

User's Manual



LT-700-150 Portable Display FM Transmitter

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 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."

Package Contents	3
150 MHz Specifications	4
Quick Reference	5
Setup Instructions	7
Operating Instructions	9
Programming Instructions	10
Charging Batteries	11
Wall Transformer Operation	12
Channel Selection	13
Listen SQ™	14
RF Reception Maximization Strategies	15
150 MHz Frequency Chart	16
Troubleshooting	17
Warranty	19
Contact Information	19
Optional Accessories	20

LT-700-150 Contents

• LT-700-150 (150 MHz)

Listen Part Number

LT-700-150 (150 MHz)

Optional Accessories

See page 20

Architectural Specifications

The portable FM transmitter shall be capable of broadcasting on 32 channels. The unit shall incorporate a microphone sensitivity switch. The device shall broadcast on both wide and narrow band channels with a SNR of 80 dB or greater. The device shall have an audio frequency response of 50 Hz to 15 KHz (±3 dB). The device will incorporate a mute switch. The battery door shall be capable of being mechanically locked. The device shall incorporate an LCD display that indicates channel, battery level, low battery, battery charging, and RF signal strength. The device shall be able to enable companding. The unit shall operate off of two (2) AA batteries; alkaline or NiMH. The portable transmitter shall incorporate automatic battery charging circuitry for recharging of NiMH batteries, with the ability to charge via a wall transformer or drop in charging case. The Listen LT-700-150 is specified.

	Specifications*	
	RF Frequency Range	150.8000 MHz - 152.3500 MHz
	Number of Channels	6 wideband, 26 narrowband
	Number of Simultaneous Transmitters	Six (6)
	Frequency Accuracy	± .005% stability 32 to 122° (0 to 50°C)
	Transmitter Stability	50 PPM
	Transmission Range	up to 45.72 m (150 ft.)
	Output Power	10 mW maximum
	Antenna	Uses microphone cable
Audio	Antenna Connector	3.5 mm connector
	Compliance	C-Tick
	System Frequency Response	50 Hz - 15 kHz (±3dB)
	System Signal to Noise Ratio	SQ enabled 80 dB, SQ disabled 60 dB
	System Distortion	<2% total harmonic distortion (THD) at 80% deviation
	Microphone Input	Unbalanced, tip of 3.5mm connector, -20 dbu nominal, -30 dbu maximum, impedance 21 ohms
	Microphone Sensitivity	Three position switch: high, middle, and low; 6 db increments
	Line Input	Unbalanced, ring of 3.5mm connector, -10 dbu nominal input level, -3 dbu maximum, impedance 10K ohms
	Microphone Power	3 VDC Bias

Controls & Indicators	User Controls	Power, mute, channel UP/DOWN
	Set-up Controls (battery compartment)	Mic sensitivity, NiMH/alkaline battery, SQ enable/disable
	Programming	Channel lock out, Channel lock
	LED	Red, illuminated when unit is on. Flashes when batteries are low, or to indicate charging. Flashes when muted.
	Display	Channel Designation, lock status, signal strength indication, battery life, RF Power

	Battery Type	Two (2) AA batteries, alkaline or NiMH
Power	Battery Life (Listen batteries)	15 hours alkaline (LA-361), 8 hours NiMH rechargeable (LA-362)
	Battery Charging (NIMH only)	Fully automatic, 13 hours
	Power Supply	I/P 120VAC; O/P 7.5VDC 250 mA; Drop in contact points for use with charging cases. Power supply not included (LA-208)
	Power Supply Connector	2.3mm OD by 0.7mm ID, barrel type connector 7.5 VDC, center positive <250 mA. Drop in contact points for use with Listen charging cases
	Power Supply Compliance	RoHS, WEEE, UL, PSE, CE, CUL, TUV, CB compliant

	Dimensions (H x W x D)	3.00 x 1.00 x 5.00 in. (7.6 x 2.5 x 13.0 cm)
	Color	Dark Grey with white silk screening
Dhusical	Unit Weight	3.9 oz (111g)
Physical	Unit Weight with batteries	5.8 oz (164g)
	Shipping Weight	1.0 lbs. (0.45kg)
	Door	Manually Lockable (on sides). Up, down, and power buttons through door

* Specifications are subject to change without notification.

