

LightSPEED

REDCAT™

Classroom Amplification System



User Manual



SAFETY INSTRUCTIONS



CAUTION



RISK OF ELECTRIC SHOCK DO NOT OPEN

**CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK
DO NOT REMOVE COVER (OR BACK)
NO USER-SERVICEABLE PARTS INSIDE
REFER SERVICING TO QUALIFIED PERSONNEL**



The lightning flash with arrowhead symbol within an equilateral triangle is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure, that may be sufficient magnitude to constitute a risk of electric shock.



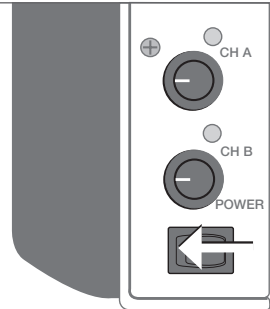
The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

- 1. Read Instructions**—All the safety and operation instructions should be read before this LightSPEED product is operated.
- 2. Retain Instructions**—The safety and operating instructions should be kept for future reference.
- 3. Heed Warning**—All warnings on this LightSPEED product and in these instructions should be followed.
- 4. Follow Instructions**—All operating and other instructions should be followed.
- 5. Water and Moisture**—This LightSPEED product should not be used near water.
- 6. Heat**—This LightSPEED product should be situated away from heat sources such as radiators, etc.
- 7. Power Sources**—This LightSPEED product should be connected to a power supply only of the type described in these operation instructions or as marked on this LightSPEED product.
- 8. Power Cord Protection**—Power supply cords should be routed so that they are not likely to be walked upon or pinched by items placed upon or against them.
- 9. Object and Liquid Entry**—Care should be taken so that objects do not fall onto and liquids are not spilled into the inside of this LightSPEED product.
- 10. Damage Requiring Service**—This LightSPEED product should be serviced only by qualified service personnel. The user should not attempt to service this LightSPEED product.
- 11. Prevent Electric Shock**—do not use this polarized plug with an extension cord, receptacle or other outlet unless the blades can be fully inserted to prevent blade exposure.

DAILY USE INSTRUCTIONS

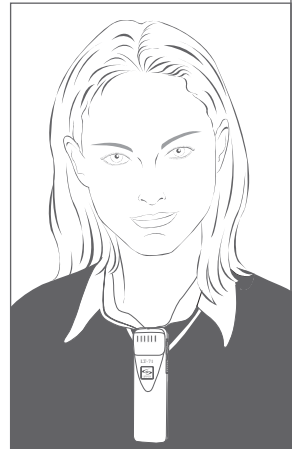
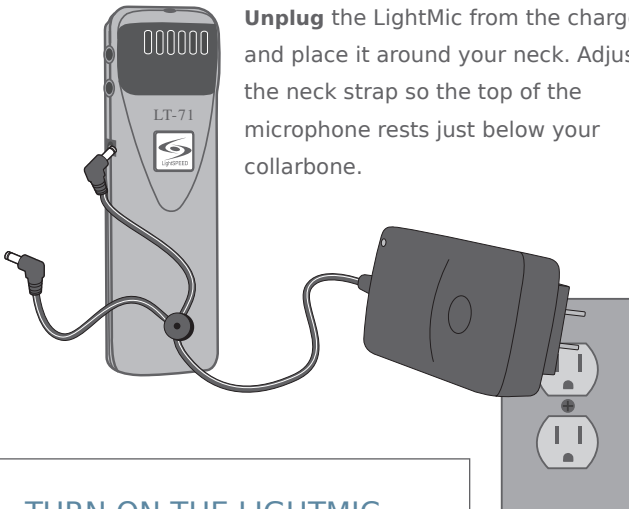
TURN ON THE REDCAT

Flip the POWER switch on the side of the REDCAT to the ON position, the LED will glow.



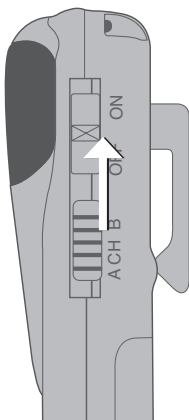
POSITION THE LIGHTMIC

Unplug the LightMic from the charger and place it around your neck. Adjust the neck strap so the top of the microphone rests just below your collarbone.



TURN ON THE LIGHTMIC

Turn the microphone ON using the switch ON/OFF switch on the side of the LightMic and speak normally.



CHARGE BATTERIES

Recharge the LightMic at the end of each day by plugging it back into the charger.

