LECTROSONICS DSSM-A1B1 Water Resistant Micro Digital Wireless Transmitter User Guide

Contents

LECTROSONICS DSSM-A1B1 Water Resistant Micro Digital Wireless Transmitter

Product Information

Specifications

- Model: DSSM
- **Water Resistance Rating:** IP57
- **RF Power Selections:** 10mW, 35mW, 2mW (HDM mode)
- **Audio Input:** Mic or Line level signals
- **Battery:** Rechargeable LB-50 battery
- **Compatibility:** Works with Lectrosonics digital receivers DSR, DSR4, DSQD, DCR822, M2Ra, DCHR

FAQ

- **What does the IP57 rating mean?**
  - The IP57 rating indicates that the DSSM is water-resistant up to 1 meter for 30 minutes, making it suitable for use in challenging environments.
- **How do I know if my battery is running low?**
  - The bi-color LED indicator on the transmitter will change from green to red as the battery runs down, and

will start blinking red when there are only a few minutes of runtime remaining.

What is IP57

- IP ratings indicate how resistant an electrical device is to water and common materials – like dirt, dust and sand.
- The DSSM's IP57 rating indicates that that it is water resistant up to 1 meter (3.2 feet) for 30 minutes – perfect for your most demanding environments.

Introduction to DSSM

The DSSM is the enhanced, fully digital successor to the SSM, while being IP57 rated for moisture and particulate resistence and offering dock charging capability. The DSSM is ideal in theater, TV, film and broadcast where concealment is desired and water-resistance is required. The DSSM offers an extensive feature set and performance packed into an exceptionally compact housing, compatible with all current Lectrosonics digital receivers, including the DSR, DSR4, DSQD, DCR822, M2Ra and DCHR.

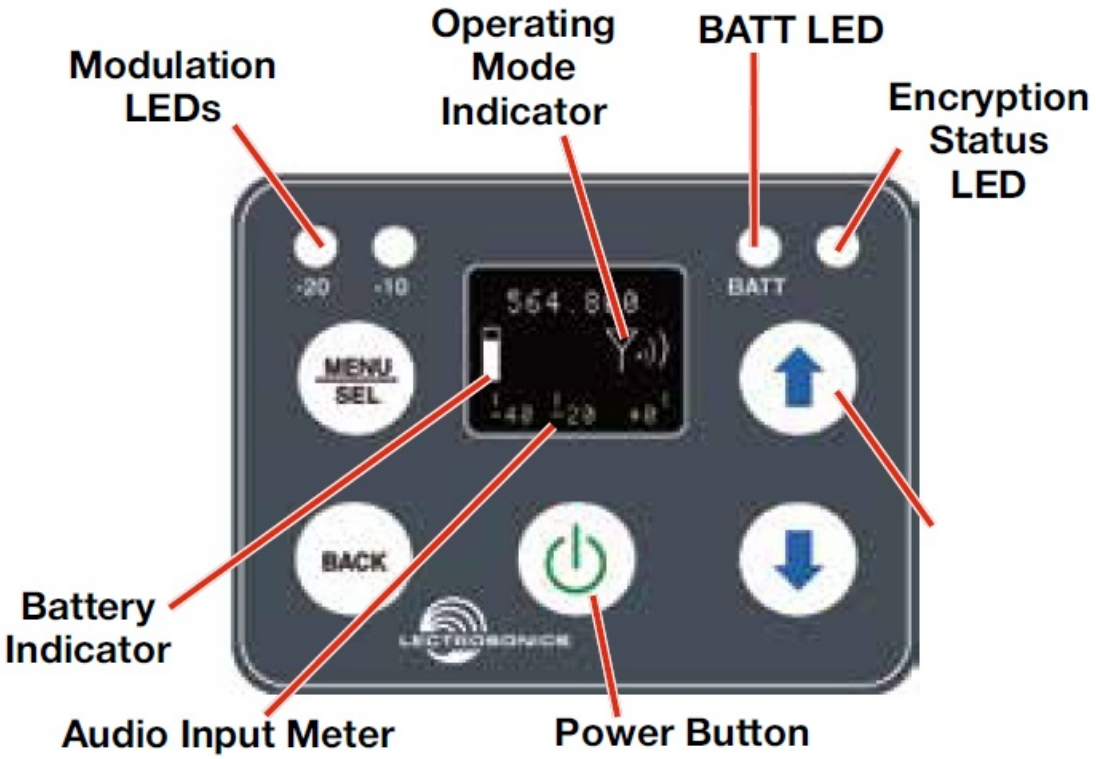
The DSSM includes specially developed, highly efficient circuitry for extended operating time on the rechargeable LB-50 battery. RF power selections are offered at 10 and 35 mW (D2 compat mode) and a special high density (HDM) mode at 2 mW.

