

# Quick Start Guide



## Digital Hybrid Wireless® Receiver

**R400A**



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U.S. Patent 7,225,135

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

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

[www.lectrosonics.com/manuals](http://www.lectrosonics.com/manuals)

15 March 2017

# Initial Setup

1. Connect the power cord from the power supply to the Power Input Jack.
2. Attach the antennas or antenna cables to the MAIN ANT and DIV ANT BNC connectors.
3. Press the POWER/PREV MENU button to turn on the unit. Check to see that the LCD displays the three-screen Power Up Sequence:

## Lectrosonics

**R400A VXX** where XX is the current firmware version installed

**Block XX** where XX is the frequency tuning range block number

After the Power Up Sequence is displayed, the Main Window appears and the R400A is ready for operation.

4. Ensure the receiver and transmitter are set to the same Compatibility Mode, then locate a clear operating frequency (see Frequency Coordination.) Then set the Transmitter Frequency Select Switches to match the receiver's operating frequency. (See R400A Menu Options.)
5. Turn the transmitter on and verify that an RF signal is indicated on the LCD.
6. Connect an audio cable to the appropriate audio output jack. Because the audio outputs operate independently, external equipment can be connected to either, or both output jacks.
7. Locate a clear operating frequency. The easiest method is to use SmartTune™ and then set the transmitter frequency indicated on the display.

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Note: For more detailed instructions, see "Using SmartTune™ and the Scan Function" on page 7.

8. Refer to the associated transmitter operating instructions and adjust the transmitter gain.

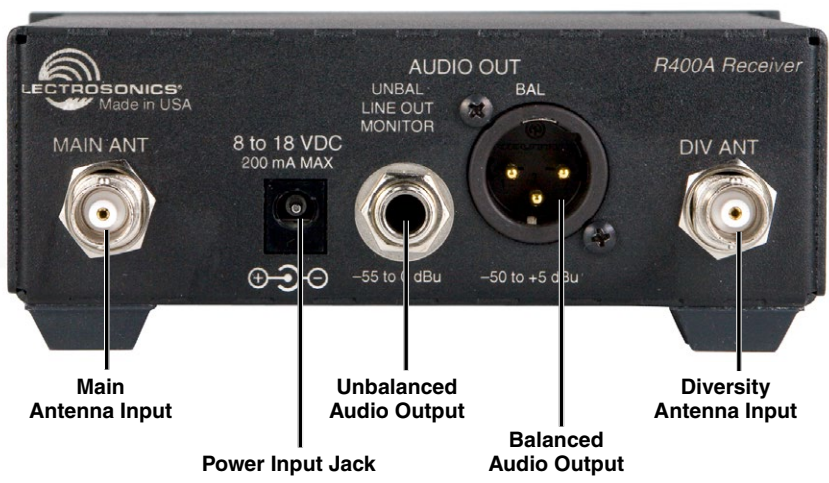
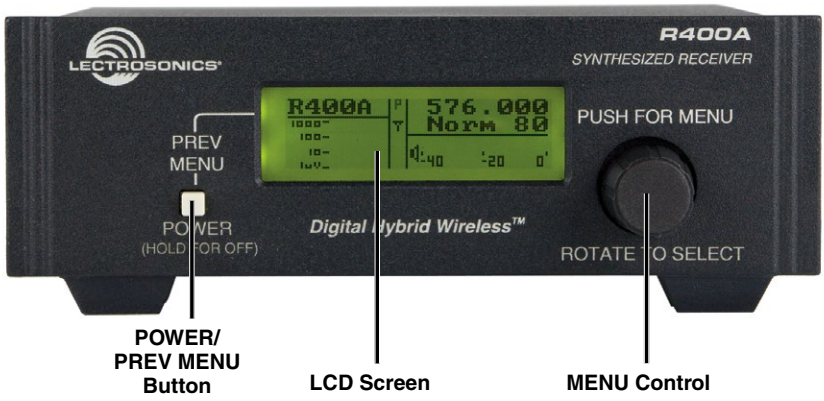
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**Warning: This is perhaps the most important step in the setup procedure.**

In general, adjust the transmitter gain so that the voice peaks will cause the audio modulation level indicators on both the receiver and transmitter to show full modulation on the loudest peak audio levels. Normal levels should cause the R400A's audio level bar to fluctuate fully resulting in the best possible signal to noise ratio for the system.

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Note: A common mistake is to use the transmitter audio gain control to set the overall audio level of the entire system. The transmitter gain control is not a volume control and must be set independently of the overall system audio level. The transmitter gain control is only used to set the proper modulation of the transmitter. It is used to match the transmitter to the type of microphone and the sound levels that will be present at that microphone. We encourage users to either disconnect the rest of the sound system or turn the sound system gain to minimum to prevent either feedback or overload as the transmitter gain is set. Only after the transmitter gain control is set should the gain of the rest of the audio system be adjusted to achieve the desired sound or signal levels.



