



LR-500 Portable Programmable Display FM Receiver  
LR-400 Portable Display FM Receiver  
LR-300 Portable Digital FM Receiver

***Don't miss a single sound.***





Dear Valued Customer,

Thank you for choosing Listen! All of us at Listen are dedicated to providing you with the highest quality products available. We take great pride in their outstanding performance because we care that you are completely satisfied. That's why we independently certify them to the highest quality standards and back them with a limited lifetime guarantee. We stand ready to answer any questions you might have during installation or in the operation of our products. Should you experience any problems whatsoever with your Listen products, we are ready to help you in any way we can with prompt, efficient customer care. Because at Listen, it's all about you! And should you have any comments on how we might improve our products or our service, we're here to listen.

Here's how to reach us:

+1.801.233.8992

+1.800.330.0891 North America

+1.801.233.8995 fax

[support@listentech.com](mailto:support@listentech.com)

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

Thank you and enjoy your listening experience!

Best regards,

Russell Gentner and the Listen Team

- In the few instances where repairs were needed, 99% of all clients indicated that they were happy with repair turn-around-times and 85% of the time, clients were without their product for less than 10 days!
- Overall client satisfaction of working with Listen was rated 4.8 out of 5.
- "Please continue with your excellent attitude toward customer satisfaction. You guys are great!"
- "I've never had such good service from any company. Keep up the good work!"
- "You stand behind your product wonderfully."



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# User's Manual



LR-500 Portable Programmable Display FM Receiver

***Don't miss a single sound.***





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# LR-500 Package Contents

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## LR-500 Contents

- LR-500 Portable Programmable Display FM Receiver (72 MHz, 216 MHz)

## Listen Part Number

- LR-500-072 (72 MHz)
- LR-500-216 (216 MHz)



# LR-500 Specifications

## Architectural Specifications

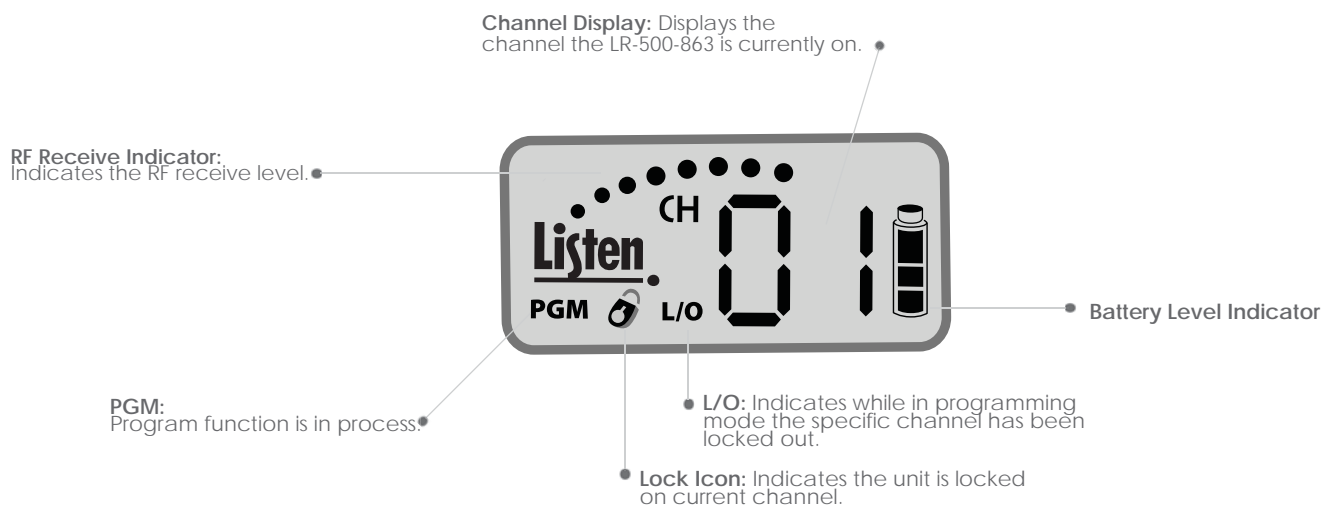
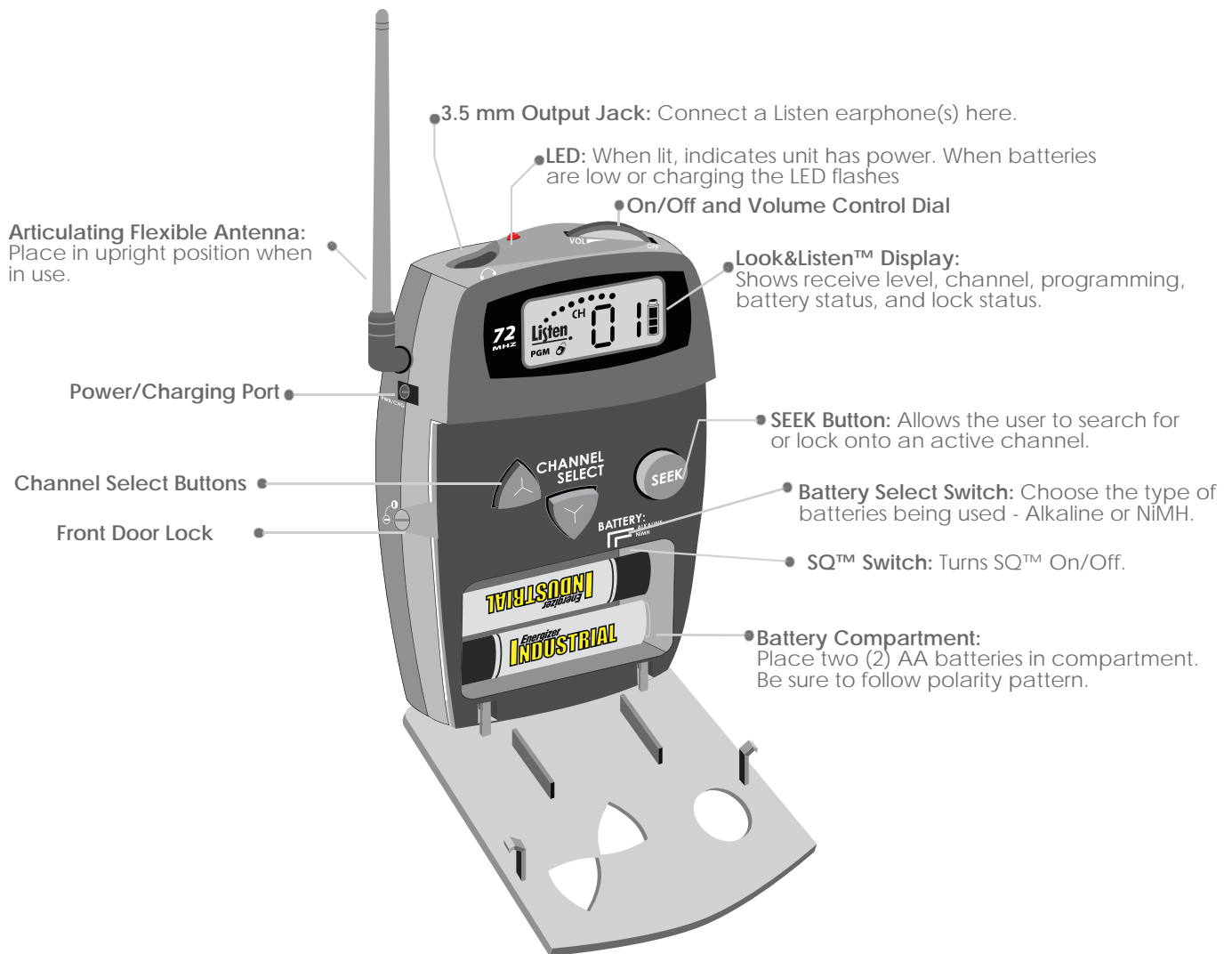
The FM receiver shall be capable of receiving on 57 wide and narrow band channels with a SNR of 80dB or greater. The receiver shall be programmable to electronically lock out unneeded channels. The receiver shall be capable of seeking channels. The device shall have an adjustable squelch. The device shall have an audio frequency response of 63 Hz to 15 KHz,  $\pm 3$ dB at 72 MHz, or 63 Hz to 10 KHz,  $\pm 3$ dB at 216 MHz. The device will incorporate a stereo headset jack that allows the user to plug in either a mono or stereo headset. The device shall incorporate an LCD display that indicates channel, channel lock or lock status, battery level, battery charging, and RF signal strength. The receiver shall incorporate automatic battery charging circuitry for recharging of NiMH batteries. The Listen LR-500 is specified.