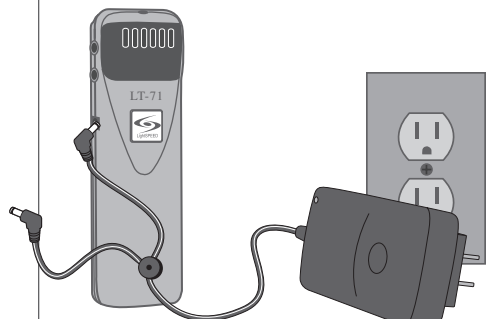


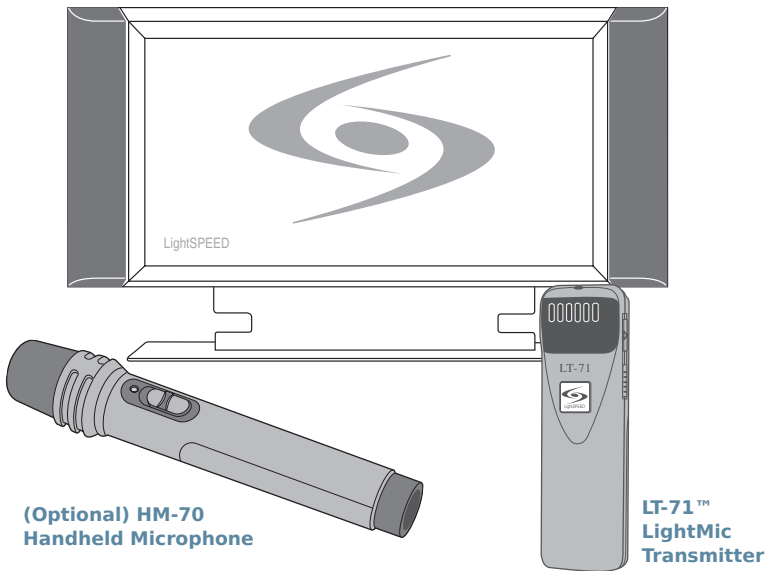
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REDCAT™ CLASSROOM AMPLIFICATION SYSTEM

REDCAT Receiver/Amplifier



**(Optional) HM-70
Handheld Microphone**

**LT-71™
LightMic
Transmitter**

Congratulations on your purchase of the REDCAT™ Classroom Amplification System! This simple, yet powerful technology provides crystal-clear sound throughout the classroom, allowing every child to hear every word every time.

As the teacher speaks into the LightMic pendant-style transmitter, his or her voice is transmitted to the REDCAT and then amplified through the loudspeaker(s). The standard system includes the REDCAT™ infrared receiver/amplifier, LT-71 LightMic™ transmitter and speaker package.

The REDCAT is a two-channel receiver amplifier that allows the use of up to two microphones simultaneously and an additional audio input source (such as TV, VCR, DVD, CD, MP3, etc.).

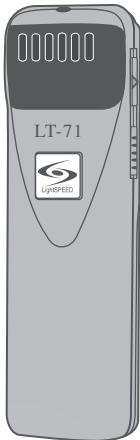
The LT-71 LightMic is a wireless, pendant-style transmitter. This two-channel, rechargeable unit is clipped to a lavalier cord and worn around the neck for the teacher to use or can be used like a standard handheld microphone for the students to pass around when speaking.

SYSTEM COMPONENTS

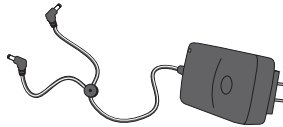


REDCAT™ Infrared Receiver/Amplifier w/Table Stand

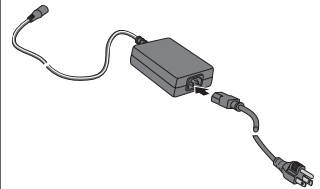
LT-71 LightMic™ Transmitter



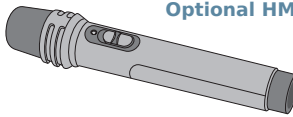
Wall Charger



Power Supply



Optional HM-70 Handheld Microphone



Optional Wall Bracket



Helpful Hint:

Keep ALL packaging materials. If the system must be returned, it will be quick, convenient and undamaged.

SETTING UP THE REDCAT

UNPACKING YOUR SYSTEM

Ensure that you have received all of the components of your system.

- REDCAT™ receiver/amplifier and power supply
- LT-71 LightMic™ transmitter
- BC-TXLT transmitter wall charger
- Tabletop stand (attached to the REDCAT) and wall-mount bracket
- Optional: second LightMic or IR handheld microphone

DETERMINE SET-UP METHOD

The REDCAT is shipped with a table stand connected and ready for use. A wall bracket is also included.