The servo bias input accepts mic or line level signals with a wide range of gain adjustment in 1 dB steps. Accurate indications on the display allow precise gain adjustments to be made for the maximum signal to noise ratio and minimum distortion. The limiter in the preamp can cleanly handle signal peaks over 30 dB above full modulation, allowing the input gain to be set high enough to achieve the maximum signal to noise ratio, yet provide protection against input overload.

The audio input jack is a common miniature 3-pin connector with a threaded collar adding additional ruggedness. An IR (infrared) port next to the SMA antenna mount allows transfer of frequency and compatibility mode settings.

The membrane switch panel and OLED display enable access to all adjustments and settings. The menu structure is easy to navigate. Battery status is indicated by a bi-color LED that is green with a fresh battery, then turns to red as the battery runs down, and finally starts blinking red when there are only a few minutes of runtime remaining. The housing is constructed of machined aluminum alloy, treated in the conductive, super hard electroless nickel ebENi finish. A flexible, repositionable wire belt clip (to orient the antenna facing up or down) is included.

Controls and Functions



Modulation LEDs

Proper input gain adjustment is critical to ensure the best audio quality. Two bicolor LEDs will glow either red or green to accurately indicate modulation levels. The input circuitry includes a wide range DSP controlled limiter to prevent distortion at high input levels.

It is important to set the gain (audio level) high enough to achieve full modulation during louder peaks in the audio. The limiter can handle over 30 dB of level above full modulation, so with an optimum setting, the LEDs will flash red during use. If the LEDs never flash red, the gain is too low. In the table below, +0 dB indicates full modulation. See the Adjusting Input Gain section for additional information.

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

OLED Screen

The display is a matrix OLED with screens for adjusting various modes and options. The transmitter can be powered up with or without the RF output turned on. A brief press on the power button turns the unit on in a Standby Mode with the output turned off to allow adjustments to be made without interfering with other wireless systems in the vicinity.

BATT LED and Battery Indicator

The battery LED glows green when the battery is good, and the battery icon is solid and steady. The LED color changes to red when there is limited operating time remaining. When the battery is extremely low and the unit is about to turn off, the LED will blink, a few minutes before the unit powers itself down.

The exact point at which the LED turns red will vary with temperature and current drain. The LED is intended to simply catch your attention, not to be an exact indicator of remaining time. The LED next to the BATT LED (Encryption Status) will glow blue if the unit is transmitting and has a valid encryption key.

MENU/SEL Button

The MENU/SEL button is used to access the MENU tree. The ⬆ and ⬇ arrows allow you to scroll through the list. Pressing MENU/SEL again allows you to access that selection's submenu. Pressing the BACK button returns you to the previous screen.

Power Button

- Turns the unit on and off. A brief press turns power on in a Standby Mode to make settings without interfering with other wireless systems in the vicinity.
- Pressing and holding the button until a bar on the display completes a sequence turns the power on with the RF output turned on. Pressing and holding for the duration of a bar sequence turns the unit off.

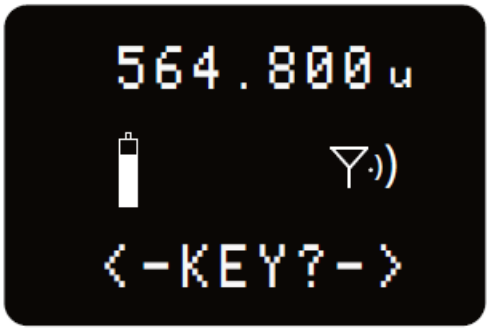
Audio Input Meter

- This shows the dB signal level, against a scale of -40 to +0. A small box with the letter "L" will appear at the far right when the audio signal goes into limiting.

UP and DOWN Arrow Buttons

- The ⬆ and ⬇ arrow buttons are used to select the values on the various setup screens and to lock out the control panel.