## Specifications

	Specification	LR-500-072	LR-500-216
RF	RF Frequency Range	72.025-75.950 MHz	216.025-216.975 MHz
	Number of Channels	57 (17 wide, 40 narrow)	57 (19 wide, 38 narrow)
	Sensitivity	.6uV typical, 1 uV maximum for 12dB SINAD	
	Frequency Accuracy	$\pm .005\%$ stability 32 to 122° F (0 to 50° C)	
	Antenna	Uses earphone cable	
	Antenna Connector	3.5 mm connector	
	Squelch	Programmable in 20 steps	
	Compliance	FCC Part 15, Industry Canada	
** All system specifications are wireless end-to-end			
Audio	System Frequency Response	63 Hz-15 Hz ( $\pm 3$ dB)	63 Hz-10 kHz ( $\pm 3$ dB)
	System Signal to Noise Ratio (A-weighted)	SQ™ enabled: 80dB; SQ™ disabled: 60dB	SQ™ enabled: 80dB; SQ™ disabled: 50dB
	System Distortion	< 2% total harmonic distortion (THD) at 80% deviation	
	Output	3.5 mm connectors, unbalanced, 0dBu nominal output level, 16mW maximum, impedance 32 Ohms	
Controls	Set Up Controls	Programmable channel selection (see below), alkaline/NiMH batteries and squelch, SQ™ enable/disable	
	User Controls	Volume, channel UP/DOWN/SEEK. All controls except volume are electronically lockable	
	Programming	Unit can be programmed so that only desired channels are displayed. Squelch can be adjusted for sensitivity and signal capture control. Channel selection can be locked by holding the SEEK button for 5 seconds.	
Indicators	LCD Display	Indicates channel, RF signal strength, lock status, squelch, battery power level and channel programming	
	LED	Red, illuminates when unit is on. Flashes when batteries are low. Flashes when charging. Flashes when locked and user attempts to seek to another channel.	
Power	Battery Type	Two AA batteries, alkaline or NiMH	
	Battery Life (Listen batteries)	30 hours alkaline (LA-361), 15 hours NiMH rechargeable (LA-362)	
	Battery Charging (NiMH only)	Fully automatic, 14 hours	
	Power Supply Connector	2.3 mm OD by 0.7 mm ID, barrel type connector. 7.5VDC, center positive <250mA. Drop in contact points for use with Listen charging cases	
	Compliance	UL Listed	
Physical	Dimensions W x D x H	3.0 x 1.0 x 4.25 in. (7.6 x 2.5 x 13 cm)	
	Unit Weight	3.9 oz. (111 g)	
	Unit Weight with batteries	5.8 oz. (164.4 g)	
	Shipping Weight	1.0 lbs. (453.6 kg)	
	Door	Manually lockable. UP, DOWN and SEEK through door, other controls behind door (see Controls above)	
Environmental	Temperature - Operation	14 to 104° F (10 to 40° C)	
	Temperature - Storage	-4 to 122° F (-20 to 50° C)	
	Humidity	0 to 95% relative humidity, non-condensing	

# LR-500 Quick Reference

LR-500



# LR-500 Setup Instructions

## 1 Remove the product

Remove outer packaging and plastic cover. Inspect for physical damage. If damage is apparent, please contact Listen Technologies Corporation technical support for assistance.

## 2 Open the front access door

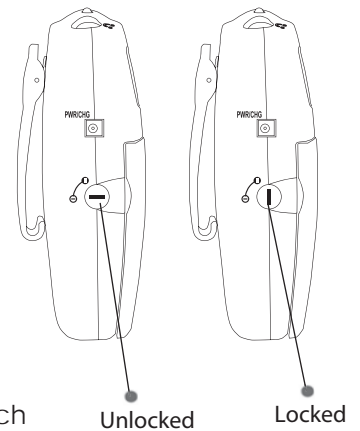
If locked, use a pocketknife or small screwdriver to unlock the door locks on both sides of the unit. To unlock the door, rotate the lock 1/4 turn counterclockwise.

Grip the two tabs with your thumb and index finger and pull the door downward. Do NOT place batteries in the unit yet.

## 3 Select Battery Type

You have two choices: NiMH and Alkaline. The unit is shipped with the switch in the Alkaline position. Use a pen or small screwdriver to select the battery type.

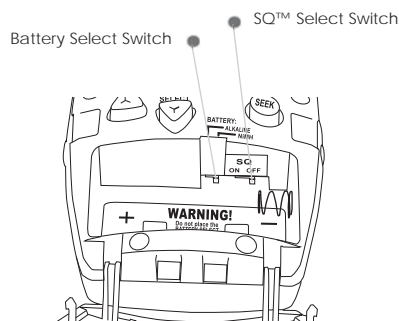
**CAUTION:** If you are using any battery type other than rechargeable Nickel Metal Hydride (NiMH) batteries, make sure the BATTERY selection switch is in the alkaline position.



**WARNING:** Do not place the BATTERY switch in the NiMH position if you are not using Nickel Metal Hydride Batteries. The NiMH position will attempt to charge any batteries in the unit, even if they are not the proper type. Charging non-Nickel Metal Hydride (NiMH) batteries will result in physical harm, destruction of property and/or fire.

## 4 Set SQ switch

The SQ switch is inside the battery compartment next to the Battery Select switch. The unit is shipped with SQ in the ON position. To turn it off, use a small screwdriver or pen to slide the switch to the OFF position (to the right). See page 45 for more information on SQ.



## 5 Place Batteries in Unit

Place two AA batteries in the compartment, making note of the battery polarity shown in the battery compartment, and again verifying that the BATTERY SELECT switch is in the correct position for the batteries you are using. (ALK should be selected for all battery types other than NiMH).

**NOTE:** Listen provides industrial strength AA alkaline batteries (part number LA-361) and high performance AA Nickel Metal Hydride batteries (part number LA-362). These may be purchased from your Listen dealer.

# LR-500 Setup Instructions

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## **Connect an Earphone or Headset**

Your headset or earphone will connect to the jack on the top of the unit. Either mono or stereo connectors may be used with a Listen receiver. Make certain you push the plug all the way into the jack.

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## **Turn the Unit On**

Receivers are turned on by rotating the volume dial counterclockwise. The red LED on top of the unit should activate and the LCD display should illuminate. If they do not, make sure you have installed the batteries correctly and that you are using fully charged batteries.

8

## **Select Channel(s)**

See page 44 for complete channel selection information.

9

## **Set Squelch**

See pages 13 and 14 for squelch and programming information.

10

## **Program Channels**

see page 13.



# LR-500 Operation Instructions

## 1 **Make Sure the Unit is On**

Rotate the volume knob counterclockwise with an earphone or headset connected to the unit. Listen receivers use the cable of the earphone or headset as a receiving antenna.

Be careful when turning the unit on - if you turn the knob too far you might get too much volume in your earphone!

## 2 **Select a Channel**

Select the channel to match the transmission channel by pressing the UP and DOWN buttons on the receiver. Listen recommends the use of wide band channels.

### **At 72 MHz:**

72 MHz receivers operate on 17 wide band channels and 40 narrow band channels. Channels represented by letters on the display (i.e. A) are wideband channels; channels represented by numbers are narrowband channels.

### **At 216 MHz:**

216 MHz receivers operate on 19 wide band channels and 38 narrow band channels. Channel numbers starting with a "2" are wide band; channels beginning with a "1" or "3" are narrow band channels.

Refer to the Frequency Compatibility Tables (pages 47-48) for specific frequencies and compatibility with other manufacturers.

## 3 **Test the audio**

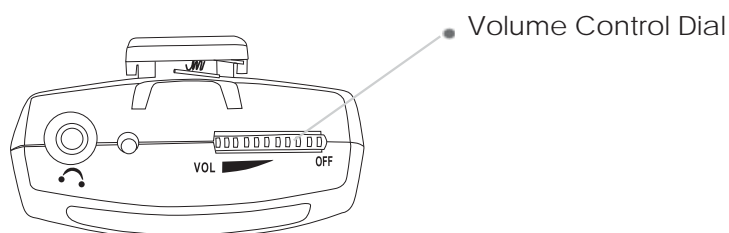
If a transmitter is broadcasting on that channel, you will be able to hear the audio. If the signal is too weak, the audio will be muted (squelched).

## 4 **Find an audio transmission using SEEK**

Another way to find a channel on the LR-500 is to use the SEEK button. When you do this, the Listen receiver looks for the next active channel. Sometimes the unit will mistake interference for a real broadcast signal. If you get interference, press the SEEK button again. The unit may stop on a channel that is close to the actual broadcast channel, in which case the channel will sound noisy or distorted. Simply press SEEK again until you find the clearest operating channel.

## 5 **Adjust the volume control**

Use the control dial on the top of the unit to adjust the volume to a comfortable level.



# LR-500 Operation Instructions

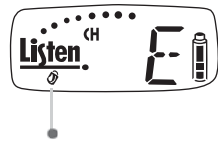
6

## To Lock into Only One Channel

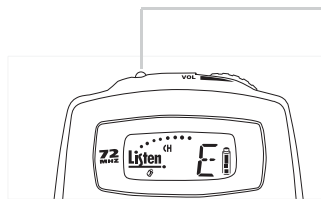
Press and hold the SEEK button for 5 seconds to lock a receiver onto the currently tuned channel. Press and hold the button again to unlock. When locked the LED on top of the unit will flash when you press the SEEK button.

## Is the Channel Locked on My Receiver?

On the LR-500, when the channel is locked, the padlock icon will appear on the display. If the unit is locked, the red LED on the top of the unit will flash when you press the SEEK button.



Padlock appears when locked



If locked, LED flashes on all portable receivers when SEEK button is pressed



# LR-500 Programming Instructions

The LR-500 Display Receiver has some special features not available in the other receivers: you may lock out unwanted channels, and you can adjust the squelch in the unit.

## **Locking Out Unwanted Channels**

For applications where users are required to select a channel (such as language interpretation or classrooms), and you don't want them to have to go through all 57 available channels to find the appropriate channel, you can lock out all channels except the ones you are using in your facility.



UP and DOWN buttons on front of LR-500

### **1 Enter the PROGRAM mode**

Press the UP and DOWN buttons simultaneously for 5 seconds, until the PGM symbol appears in the display.



### **2 Use the UP and DOWN keys to select channels**

As channels are displayed on the unit, those channels that are locked out from user access will be indicated by the L/O (Locked Out) symbol. When a channel is locked out, the receiver will skip over that channel when a user is tuning the receiver.



### **3 Press the SEEK button to toggle channels between locked out and non-locked out modes**

#### **Exiting PROGRAM mode**

To exit the PROGRAM mode, let the receiver sit idle (don't press any buttons) for 5 seconds. The receiver will automatically return to normal operation. If you haven't finished programming the unit and it automatically exits, press and hold the UP & DOWN buttons simultaneously for 5 seconds to re-enter the PROGRAM mode.

# LR-500 Squelch

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## **Squelch**

The purpose of squelch is to mute the audio output of your receiver when the signal from the transmitter is turned off or is too weak to be received. Without squelch you would hear radio noise in your earphone. The squelch on your receiver can be adjusted so that it will mute the audio on different RF signal strengths. This is useful as follows:

- To ensure that users don't hear transmissions from other transmitters, set the squelch setting to the highest level that doesn't squelch the receiver.
- If the receiver is going to be close to the transmitter (i.e. in a classroom), setting the squelch setting high so that when the transmitter is turned off it immediately squelches and ignores transmitters in other rooms.
- If you are in an area that has a lot of inference, you may want to set the squelch setting to a high setting to ensure the interference is not picked by the receiver.
- If you need the maximum amount of range, you may want to consider setting the squelch setting to a low level (0, 1 or 2).

