

# User's Manual

## LR-100 Stationary Receiver / Power Amplifier

Don't miss a single sound. Listen.



[www.ListenTech.com](http://www.ListenTech.com)

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## LR-100 Stationary Receiver / Power Amplifier



*For a complete description of connectors and controls, please see page 4 of this manual*

### Architectural Specifications:

The FM stationary receiver - power amplifier (receiver) shall be capable of receiving on 57 wide and narrow band channels in the frequency ranges of either 72 MHz or 216 MHz. The receiver shall be programmable to electronically lock out unneeded channels. The receiver shall have an adjustable squelch with an LED indication. The frequency response of the receiver shall be within 3dB from 50 Hz to 15 kHz at 72 MHz, or within 3dB from 50 Hz to 10 kHz at 216 MHz. The signal to noise ratio shall be 80dB or greater. The receiver will have an integrated power amplifier capable of driving a 4 ohm speaker. The receiver shall be rack mountable and shall have the capability of a remote antenna. The receiver shall incorporate an LCD display that indicates channel and RF signal strength. The Listen LR-100 is specified.

### Contents of Package:

LR-100-072 (72 MHz) *or*  
LR-100-216 (216MHz)  
Helical Antenna (LA-123 for 72Mhz, LA-124 for 216Mhz)  
Power Supply (LA-201)  
Detachable Terminal Block (installed on the unit)  
User's Manual

### Listen Part Number:

LR-100-072 for 72 MHz  
LR-100-216 for 216 MHz

### Optional Accessories:

LA-326 Rack Mounting Kit  
LA-327 "L" Bracket Mounting Kit  
LA-123 90 Degree Helical Antenna (72 MHz) (One included)  
LA-124 90 Degree Helical Antenna (216 MHz) (One included)  
LA-122 Universal Antenna Kit  
LA-315 Portable Antenna Stand for LA-122 Universal Antenna Kit  
LA-127 RG58 BNC Cable Connector  
LA-128 RG8 BNC Cable Connector  
LA-112 RG58 Coaxial Cable  
LA-113 RG8 Low Loss Coaxial Cable  
LA-114 Coaxial Connector Installation (2 connectors)  
LA-316 Expansion Speaker

### Use With:

LT-800-072 Stationary Transmitter  
LT-800-216 Stationary Transmitter  
LT-700-072 Portable Transmitter  
LT-700-216 Portable Transmitter

Thank you for purchasing this Listen product! If you have any questions or would like to offer suggestions on future Listen products, please contact us at the address shown below.

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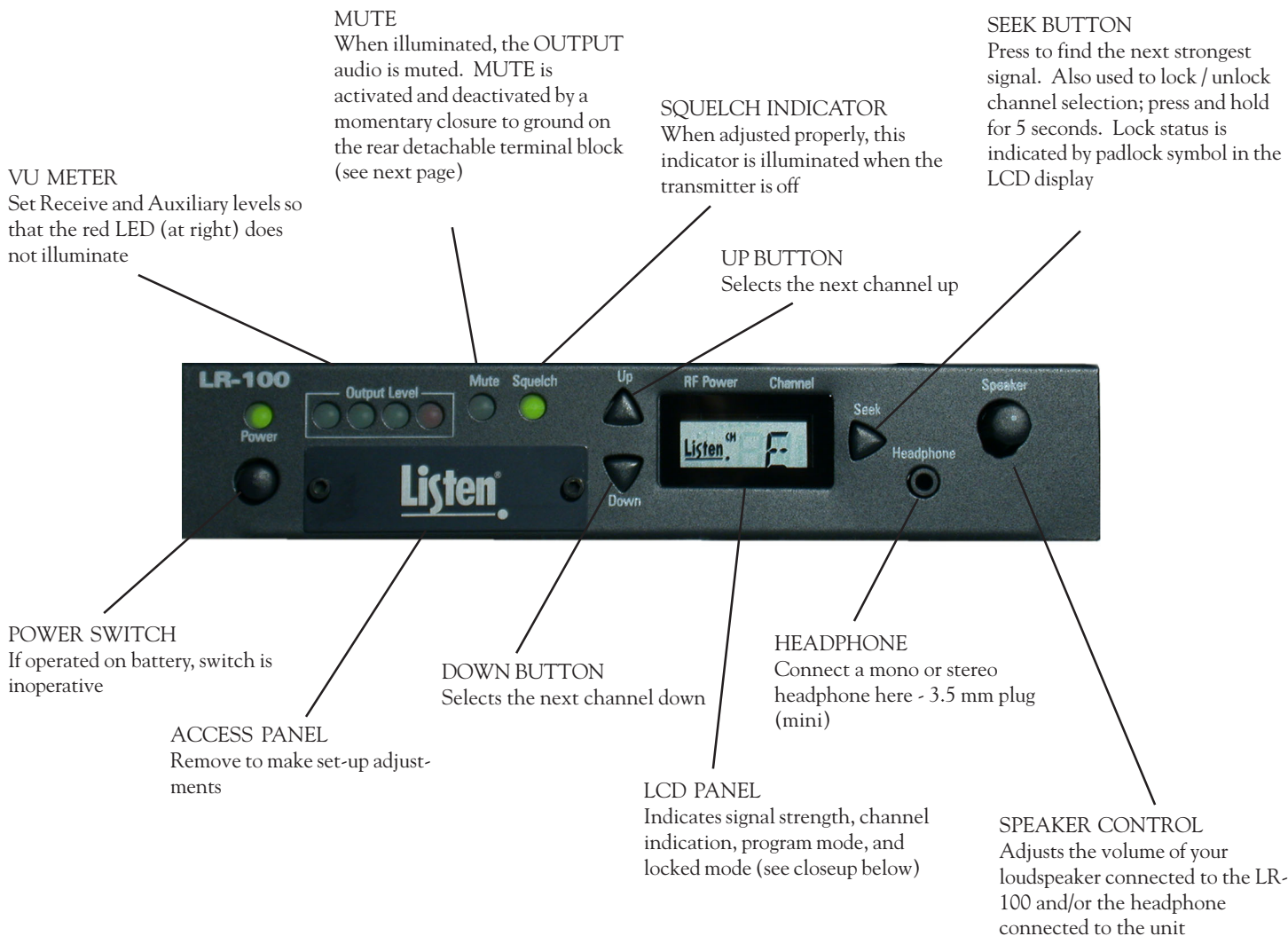
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## Specifications