9. Use the Level or Tone menus to adjust the audio output levels to match the required input level of any connected devices (camera, mixer, recorder, etc.). The adjustment range is from -50 dBu to +5 dBu in 1 dBu steps for the balanced output and -55 dBu to +0 dBu in 1 dBu steps for the unbalanced output.

*Note: The test tone output is especially useful for an exact level match. With the test tone running, adjust for the maximum desired peak level using the metering on the connected device.*

10. If desired, access the LockSet menu to lock the R400A front panel controls to prevent inadvertently modifying the receiver settings during operation.

# R400A Menu Options

The R400A Menu functions can be divided into four main areas: setting up the receiver, automatic clear channel selection, locking the receiver and scanning for clear frequencies.

## SetUpRx

The SetUpRx menu accesses the screens used to set up the receiver. These screens include: Freq, Level, Tuning, Compat, Tone, PilotBP, Phase, Tx Batt and SmartNR.

## Freq

The Freq setup screen displays the TV channel, the associated transmitter Frequency Select Switch settings and the selected operating frequency for the R400A. To change the operating frequency, rotate the MENU control. Exit this setup screen by pressing the PREV MENU button. The receiver will retain its tuning even when the power is off.

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Note: If the operating frequency is changed, ensure that the Frequency Select Switch settings of the associated transmitter match the settings shown in the upper right hand corner of this screen.

## Level-B

The Level-B setup screen displays the audio output level of the receiver in dBu at the balanced XLR jack.

## Level-U

The Level-U setup screen displays the audio output level of the receiver in dBu at the unbalanced 1/4-inch jack.

## Tuning

The R400A offers 7 tuning modes: Normal mode (default), 4 factory set frequency groups (Fact Grp A thru D), and 2 user programmable frequency groups (User Grp U and V). For more information on tuning groups, see owner's manual. In normal tuning mode, all 256 channels are available.

## Compat

The Compat setup screen is used to select the compatibility mode, allowing the R400A to operate with a variety of transmitters. The available compatibility modes are:

**400** - This is the factory default setting and works with all Lectrosonics 400 Series Digital Hybrid Wireless™ transmitters. This mode offers the best audio quality.

**IFB** - This mode works with all Lectrosonics IFB compatible transmitters.

**100** - This mode works with Lectrosonics 100 Series compatible transmitters.

**200** - This mode works with Lectrosonics 200 Series compatible transmitters.

**MODE 3 and MODE 6\*** - These modes work with a number of non-Lectrosonics analog transmitters. Contact the company for a list of compatible transmitters for each mode.

*\*Mode 6 available on units with Serial Number 236 and up.*

### **Tone-B**

The Tone-B setup screen switches from received audio at the balanced XLR audio output jack to an internally generated 1kHz audio test tone for precise level matching with other externally connected equipment without actually going “on the air.” Pressing the PREV MENU button exits the setup screen.

### **Tone-U**

The Tone-U setup screen switches from received audio at the unbalanced 1/4-inch audio output jack to an internally generated 1kHz audio test tone for precise level matching with other externally connected equipment without actually going “on the air.” Pressing the PREV MENU button exits the setup screen.

***Warning: There is only one audio output level setting for both received audio and the setup tone. The level set here will be retained in the receive mode (superseding settings made in the Level-U setup screen).***

### **PilotBP**

The R400A always powers up with the pilot tone enabled (a pilot tone is required from the transmitter to unscquelch the receiver). To enable pilot tone bypass mode, in the PilotBP window, rotate the MENU control to select BY-PASS, then press the PREV MENU button.

To return to normal operating mode (pilot tone enabled), rotate the MENU control to select NORMAL, then press the PREV MENU button. Exit this setup screen by pressing the PREV MENU button.

***Note: No pilot tone is used in 100 Series or Mode 3 Compatibility Modes, so therefore this function is not offered for those modes.***

### **Phase-B, Phase-U**

By default, the audio outputs are driven IN PHASE in regard to the audio signal from the transmitter. To invert the polarity of the receiver’s balanced audio output, enter the Phase-B or -U setup screen, rotate the MENU control to select INVERT. The phase of the audio signal is inverted at the balanced XLR jack. To restore the receiver’s balanced audio output to “In Phase,” select NORMAL. Exit this setup screen by pressing the PREV MENU button.

### **TxBatt**

The TxBatt setup screen allows the selection of the exact battery type being used in the transmitter to provide more accurate battery level monitoring. Four different types of batteries are commonly used in Lectrosonics transmitters: 9 Volt alkaline, 9 Volt lithium, AA alkaline, and AA lithium. Rechargeable NiMH batteries can also be used in the transmitters (see TIMER below). Correctly set, this feature will ensure that adequate warning will be provided in advance of battery failure.

**TIMER** - Transmitter using any battery. Displays the cumulative time that the communications link is active. The time is displayed in two locations: the lower left corner of the Tx Batt setup screen and the upper left corner of the Main Window display. No battery icon is displayed in TIMER mode.