LT-700 Front



LT-700 Battery Indicator



All three segments showing: The batteries are at 50% or greater capacity.



One segment showing: Your batteries less than 25% capacity. When this segment begins flashing along with the LED on top of the unit, you should immediately change your batteries or recharge them (if using NiMH batteries).

LT-700 Inside Access Door



Mic Sensitivity Switch - it arrives set at MED, which will work for most microphones. If your mic level is too low, change the switch to HI; if the level is too high, switch to LO. (see page 7 for more information)

Battery Select Switch - place in NiMH position ONLY if you are using Nickel Metal Hydride batteries, otherwise, leave it in the Alkaline position.

SQ Switch: shipped in the ON position, use a screwdriver or pen to slide to the OFF position if needed. You should turn SQ off if you are using any non Listen receiver or older Listen receiver that does not have the SQ feature. (see page 14 for more information)

LT-700 Top of Unit



A microphone or line level cable connects here.

A Note on Charging NiMH Batteries

If you are using NiMH batteries in any Listen product, you should allow adequate time for the charger (charging case or LA-208) to complete a full charge cycle on the batteries. This takes about 13 hours.

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. See page 19 for contact information.

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

See diagram below. 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.

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 14 for more information on SQ.

Set Mic Sensitivity Switch

The microphone sensitivity switch is located inside the battery compartment, to the left of the BATTERY selection switch. The LT-700 is shipped with this switch in the center (MED) position. Listen recommends the following settings for our microphones. If you are using a microphone from another vendor, you may need to experiment with different settings.

Part # Description	Setting
LA-261 Lavalier Microphone	MED
LA-262 Over-the-Head Microphone	MED
LA-270 Noise Canceling Microphone	MED
LA-272 Over-the-Head Microphone w/Earphone	MED
LA-274 Handheld Microphone	HI
LA-276 Collar Microphone	HI
LA-277 Conference Microphone	MED
LA-278 Behind-the-Head Microphone	MED
LA-279 Over-The-Ear Microphone Presentation	Lo
Style	





NOTE: If the setting is too low for the microphone the audio will be faint. If the setting is too high for the microphone in use the audio will be distorted.

6 Place Batteries in Unit

Place two (2) 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 uses 2300mAh (milli-Amp-hour) constant current NiMH (Nickel Metal Hydride) batteries. These may be purchased from your Listen dealer (ask for part number LA-362).

7 Connect the Microphone

The microphone jack is located on top of the unit. The LT-700 uses the microphone cable as an antenna for transmitting.

8 Optional - Connect the Line Input Cable.

This cable allows you to connect a TV, CD player or other equipment to the LT-700. To do this, you must order the Listen LA-263 Line Input Cable (it is not included with your unit). This cable allows you to connect both a microphone and line input to the jack on top of the LT-700. See the diagram below for connection information. You can use the microphone and the line input at the same time. Please note that the MUTE switch mutes only the microphone; the line source will continue transmitting when the switch is in the MUTE position.

If you prefer to make your own cable for connection of mic and line inputs, connection shown in the following diagram:







Make sure the unit is on

When you press the power button, the LED on top of the unit will be illuminated and the LCD display will be visible.

Select the channel for transmitting

Please refer to Channel Selection on page 13 for guidelines on choosing an interference-free channel.

To select a channel, press either the channel UP or DOWN button until the display reads the channel you want. To lock your selection, press and hold the UP or DOWN button for 5 seconds. When locked, the small padlock icon will be visible on the display. Press and hold either button again to unlock.

150 MHz Units

The LT-700-150 operates on 6 wide band channels and 26 narrow band channels.

Close the Access Door

Lock it if desired by turning the locks on the side of the unit to the vertical position. See diagram on page 7.

Using the red MUTE / TALK switch on top of the unit

The red mute/talk switch on top of the unit is a handy way to "turn off" the audio from the microphone. Slide the switch to the mute position and the microphone audio is muted. When the microphone audio is muted, the LED on top of the unit flashes rapidly. Slide the switch back to the talk position and the microphone audio will return to the transmission. If you are using line level audio, it will not be effected by the mute/talk switch.