RF Frequency Range	72 MHz: 72.025 - 75.950 MHz 216 MHz: 216.0250 MHz - 216.975 MHz
Number of Channels	57
Sensitivity	.6 uV typical, 1 uV maximum for 12dB SINAD
Signal to Noise Ratio*	80dB with SQ enabled, 60dB (72 MHz), 50dB (216 MHz) with SQ disabled
Frequency Response*	50 to 15 kHz +/-3dB (10 kHz at 216 MHz)
Distortion*	<2% at 80% deviation
Auxiliary Input to Audio Output / Speaker	25 Hz to 20 kHz +/-3dB, <.2% distortion, >80dB SNR
Balanced Output	Male XLR, 0dBu nominal
Unbalanced Output	Phono (2), -10dBu nominal
Balanced Auxiliary Input	Female XLR-1/4" combo connector, adjustable input level, 0dBu nominal
Unbalanced Auxiliary Input	Phono (2), adjustable input level, -10dBu nominal
Power Amplification	44 Watt peak (31 Watt RMS), 4 ohms
Remote Channel Select	Detachable terminal block connector. Momentary closure to ground for UP, DOWN and MUTE functions. Mute function is indicated on front panel
Squelch	Adjustable with front panel control; LED indicator
Programming	Front panel can be locked by holding down the SEEK button for five seconds; receive channels can be programmed so user can only access certain channels
Antenna	Standard BNC, flexible helical, included. 9 in (23 cm) for 72 MHz; 5.5 in (14 cm) for 216 MHz. Optional remote antennas available (see antenna selection guide)
Physical	8.0 in (20.3 cm) W x 8.0 in (20.3 cm) D x 1.75 in (4.45 cm) H
Power Supply	Provided (Listen part number LA-201, same as LT-800 power supply). Input: 120 VAC, 60 Hz, 19 Watts (maximum continuous); Output: 18 VAC, 1000 mA. Connector: .02 in (5.0 mm) OD, .01 in (2.5 mm) ID, barrel type
Optional External Battery	12 VDC

\*Wireless Transmission System Specifications: End-to-end.

## LR-100 Front Panel - Connections and Controls



### BEHIND ACCESS PANEL

RECEIVE audio level adjustment



AUXILIARY audio level adjustment

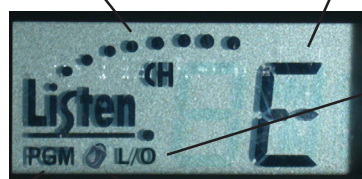
SQUELCH - adjust so that when the transmitter is off, the Squelch LED is illuminated. When squelched, receive audio is muted

SQ - to activate, move to the ON position (for more information on Listen SQ™, see page 7)