Advantages of either include:

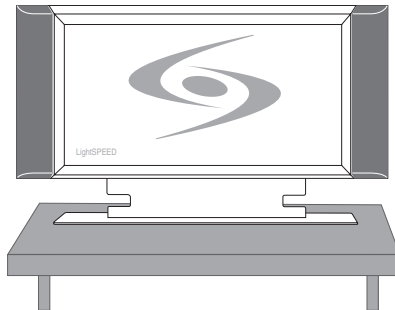
Tabletop (recommended):

- Virtually no setup time
- Greater flexibility to move to different locations

Wall-mount:

- More permanent setup
- Greater security

SELECTING A LOCATION FOR THE REDCAT



Tabletop Set-up

1. Set it up. Find a flat surface and keep in mind the following:

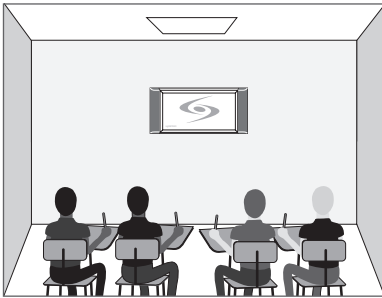
- **Power Source**
Within 7 feet of an electrical outlet
- **Proximity**
BEST: Along the wall in the back of the classroom
GOOD: Along either side of the wall or in a corner

AVOID: Locations next to where the teacher instructs (can result in feedback)

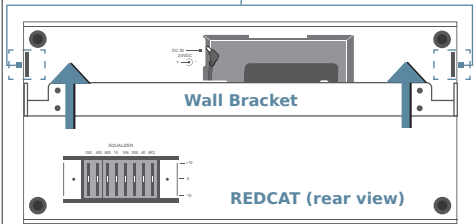
- **Height**
3–6 feet high
- 2. Plug it in**
Uncoil the power cable and plug it into an electrical outlet.
- 3. Turn it on**
Flip the power switch on and proceed to page 8 for system operation instructions.

SETTING UP THE REDCAT

Wall Set-up



Bracket Slots



- 1. Select a location.** Identify an open area on the wall with the following characteristics:
 - **Power Source**
Within 7 feet of an electrical outlet
 - **Proximity**
BEST: Centered on the long wall in the back of the classroom
GOOD: On the wall on either side of the classroom
AVOID: Locations right next to where the teacher instructs (can result in feedback)
 - **Height**
6–8 feet high

Wall Bracket



2. Hang it on the wall

- Remove the table stand from the REDCAT by unscrewing the two screws on the bottom of the unit.
- Locate the wall bracket
- Using a level, hold the bracket up to the wall in the location selected and use a pencil to mark screw holes.

If the walls are drywall:

- Drill a pilot and then screw in the sheet rock mollies until they are flush with the surface.
- Hold the bracket back up to the wall and, using the screws provided; tightly secure the bracket to the wall.

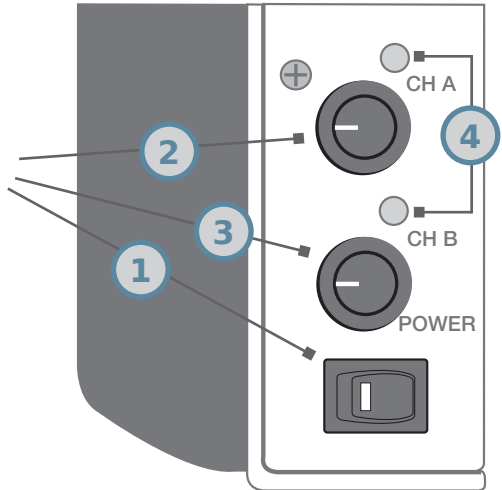
If the wall are wood:

- Screw the mounting bracket to the wall with the two mounting screws at the marked spaces. Tighten the screws so that the bracket hangs snug to the wall.
- Hang the REDCAT onto the bracket so that both ears slide into the slots on the back of the REDCAT. Make sure to route the power cord down the wall, behind the REDCAT so that it can be plugged into the nearby electrical outlet.
- Secure the REDCAT to the bracket using the two screws provided.