**CAUTION:** When setting the squelch level low the reliability of squelch function is comprised. This will cause radio noise to be heard in the earphone and there is a possibility of hearing damage.

## *Squelch Programming Instructions*

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### **Squelch Programming**

To enter Squelch programming mode

- Turn the unit off
- Press and hold the seek button; while still holding seek turn the ON/OFF dial to turn the unit on.
- Release the seek button when the Listen name disappears and a two digit display is seen.

To adjust the Squelch level

- Use the Channel UP and DOWN buttons to raise or lower the squelch sensitivity settings.
- Lower numbers mean that a less powerful and possibly noisy signal will be heard, but you can have a longer range.
- Higher numbers mean that a more powerful signal with no noise will be heard, but you may have a shorter range.
- Once the desired squelch setting is found, press "seek" to exit the squelch programming mode.

Squelch setting 00 is no squelch; this effectively disables Squelching capabilities of the receiver. Squelch setting 20 is maximum squelch sensitivity; you must have a very strong and stable RF signal for the unit to not engage the squelch feature.

Adjusting the squelch setting will keep your LR-500 receiver from picking up noise when the transmitter is not transmitting, or when you lose the signal by being out of range or if encountering interference.

**Note:** For squelch settings 1-3, the squelch function is slow which allows for maximum transmission range. For squelch settings 4-20 the squelch function is fast to ensure little radio noise is heard during the squelch function.

(The Listen SQ™ feature is not squelch, please refer to page 45 for information on Listen SQ™).

# LR-500 Charging Batteries

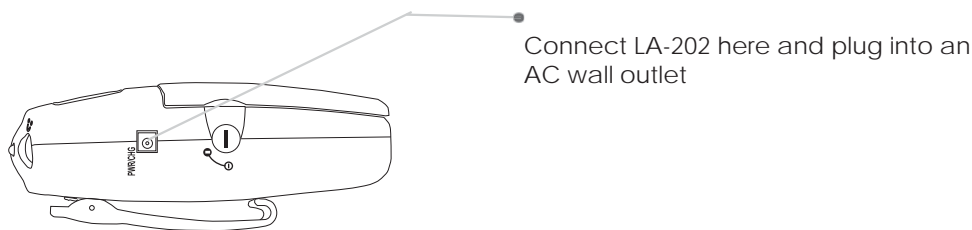
The LR-500 and all Listen receivers are unique because they have SmartCharge™ chargers built in. When any of these units are connected to an LA-202 wall transformer or dropped into a Listen charging case, NiMH batteries will be charged.

**1** To charge the batteries using the LA-202 wall transformer, plug the transformer into the jack marked "PWR/CHG" on the side of the unit. The unit can be operated while the batteries are charging.

**2** To charge the batteries using a drop-in charger, simply place the unit into a slot in the charger and connect the charger to power. Make sure the unit is fully seated in its slot.

SmartCharge™ uses a pulse charging, which greatly extends the life of Nickel Metal Hydride (NiMH) batteries. The entire charging process takes 13 hours. Listen recommends that you allow the charger to complete its full cycle every time for maximum battery life.

**NOTE: In order to charge NiMH batteries, the BATTERY SELECT switch in your Listen product must be set to the NiMH setting. Use a pen or small screwdriver to move the switch (located in the battery compartment) to the proper position.**



**IMPORTANT: DO NOT ATTEMPT TO CHARGE ANY TYPE OF BATTERY OTHER THAN NiMH (NICKEL METAL HYDRIDE) with your Listen equipment. Alkaline batteries may explode when connected to a charger. Other risks of charging non-NiMH batteries include destruction of property or fire.**

During the charge cycle, the red LED on top of the Listen product will flash slowly. When charging is completed, the LED will turn off. It is not necessary to unplug the charger; however, if you unplug the unit from the charger and then plug it back in, it will begin the 13-hour charge cycle over again.

When not using the LR-500, it is recommended to leave the unit on the charger. The charger provides a "maintenance" charge that keeps the battery at 100%. If the unit is not on the charger, the battery will lose up to 20% of its charge per month.

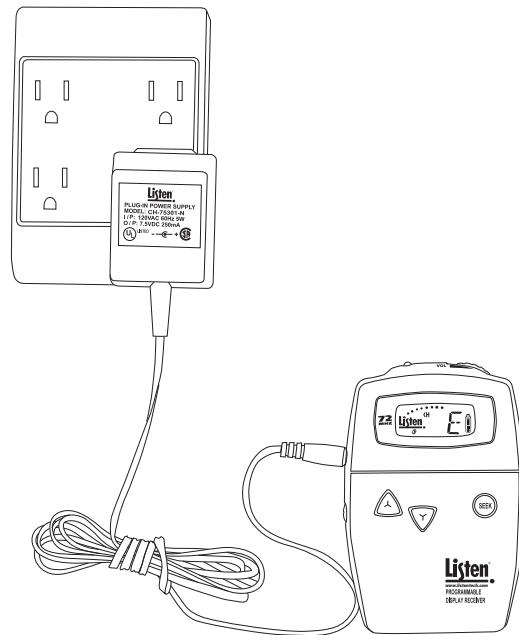
**NOTE: Listen provides high performance constant current NiMH (Nickel Metal Hydride) batteries. These may be purchased from your Listen dealer (ask for part number LA-362).**

## LR-500 Wall Transformer Operation

The LR-500 will operate normally when connected to a wall transformer. Use Listen part number LA-202, available from any Listen dealer. Connect the wall transformer to the jack on the side of the LR-500 marked "PWR/CHG" and plug the wall transformer into a grounded AC outlet.

You do not need to have batteries installed in the LR-500 to operate it with a wall transformer.

**NOTE:** If batteries are in the unit ensure that the battery selection switch is set properly as shown on page 9. Please review the information on page 15 for important information regarding battery type and charging.



The LA-202 wall transformer plugs into the side of your portable transmitter or receiver







LR-400 Portable Display FM Receiver

***Don't miss a single sound.***





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# LR-400 Package Contents

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## LR-400 Contents

- LR-400 Portable Display FM Receiver (72 MHz, 216 MHz)

## Listen Part Number

- LR-400-072 (72 MHz)
- LR-400-216 (216 MHz)



# LR-400 Specifications

## Architectural Specifications

The FM receiver shall be capable of receiving on 57 wide and narrow band channels with a SNR of 80dB or greater. The receiver shall be capable of seeking channels. The device shall have an adjustable squelch. The device shall have an audio frequency response of 63 Hz to 15 KHz,  $\pm$  3dB at 72 MHz, or of 63 Hz to 10 kHz,  $\pm$  3dB at 216 MHz. The device will incorporate a stereo headset jack that allows the user to plug in either a mono or stereo headset and listen to the audio normally. The device shall incorporate an LCD display that indicates channel, battery level, low battery, battery charging, RF signal strength and channel lock status. The receiver shall incorporate automatic battery charging circuitry for recharging of NiMH batteries. The Listen LR-400 is specified.