### LCD PANEL DETAILS

RF Signal Strength

Channel Indication

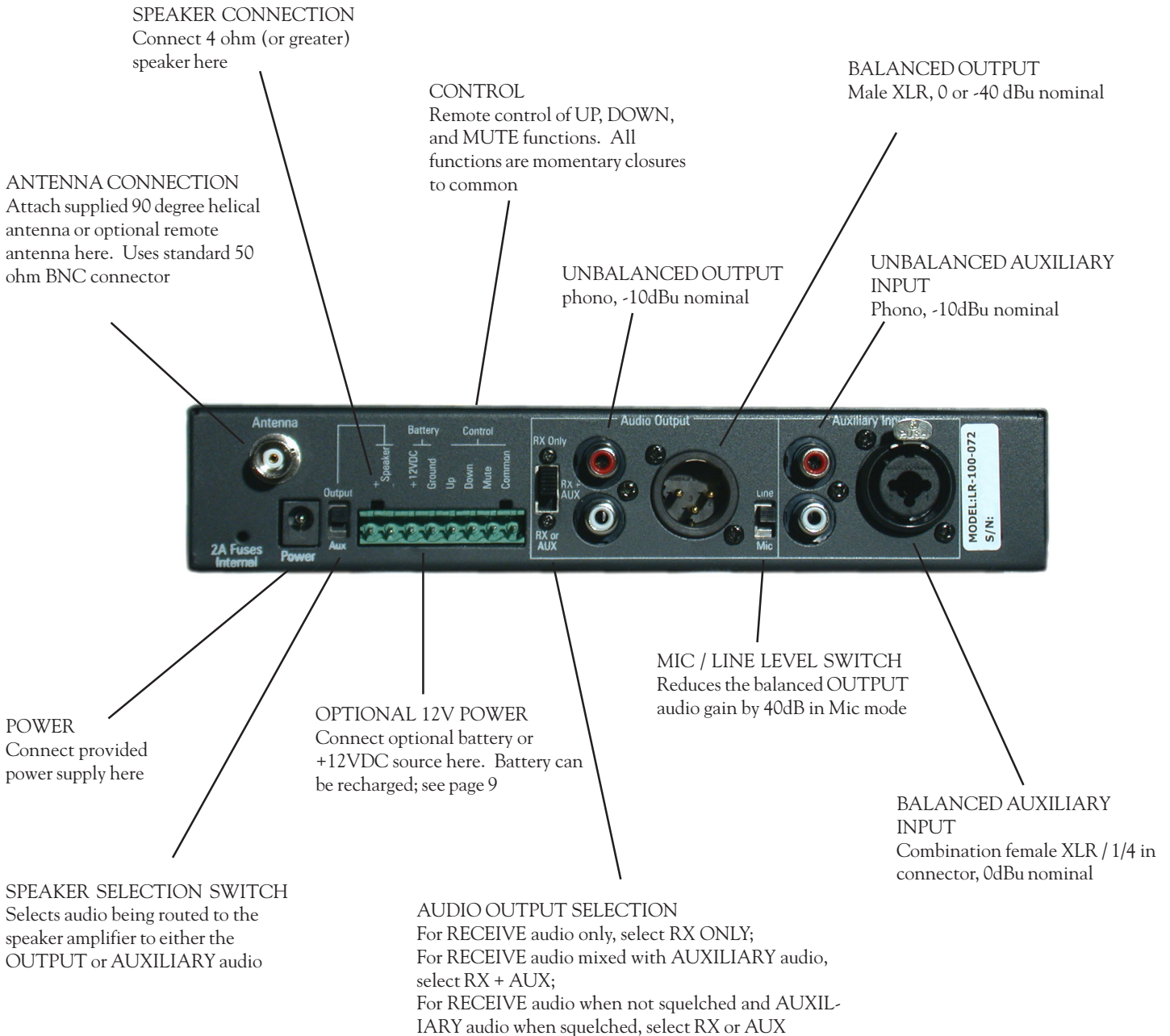


L/O - When in the programming mode, this symbol indicates the channel is locked out and will not be displayed to the user

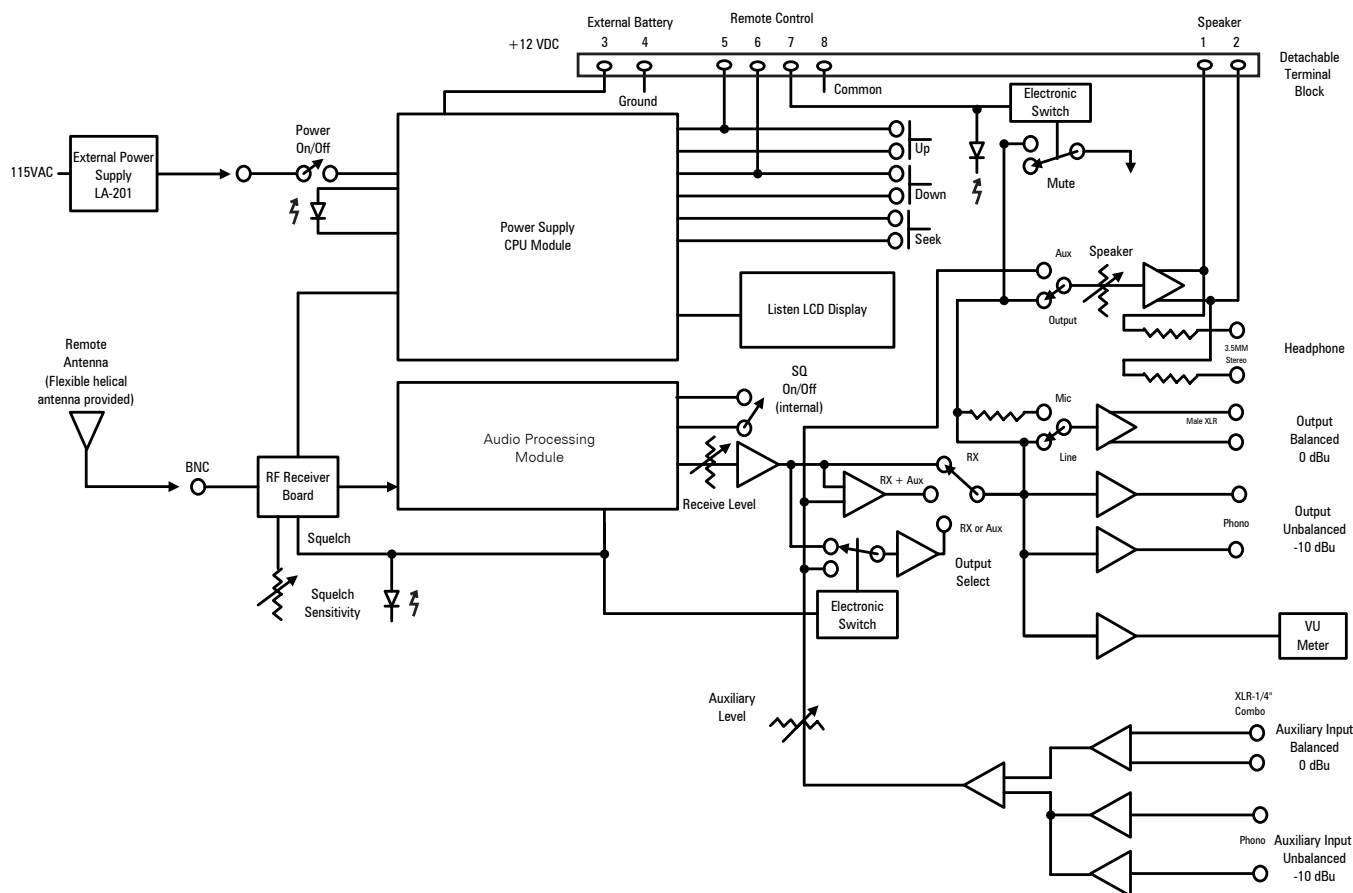
PGM - indicates the unit is in the program mode that allows you to lock out channels that are not used

LOCK - When the padlock icon is visible, the unit is locked and you cannot change the channel. Press and hold SEEK for 5 seconds to lock or unlock

## LR-100 Rear Panel - Connections and Controls



## System Block Diagram



## Before Installing Your LR-100

Please carefully compare the contents of your kit with the list found on page 2 of this manual. If any items are missing or damaged, please contact Listen Technologies. If items were damaged in shipment, contact your carrier immediately and retain all packaging for inspection by your carrier. Listen is not responsible for shipping damage.

