signal Source

Microphones, line level audio sources and instruments can be used with the transmitter. Refer to the manual 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.

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 selected in the Power Button menu.

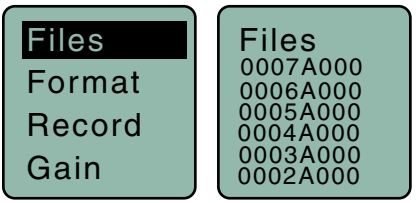
The control panel LEDs can also be turned on and off with the **LED Off** option in the Power Button menu.

Helpful Features on Receivers

To aid in finding clear frequencies, several Lectrosonics 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.

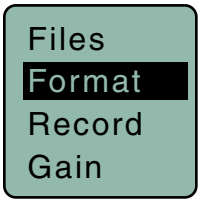
Lectrosonics receivers equipped with an ***IR Sync*** function allow the receiver to set frequency, step size and compatibility modes on the transmitter via an infrared link between the two units.

Files



Select recorded files on microSDHC memory card.

Format



Formats the microSDHC memory card.

WARNING: This function erases any content on the microSDHC memory card.

Record or Stop

Begins recording or stops recording. (See page 7.)

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.

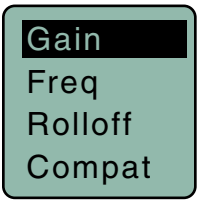
Signal Level	-20 LED	-10 LED
Less than -20 dB	Off	Off
-20 dB to -10 dB	Green	Off
-10 dB to +0 dB	Green	Green
+0 dB to +10 dB	Red	Green
Greater than +10 dB	Red	Red

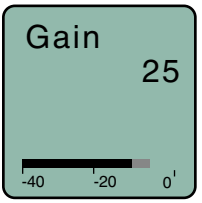
NOTE: Full modulation is achieved at 0 dB, when the "-20" LED first turns red. The limiter can cleanly handle peaks up to 30 dB above this point.

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 ***Turning Power ON and OFF***).

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 will occur during use, or set the output level of the instrument or audio device to the maximum level that will be used.

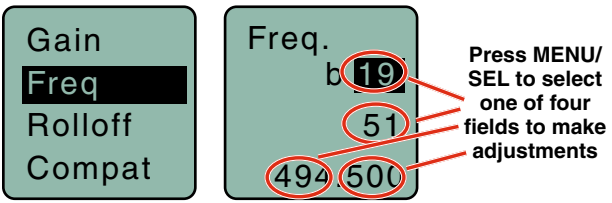
4) Use the ⇧ and ⇩ arrow buttons to adjust the gain until the **–10 dB** glows green and the **–20 dB** LED starts to flicker red during the loudest peaks in the audio.

5) Once the audio gain has been set, the signal can be sent through the sound system for overall level adjustments, monitor settings, etc.

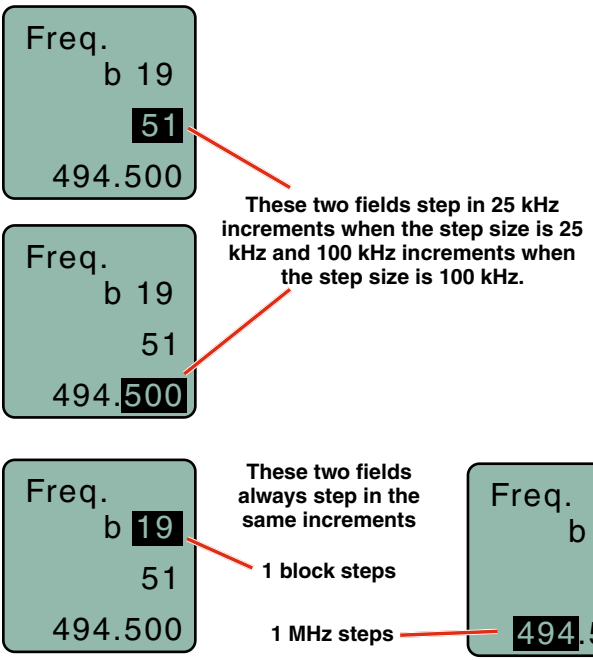
6) If the audio output level of the receiver is too high or low, use only the controls on the receiver to make adjustments. Always leave the transmitter gain adjustment set according to these instructions, and do not change it to adjust the audio output level of the receiver.