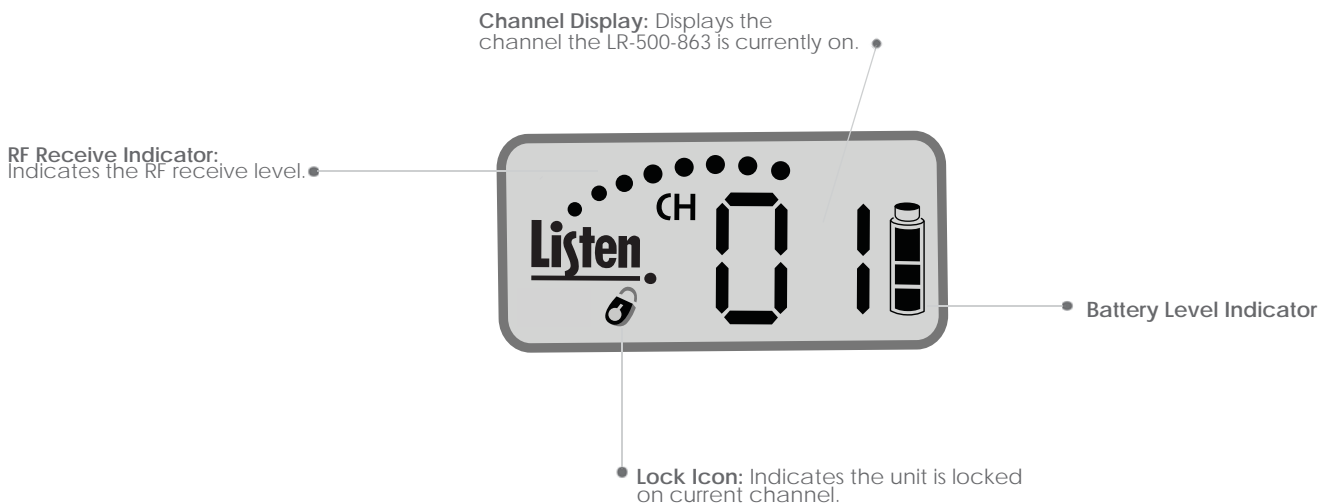
## Specifications

	Specification	LR-400-072	LR-400-216
RF	RF Frequency Range	72.025-75.950 MHz	216.025-216.975 MHz
	Number of Channels	57 (17 wide, 40 narrow)	57 (19 wide, 38 narrow)
	Sensitivity	.6uV typical, 1 uV maximum for 12dB SINAD	
	Frequency Accuracy	$\pm$ .005% stability 32 to 122° F (0 to 50° C)	
	Antenna	Uses earphone cable	
	Antenna Connector	3.5 mm connector	
	Squelch	Programmable in 20 steps	
	Compliance	FCC Part 15, Industry Canada	
** All system specifications are wireless end-to-end			
Audio	System Frequency Response	63 Hz-15 Hz ( $\pm$ 3dB)	63 Hz-10 kHz ( $\pm$ 3dB)
	System Signal to Noise Ratio (A-weighted)	SQ™ enabled: 80dB; SQ™ disabled: 60dB	SQ™ enabled: 80dB; SQ™ disabled: 50dB
	System Distortion	< 2% total harmonic distortion (THD) at 80% deviation	
	Output	3.5 mm connectors, unbalanced, 0dBu nominal output level, 16mW maximum, impedance 32 Ohms	
Controls	Set Up Controls	Alkaline/NiMH batteries and SQ™ enable/disable and programmable squelch setting	
	User Controls	Volume, channel UP/DOWN/SEEK (All controls except volume are electronically lockable, and are behind the door)	
	Programming	Squelch can be adjusted for sensitivity and signal capture control. Channel selection can be locked by holding the SEEK button for 5 seconds. Unit cannot be programmed to seek only used channels, however, it is capable of entering squelch mode.	
Indicators	LCD Display	Indicates channel, RF signal strength, lock status, and squelch setting	
	LED	Red, illuminates when unit is on. Flashes when batteries are low. Flashes when charging. Flashes when locked and user attempts to seek to another channel.	
Power	Battery Type	Two AA batteries, alkaline or NiMH	
	Battery Life (Listen batteries)	30 hours alkaline (LA-361), 15 hours NiMH rechargeable (LA-362)	
	Battery Charging (NiMH only)	Fully automatic, 14 hours	
	Power Supply Connector	2.3 mm OD by 0.7 mm ID, barrel type connector. 7.5VDC, center positive <250mA. Drop in contact points for use with Listen charging/carrying cases	
	Compliance	UL Listed	
Physical	Dimensions W x D x H	3.0 x 1.0 x 4.25 in. (7.6 x 2.5 x 13 cm)	
	Unit Weight	3.9 oz. (111 g)	
	Unit Weight with batteries	5.8 oz. (164.4 g)	
	Shipping Weight	1.0 lbs. (453.6 kg)	
	Door	Manually lockable. UP, DOWN and SEEK protected by door	
Environmental	Temperature - Operation	14 to 104° F (10 to 40° C)	
	Temperature - Storage	-4 to 122° F (-20 to 50° C)	
	Humidity	0 to 95% relative humidity, non-condensing	

# LR-400 Quick Reference



LR-400



# LR-400 Setup Instructions

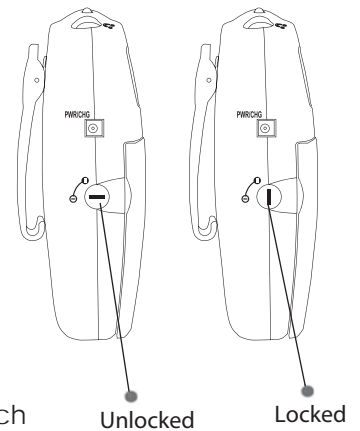
## 1 Remove the product

Remove outer packaging and plastic cover. Inspect for physical damage. If damage is apparent, please contact Listen Technologies Corporation technical support for assistance.

## 2 Open the front access door

If locked, use a pocketknife or small screwdriver to unlock the door locks on both sides of the unit. To unlock the door, rotate the lock 1/4 turn counterclockwise.

Grip the two tabs with your thumb and index finger and pull the door downward. Do NOT place batteries in the unit yet.



## 3 Select Battery Type

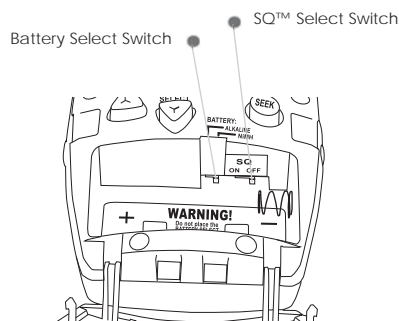
You have two choices: NiMH and Alkaline. The unit is shipped with the switch in the Alkaline position. Use a pen or small screwdriver to select the battery type.

**CAUTION:** If you are using any battery type other than rechargeable Nickel Metal Hydride (NiMH) batteries, make sure the BATTERY selection switch is in the alkaline position.

**WARNING:** Do not place the BATTERY switch in the NiMH position if you are not using Nickel Metal Hydride Batteries. The NiMH position will attempt to charge any batteries in the unit, even if they are not the proper type. Charging non-Nickel Metal Hydride (NiMH) batteries will result in physical harm, destruction of property and/or fire.

## 4 Set SQ switch

The SQ switch is inside the battery compartment next to the Battery Select switch. The unit is shipped with SQ in the ON position. To turn it off, use a small screwdriver or pen to slide the switch to the OFF position (to the right). See page 45 for more information on SQ.



## 5 Place Batteries in Unit

Place two AA batteries in the compartment, making note of the battery polarity shown in the battery compartment, and again verifying that the BATTERY SELECT switch is in the correct position for the batteries you are using. (ALK should be selected for all battery types other than NiMH).

**NOTE:** Listen provides industrial strength AA alkaline batteries (part number LA-361) and high performance AA Nickel Metal Hydride batteries (part number LA-362). These may be purchased from your Listen dealer.

# LR-400 Setup Instructions

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6

## **Connect an Earphone or Headset**

Your headset or earphone will connect to the jack on the top of the unit. Either mono or stereo connectors may be used with a Listen receiver. Make certain you push the plug all the way into the jack.

7

## **Turn the Unit On**

Receivers are turned on by rotating the volume dial counterclockwise. The red LED on top of the unit should activate and the LCD display should illuminate. If they do not, make sure you have installed the batteries correctly and that you are using fully charged batteries.

8

## **Select Channel(s)**

See page 44 for complete channel selection information.

9

## **Set Squelch**

See page 29 for squelch and programming information.



# LR-400 Operation Instructions

## 1 **Make Sure the Unit is On**

Rotate the volume knob counterclockwise with an earphone or headset connected to the unit. Listen receivers use the cable of the earphone or headset as a receiving antenna.

Be careful when turning the unit on - if you turn the knob too far you might get too much volume in your earphone!

## 2 **Select a Channel**

Select the channel to match the transmission channel by pressing the UP and DOWN buttons on the receiver. Listen recommends the use of wide band channels.

### **At 72 MHz:**

72 MHz receivers operate on 17 wide band channels and 40 narrow band channels. Channels represented by letters on the display (i.e. A) are wideband channels; channels represented by numbers are narrowband channels.

### **At 216 MHz:**

216 MHz receivers operate on 19 wide band channels and 38 narrow band channels. Channel numbers starting with a "2" are wide band; channels beginning with a "1" or "3" are narrow band channels.

Refer to the Frequency Compatibility Tables (pages 47-48) for specific frequencies and compatibility with other manufacturers.

## 3 **Test the audio**

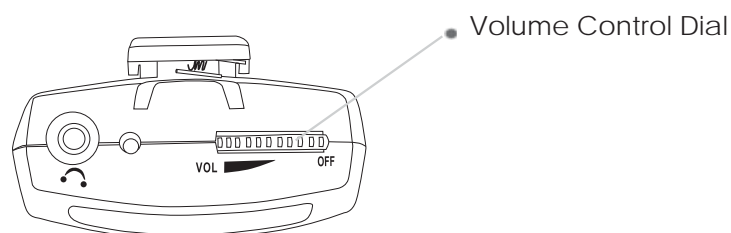
If a transmitter is broadcasting on that channel, you will be able to hear the audio. If the signal is too weak, the audio will be muted (squelched).

## 4 **Find an audio transmission using SEEK**

Another way to find a channel on the LR-400 is to use the SEEK button. When you do this, the Listen receiver looks for the next active channel. Sometimes the unit will mistake interference for a real broadcast signal. If you get interference, press the SEEK button again. The unit may stop on a channel that is close to the actual broadcast channel, in which case the channel will sound noisy or distorted. Simply press SEEK again until you find the clearest operating channel.

## 5 **Adjust the volume control**

Use the control dial on the top of the unit to adjust the volume to a comfortable level.



# LR-400 Operation Instructions

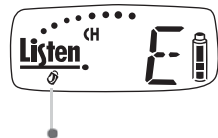
6

## **To Lock into Only One Channel**

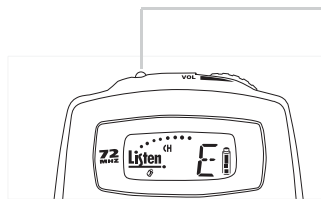
Press and hold the SEEK button for 5 seconds to lock a receiver onto the currently tuned channel. Press and hold the button again to unlock. When locked the LED on top of the unit will flash when you press the SEEK button.

## **Is the Channel Locked on My Receiver?**

On the LR-400, when the channel is locked, the padlock icon will appear on the display. If the unit is locked, the red LED on the top of the unit will flash when you press the SEEK button.



Padlock appears when locked



If locked, LED flashes on all portable receivers when SEEK button is pressed



# LR-400 Squelch

---

## **Squelch**

The purpose of squelch is to mute the audio output of your receiver when the signal from the transmitter is turned off or is too weak to be received. Without squelch you would hear radio noise in your earphone. The squelch on your receiver can be adjusted so that it will mute the audio on different RF signal strengths. This is useful as follows:

- To ensure that users don't hear transmissions from other transmitters, set the squelch setting to the highest level that doesn't squelch the receiver.
- If the receiver is going to be close to the transmitter (i.e. in a classroom), setting the squelch setting high so that when the transmitter is turned off it immediately squelches and ignores transmitters in other rooms.
- If you are in an area that has a lot of interference, you may want to set the squelch setting to a high setting to ensure the interference is not picked by the receiver.
- If you need the maximum amount of range, you may want to consider setting the squelch setting to a low level (0, 1 or 2).

**CAUTION: When setting the squelch level low the reliability of squelch function is comprised. This will cause radio noise to be heard in the earphone and there is a possibility of hearing damage.**

## *Squelch Programming Instructions*

---

### **Squelch Programming**

To enter Squelch programming mode

- Turn the unit off
- Press and hold the seek button; while still holding seek turn the ON/OFF dial to turn the unit on.
- Release the seek button when the Listen name disappears and a two digit display is seen.