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## Important Things to Note Before Starting Your Installation

### What is Squelch?

The LR-100 is a radio receiver that receives an RF signal from either an LT-800 or LT-700 radio transmitter. Many radio receivers, including the LR-100, include a control called “squelch” that mutes the receiver’s output signal when there is no received RF signal. Without the squelch control, a strong noise is heard at the receiver whenever it is not receiving a signal. This noise can be disturbing to listeners and if sound is turned up high enough, could damage the listeners’ ears.

The squelch control is a threshold adjustment, determining at what RF signal level the unit will squelch (or mute) the receiver’s output audio. When the squelch is set high, it takes more RF signal to unsquelch the receiver.

For information on setting up the LR-100’s squelch, please see page 17.

### What is ListenSQ™?

We are accustomed to listening to low noise, high fidelity audio delivered to us via compact discs and other audio mediums. FM radio systems (such as used in the LR-100) are inherently noisy as compared to most sound systems. In order to reduce noise of the broadcast system, the LR-100 uses a noise reduction technology called ListenSQ™. Both the transmitter and receiver must have SQ on to achieve the desired results. You will notice on the front panel of the LR-100 (under the security plate) a switch labeled “SQ: ON/OFF”. To receive the benefits of SQ, turn this switch to the ON position. Also make sure that the transmitter also has its SQ switch turned on. If the transmitter is not capable of SQ (if you are using an older version Listen transmitter or a product from a different manufacturer), you should turn SQ OFF on the LR-100.

### Coaxial Cable

The antenna for the LR-100 can be mounted directly on the unit if desired. However, you may find that the unit will provide better performance when the antenna is located elsewhere. If you plan to mount the LR-100’s antenna in a different location than on the top of the unit, you must use cable and connectors rated at 50 ohms. Although cable used for cable TV installations looks similar to this cable, it won’t work with your Listen system.

If you need to run cable over a greater length than 50 feet for 216 MHz applications or greater than 100 feet for 72 MHz applications, we recommend that you use RG-8 cable rather than RG-58. It is a lower loss cable, meaning that more of your signal will reach the antenna.

Long cable runs can result in signal degradation due to “loss” characteristics of the cable. At 72 MHz, there is a loss of 2dB per 100 feet of cable and at 216 MHz, there is a loss of 5 dB per 100 feet of cable. (A 3dB loss means half of your power has been lost.) However, **it is better to suffer coaxial power loss than to try to shoot your signal through obstacles!** Obstacles, especially metal, can create drop-outs or reflections of your signal that will result in poor listening conditions.

## Strategies for Maximizing RF Reception with the LR-100

For proper and dependable operation, the LR-100 should receive a strong and consistent signal from the originating transmitter. The following strategies should be used maximize this signal:

- a. When designing and installing your system, keep in mind that the location of both the transmitting and receiving antennas is critical to maximizing signal strength.
- b. Eliminate or minimize obstructions between the transmitting antenna and the receiving antenna.
- c. Minimize the distance between the transmitting and receiving antennas.
- d. Move transmitting and receiving antennas away from metal objects.
- e. For the LR-100, consider using a remote antenna instead of the supplied 90-degree helical antenna. This will allow you to place the antenna at a location with improved line of site to the transmitting antenna. (You will need to be careful about the type and length of coaxial cable; see the note above.)
- f. Place the transmitting antenna as high as possible.
- g. Orient both transmitting and receiving antennas vertically.
- h. For 216MHz unit only, consider using a gain antenna such as a Yagi type antenna.

**CAUTION:** When installing antennas, ensure the antenna is clear of power lines.

**NOTES:** If the RF signal to the LR-100 is too high, the audio will be distorted. This may happen if you are within 40 feet of the LT-800 transmitter. Consider reducing the output power of the transmitter or optionally removing the antenna on the LR-100 (there is sufficient internal antenna inside the LR-100 to receive an adequate signal from the transmitter).

Coaxial cable, connectors, and optional antenna mounting kits are available from Listen. Visit our website for details.

## Installation

- ✱ If you are using the LR-100's power amplifier, make sure the unit is given sufficient room around the ventilation holes.
- ✱ If you are rack mounting the LR-100, use the optional LA-326 rack mounting kit. This kit allows for single and dual rack mounting, and comes with a security cover.
- ✱ For mounting on vertical or horizontal surfaces, use the optional L bracket mounting kit, part number LA-327.

## Powering the Unit

Note: The LR-100 will shut down to prevent damage to the unit if the speaker terminals are shorted. Please see page 19 for details.

## AC Power Operation

The unit comes with a UL listed inline power supply designed for 115VAC, 60Hz operation. **Do not use any other power supply.** Use of any non-Listen supplied power supply will void the warranty. Plug the power supply into the back of the unit at the connector labeled POWER. Now connect the power supply to power.

## Battery Operation

To operate the unit on a battery or +12VDC power supply, connect to the rear detachable terminal block as follows:

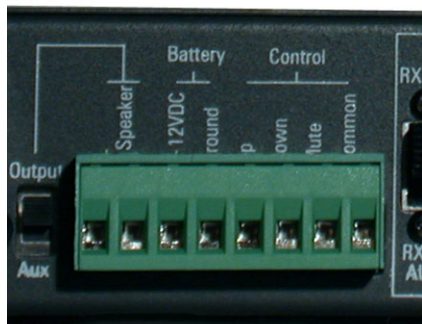
- Pin 3: +12VDC
- Pin 4: Ground

Please note that when operating on the +12VDC battery supply, the POWER switch is bypassed and the unit is always on.

You can optionally charge batteries by also supplying power to unit with the batteries connected. In this case, the batteries are trickled charged at a rate of 18 - 36 mA. You should only use rechargeable type batteries.