Selecting Frequency

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



Each field will step through the available frequencies in a different increment. The increments are also different in the 25 kHz mode from the 100 kHz mode.

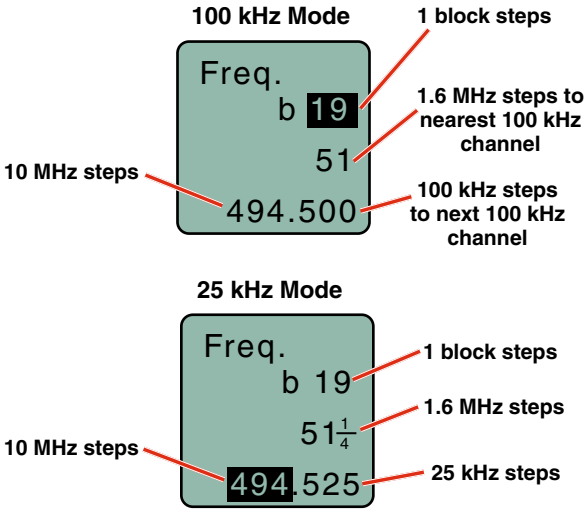


A fraction will appear next to the hex code in the setup screen and in the main window when the frequency ends in .025, .050 or .075 MHz.

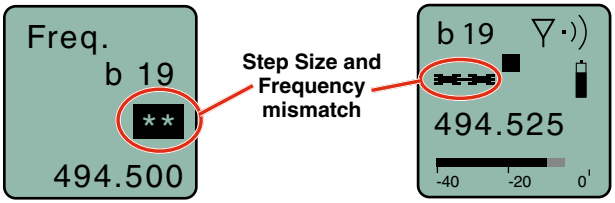
Selecting Frequency Using Two Buttons

Hold the MENU/SEL button in, then use the ⇧ and ⇩ arrow buttons for alternate increments.

NOTE: You must be in the FREQ menu to access this feature. It is not available from the main/home screen.



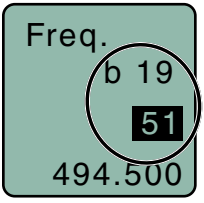
If the Step Size is 25 kHz with the frequency set between even 100 kHz steps and the Step Size is then changed to 100 kHz, the mismatch will cause the hex code to display as two asterisks.

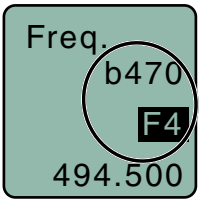


About Overlapping Frequency Bands

When two frequency bands overlap, it is possible to select the same frequency at the upper end of one and the lower end of the other. While the frequency will be the same, the pilot tones will be different, as indicated by the hex codes that appear.

In the following examples, the frequency is set to 494.500 MHz, but one is in band 470 and the other in band 19. This is done intentionally to maintain compatibility with receivers that tune across a single band. The band number and hex code must match the receiver to enable the correct pilot tone.





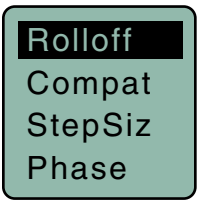
Make sure the band number and hex code match the receiver setting

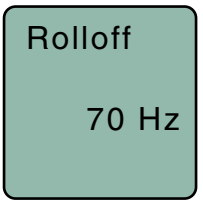
Selecting the Low Frequency Roll-off

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:

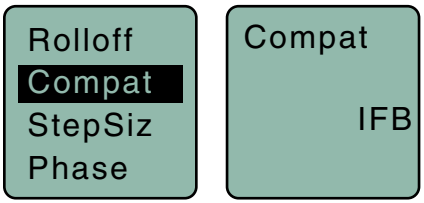
- LF 35 35 Hz
- LF 50 50 Hz
- LF 70 70 Hz
- LF 100 100 Hz
- LF 120 120 Hz
- LF 150 150 Hz

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





Selecting the Compatibility (Compat) Mode



Use the UP and DOWN arrows to select the desired mode, then press the BACK button twice to return to the Main Window.