To adjust the Squelch level

- Use the Channel UP and DOWN buttons to raise or lower the squelch sensitivity settings.
- Lower numbers mean that a less powerful and possibly noisy signal will be heard, but you can have a longer range.
- Higher numbers mean that a more powerful signal with no noise will be heard, but you may have a shorter range.
- Once the desired squelch setting is found, press "seek" to exit the squelch programming mode.

Squelch setting 00 is no squelch; this effectively disables Squelching capabilities of the receiver. Squelch setting 20 is maximum squelch sensitivity; you must have a very strong and stable RF signal for the unit to not engage the squelch feature.

Adjusting the squelch setting will keep your LR-500 receiver from picking up noise when the transmitter is not transmitting, or when you lose the signal by being out of range or if encountering interference.

**Note: For squelch settings 1-3, the squelch function is slow which allows for maximum transmission range. For squelch settings 4-20 the squelch function is fast to ensure little radio noise is heard during the squelch function.**

(The Listen SQ™ feature is not squelch, please refer to page 45 for information on Listen SQ™).

# LR-400 Charging Batteries

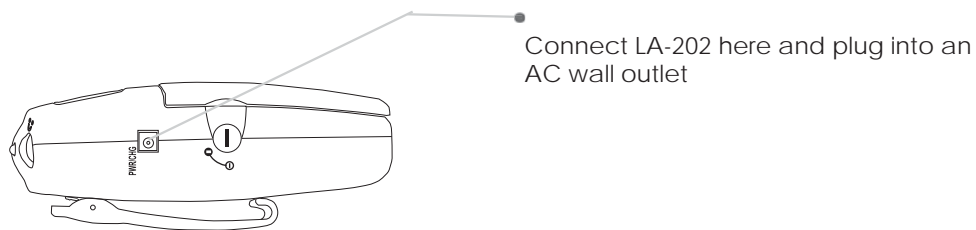
The LR-400 and all Listen receivers are unique because they have SmartCharge™ chargers built in. When any of these units are connected to an LA-202 wall transformer or dropped into a Listen charging case, NiMH batteries will be charged.

**1** To charge the batteries using the LA-202 wall transformer, plug the transformer into the jack marked "PWR/CHG" on the side of the unit. The unit can be operated while the batteries are charging.

**2** To charge the batteries using a drop-in charger, simply place the unit into a slot in the charger and connect the charger to power. Make sure the unit is fully seated in its slot.

SmartCharge™ uses a pulse charging, which greatly extends the life of Nickel Metal Hydride (NiMH) batteries. The entire charging process takes 13 hours. Listen recommends that you allow the charger to complete its full cycle every time for maximum battery life.

**NOTE: In order to charge NiMH batteries, the BATTERY SELECT switch in your Listen product must be set to the NiMH setting. Use a pen or small screwdriver to move the switch (located in the battery compartment) to the proper position.**



**IMPORTANT: DO NOT ATTEMPT TO CHARGE ANY TYPE OF BATTERY OTHER THAN NiMH (NICKEL METAL HYDRIDE) with your Listen equipment. Alkaline batteries may explode when connected to a charger. Other risks of charging non-NiMH batteries include destruction of property or fire.**

During the charge cycle, the red LED on top of the Listen product will flash slowly. When charging is completed, the LED will turn off. It is not necessary to unplug the charger; however, if you unplug the unit from the charger and then plug it back in, it will begin the 13-hour charge cycle over again.

When not using the LR-400, it is recommended to leave the unit on the charger. The charger provides a "maintenance" charge that keeps the battery at 100%. If the unit is not on the charger, the battery will lose up to 20% of its charge per month.

**NOTE: Listen provides high performance constant current NiMH (Nickel Metal Hydride) batteries. These may be purchased from your Listen dealer (ask for part number LA-362).**

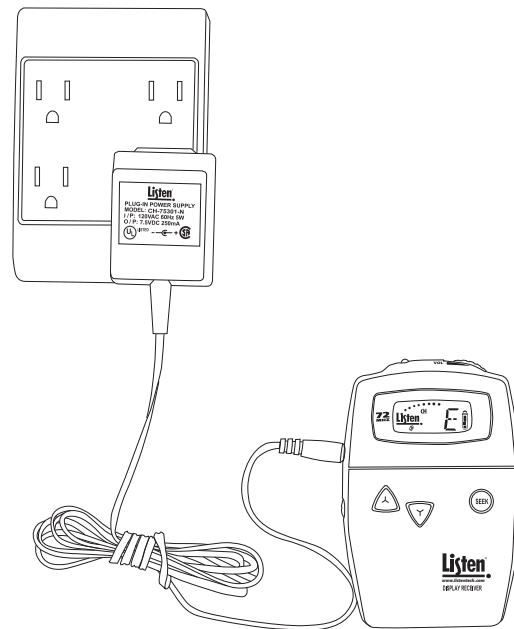
## LR-400 Wall Transformer Operation

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The LR-400 will operate normally when connected to a wall transformer. Use Listen part number LA-202, available from any Listen dealer. Connect the wall transformer to the jack on the side of the LR-400 marked "PWR/CHG" and plug the wall transformer into a grounded AC outlet.

You do not need to have batteries installed in the LR-400 to operate it with a wall transformer.

**NOTE:** If batteries are in the unit ensure that the battery selection switch is set properly as shown on page 25. Please review the information on page 30 for important information regarding battery type and charging.



The LA-202 wall transformer plugs into the side of your portable transmitter or receiver





# User's Manual



LR-300 Portable Digital FM Receiver

***Don't miss a single sound.***



# *LR-300 Table of Contents*

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# LR-300 Package Contents

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## LR-400 Contents

- LR-300 Portable Digital FM Receiver (72 MHz or 216 MHz)

## Listen Part Number

- LR-300-072 (72 MHz)





# LR-300 Specifications

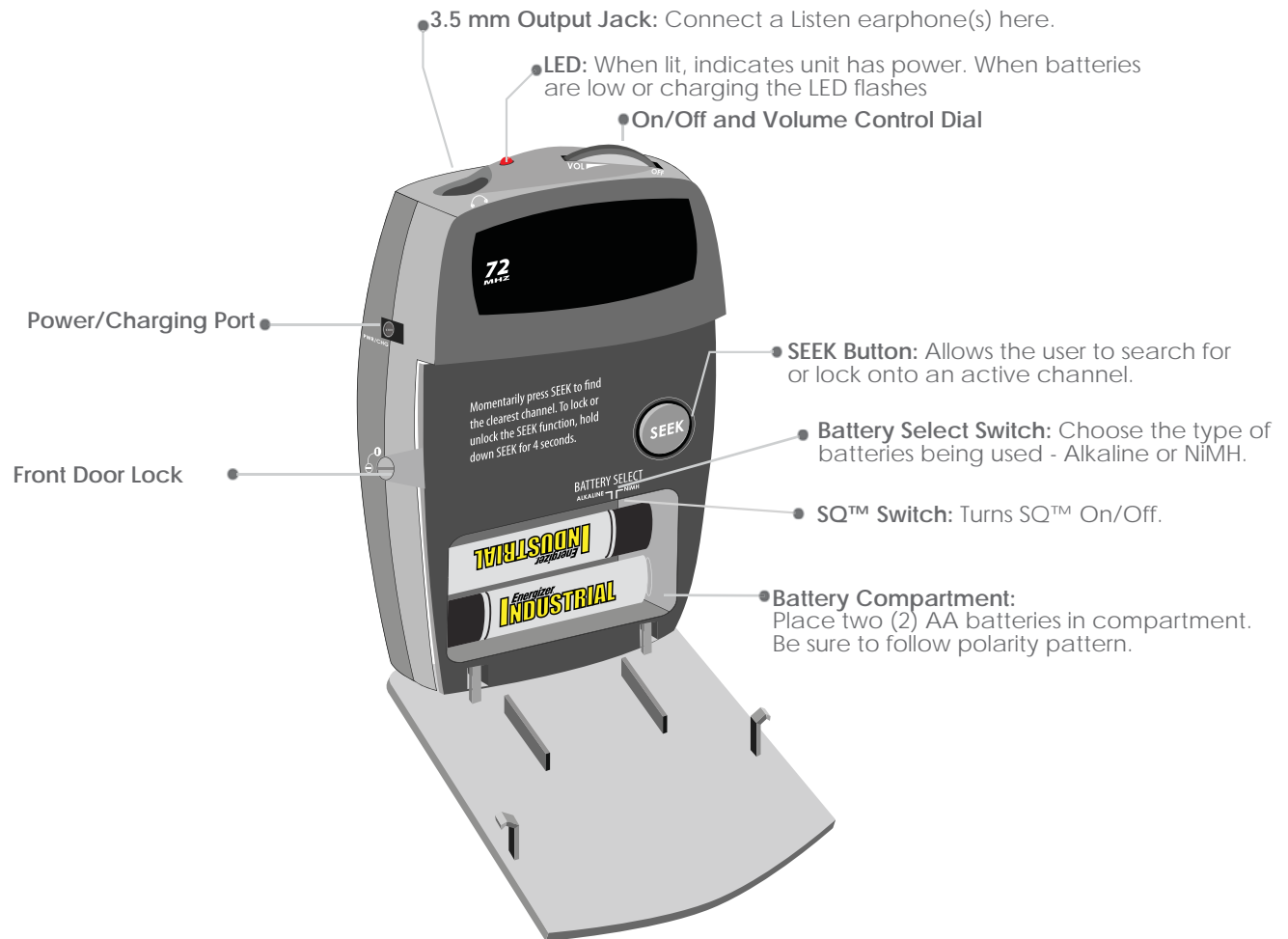
## Architectural Specifications

The FM receiver shall be capable of receiving on 17 wide band channels and have a SNR of 80dB or greater. The receiver shall be capable of seeking channels. The device shall have a squelch. The device shall have an audio frequency response of 63 Hz to 15 KHz,  $\pm$  3dB at 72 MHz. The device shall incorporate a stereo headset jack that allows the user to plug in either a mono or stereo headset and listen to audio normally. The receiver shall incorporate automatic battery charging circuitry for recharging of NiMH batteries. The Listen LR-300 is specified.