**CAUTION:** Attempting to charge non-rechargeable batteries may result in explosion and/or fire.

## Installation - Detachable Terminal Block



### Detachable Terminal Block Wiring:

Pin 1:	Speaker +
Pin 2:	Speaker -
Pin 3:	Ground for Battery or Power Source connection
Pin 4:	+12VDC Battery or Power Source
Pin 5:	UP remote control function
Pin 6:	DOWN remote control function
Pin 7:	MUTE remote control function
Pin 8:	Common for remote control function

## Installation - Audio Connections

### OUTPUT Audio

The OUTPUT audio section is composed of an OUTPUT audio selection switch, a male XLR balanced audio OUTPUT connector and two phono unbalanced audio OUTPUT connectors.

### OUTPUT Audio Selection Switch

This switch selects what audio is routed to the OUTPUT audio connectors. The switch has three positions:

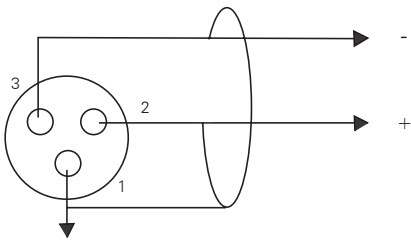
1. RX ONLY. In this position, only RECEIVE audio is routed to the OUTPUT.
2. RX + AUX. In this position, both the RECEIVE and AUXILIARY audio are mixed and routed to the OUTPUT.
3. RX or AUX. In this position, the OUTPUT audio is either RECEIVE or AUXILIARY audio. When the RECEIVE audio is squelched (indicated by the illumination of the SQUELCH LED on the front panel), AUXILIARY audio is routed to the OUTPUT. When RECEIVE audio is not squelched, RECEIVE audio only is routed to the OUTPUT.

## What is Squelch?

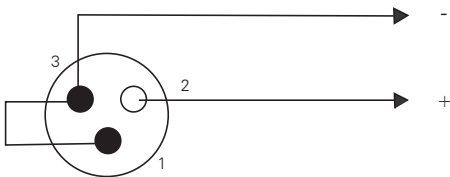
See page 7.

## Balanced Audio Output

When connecting to the XLR balanced OUTPUT, use the pin out show below. If the output is unbalanced, either use the unbalanced phono connectors or wire the balanced XLR output as shown below with pins 3 and 1 wired together. The OUTPUT audio has a nominal output level of 0dBu.



1. XLR pin out diagram for a balanced connection:  
Pin 2 +  
Pin 3 -  
Pin 1 Shield



2. XLR pin out diagram for a unbalanced connection:  
Pin 2 +  
Pin 1 and 3 -

## LINE/MIC Switch

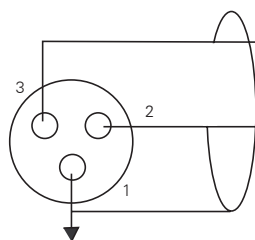
This switch reduces the OUTPUT level of the balanced OUTPUT audio only. It does not affect the OUTPUT level of the unbalanced audio. The OUTPUT audio is reduced by 40dB to microphone level when this switch is selected to MIC.

## Unbalanced Audio Output

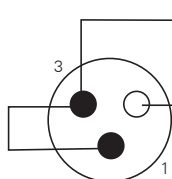
There are two unbalanced phono audio OUTPUT connectors. The nominal OUTPUT audio level is -10dBu.

## AUXILIARY Input

The LR-100 has an AUXILIARY input that allows for greater functionality of the unit for a variety of applications. The AUXILIARY input consists of a balanced input, combination connector (female XLR and 1/4 in) and two unbalanced phono connectors. All of these inputs are actively mixed together. Thus, any combination of input sources can be used. Input level is adjusted via the front panel trim pot labeled AUX LEVEL ADJUST. Adjust this level to fit the needs of your installation ensuring the last red LED on the VU meter is not illuminated (indicating peak audio).



- AUXILIARY Balanced Audio Input:  
The nominal input level for the balanced input is 0dBu.  
Female XLR / 1/4 in combination connector pin outs:  
Pin 2 (tip) +  
Pin 3 (ring) -  
Pin 1 (sleeve) Shield



- AUXILIARY Unbalanced Audio Input:  
The nominal input level for the two unbalanced inputs is -10dBu.  
Female XLR / 1/4 in combination connector pin outs:  
Pin 2 (tip) +  
Pin 1 and 3 ring/sleeve

## Speaker Connection

The LR-100 contains a 44-watt (31 watt RMS), 4-Ohm power amplifier.

- i. The Speaker Selection switch determines what audio is directed to the power amplifier. With the switch in the OUTPUT position, the OUTPUT audio (same audio that is on the OUTPUT audio connectors) is directed to the power amplifier. With the switch in the AUX position, AUXILIARY input audio only is directed to the power amp. This allows you to use the power amplifier separate of the RECEIVER audio if desired.

Note: When the speaker switch is in the OUTPUT position and the MUTE control is enabled (indicated by the illumination of MUTE LED), the speaker output is also muted.

- ii. Connection to the speaker is achieved through pins 1 and 2 on the detachable terminal block. Strip the speaker wires, rotate the screws on the terminal block counter-clockwise, insert the wires and then tighten the screw clockwise until the wire is secure in the connector block. You may connect any parallel, series combination of speakers that produces an impedance of 4-ohms or greater.

Example: If you have two 8-ohm speakers, you can connect these in parallel to produce a 4-ohm load to the power amp.

- iii. The SPEAKER level control on the front panel adjusts the level of the speaker.
- iv. The front panel headphone jack is in parallel with the speaker level. Connect any mono or stereo headphone to this 3.5mm jack. Adjust level with the SPEAKER volume knob.

## Installation – Antenna

A properly installed antenna is critical to the operation of the LR-100. Without a strong and consistent RF signal from the transmitter, the LR-100 will not meet the needs of your installation. You can use the RF POWER indication on the LCD to provide a relative RF signal strength. You should see four or more dots displayed on the LCD for best results.