3. Plug it in. Plug the power cable into an electrical outlet or extension cord.

4. Turn it on. Flip the power switch on and proceed to page 8 for system operation instruction.

SIDE PANEL CONTROLS



1. **POWER Switch/POWER Indicator:**

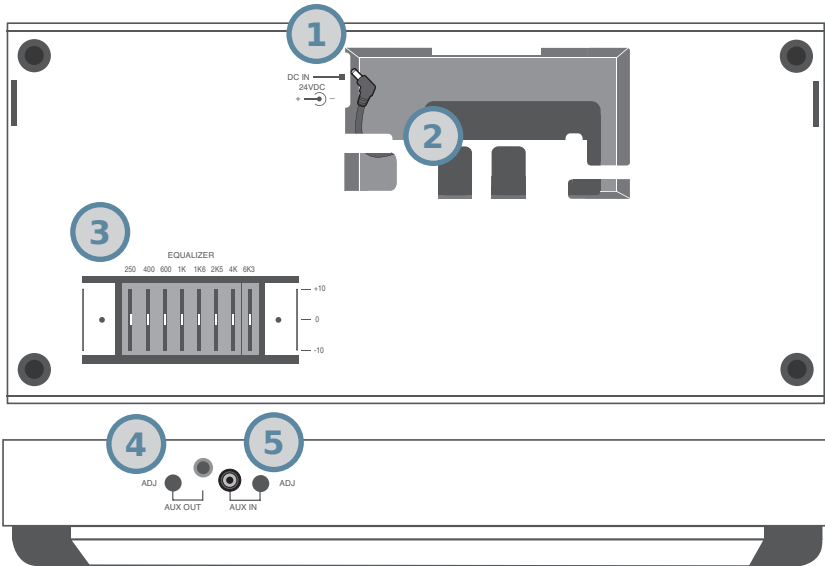
This switch is used to turn the REDCAT ON (switch up), or OFF (switch down). When the POWER switch is in the ON position, the POWER light will glow red.

2. A VOLUME: Controls the volume level of the teacher microphone that is switched to Channel A. Rotating the knob clockwise increases volume level.

3. B VOLUME: Controls the volume level of a second microphone that is switched to Channel B. Rotating the knob clockwise increases volume level.

4. IR Indicators (IR): These lights will glow red when the corresponding microphone is turned on. This light confirms the REDCAT is receiving a steady infrared signal.

REAR AND BOTTOM PANEL CONTROLS



- 1. DC INPUT:** Plug the 24 V power supply into this jack.
- 2. POWER SUPPLY:** Plug the 24 V power supply into an AC outlet.
- 3. 8-BAND GRAPHIC EQUALIZER:** The sliding controls adjust the levels of the various audio frequencies. This allows the installer to properly equalize the system to produce optimum sound quality.
- 4. AUX INPUT AND ADJ:** This mono RCA jack accepts input from various audio devices like TV, CD/DVD, MP3 and computer. The knob labeled ADJ controls the input level.
- 5. AUX OUTPUT AND ADJ:** Send audio out via this 3.5 mm output jack. The knob labeled ADJ controls the output level.



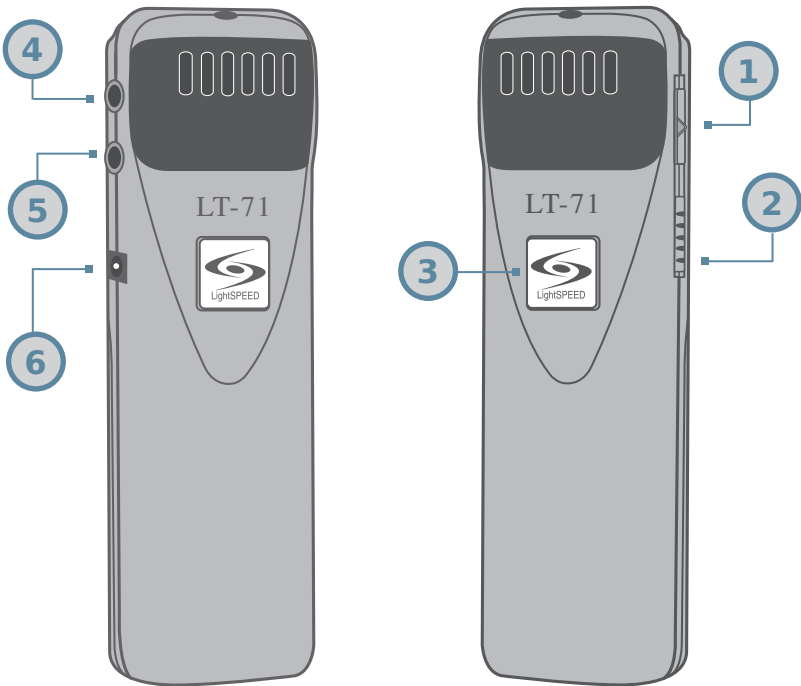
Helpful Hint:

The graphic equalizer comes preset from the factory to provide optimum sound in the majority of classrooms. Sometimes fine-tuning is required to eliminate feedback.