## Specifications

	Specification	LR-300-072
RF	RF Frequency Range	72.025-75.950 MHz
	Number of Channels	17 (wide band)
	Sensitivity	.6uV typical, 1 uV maximum for 12dB SINAD
	Frequency Accuracy	$\pm$ .005% stability 32 to 122° F (0 to 50° C)
	Antenna	Uses earphone cable
	Antenna Connector	3.5 mm connector
	Squelch	Automatic on loss of RF signal
	Compliance	FCC Part 15, Industry Canada
	** All system specifications are wireless end-to-end	
Audio	System Frequency Response	63 Hz-15 kHz ( $\pm$ 3dB)
	System Signal to Noise Ratio (A-weighted)	SQ™ enabled: 80dB; SQ™ disabled 60dB
	System Distortion	< 2% total harmonic distortion (THD) at 80% deviation
	Output	3.5 mm connectors, unbalanced, 0dBu nominal output level, 16mW maximum, impedance 32 Ohms
Controls	Set Up Controls	Alkaline/NiMH batteries, SQ™ enable/disable
	User Controls	Volume, SEEK (Channel SEEK is electronically lockable)
	Programming	Channel selection can be locked by holding the SEEK button for 5 seconds
Indicators	LED	Red, illuminates when unit is on. Flashes when batteries are low. Flashes when charging. Flashes when locked and user attempts to seek to another channel.
Power	Battery Type	Two AA batteries, alkaline or NiMH
	Battery Life (Listen batteries)	30 hours alkaline (LA-361), 15 hours NiMH rechargeable (LA-362)
	Battery Charging (NiMH only)	Fully automatic, 14 hours
	Power Supply Connector	2.3 mm OD by 0.7 mm ID, barrel type connector. 7.5VDC, center positive <250mA. Drop in contact points for use with Listen charging cases
	Compliance	UL Listed
Physical	Dimensions W x D x H	3.0 x 1.0 x 4.25 in. (7.6 x 2.5 x 13 cm)
	Unit Weight	3.9 oz. (111 g)
	Unit Weight with batteries	5.8 oz. (164.4 g)
	Shipping Weight	1.0 lbs. (453.6 kg)
	Door	Manually lockable. SEEK behind the door.
Environmental	Temperature - Operation	14 to 104° F (10 to 40° C)
	Temperature - Storage	-4 to 122° F (-20 to 50° C)
	Humidity	0 to 95% relative humidity, non-condensing

# LR-300 Quick Reference



# LR-300 Setup Instructions

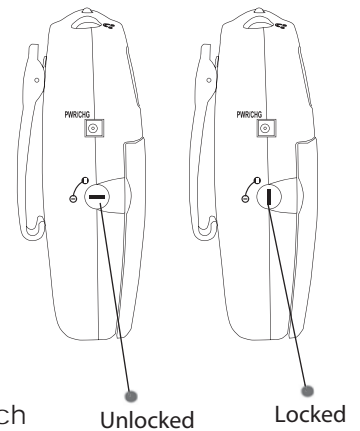
## 1 Remove the product

Remove outer packaging and plastic cover. Inspect for physical damage. If damage is apparent, please contact Listen Technologies Corporation technical support for assistance.

## 2 Open the front access door

If locked, use a pocketknife or small screwdriver to unlock the door locks on both sides of the unit. To unlock the door, rotate the lock 1/4 turn counterclockwise.

Grip the two tabs with your thumb and index finger and pull the door downward. Do NOT place batteries in the unit yet.



## 3 Select Battery Type

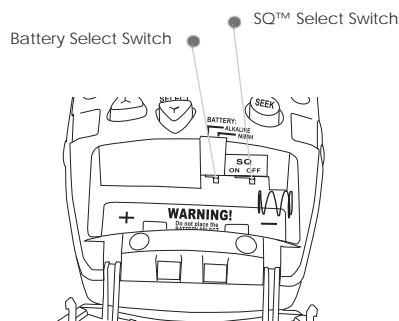
You have two choices: NiMH and Alkaline. The unit is shipped with the switch in the Alkaline position. Use a pen or small screwdriver to select the battery type.

**CAUTION:** If you are using any battery type other than rechargeable Nickel Metal Hydride (NiMH) batteries, make sure the BATTERY selection switch is in the alkaline position.

**WARNING:** Do not place the BATTERY switch in the NiMH position if you are not using Nickel Metal Hydride Batteries. The NiMH position will attempt to charge any batteries in the unit, even if they are not the proper type. Charging non-Nickel Metal Hydride (NiMH) batteries will result in physical harm, destruction of property and/or fire.

## 4 Set SQ switch

The SQ switch is inside the battery compartment next to the Battery Select switch. The unit is shipped with SQ in the ON position. To turn it off, use a small screwdriver or pen to slide the switch to the OFF position (to the right). See page 45 for more information on SQ.



## 5 Place Batteries in Unit

Place two AA batteries in the compartment, making note of the battery polarity shown in the battery compartment, and again verifying that the BATTERY SELECT switch is in the correct position for the batteries you are using. (ALK should be selected for all battery types other than NiMH).

**NOTE:** Listen provides industrial strength AA alkaline batteries (part number LA-361) and high performance AA Nickel Metal Hydride batteries (part number LA-362). These may be purchased from your Listen dealer.

# LR-300 Setup Instructions

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## **Connect an Earphone or Headset**

Your headset or earphone will connect to the jack on the top of the unit. Either mono or stereo connectors may be used with a Listen receiver. Make certain you push the plug all the way into the jack.

7

## **Turn the Unit On**

Receivers are turned on by rotating the volume dial counterclockwise. The red LED on top of the unit should activate and the LCD display should illuminate. If they do not, make sure you have installed the batteries correctly and that you are using fully charged batteries.



# LR-300 Operation Instructions

## 1 **Make Sure the Unit is On**

Rotate the volume knob counterclockwise with an earphone or headset connected to the unit. Listen receivers use the cable of the earphone or headset as a receiving antenna.

Be careful when turning the unit on - if you turn the knob too far you might get too much volume in your earphone!

## 2 **Test the audio**

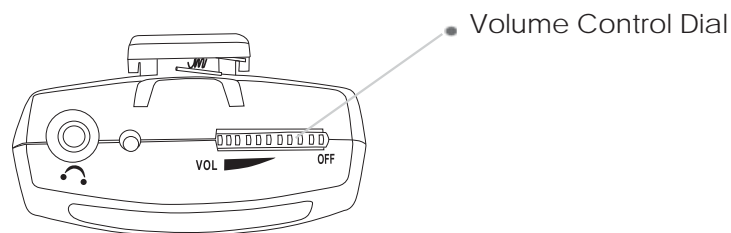
If a transmitter is broadcasting on that channel, you will be able to hear the audio. If the signal is too weak, the audio will be muted (squelched).

## 3 **Find an audio transmission using SEEK**

Another way to find a channel on the LR-300 is to use the SEEK button. When you do this, the Listen receiver looks for the next active channel. Sometimes the unit will mistake interference for a real broadcast signal. If you get interference, press the SEEK button again. The unit may stop on a channel that is close to the actual broadcast channel, in which case the channel will sound noisy or distorted. Simply press SEEK again until you find the clearest operating channel.

## 4 **Adjust the volume control**

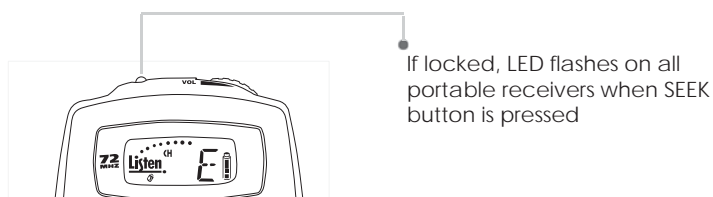
Use the control dial on the top of the unit to adjust the volume to a comfortable level.



## 5 **To Lock into Only One Channel**

Press and hold the SEEK button for 5 seconds to lock a receiver onto the currently tuned channel. Press and hold the button again to unlock. When locked the LED on top of the unit will flash when you press the SEEK button.

**IMPORTANT:** Because the LR-300 has no LCD display, it is important to recognize when the unit is locked on a channel. If the unit sounds distorted or there is no audio heard and pressing the seek button does not correct the problem, the unit is probably locked on the wrong channel. Press and hold the seek button for 5 seconds to unlock.



# LR-300 Charging Batteries

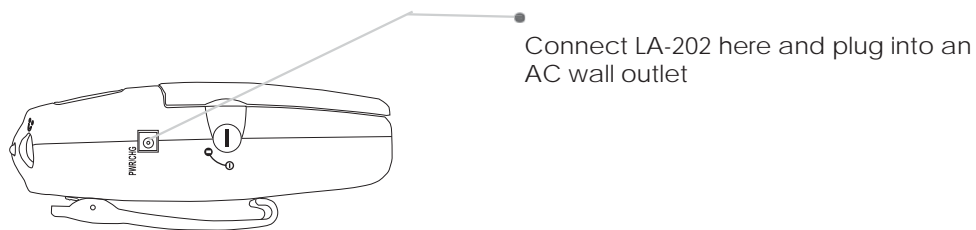
The LR-300 and all Listen receivers are unique because they have SmartCharge™ chargers built in. When any of these units are connected to an LA-202 wall transformer or dropped into a Listen charging case, NiMH batteries will be charged.

**1** To charge the batteries using the LA-202 wall transformer, plug the transformer into the jack marked "PWR/CHG" on the side of the unit. The unit can be operated while the batteries are charging.

**2** To charge the batteries using a drop-in charger, simply place the unit into a slot in the charger and connect the charger to power. Make sure the unit is fully seated in its slot.

SmartCharge™ uses a pulse charging, which greatly extends the life of Nickel Metal Hydride (NiMH) batteries. The entire charging process takes 13 hours. Listen recommends that you allow the charger to complete its full cycle every time for maximum battery life.