Encryption Status LCD/LED Indicator Modes



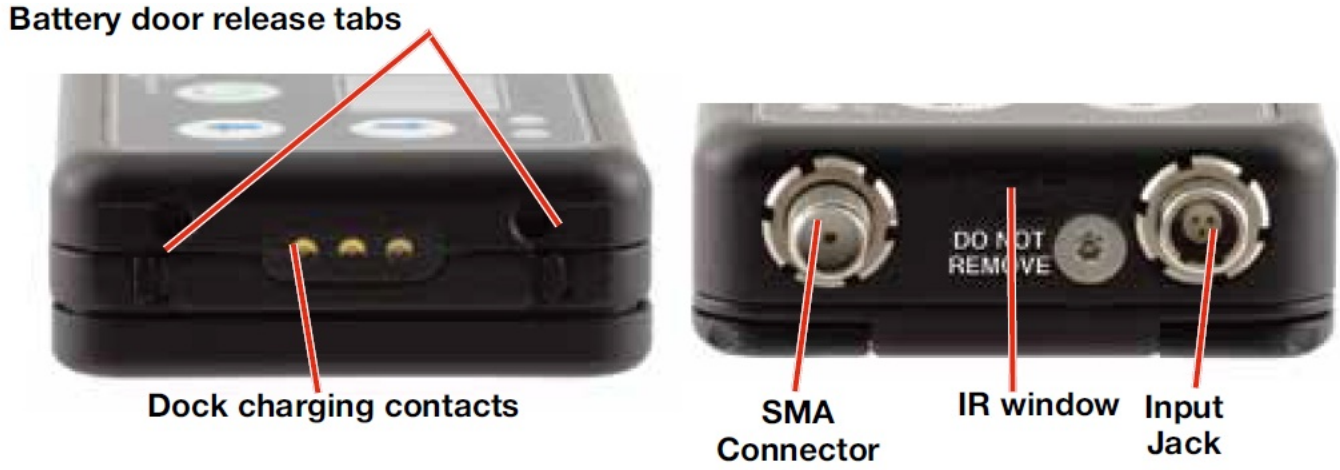
- **StandBy:** Blue LED is OFF and Operating Mode Indicator icon has a line through it
- **Missing/Wrong Key:** LED is FLASHING when unit is transmitting, along with <-KEY?-> flashing below the Operating Mode Indicator.
- **Transmitting:** Blue Light is steadily ON when key is valid.

Turning LEDs ON and OFF (Shortcut)

- From the main “home” screen, the arrow keys also turn the LEDs on and off.
- With no other button pressed, the ⬆ arrow turns the LEDs on and the ⬇ arrow turns them off.
- They can also be turned off or set to constantly stay on via the SetUp menu.

Connectors and USB Port

The housing is machined out of solid aluminum alloy for a rugged, lightweight assembly.
The antenna attaches via SMA connector. The IR port is capped with a translucent window to broaden the reception angle. The input jack is a rugged, watertight 3-pin connector with a threaded locking sleeve.



- The opposite end of the transmitter contains the battery door latches and release tabs, along with the dock charging contacts.
- The battery door has a Gore-Tex® sealed vent to allow air pressure to escape while blocking moisture ingress.
- The USB port, which is used for firmware updates, is located inside the battery compartment. When connected, the unit is powered from the USB source.

Battery Installation

The battery compartment and door catch are designed for simple and quick battery changes, yet prevent the door from being opened accidentally. Press both release catches inward to open.

CAUTION: Use only the Lectrosonics LB50 battery and Lectrosonics battery chargers.

- Insert battery into compartment, contact end first. Line the contacts on the battery up with the contacts on the unit, then press the back end of the battery into compartment.

Attaching/Removing the Microphone

- Align the ridges on the plug with the grooves in the jack and insert the plug. Slide the threaded sleeve onto the jack and rotate it clockwise to tighten it.