Fine-tuning the Graphic Equalizer:

- 1. Remove** the two screws and take the cover off.
- 2. Walk** around room (near speakers) and listen for squealing or feedback.
- 3. Lower** the 2K5 and/or 4K sliders if a high-pitched squealing is present.
- 4. Lower** the 400 or 700 sliders if a low-pitched ring is present.
- 5. Reduce** volume if feedback is still present.

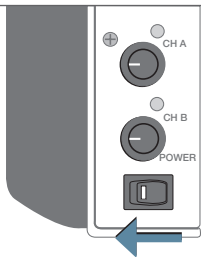
LIGHTMIC CONTROLS AND CONNECTIONS



1. **ON/OFF/MUTE Switch:** This switch, located on the side of the LightMic, turns the unit on or off.
2. **Channel Select Switch (CH A/B):** This switch allows for selection between Channel A or B. If you are using a single microphone/transmitter for your system, we recommend using Channel A.
3. **Power/Charge LED Indicator:** The light glows blue when the LightMic is powered ON, and red when charging.
4. **External Microphone Input (MIC):** Use the 3.5 mm MIC jack for the optional TK-250 headset microphone (part# MC-TK250LTM).
5. **Auxiliary (AUX):** Plug a laptop, MP3 player or other audio source into this jack to wirelessly transmit the audio signal to be played through the REDCAT.
6. **Charger Input (CHARGER):** Plug the wall charger into this jack for daily charging. The LED on the front of the LightMic will glow red to indicate charging.

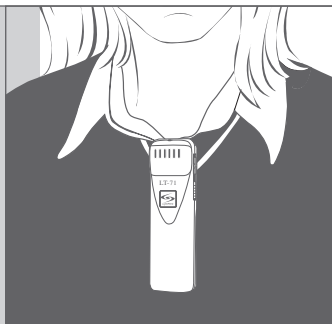
SYSTEM OPERATION

TURNING THE SYSTEM ON

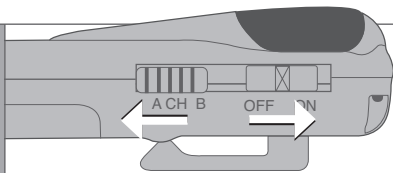


◀◀ **1. Turn** the REDCAT on. The LED on the power switch will glow.

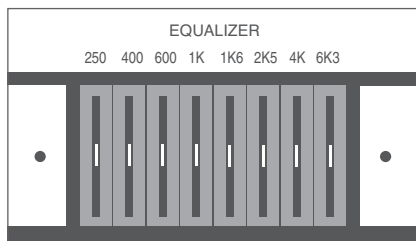
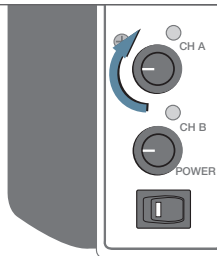
2. Slip the LT-71 LightMic with lanyard around the neck and position the top of the microphone just below the collarbone. Note: Positioning of the LightMic is critical for proper volume adjustment. ▶▶



3. Turn on the LightMic and set the operating channel to "A." This microphone will be designated as the "Teacher Mic." ▶▶

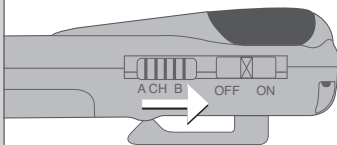


4. Adjust the volume up or down as needed. At proper volume level, you will just barely be able to hear your own voice. **Remember!** Classroom Amplification Technology is a low-volume system providing clarity of speech and even sound distribution throughout the learning environment. Having the volume set too high will result in feedback and listener fatigue. ▶▶