### Using the supplied helical antenna

Connect the antenna to the rear BNC connector and orient the antenna vertically. If reception is from the transmitter is not adequate, consider using a remote antenna (see below) or place the LR-100 at an improved location to improve the signal strength. See “Strategies for Maximizing RF Reception with the LR-100” on page 7 for more information.

### Using a remote antenna

For better reception in longer broadcast range applications, you should use a remote antenna. A remote antenna will allow you to get the antenna higher in altitude and in a position that is clear of obstructions. Please refer to the specific antennas instructions for installation. Also refer to “Strategies for Maximizing RF Reception with the LR-100” on page 7 for additional information.

**CAUTION:** When installing antennas, ensure the antenna is clear of power lines.

**NOTES:** If the RF signal to the 216MHz model is too high, the audio will be distorted. This may happen if the LR-100 is within 40 feet of the LT-800-216 transmitter. Consider reducing the output power of the transmitter or optionally removing the antenna on the LR-100 (there is sufficient internal antenna inside the LR-100 to receive an adequate signal from the transmitter).

## Installation – Remote Control

The LR-100 can be programmed (see Set-up – Programming, page 17) so only used channels can be selected. For example: You are broadcasting material on channels A, E and F (72MHz). You would program the LR-100 so that it could only receive these channels. Thus, depression of the front panel UP, DOWN and SEEK would only allow you to select one of these three channels. The UP and DOWN functions can be remotely controlled with a momentary closure to common (see Set-up Diagram above). In addition, the MUTE function can be remotely controlled. Please note that the MUTE function cannot be controlled on the unit and must be remotely controlled. All control is obtained with a momentary closure to ground.

Remote control pin outs:

- a. UP Channel Selection: pin 5
- b. DOWN Channel Selection: pin 6
- c. MUTE function: pin 7
- d. COMMON: pin 8

NOTE: The MUTE function is indicated on the front panel MUTE LED. If the unit loses power, the unit will remember the MUTE function when power is restored.

## Setup

### Understanding the LCD display

The front panel LCD provides important information to the operation of the LR-100:



**Channel:** This indicates the currently tuned channel. See “Which channel should I use?” below for more information and the Channel Selection Chart on page 22.

**RF Power:** This indicates the relative power from the transmitter. You should maximize the level for best operation.

### Which channel(s) should I use?

Your LR-100 gives you the ability to select both wideband and narrowband receiving channels, so finding a clear reception channel should not be difficult. Listen recommends the use of wideband channels (channels designated with a letter on 72 MHz or starting with a “2” on 216 MHz), unless you are interfacing with an existing narrowband transmission system. Before turning on the system transmitter, use the “Seek” button to find any other transmitters that might be in the area. Choose a channel with the least amount of interference for your operation, and set your transmitter to this channel.

If you are using multiple channels at the facility, follow this process:

- a. **Same Space:** If your transmitters are located in the same space (i.e. an equipment rack), you can only use six channels at 72MHz or three at 216MHz. With all of the transmitters off, listen for interference on the wide band channels (listed on page 22 in the channel selection guide) via the headphone jack. Do not attempt to use channels that have noticeable interference. Now choose the channels with the widest channel spacing. It is recommended that adjacent channels in a facility be spaced at least 300KHz. If there is no interference the following channels are recommended: A, C, E, I, J, and H for 72MHz and channels 2A, 2K and 2V at 216MHz.
- b. **Distributed Spacing.** If you are using transmitters that are spread out over space, you can have more simultaneous broadcast channels. You can use adjacent channels (see

selection chart on page 22) as long as the adjacent channel transmitter is at least 50% further away from an LR-100 than its own transmitter. Example: The transmitter for the LR-100 on channel E is 100 feet from the LR-100. The adjacent channel transmitter on channel D should be at least 150 feet away.

## Notes in regard to using 72MHz and 216MHz systems:

- i. 72MHz is a secondary frequency band. This means that other applications such as paging systems are licensed to use these frequencies. Thus, you may experience interference from other types of transmissions. You will need to find a clear channel by listening to all the wide band channels.
- ii. 216MHz is a primary frequency band and no other types of transmissions are authorized to use it. Thus, you will find the highest probability of clear channels in this band. However, if there is a TV Channel 13 in your area, you may experience intermodulation of the TV Channel 13 aural carrier. If you cannot find a clear channel in 216MHz band due to channel 13 interference, it is recommended that you switch to a 72MHz system.

NOTE: Once you have selected your transmit and receive channels, it is recommended that you lock the channel so that it cannot be changed by the user. To accomplish LOCK, press and hold the SEEK button for five seconds. Repeat to unlock.

## Setup Adjustments

To make setup adjustments, remove the two hex screws that secure the front panel security cover.

### Setup VU Meter

The front panel VU meter indicates the audio level of the OUTPUT signal. When making input audio level adjustments, ensure that the red LED only illuminates occasionally.

### Input Audio Levels

Proper adjustment of input levels is critical to the proper operation of the LR-100.

- a. Receiver Audio Level Adjustment. Under normal audio conditions, adjust the receive audio level to meet the output level needs of your installation. Ensure the red LED on the VU meter only illuminates occasionally.
- b. Auxiliary Input Level Adjustment. Under normal audio conditions adjust the receive audio level to meet the output level needs of your installation. Make sure that the red LED on the VU meter only illuminates occasionally.

## Selecting SQ ON or OFF

See “What is Listen SQ?” on page 6. If the transmitter that is broadcasting to the LR-100 is SQ capable, make sure the SQ switch for the transmitter and the LR-100 is turned ON. If not, the SQ switch should be turned OFF.

## Channel Selection

Select the most appropriate channel by pressing the UP or DOWN button (see What Channel Should I Use? on page 15). You can optionally press the SEEK button and the unit will SEEK for the strongest RF signal. Please note that the unit will stop on interfering signals and adjacent channels. In this case, redepres the SEEK button.