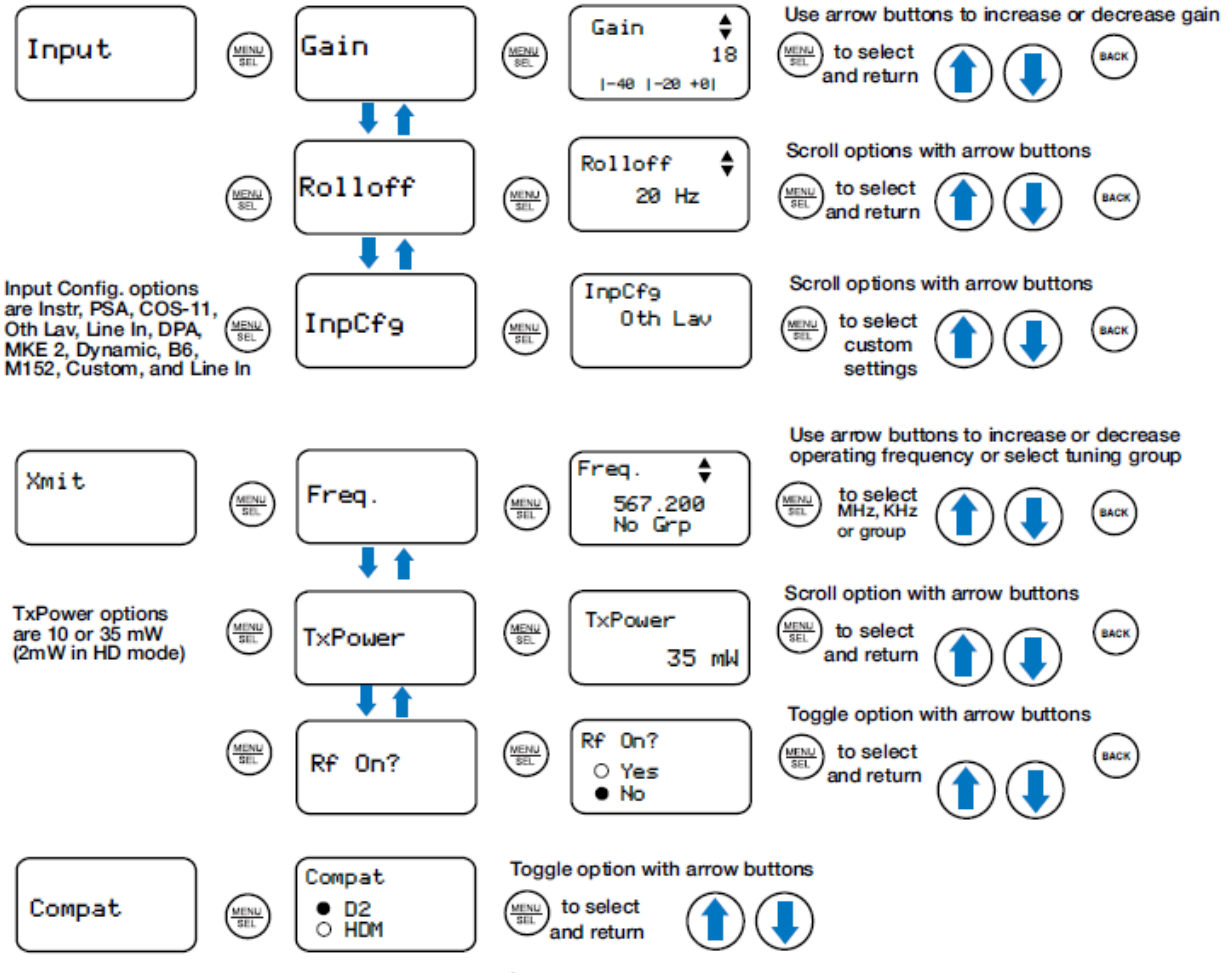
Reversible Belt Clip

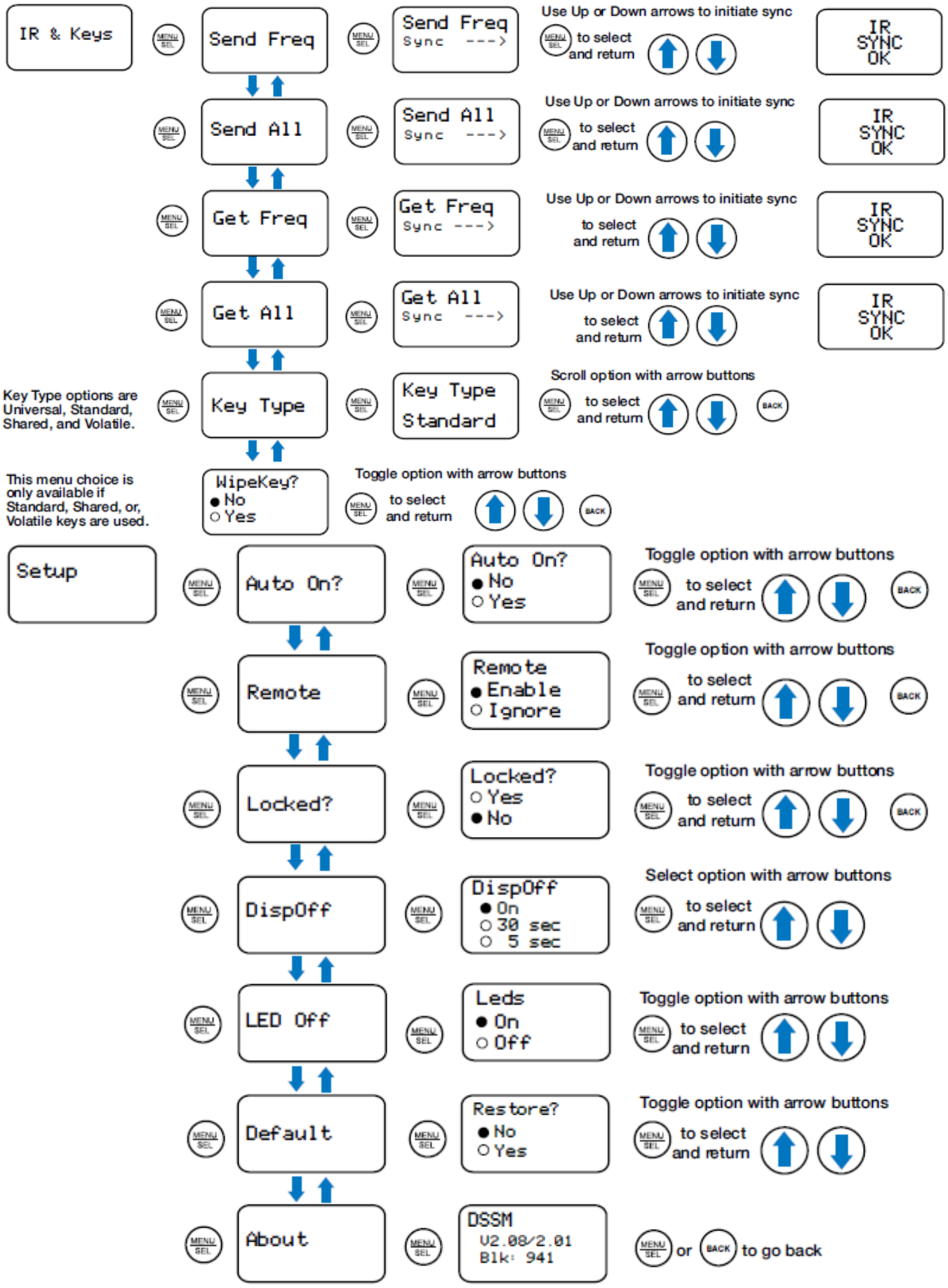
- The belt clip may be removed or reoriented (to point the antenna up or down) by carefully lifting it out and off of the housing, with the battery door open.
- Pull the one side of the wire out of the grooved hole as shown, then upward to remove. Repeat for the opposite side.

- The wire rests in a small groove while placed into the mounting hole.