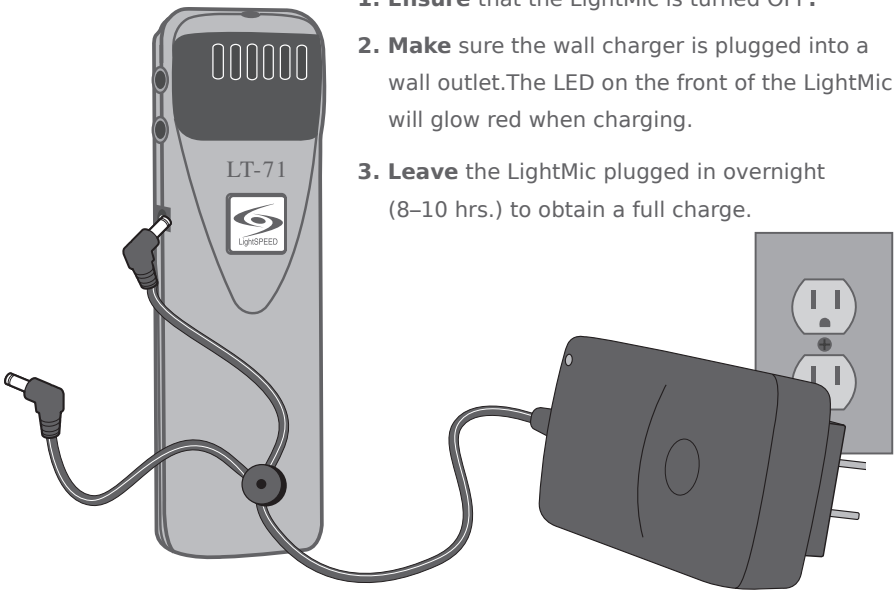


◀◀ **5. Once** initial volume level is set, walk around the room and listen for audio dropout and overall audio quality. Fine-tuning the audio is accomplished by making minor adjustments to the 8-Band Graphic Equalizer on the back panel of the receiver/amplifier.

6. If a second student pass-around microphone was purchased with system, repeat steps 3-4 but set the operating channel to "B." ▶▶ (If a HM-70 was purchased, see page 16.)



CHARGING THE LIGHTMIC



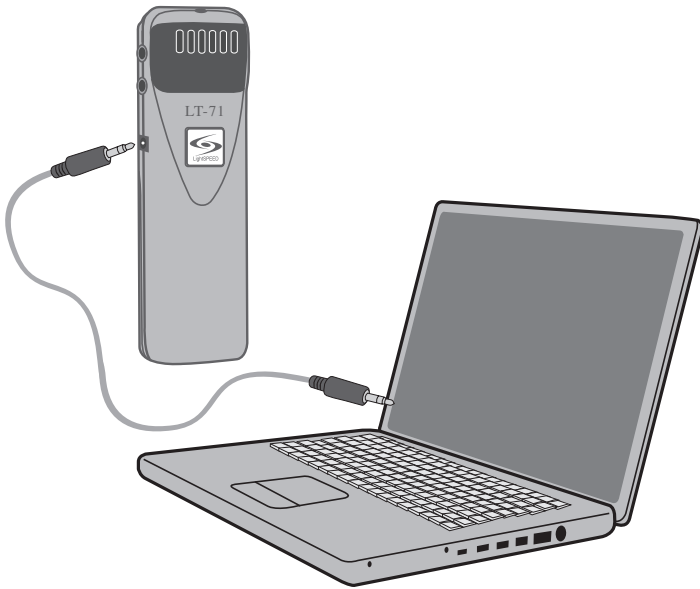
1. **Ensure** that the LightMic is turned OFF.
2. **Make** sure the wall charger is plugged into a wall outlet. The LED on the front of the LightMic will glow red when charging.
3. **Leave** the LightMic plugged in overnight (8–10 hrs.) to obtain a full charge.



Helpful Hint

Do not attempt to charge alkaline batteries. They can overheat and expand, creating a significant hazard and damaging the LightMic. (This is not covered by the warranty.)

USING THE LIGHTMIC TO AMPLIFY EXTERNAL AUDIO EQUIPMENT

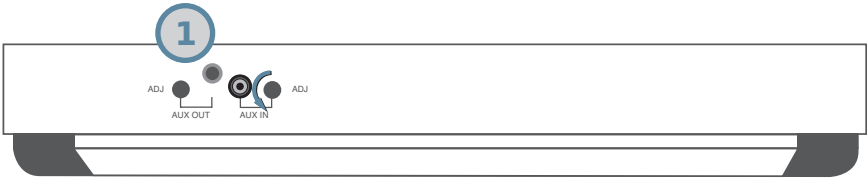


The LightMic contains a 3.5 mm audio input jack to connect to an audio source like a laptop or digital music player. The LightMic will transmit the audio signal to be played through the REDCAT.

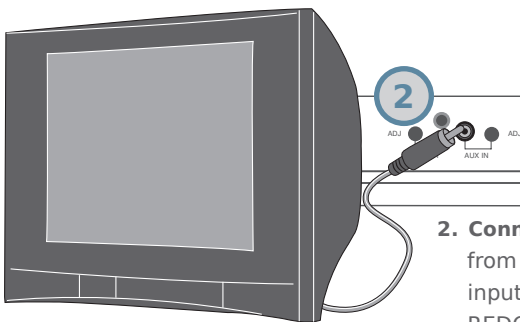
- 1. Set** the LightMic to Channel B. If your system includes two LightMics, use the student microphone (already set to Channel B). NOTE: This feature works on both channels but we recommend using Channel B so the teacher's volume on the CH A does not have to be adjusted.
- 2. Plug** your laptop, MP3 player or other audio source into the input on the LightMic labeled "AUX" using a 3.5 mm patch cable.
- 3. Adjust** the volume of the audio source to achieve desired loudness. If more volume is needed, adjust the volume of the REDCAT.