**NOTE: In order to charge NiMH batteries, the BATTERY SELECT switch in your Listen product must be set to the NiMH setting. Use a pen or small screwdriver to move the switch (located in the battery compartment) to the proper position.**



**IMPORTANT: DO NOT ATTEMPT TO CHARGE ANY TYPE OF BATTERY OTHER THAN NiMH (NICKEL METAL HYDRIDE) with your Listen equipment. Alkaline batteries may explode when connected to a charger. Other risks of charging non-NiMH batteries include destruction of property or fire.**

During the charge cycle, the red LED on top of the Listen product will flash slowly. When charging is completed, the LED will turn off. It is not necessary to unplug the charger; however, if you unplug the unit from the charger and then plug it back in, it will begin the 13-hour charge cycle over again.

When not using the LR-300, it is recommended to leave the unit on the charger. The charger provides a "maintenance" charge that keeps the battery at 100%. If the unit is not on the charger, the battery will lose up to 20% of its charge per month.

**NOTE: Listen provides high performance constant current NiMH (Nickel Metal Hydride) batteries. These may be purchased from your Listen dealer (ask for part number LA-362).**

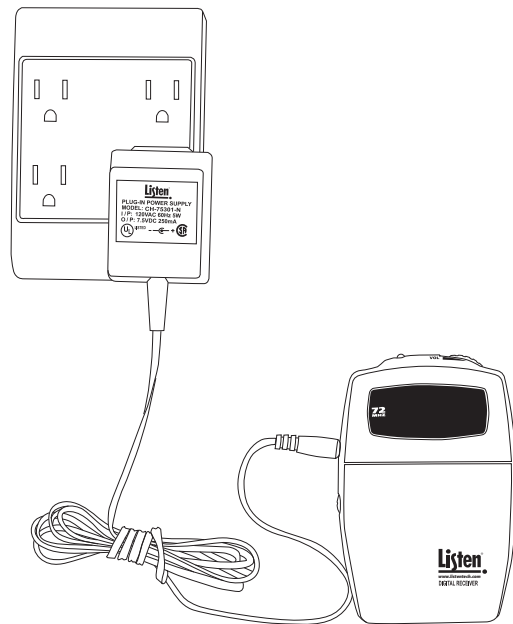
## LR-300 Wall Transformer Operation

---

The LR-300 will operate normally when connected to a wall transformer. Use Listen part number LA-202, available from any Listen dealer. Connect the wall transformer to the jack on the side of the LR-300 marked "PWR/CHG" and plug the wall transformer into a grounded AC outlet.

You do not need to have batteries installed in the LR-300 to operate it with a wall transformer.

**NOTE:** If batteries are in the unit ensure that the battery selection switch is set properly as shown on page 39. Please review the information on page 42 for important information regarding battery type and charging.



The LA-202 wall transformer plugs into the side of your portable transmitter or receiver

# Channel Selection

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It is highly recommended that after channel selection has been achieved, you lock the channel so that it cannot be changed by the user. To accomplish lock on receivers, press and hold seek for 5 seconds. Repeat the process to unlock. It is important to choose channels that are free from interference to achieve proper operation of your Listen equipment. This process is trial and error. Before turning on the transmitter, listen to the wide band channels (lettered channels at 72 MHz and channels that start with a "2" for 216 MHz). Listen to the audio through the headphone or via the speaker. Choose a channel with the least amount of interface. Unless you are interfacing with an existing narrowband transmission system, always use a wide band channel. If you are using multiple channels follow this process:

- a. **Same Space** If you are using transmitters in the same space, the most number of channels that will work simultaneously is six at 72 MHz and three at 216 MHz. With all of the transmitters off, listen for interference on all the wide band channels via the headphone jack. Using the frequency compatibility tables on pages 47-48, eliminate any channels that have noticeable interference. Now choose the channels with the widest channel spacing. It is recommended that adjacent channels be spaced at least 300 KHz. If there is no interference the following channels are recommended: A, C, E, I, J, and H for 72 MHz and channels 2A, 2K and 2V at 216 MHz.
  
- b. **Distributed Spacing** If you are using transmitters that are spread out over space, you can achieve more simultaneous broadcast channels. However, it is critical that your receiver(s) be located as close to its transmitter as possible. You can use adjacent channels (see frequency compatibility tables on pages 47-48) in this case as long as the adjacent channel transmitter is at least 50% further away from the receiver as its transmitter. Example: The transmitter for the receiver on channel E is 100 feet from the receiver. The adjacent channel transmitter on channel D should be at least 150 feet away.

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

- i. 72 MHz is a secondary frequency band. This means that other transmitters are licensed to use these frequencies. Thus, you may experience interference from paging transmitters and other type transmissions. You will need to find a clear channel by listening to all the wide band channels.
- ii. 216 MHz 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, you may experience intermodulation of the TV Channel 13 aural carrier if there is a channel 13 transmitter in your area and you are close to the transmitter. If you cannot find a clear channel in 216 MHz band due to channel 13, it is recommended that you switch to a 72 MHz system.

**NOTE: The LR-300-072 can only be used with the 17 wide band 72 MHz channels, if you are using the LR-300 choose only lettered wide band frequencies on your transmitter.**



We are accustomed to listening to low noise, high fidelity audio (delivered via CD, DVD, etc.). FM radio systems, such as those made by Listen, have more inherent noise compared to most sound systems. To reduce noise of our systems, Listen now offers a noise reduction technology called Listen SQ™. Both the transmitter and receiver must have SQ™ on to achieve the desired results. SQ™ is now available on new Listen systems, including the system you received in this shipment. If you are planning to use this product with older Listen systems or equipment not manufactured by Listen, you should disable SQ™.

Your Listen equipment has been shipped to you with the SQ™ feature enabled. You may need to disable the SQ™ function for one or more of the following reasons:

1. You are using your new Listen system with older version Listen equipment that does not have the SQ™ function.
2. You are using your new Listen system with equipment supplied by other manufacturers.
3. You expect that end users may bring and use their own receivers that don't have the SQ™ function.

#### **SQ™ Summary**

- Improves noise performance by at least 20dB
- SQ™ is NOT compatible with older version Listen products
- SQ™ is NOT compatible with other manufacturers' products
- SQ™ is NOT squelch
- To work properly, SQ™ must be enabled for both the transmitter and receivers
- SQ™ can be disabled to permit operation with older Listen products or other manufacturers' products

# *RF Reception Maximization Strategies*

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

- a. When designing and installing your system, keep in mind that the location of both the transmitter and receivers is critical to maximizing signal strength.
- b. Eliminate or minimize obstructions between the transmitter and receivers.
- c. Minimize the distance between the transmitter and receivers.
- d. Move transmitter and receivers away from metal objects.
- e. Place the transmitting antenna as high as possible (on stationary transmitters).
- f. Orient both transmitting and receiving antennas vertically.
- g. For 216 MHz stationary LT-800 transmitter only, consider using a gain antenna such as a Yagi type antenna or the LA-107 ground plane antenna.
- h. On portable transmitters and receivers, the cable from the microphone or headset is the antenna; ensure that the cable is not coiled or laying horizontal.

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

**NOTE: If the RF signal to the 216 MHz models is too high, the audio will be distorted. This may happen if you are within 40 feet (12m) of the LT-800-216 transmitter or within 5 feet (1.5 m) of the LT-700-216 transmitter.**

Coaxial cable, connectors, and optional antenna mounting kits are available from Listen. Visit [www.listentech.com](http://www.listentech.com) or ask your dealer for details.

# 72 MHz Compatibility Chart

Frequency MHz	Phonak		Phonic		Comtek	Williams*	Gentner	Telex	Drake
	Listen	Microfield	Ear	Ear					
72.0250	1	A1	1	1	(11, 1)				
72.0500					(2)	1			
72.0750	2	A2	2	2	(12, 3)				
72.1000	A	A	A	A	A, (13, 4)	2	A	72.1	
72.1250	3	A3	3	3	(14, 5)				
72.1500					(6)	3			
72.1750	4	A4	4	4	(15, 7)				
72.2000	K	K	K	K	K, (8)	4	B	72.2	
72.2250	5	K5	5	5	(16, 9)				
72.2500					(10)	5			
72.2750	6	K6	6	6	(17, 11)				
72.3000	B	B	B	B	B, (18, 12)	6	C	72.3	
72.3250	7	B7	7	7	(19, 13)				
72.3500					(14)	7			
72.3750	8	B8	8	8	(20, 15)				
72.4000	N	N	N	N	N, (16)	8	D	72.4	
72.4250	9	N9	9	9	(21, 17)				
72.4500					(18)	9			
72.4750	10	N0	10	10	(22, 19)				
72.5000	C	C	C	C	C, (23, 20)	10	E	72.5	
72.5250	11	C1	11	11	(24, 21)				
72.5500					(22)	11			
72.5750	12	C2	12	12	(25, 33)				
72.6000	O	O	O	O	O, (24)	12	F	72.6	
72.6250	13	O2	13	13	(26, 25)				
72.6500					(26)	13			
72.6750	14	4	14	14	(27)				
72.7000	D	D	D	D	D, (28)	14	G	72.7	
72.7250	15	D5	15	15	(29)				
74.7500					(45)	22			
74.7750	36	I6	36	36	(40, 46)				

\*Parenthesis indicate T35 and T20 narrowband.