- a. Locking the unit on channel. The unit can be locked on channel by pressing and HOLDING the SEEK button for five seconds. In this case, the padlock symbol on the LCD will be displayed. Repeat this process to unlock.
- b. NOTE: It is highly recommended to lock the channel after installation to prevent accidental channel selection.

## Programming

In some cases, you may choose to give users the ability to select multiple channels. For example, you’re using the LR-100 for language interpretation. In this example, channels A, E and I are three different languages. You can use the LR-100 programming feature to lock out all but the three channels used in this example. By pressing the UP or DOWN button, the user can select between the three channels.

To program the LR-100:

- i. Simultaneously press and hold the UP and DOWN button. You will notice the PGM indicator on the LCD indicating you are in the programming mode (the unit will go out of the programming mode if you don’t press a key for 10 seconds).
- ii. Now use the UP and DOWN buttons to select the channels you want to lock out.
- iii. Press the SEEK button to lock out a channel (lock out means the channel will not be displayed to the user). You will notice that the L/O symbol is displayed on the LCD indicating the channel is locked. To reverse the lock out process, simply press the SEEK button on locked out channels.
- iv. When completed programming, don’t press any key for 10 seconds and the unit will exit the programming mode.

## Squelch

See “What is Squelch?” on page 7. The squelch adjustment is important to ensure the radio audio is muted when no transmit signal is present. You want to set the squelch adjustment for the highest setting without squelching the incoming signal.

To set the squelch control:

- a. Turn the transmitter OFF.
- b. Listen to the receiver audio on the speaker or headphone. Turn the audio level down in the beginning.
- c. Adjust the squelch adjustment clockwise until the squelch LED goes off (not illuminated). You will hear radio noise now. This is the audio you want to squelch (mute) when the transmitter is off.
- d. Now adjust the squelch setting counter clockwise until it squelches (mutes). This is the minimum squelch setting.
- e. Now turn the transmitter on. Adjust the squelch setting counter clockwise until the unit squelches. This is the maximum squelch threshold. Please note that if you are close to the transmitter, you may not be able to find the maximum squelch threshold due to the high RF signal of the transmitter.
- f. Set the squelch adjustment between the maximum and minimum squelch thresholds, keeping the following in mind.
  - i. Minimum squelch threshold. By adjusting the unit near this threshold, you will maximize the probability the unit will NOT squelch when the transmitter is on. However, you also run the risk having the unit NOT squelched (and resulting radio noise coming through the system) when the transmitter is off. You may experience unsquelching of the receiver by interference as well.
  - ii. Maximum squelch threshold. By adjusting the unit near this threshold, you will greatly increase the chance the unit will squelch when the transmitter is off AND you will minimize the probability that the unit will be unsquelched by interference. However, you are also increasing the chances that the signal coming from the transmitter will be squelched. Thus, if the RF signal from the transmitter dips just slightly (someone walks in front of the antenna), you will experience momentary squelching of the audio.

**CAUTION:** Ensure proper setting of the squelch adjustment to prevent user ear damage and unwanted radio noise. Users will find unsquelched radio noise very objectionable.

## Resetting After an Overload Condition

In an overload condition, the LR-100 will go into a protective state to protect the unit and power supply from excessive current and heat. This condition will occur if the speaker terminals are shorted to each other or if they are shorted to the chassis for over 15 seconds. In this condition, the LR-100 will no longer function normally. If the LR-100 stops functioning normally, do the following:

1. Turn the unit off and unplug it from power. If you are operating the LR-100 with an external +12VDC source such as a battery, disconnect the power source from the unit.
2. Remove the short to the speaker terminals.
3. Wait 30 seconds or longer.
4. Plug the unit back in and turn the power on.

The LR-100 should now function normally. If the unit is still not functioning normally, contact Listen Support (see page 21).

## Troubleshooting

The unit does not power up, or it has stopped operating.

- i. Ensure the power supply is connected properly.
- ii. The speaker terminals may be shorted (see page 19).

The audio is muted occasionally.

- i. Check to see if the unit is squelching (indicated by the squelch LED). In this case, either improve the RF signal path or adjust the squelch setting for less squelch sensitivity.

I hear noise coming from the receiver.

- i. You may have inadequate RF signal strength. Adjust the positioning of the antennas. Make the transmitter is on high power.
- ii. You may be experiencing interference, try a different channel.
- iii. Make sure the transmitter and receiver are on the same channel.

The channel is often accidentally changed.

- i. Lock the unit on channel by pressing and holding the SEEK button for five seconds. The padlock symbol is illuminated on the LCD.

There is no audio.

- i. Make sure the RECEIVE and/or AUX trim adjustments are turned clockwise.
- ii. Make sure the unit is not MUTED, indicated by the MUTE LED.
- iii. Make sure the unit is wired correctly.
- iv. Make sure the transmitter and receiver are on the same channel.
- v. Make sure the squelch adjustment is set correctly.

The audio is distorted.

- i. Make sure the transmitter and receiver are on the same channel.
- ii. Make sure that the SQ switch is ON or OFF for both the transmitter and receiver.
- iii. Make sure the audio level is not set too high.
- iv. Make sure you are not too close to the transmitter.

The OUTPUT level is low.

- i. Make sure the MIC/LINE switch is in LINE.
- ii. Adjust the RECEIVE or AUX input levels.

There is no audio on the speaker.

- i. Make sure the speaker selection switch is in the correct position.

I can't hear AUX audio on the OUTPUT.

- i. Move the OUTPUT audio selection switch to either "RX + AUX" or "RX or AUX" depending on your application.

I cannot change channels.

- i. The unit is locked on channel. Press and hold the SEEK button for five seconds.

The power switch does not work.

- i. This is normal when using the +12VDC power on the rear terminal block.