LT-700 Shown in the TALK position

The LT-700 can be programmed to transmit on a limited number of channels. For applications where users are required to select a channel (such as classrooms or language interpretation), and you don't want them to have to scroll through all of the available channels, this feature is ideal. You can set up the LT-700 so that only the channels they need to use are available for selection with the UP and DOWN buttons.

Enter PROGRAM Mode

Press and hold the UP and DOWN keys simultaneously until the PGM symbol is displayed (see the Look & Listen[™] Quick Reference on page 5).

2 Scroll Through Channels to Lock or Unlock

Use the UP and DOWN channel select keys to scroll through all available channels. If the L/O symbol appears with a particular channel's indicator, this means that particular channel will not be available for selection by the user. To toggle a channel between locked out and available, press the POWER button.

3 To exit PROGRAM mode

Allow the unit to sit idle (don't press any buttons) for 5 seconds. The LT-700 will exit the PROGRAM mode and the PGM icon will disappear.

The LT-700 and all Listen receivers are unique because they have SmartCharge[™] chargers built in. When any of these units are connected to an LA-208 wall transformer or dropped into a Listen charging case, NiMH batteries will be charged.

To charge the batteries using the LA-208 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.

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.

There are several charging cases available from Listen. Check the Listen website for more details.

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

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.



IMPORTANT: 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.

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 LT-700, 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 uses 2300mAh (milli-Amp-hour) constant current NiMH (Nickel Metal Hydride) batteries. These may be purchased from your Listen dealer (ask for part number LA-362).

One of several charging cases available from Listen. See www.ListenTech.com for more options.



LA-311 - 16-unit Drop In Charging Case shown

The LT-700 will operate normally when connected to a wall transformer. Use Listen part number LA-208, available from any Listen dealer. Connect the wall transformer to the jack on the side of the LT-700 marked "PWR/CHG" and plug the wall transformer into a grounded AC outlet.

You do not need to have batteries installed in the LT-700 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 7. Please review the information on page 11 for important information regarding battery type and charging.



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. Listen to the audio through the headphone or on a Listen receiver or receiver / 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 multiple transmitters in the same space, the maximum number of channels that will work simultaneously is six at 150 MHz. With all of the transmitters off, listen for interference on all the wide band channels via the headphone jack on a Listen receiver. Using the frequency chart on page 16, 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.
- 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 chart on page 16) in this case as long as the adjacent channel transmitter is at least 50% further away from the receiver as its transmitter.

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 the LT-700, press both the UP or DOWN buttons simultaneously for 5 seconds. Repeat the process to unlock.

Wide Band Recommendation Listen recommends that you always use a wide band channel unless you need to be compatible with existing narrow band receivers from other manufacturers. Wide band channels have lower noise than their narrow band counterparts.

At 150MHz

The LT-800 at 72MHz operates on 6 wide band channels and 27 narrow band channels.

• Numbers (0-6)= Wide Band Channels (Example: 4)

• Numbers (7-32)= Narrow Band Channels (Example: 32) People 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 minimize noise, Listen uses a noise reduction technology called ListenSQ[™]. Both the transmitter and receiver must have the SQ feature enabled to achieve the desired results. SQ is 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 that do not have Listen SQ or equipment not manufactured by Listen, you should disable Listen 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 donit have the SQ function.

• SQ is NOT squelch

- Improves noise performance by at least 20dB
- SQ is NOT compatible with older version Listen products
- SQ is NOT compatible with other manufacturers products
- 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 For proper and dependable operation, Listen receivers should receive a strong and consistent signal from the originating transmitter. The following strategies should be used maximize this signal:

- a. When using your system, keep in mind that the location of both the transmitter and receiver is critical to maximizing signal strength.
- b. Eliminate or minimize obstructions between the transmitter and the receivers.
- c. Minimize the distance between the transmitter and the receivers.
- d. Stay clear of metal objects.
- e. Keep the microphone and headphone cables fully extended. Do not shorten or coil microphone and headphone cables. These cables are the antennas for you portable products.