Compatibility modes are as follows:

Receiver Models	**LCD menu item**

SMWB/SMDWB:

- Nu Hybrid: Nu Hybrid
- Mode 3:* Mode 3
- IFB Series: IFB Mode

Mode 3 works with certain non-Lectrosonics models. Contact the factory for details.

NOTE: If your Lectrosonics receiver does not have Nu Hybrid mode, set the receiver to Euro Digital Hybrid Wireless® (EU Dig. Hybrid).

/E01:

- Digital Hybrid Wireless®: EU Hybr
- Mode 3: Mode 3*
- IFB Series: IFB Mode

* Mode works with certain non-Lectrosonics models. Contact the factory for details.

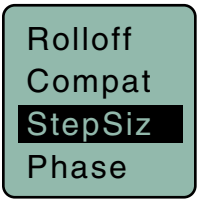
/X:

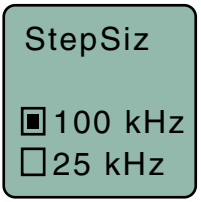
- Digital Hybrid Wireless®: NA Hybr
- Mode 3:* Mode 3
- 200 Series: 200 Mode
- 100 Series: 100 Mode
- Mode 6:* Mode 6
- Mode 7:* Mode 7
- IFB Series: IFB Mode

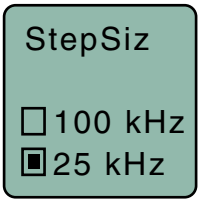
Modes 3, 6 and 7 work with certain non-Lectrosonics models. Contact the factory for details.

Selecting Step Size

This menu item allows frequencies to be selected in either 100 kHz or 25 kHz increments.





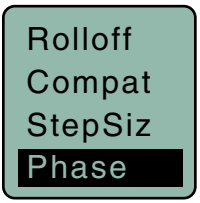


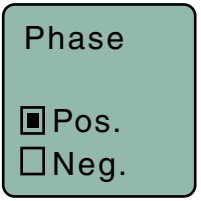
If the desired frequency ends in .025, .050 or .075 MHz, the 25 kHz step size must be selected.

Normally, the receiver is used to find a clear operating frequency. All Lectrosonics Digital Hybrid Wireless® receivers provide a scanning function to quickly and easily find prospective frequencies with little or no RF interference. In other cases, a frequency may be specified by officials at a large event such as the Olympics or a major league ball game. Once the frequency is determined, set the transmitter to match the associated receiver.

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.





Setting Transmitter Output Power

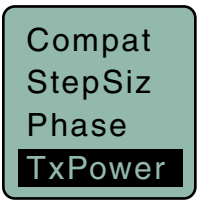
The output power can be set to:

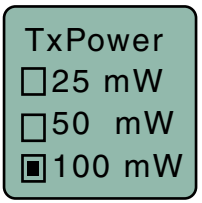
SMWB/SMDWB, /X

- 25, 50 or 100 mW

/E01

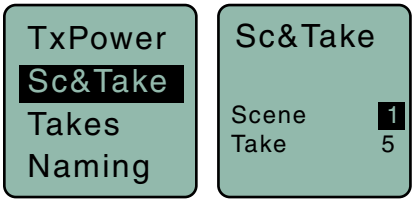
- 10, 25 or 50 mW





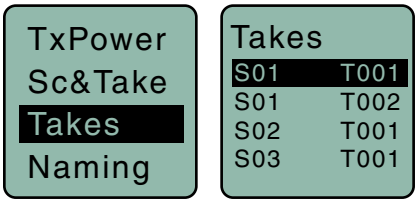
Setting Scene and Take Number

Use UP and DOWN arrows to advance Scene and Take and MENU/SEL to toggle. Press the BACK button to return to menu.