DIRECT INPUT FROM EXTERNAL AUDIO EQUIPMENT

Below are instructions on how to connect an external audio device like a TV, VCR, DVD, MP3 or computer directly into the REDCAT.

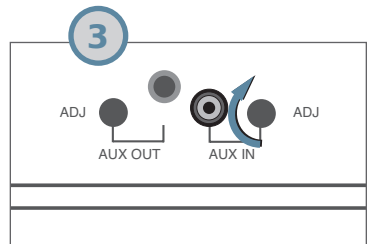


- 1. Turn** the aux in volume adjust control on the bottom of the REDCAT all the way down (fully counterclockwise).



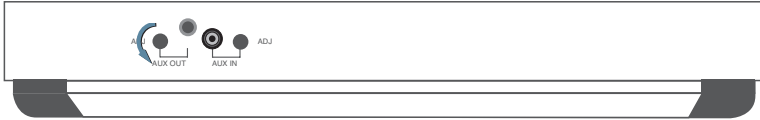
- 2. Connect** a patch cable (not included) from the audio source into the aux input jack on the bottom of the REDCAT.

- 3. With** both the REDCAT and audio source power on, adjust the AUX IN volume control until the desired level is achieved. **NOTE!** Be careful to not to set the volume to high, as this can distort the speaker and potentially cause damage.

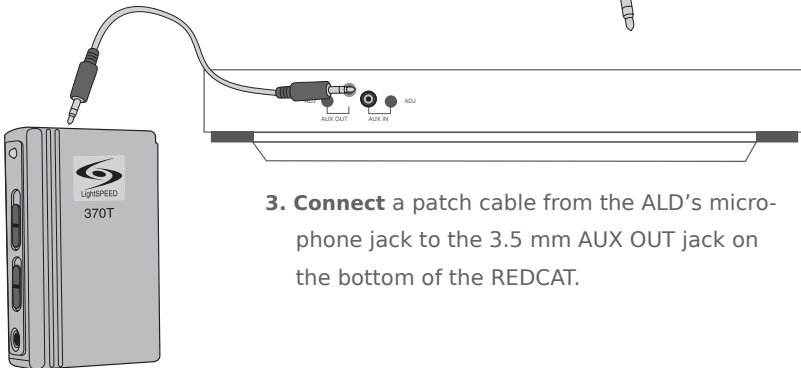
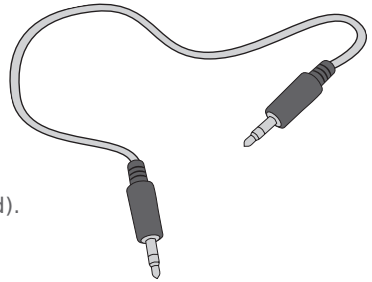


OUTPUT TO PERSONAL FM TRANSMITTER

- 1. Turn** the AUX OUT volume adjust control on the bottom of the REDCAT all the way down (fully counterclockwise).



- 2. Determine** the size and type of audio input jack on the device as many manufacturers' products differ in connector size and shape. The LightSPEED LES-370 Personal FM System requires a 3.5 mm to 3.5 mm patch cable (part# CA-MMC3535, not included).

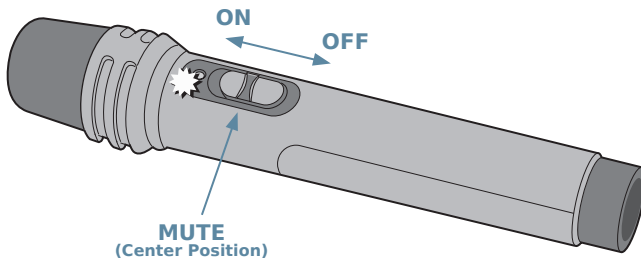


- 3. Connect** a patch cable from the ALD's microphone jack to the 3.5 mm AUX OUT jack on the bottom of the REDCAT.

- 4. Adjust** the volume control on the ALD's receiver to maximum output.

- 5. With** the REDCAT and ALD turned on, speak into the LightMic and slowly adjust "ALD VOLUME" control until the appropriate audio level is attained in the ALD's receiver headphones.

OPERATING THE OPTIONAL HM-70 HANDHELD MIC



The Channel A/B switch is located inside the battery compartment. The switch is set to Channel B at the factory.