Menu Map

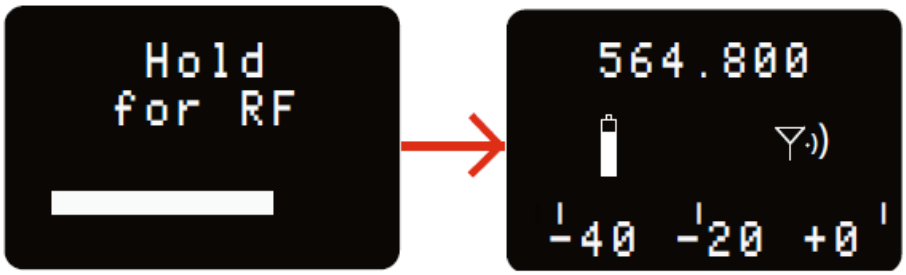
Main Menu Tree





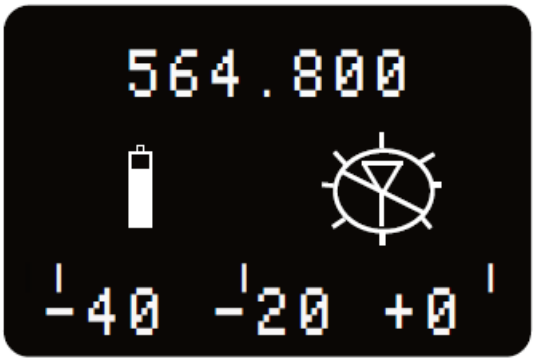
Operating Instructions

Powering On in Operating Mode



- Press and hold the Power Button for several seconds while“Hold for RF” appears and a bar indicator on the LCD progresses across the screen, returning to the Main Screen.
- When you release the button, the unit will be operational with the RF output turned on and the Main Window displayed.