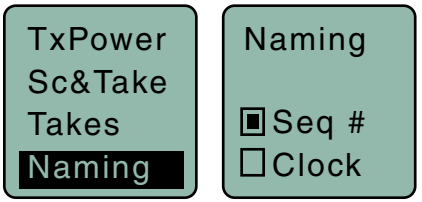
Choosing Takes for Replay

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



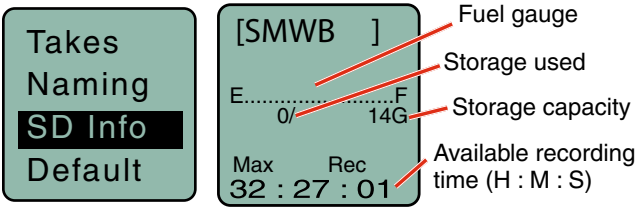
Recorded File Naming

Choose to name the recorded files by the sequence number or by the clock time.



MicroSDHC Memory Card Info

MicroSDHC Memory Card information including space remaining on card.



Restoring Default Settings

This is used to restore the factory settings.

Compatibility with microSDHC memory cards

Please note that the PDR and SPDR are designed for use with the ***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!

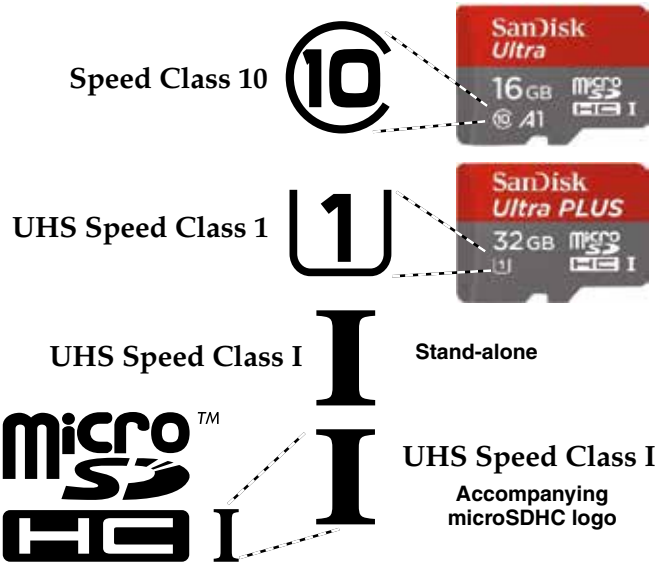
SDUC: extended capacity, more than 2TB and up to and including 128 TB – DO NOT USE!

The larger XC and UC cards use a different formatting method and bus structure and are NOT compatible with the SPDR recorder. These are typically used with later generation video systems and cameras for image applications (video and high resolution, high speed photography).

ONLY the 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.



microSDHC Logo is a trademark of SD-3C, LLC

Formatting SD Card

New microSDHC memory cards come pre-formatted with a FAT32 file system which is optimized for good performance. The PDR relies on this performance and will never disturb the underlying low level formatting of the SD card. When the SMWB/SMDWB "formats" a card, it performs a function similar to the Windows "Quick Format" which deletes all files and prepares the card for recording. 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 SMWB/SMDWB to prepare it again for recording. The SMWB/SMDWB never low level formats a card and we strongly advise against doing so with the computer.

To format the card with the SMWB/SMDWB, 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 (complete format) with a computer. Doing so may render the memory card unusable with the SMWB/SMDWB 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 SMWB/SMDWB 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 SMWB/SMDWB 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 SMWB/SMDWB 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.

iXML HEADER SUPPORT

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

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.

LECTROSONICS®

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