Channel	Frequency
01	150.900
02	152.400
03	151.500
04	152.100
05	151.200
06	151.800
07	150.850
08	150.950
09	151.000
10	151.050
11	151.100
12	151.150
13	151.250
14	151.300
15	151.350
16	151.400
17	151.450
18	151.550
19	151.600
20	151.650
21	151.700
22	151.750
23	151.850
24	151.900
25	151.950
26	152.000
27	152.050
28	152.150
29	152.200
30	152.250
31	152.300
32	152.350

Troubleshooting

The LT-700 has no power

Make sure the unit has fully charged batteries, or has a Listen LA-208 wall transformer connected to it. Press the ON button. If this does not work, try a different set of batteries. Make sure the batteries are installed correctly.

There is no audio

Make sure the MUTE/TALK switch is in the TALK position. Make sure you have the microphone plugged all the way in to the input jack. Make sure you are using a Listen approved microphone (see list on page 7). If you are using the line input, make sure you have connected a line level, unbalanced input at the ring of the connector.

The audio is distorted

Make sure you are using an approved Listen microphone. Try using a different mic sensitivity switch setting (the switch is located inside the battery compartment of the unit). If you are using a line level input, try turning down the level of the input. If you are using any equipment that does not have SQ capability, turn off SQ in the LT-700.

There is hum in the audio

The microphone may be too close to a transformer. Try moving around and see if the hum goes away.

The microphone level is low

The microphone must be in close proximity to the person who is speaking. If this does not work, try using a head-worn microphone. The mic sensitivity switch may be on the wrong setting, see page 7. Try a different setting (the switch is located inside the battery compartment). Some microphones have directional pickups, ensure that the microphone in use is oriented and positioned properly (pointing at the speakers mouth).

The audio doesn't have much fidelity

If your receivers all have SQ capability, activate SQ in all units by moving their switches to the ON position. In the LT-700 and all SQ-equipped receivers, the SQ switch is located inside the battery compartment. See page 14 for more information.

There is too much noise

This is most likely because the microphone is not close enough to the speakers mouth, and it is picking up background noise. Try positioning the microphone closer or try using a microphone that is directional (such as a head-worn mic). If you are using a narrow band channel, try switching to a wide band channel. Try another setting on the mic sensitivity switch (located inside the battery compartment). Ensure the microphone is not brushing up against anything. See page 7 for more information.

There is interference

Try different frequencies until you find a clear channel.

I cannot pick up the signal on the receiver

Make sure the transmitter and the receiver are on the same frequency band and channel.

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 using another brand of receiver refer to Listen's Frequency Chart on page 16).

Troubleshooting

There is not sufficient range

The LT-700 is a portable transmitter that uses the microphone cable as an antenna and the range will vary depending on the location of the receivers compared to the transmitter. You can only expect about 100 feet of average effective working range.

It's confusing for users to have 32 channels when switching between channels

Use the PROGRAM function to lock out unwanted channels. This way, users will only need to scroll among a few channels.

I cannot change the channel

It is probably locked (check for the padlock icon). To unlock, press and hold the UP or DOWN button for 5 seconds.

My batteries are not charging

Make sure you are using NiMH batteries and that the BATTERY SELECT switch (inside the battery compartment) is set to the NiMH position. Make sure the batteries are installed correctly. Make sure you are using the right kind of wall transformer (Listen part number LA-208) or charging case. Make sure the charging case is connected to power and the unit is securely pushed into its slot in the case.

NOTE: Listen uses 2300 mAh (milli-Amp-hour) constant current NiMH (Nickel Metal Hydride) batteries. These may be purchased from your Listen dealer (ask for part number LA-362).

Warranty

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

14912 Heritagecrest Way Bluffdale, Utah 84065-4818 +1.801.233.8992 +1.800.330.0891 North America +1.801.233.8995 fax

support@listentech.com www.listentech.com







Listen Technologies Corporation 14912 Heritagecrest Way Bluffdale, Utah 84065-4818, U.S.A. +1.801.233.8992 1.800.330.0891 North America +1.801.233.8995 fax

www.listentech.com

Printed in China © 2009 Listen Technologies Corporation® All Rights Reserved 09162009