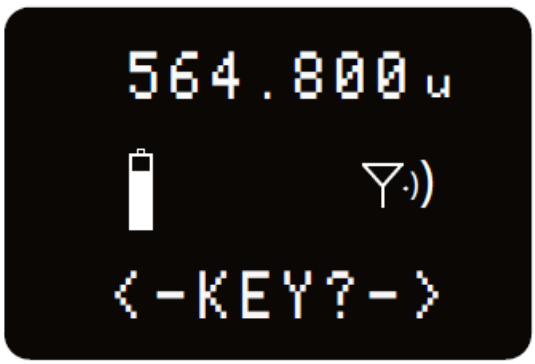
Powering On in Standby Mode



- A brief press of the Power Button , releasing it before the progress bar is complete, will turn the unit on with the RF output turned off. The LCD will display a reminder that the RF output of the transmitter is turned off. Standby Mode means no transmission.
- In this Standby Mode the frequency can be browsed to make adjustments without the risk of interfering with other wireless systems nearby.
- After adjustments are made, press the Power Button again to turn the unit off.

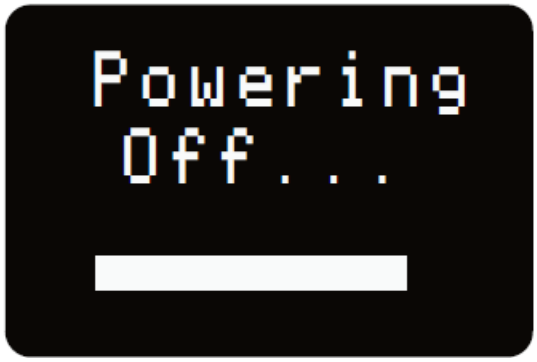
Encryption Key Missing

A blinking <-KEY?-> below next to the Operating Mode Indicator shows that the Encryption Key is missing. Refer to page 14 in the Operator’s Manual for instructions on setting the Encryption Key.



- The DSSM ships with the key type set as “Universal” and will work right away with any receiver also set to Universal Key Type.

Powering Off



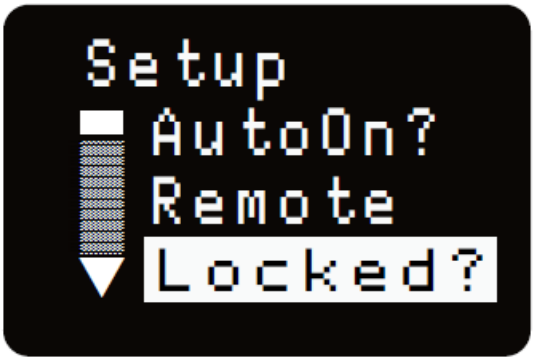
- Holding the Power Button in and waiting for the bar counter to decrease fully will turn the power off.
- If the power button is released before the countdown is completed, the unit will remain turned on and the LCD will return to the same screen or menu that was displayed previously.

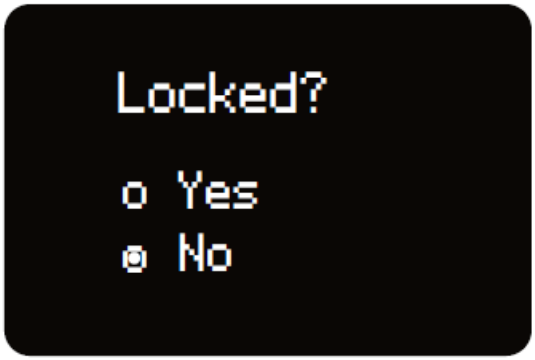
Setup Steps

The top level menus are accessed by powering the unit on, then pressing MENU/SEL. Refer to the Setup Screens section for details of each setup parameter.
The following list outlines the steps necessary to set up the transmitter for normal use.