**NOTE: Wideband frequencies in highlighted rows.**

Frequency MHz	Phonak		Phonic		Comtek	Williams*	Gentner	Telex	Drake
	Listen	Microfield	Ear	Ear					
75.2250	37	I7	37	37	(41, 47)				
75.2500					(48)	23			
75.2750	38	I8	38	38	(42, 49)				
75.3000	J	J	J	J	J, (43, 50)	24	P		
75.3250	39	J9	39	39	(55, 51)				
75.3500					(52)	25			
75.3750	40	J0	40	40	(45, 53)				
75.4000	R	R	R	R	R, (54)	26	Q		
75.4250	21	R1	21	21	(46, 55)				
75.4500					(56)	27			
75.4750	22	R2	22	22	(47, 57)				
75.5000	F	F	F	F	F, (48, 58)	28	J	75.5	
75.5250	23	F3	23	23	(49, 59)				
75.5500					(60)	29			
75.5750	24	F4	24	24	(50, 61)				
75.6000	S	S	S	S	S, (62)	30	K	75.6	
75.6250	25	S5	25	25	(51, 63)				
75.6500					(64)	31			
75.6750	26	S6	26	26	(52, 65)				
75.7000	G	G	G	G	G, (53, 66)	32	L	75.7	
75.7250	27	G7	27	27	(54, 67)				
75.7500					(68)	33			
75.7750	28	G8	28	28	(55, 69)				
75.8000	T	T	T	T	T, (70)	34	M	75.8	
75.8250	29	T9	29	29	(56, 71)				
75.8500					(72)	35			
75.8750	30	T0	30	30	(57, 73)				
75.9000	H	H	H	H	H, (58, 74)	36	N	75.9	
75.9250	31	H1	31	31	(59, 75)				
75.9500					(76)	37			
75.9750	32	H2	32	32	(60, 77)				

# 216 MHz Compatibility Chart

Frequency MHz	Listen	Phonak			Gentner	CSI	AVR	Light Speed
		Microfield	Comtek	Williams				
216.0125	1A	1	1				C01	N01
216.0250	2A	41	41		1	1		
216.0375	3A	2	2					
216.0625	1B	21	3					
216.0750	2B	42	42		2	10		
216.0875	3B	4	4					
216.1125	1C	5	5				C05	
216.1250	2C	43	43	A	3	6		
216.1375	3C	22	6					
216.1625	1D	23	7					
216.1750	2D	44	44	B	4	14		
216.1875	3D	8	8					
216.2125	1E	9	9				C09	N09
216.2250	2E	45	45	C	5	2		
216.2375	3E	24	10					
216.2625	1F	25	11					
216.2750	2F	46	46	D	6	11		
216.2875	3F	12	12				C12	N12
216.3125	1G	13	13					
216.3250	2G	47	47	E	7	7		
216.3375	3G	26	14					
216.3625	1H	27	15					
216.3750	2H	48	48	F	8	15		
216.3875	3H	16	16				C18	N18
216.4125	1J	17	17				C21	
216.4250	2J	49	49	G	9	18		
216.4375	3J	18	18					
216.5125	1K	61	21					
216.5250	2K	29	51	H	10	3		

*NOTE: Wideband frequencies in highlighted rows.*

Frequency MHz	Listen	Phonak			Gentner	CSI	AVR	Light Speed
		Microfield	Comtek	Williams				
216.5375	3K	62	22					
216.5625	1L	28	23					
216.5750	2L	52	52	I	11	12		
216.5875	3L	64	24				C24	N64
216.6125	1M	65	25				C25	
216.6250	2M	53	53	J	12	8		
216.6375	3M	81	26					
216.6625	1N	82	27					
216.6750	2N	54	54	K	13	16		
216.6875	3N	68	28					
216.7125	1P	69	29				C29	
216.7250	2P	55	55	L	14	19		
216.7375	3P	83	30					
216.7625	1R	84	31					
216.7750	2R	56	56		15	4		
216.7875	3R	72	32				C32	N72
216.8125	1S	73	33				C33	
216.8250	2S	57	57			13		
216.8375	3S	76	34					
216.8625	1T	85	35					
216.8750	2T	58	58			9		
216.8875	3T	86	36					
216.9125	1U	77	37				C37	N77
216.9250	2U	59	59			17		
216.9375	3U	88	38					
216.9625	1V	79	39				C39	
216.9750	2V	60	60			5		
216.9875	3V	80	40				C40	N80

# Troubleshooting LR-300, LR-400, LR-500 Receivers

## Troubleshooting

### ***The receiver has no power.***

Make sure the unit has either fully charged batteries or a Listen approved wall transformer connected. Make sure the VOLUME knob has been rotated to the ON position. If this does not work, try a different set of batteries. Make sure the batteries are installed properly.

### ***There is no audio.***

Make sure you have turned the volume control up. Make sure the earphone is plugged all the way into the jack on the top of the unit. Make sure the transmitter is broadcasting an audio source. Make sure you're tuned to the same channel as the transmitter. If the RF signal is too weak, the receiver will squelch and mute the audio source; move closer to the antenna or make sure the transmitter's output RF power switch is set on "FULL" (LT-800).

### ***The audio is distorted.***

Make sure you're receiving on the correct channel. Make sure the audio on the transmitter is not turned up too loud; this will cause distortion. Make sure the earphone connector is pushed all the way into the jack on top of the unit. If you're using the LR-300, re-scan the channels to find the clearest channel. Make sure the SQ™ switch on your transmitter and receivers is turned ON (or OFF, if some of your equipment is not SQ™ capable). Make sure you are not too close to the transmitting antenna. If you can't get farther away from the antenna, turn down the RF output power on the stationary (LT-800) transmitter.

### ***There is interference.***

Try different frequencies on the transmitter and receivers until you find a clear channel. If this does not work, try a different frequency band (i.e. if you are using 72 MHz, try 216 MHz or vice versa). This is accomplished by returning the equipment to Listen (at no charge). Please contact Listen technical support for assistance (see page 52 for information).

### ***My LR-300 sounds distorted or there is no audio.***

Because the LR-300 has no LCD display, it is important to recognize when the unit is locked on a channel. If the unit sounds distorted or there is no audio heard and pressing the seek button does not correct the problem, the unit is probably locked on the wrong channel. Press and hold the seek button for 5 seconds to unlock.

### ***I cannot pick up the signal on the receiver.***

Check to make sure the receiver and the transmitter are on the same frequency and channel. Also make sure the receiver is in broadcast range of the transmitter.

### ***I can pick up the signal on the receiver, but it sounds like it's not tuned in.***

Check to make sure the transmitter and receiver are on exactly the same channel number/letter. If you're using the LR-300, re-scan the channels to find the clearest channel by pressing SEEK.

### ***I'm using another brand of transmitter - how do I tell which channel to use?***

Refer to Listen's Frequency Compatibility Tables (pages 47-48). Either adjust the transmitter or the receiver to a common channel.

### ***There is not sufficient range.***

Make sure you are located as close as possible to the antenna of the transmitter. Try to place the antenna as high as possible and free from obstacles. You can also check the squelch setting; perhaps it is too sensitive. To change this setting, refer page 20 (LR-500) or to page 43 (LR-400).

## Troubleshooting

### ***Users keep changing channels.***

You can prevent users from changing channels by locking in the channel selection. This is done by pressing and holding the SEEK button for 5 seconds. When the channel is locked, the padlock icon will appear on the LR-400 and LR-500 displays. On the LR-300, the LED will flash when the channel is locked and seek is pressed. In addition, you can lock the access doors to the units.

### ***I cannot change channels when pressing the UP and DOWN buttons or the SEEK button.***

The unit is locked. Press the SEEK button for 5 seconds to unlock.

### ***When I change channels, only certain channels are accessible.***

The unit has been programmed to tune to only certain channels (LR-500 only). You can change these channel lock-out selections by re-programming the unit (see page 13).

### ***My batteries are not charging.***

Make sure the battery switch is in the NiMH setting and that you are using NiMH (Nickel Metal Hydride) batteries. Make sure you are using only a Listen supplied charging unit or transformer. Never try to charge alkaline or NICAD batteries.

### ***I want to run the unit from a wall transformer.***

Simply plug a Listen approved transformer (LA-202) to the CHG/PWR connector on the side of the unit. Batteries do not need to be installed when operating the unit with a wall transformer; however, if you have NiMH batteries installed and the BATTERY select switch is set to NiMH, the batteries will charge while the unit is being used.

### ***It's confusing for users to have 57 choices when switching between channels.***

Use the programming feature (only available in the LR-500) to limit the number of channels accessible by users.

# Compliance Notice and FCC Statement

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## Compliance Notice

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) These devices may not cause harmful interference, and (2) these devices must accept any interference received, including interference that may cause undesirable operation.

## 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 manufacturer could void the user's authority to operate this equipment.

# Warranty & Contacting Listen

## Warranty

Listen Technologies Corporation (Listen) warrants its transmitters and receivers (LT-82, LT-700, LT-800, LR-100, LR-42, LR-44, LR-300, LR-400, LR-500, LR-600) 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.

Listen warrants its Stationary IR Radiators (LA-140) to be free from defects in workmanship and material under normal use and conditions for three years from the date of purchase.

Listen warrants its Noise Canceling Microphone (LA-270) to be free from defects in workmanship and material under normal use and conditions for one year from date of purchase.

Listen warrants its Charging/Carrying Cases (LA-306, LA-311, LA-313, LA-317, LA-318, LA-319, LA-320, LA-321, LA-322, LA-323, LA-324, LA-325) to be free from defects in workmanship and material under normal use and conditions for one year from date of purchase.

All other products and accessories are warranted for 90 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.

In the first ninety days after purchase, any defective product will be replaced with a new unit. After 90 days, Listen will, at its own discretion either repair or replace transmitters and receivers with a new unit or a unit of similar type and condition. Product that is not covered under warranty shall be repaired or 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.

## Contacting Listen

If technical service is needed, please contact Listen. Pre-authorization is required before returning Listen products. If products were damaged in shipment, please contact the carrier, then contact Listen for replacement or repair requirements payable by the carrier.

Listen's corporate headquarters are located in Bluffdale, Utah U.S.A. and are open Monday through Friday, 8am to 5pm Mountain Time.

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# Optional Accessories

## Earphone Options



LA-164  
Ear Speaker



LA-161  
Single Ear Bud



LA-162  
Stereo Ear Buds



LA-165  
Stereo Headphones



LA-166  
Neck Loop



LA-170  
Behind-the-Head  
Stereo Headphones

## Connector Options



LA-265  
Consumer  
Camcorder Cable



LA-266  
Professional  
Camcorder Cable



LA-275  
Sacrificial Cable

# *Notes*

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# *Notes*

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