If you are still having problems after checking the above items, call Listen for help. We are available from 8 AM to 5 PM Mountain time, Monday through Friday, at 1.800.330.0881 or 801.233.8992, or you can e-mail us at [support@listentech.com](mailto:support@listentech.com). Our full contact information is available on page 1 of this manual.

## Channel Selection Chart

### 72 MHz

Frequency (MHz)	Channel	Frequency (MHz)	Channel
72.025	1	74.625	33
72.050		74.650	
72.075	2	74.675	34
72.100	A	74.700	I
72.125	3	74.725	35
72.150		74.750	
72.175	4	74.775	36
72.200	K	75.225	37
72.225	5	75.250	
72.250		75.275	38
72.275	6	75.300	J
72.300	B	75.325	39
72.325	7	75.350	
72.350		75.375	40
72.375	8	75.400	R
72.400	N	75.425	21
72.425	9	75.450	
72.450		75.475	22
72.475	10	75.500	F
72.500	C	75.525	23
72.525	11	75.550	
72.550		75.575	24
72.575	12	75.600	S
72.600	O	75.625	25
72.625	13	75.650	
72.650		75.675	26
72.675	14	75.700	G
72.700	D	75.725	27
72.725	15	75.750	
72.750		75.775	28
72.775	16	75.800	T
72.800	P	75.825	29
72.825	17	75.850	
72.850		75.875	30
72.875	18	75.900	H
72.900	E	75.925	31
72.925	19	75.950	
72.950		75.975	32
72.975	20		

### 216 MHz

Frequency (MHz)	Channel	Frequency (MHz)	Channel
216.0125	1A	216.5125	1K
216.0250	2A	216.5250	2K
216.0375	3A	216.5375	3K
216.0500		216.5500	
216.0625	1B	216.5625	1L
216.0750	2B	216.5750	2L
216.0875	3B	216.5875	3L
216.1000		216.6000	
216.1125	1C	216.6125	1M
216.1250	2C	216.6250	2M
216.1375	3C	216.6375	3M
216.1500		216.6500	
216.1625	1D	216.6625	1N
216.1750	2D	216.6750	2N
216.1875	3D	216.6875	3N
216.2000		216.7000	
216.2125	1E	216.7125	1P
216.2250	2E	216.7250	2P
216.2375	3E	216.7375	3P
216.2500		216.7500	
216.2625	1F	216.7625	1R
216.2750	2F	216.7750	2R
216.2875	3F	216.7875	3R
216.3000		216.8000	
216.3125	1G	216.8125	1S
216.3250	2G	216.8250	2S
216.3375	3G	216.8375	3S
216.3500		216.8500	
216.3625	1H	216.8625	1T
216.3750	2H	216.8750	2T
216.3875	3H	216.8875	3T
216.4000		216.9000	
216.4125	1J	216.9125	1U
216.4250	2J	216.9250	2U
216.4375	3J	216.9375	3U
216.4500		216.9500	
216.4625		216.9625	1V
216.4750		216.9750	2V
216.4875		216.9875	3V
216.5000		217.0000	

Note: If you plan to use your LR-100 with another manufacturer's transmitter, please consult our frequency compatibility chart on the Listen website for assistance in selecting the correct channel for operation. Please note that ListenSQ™ will not work with other brands and should be disabled in this case.

## FCC Statement

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been certified to comply with the limits for a class B computing device, pursuant to FCC and IC Rules. In order to maintain compliance with FCC and IC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of the manufacturer could void the user's authority to operate this equipment.

## Warranty

### **Listen Offers a Limited Lifetime Warranty, Including a Performance Guarantee.**

Listen Technologies Corporation (Listen) warrants its transmitters and receivers (LT-700, LT-800, LR-100, LR-300, LR-400, LR-500, LR-600, etc.) to be free from defects in workmanship and material under normal use and conditions for the useful lifetime of the product from date of purchase. All other products and accessories are warranted for ninety days from date of purchase. This warranty is only available to the original end purchaser of the product and cannot be transferred. Warranty is only valid if warranty card has been returned within 90 days of purchase. This warranty is void if damage occurred because of misuse or if the product has been repaired or modified by anyone other than a factory authorized service technician. Warranty does not cover normal wear and tear on the product or any other physical damage unless the damage was the result of a manufacturing defect. Listen is not liable for consequential damages due to any failure of equipment to perform as intended. Listen shall bear no responsibility or obligation with respect to the manner of use of any equipment sold by it. Listen specifically disclaims and negates any warranty of merchantability or fitness of use of such equipment including, without limitation, any warranty that the use of such equipment for any purpose will comply with applicable laws and regulations. The terms of the warranty are governed by the laws of the state of Utah.

Listen will only accept returned products with prepaid shipping and with a return authorization number. To receive a return authorization number call 1.800.330.0891 or +1.801.233.8992. Listen will refund the purchase price of the product to the original purchaser within the first ninety days after purchase if the product does not perform better than a similar competitive product subject to an annual amount to any one original purchaser not to exceed \$1,000 and subject to the conditions of this limited warranty. This is called our "Whatever-it-takes Performance Guarantee." To receive a refund, call Listen for a return authorization number. Refunds will only be given to the original purchaser of product once the product has been returned to the factory in good working order with an explanation for the refund. Return the product with a letter on the end user's letterhead stating the reason for the refund and a copy of the original invoice. If the product was purchased through a dealer, refunds must be processed through the original dealer.

In the first ninety days after purchase, any defective product will be replaced with a new unit. After ninety days, Listen will, at its own discretion, either replace transmitters and receivers with a new unit or a unit of similar type and condition. Product that is not covered under warranty can be replaced with a unit of similar type and condition based on a flat fee. Contact Listen for details.

This limited warranty, prices and the specifications of products are subject to change without notice. Visit [www.listentech.com](http://www.listentech.com) or contact Listen at the address shown below.