1. Install a charged Lectrosonics LB-50 battery or retrieve the charged unit from the charging dock.
2. Set the compatibility mode to match the receiver to be used by pressing MENU/SEL, then scrolling to COMPAT and pressing MENU/SEL again to choose either D2 or HDM.
3. Adjust the frequency to match the receiver by using IR sync or pressing MENU/SEL, then XMIT, then FREQ. Use the arrow buttons to scroll through the first set of digits, then pressing MENU/SEL to choose and go to the next set of digits. Press MENU/SEL choose. The frequency is normally determined using the receiver to identify one within clear operating spectrum. Refer to the receiver instructions for details on using features such as scanning.
4. Connect the microphone or audio source to be used. Select the correct input configuration.
5. Adjust the input gain. Refer to the Adjusting the Input Gain section on the following page for instructions.
6. Turn on the receiver and verify that solid RF and audio signals are present (see receiver manual).

Locking the Controls





- The controls can be locked by going to MENU, then SETUP. Use the arrow buttom to scroll down to Locked? Use the UP and DOWN arrows to choose, then select your choice by pressing MENU/SEL.

NOTE: If the unit is Locked, you will need to unlock it to turn the power off. This setting prevents accidentally turning off the power when in use.

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 a charged battery in the transmitter, power the unit on.
2. Press the MENU/SEL button, then press MENU/SEL again to choose INPUT. Press once more to choose GAIN.
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. Unless the microphone or its position changes, or a different instrument is being used, leave the transmitter gain adjustment set according to these instructions. Use the audio output level control on the receiver to make adjustments for the desired level being delivered to the connected mixer, recorder, etc.

600MHz Guard Band and Duplex Gap

You'll notice that our B1C1 range for North America takes advantage of two sets of spectrum space within the 600 MHz band, as designated by the FCC auction. The 600 MHz band is made up of the following four parts:

- Guard Band (614-617 MHz)
- Duplex Gap (652-663 MHz)
- Downlink Band (617-652 MHz)
- Uplink Band (663-698 MHz)

Wireless devices in North America are limited to the Guard Band (614-617 MHz) and Duplex Gap (652-663 MHz).

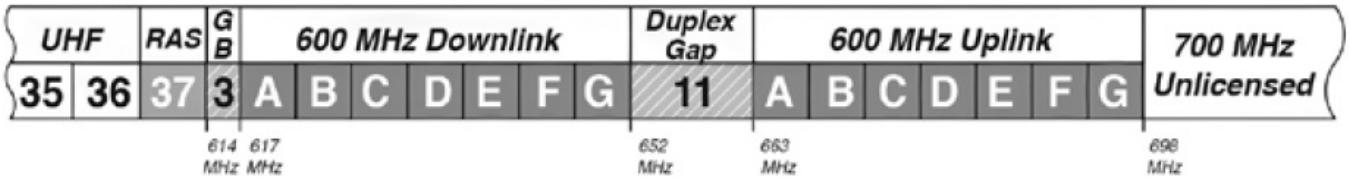
The Guard Band consists of:

- 614-616 MHz: 2 MHz (unlicensed operators)
- 616-617 MHz: 1 MHz buffer (unavailable for use)

The Duplex Gap consists of:

- 652-653 MHz: 1 MHz buffer (unavailable for use)
- 653-657 MHz: 4 MHz (licensed operators only)
- 657-663 MHz: 6 MHz (unlicensed and WSDs)

Power is limited to 20mW for wireless microphones used in this part of the spectrum.



CHSDSSM Charger

The optional CHSDSSM battery charging station (shown above) provides a convenient and organized means of recharging up to 4 LB-50 batteries or DSSM transmitters in larger systems with numerous batteries in regular use. Each charging module may be daisy-chained to 3 additional modules using a single AC-DC power supply (DCR5/9AU – not included) for a total of 16 units charging at once.

LIMITED WARRANTY

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.

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Documents / Resources

	LECTROSONICS DSSM-A1B1 Water Resistant Micro Digital Wireless Transmitter [pdf] User Guide DSSM-A1B1, DSSM-A1B1 Water Resistant Micro Digital Wireless Transmitter, Water Resistant Micro Digital Wireless Transmitter, Resistant Micro Digital Wireless Transmitter, Micro Digital Wireless Transmitter, Digital Wireless Transmitter, Wireless Transmitter, Transmitter

References

- Lectrosonics: Quality wireless microphone, encrypted digital wireless and DSP audio processing systems
- User Manual