The colon blinks when the TIMER is running, and also indicates that the communications link is active. When either the transmitter or the R400A receiver is powered OFF, the timer will retain the accumulated time and resume counting only when a signal is detected from the transmitter.

To reset the timer, navigate to the TIMER setup screen and quickly press and release the PREV MENU button and the MENU control simultaneously. The TIMER mode is most useful for NiMH batteries as they do not exhibit reliably identifiable voltage drops as they discharge.

For compatibility modes other than 400 Series and 200 Series, no battery telemetry information is available so the Tx Batt setup screen offers TIMER as the only choice.

Exit this setup screen by pressing the PREV MENU button.

## SmartNR

Available in 400 Series Compatibility Mode only, the SmartNR setup screen is used to select one of three noise reduction modes:

**OFF** - No noise reduction is performed and complete transparency is preserved. All signals presented to the transmitter's analog front end, including any faint microphone hiss, will be faithfully reproduced at the receiver.

**NORMAL** (factory default) - Enough noise reduction is applied to remove most of the hiss from the mic preamp and some of the hiss from lavalier microphones. The noise reduction benefit is dramatic in this position, yet the degree of transparency maintained is exceptional.

**FULL** - Enough noise reduction is applied to remove most of the hiss from nearly any signal source of reasonable quality, assuming levels are set properly at the transmitter.

Rotate the MENU control to select the noise reduction mode. Exit this setup screen by pressing the PREV MENU button.

## Back

Rotate the MENU control to select BACK, then push the MENU control to return to the TopMenu window.

## LockSet

LockSet is used to lock the R400A settings. When locked, the use of the MENU functions is limited to "view only" and attempts to change selections will result in a screen displaying the word "LOCKED! (To Unlock, Use LockSet Menu)" The Scan and SmartTune™ functions are disabled when the unit is in the LOCKED state.

To LOCK the R400A - Press the MENU control to enter the TopMenu, then rotate the MENU control to select LockSet. Press the MENU control to open the LockSet window, rotate the MENU control to select LOCK, then push either the MENU control or the PREV MENU button to exit to TopMenu.

To UNLOCK - Repeat the steps above and select NOT LOCKED.

## SmartTune™

SmartTune™ automates the discovery of a clear operating frequency. It does this by scanning all the available operating frequencies within the system's frequency block range (in 100 kHz increments) and then selecting the frequency with the least amount of RF interference. When SmartTune is complete, it returns to the Main Window displaying the operating frequency and transmitter switch settings for the clear channel discovered during scanning.

## Scan

Navigate to the SCAN option from the menu, then press the MENU control to activate the scan function. The receiver begins scanning the receiver's frequency block. The receiver will continue to scan, accumulating the highest peaks with each subsequent scan, until stopped by the user. Data gathered during the scanning process is retained until Scan mode is exited.

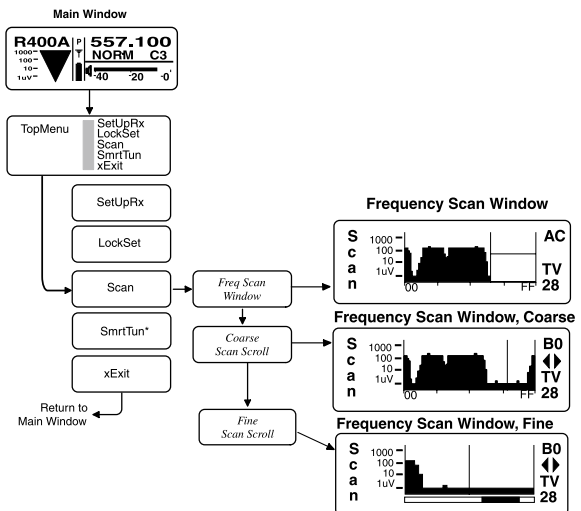
To stop scanning (but not exit Scan mode), press the MENU control once. The display switches to the Coarse View window. Rotate the MENU control to scroll the cursor across the tuning range. As the cursor scrolls across the frequency band, Frequency Select Switch settings for the associated transmitter are shown in the upper right corner of the screen.

Double pressing the MENU control switches the display to Fine View which displays an expanded portion of the spectrum around a fixed, vertical cursor. As with the Coarse View, cursor movement across the frequency band results in the displaying of the associated transmitter Frequency Select Switch settings in the upper right corner of the screen.

Scroll through the screen and find a frequency where no RF signals are present (or in the worst case, only very weak RF signals). With the cursor on this frequency, press the PREV MENU button to exit from scan mode.

When exiting the scan mode, you are given the option to select either the frequency the unit was on before entering the scan mode, or the frequency just selected in the scan mode. Select NO to return to the frequency that was set before entering the scan mode. Select SCAN to resume scanning.

**Note:** Ensure the transmitter's Frequency Select Switch settings are the same settings as shown on the display and your system will be ready for operation.



## LIMITED ONE YEAR WARRANTY

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

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

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

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

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



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