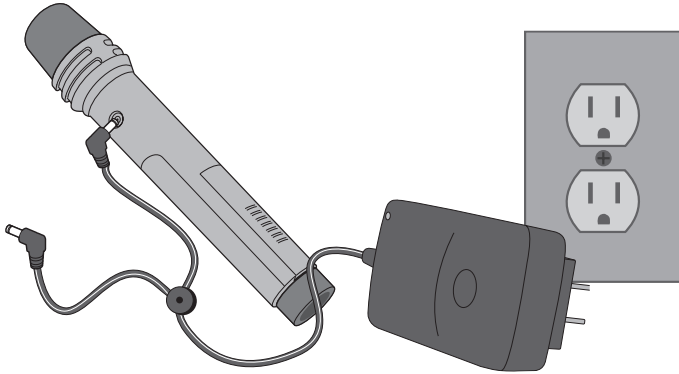
1. **Slide** the power switch on the side of the HM-70 all the way up. The power indicator LED will glow red and stay on.
2. **The center** position of the power switch is MUTE. When in this mode, the HM-70 is transmitting a signal, but no audio can be heard through the system. This is useful if you wish to temporarily turn audio off during a private conversation.

3. **Grip** the barrel of the HM-70 in the center section just below the power switch. Avoid gripping the HM-70 around the bottom, covering the infrared emitters circling the base. This could interrupt signal transmission from the microphone to the receiver.

4. **Speak** directly into the microphone at a normal level. Slowly increase the B VOLUME until you can just hear your voice.

5. **Slide** the switch to the OFF position to turn off the HM-70. (Make sure the power indicator light is off.)

CHARGING THE HM-70 HANDHELD MIC



- 1. Ensure** the HM-70 handheld microphone is turned OFF (ON/OFF switch on the side of the unit).
- 2. Make** sure the wall charger is plugged into an electrical outlet. Connect one of the charging plugs into the jack labeled CHARGER on the side of the HM-70. The HM-70's rechargeable batteries are factory installed.

- 3. The power** indicator light next to the power switch glows green when the cable is connected and charging correctly. The light goes out when fully charged. Batteries will charge in 8 to 12 hours. A fully charged battery will run for up to 8 hours of continuous operation.



Helpful Hint:

All LightSPEED microphone transmitters can remain charging for up to 10 days. Overcharging will not create a hazard, but will shorten battery life.

TIPS ON CLASSROOM AMPLIFICATION

1

Speak in a natural voice. A normal conversational speech level will provide an adequate signal. It is not necessary to increase the intensity of your voice—the amplification system provides adequate amplification (approximately 5 – 10 dB) above ambient room noises.

2

Avoid wearing jewelry that may rub or bump against the microphone.

3

Turn the LightMic off during private conversations with a student, parent, or other classroom visitor. You can also cover the LED lens on top of the LightMic to block the signal.

4

Recharge batteries each night. When recharged nightly, operating time (actual usage) for the transmitters will last through a typical school day.

Five-year limited warranty

LightSPEED Classroom Amplification Systems are guaranteed against malfunction due to defects in materials and workmanship for a period of FIVE (5) YEARS, beginning at the date of the purchase invoice. If such malfunction occurs, the product will be repaired or replaced (at LightSPEED's option) without charge during the period and under the limitations stipulated in the data sheet or the user's manual.

1. Limited exclusions specifically apply to all microphone elements, rechargeable batteries, battery chargers and their assemblies, also external cables and wires.
2. Warranty on microphones/microphone elements is limited to original manufacturer's warranty (usually ONE (1) YEAR).
3. Warranty on LightSPEED NiMH AA rechargeable batteries is ONE (1) YEAR.
3. Warranty on LightMic's internal microphone is FIVE (5) YEARS.
4. Prepaid shipping label provided by LightSPEED factory or an authorized warranty service center.
5. Warranty does not extend to finish, appearance items, or malfunctions due to abuse or operation other than specified conditions, nor does it extend to incidental or consequential damages. Repair by other than LightSPEED or its authorized service agencies will void this guarantee. Information on authorized service agencies is available from LightSPEED Technologies, Inc.

Our Service Department (800.732.8999, 6:30 a.m. – 5 p.m., PST) will handle all your repair/replacement needs.

TROUBLESHOOTING GUIDE

Note: Most problems are directly related to low battery power. Please run through the "Battery Check" items first. For remaining troubleshooting, use known good, fully-charged batteries.

Battery Check

- **Confirm** batteries are charged each night.
- **Make** sure the LT-71 is turned off while charging so that it will attain a full charge. Full charge will last eight hours.
- **Make** sure the charge cord is connected to the cradle charger.
- **Inspect** the battery contacts. Clean and adjust if necessary.

Hearing Static

- **Ensure** the REDCAT is in an acceptable location and the line of site to the IR sensors is not impeded (refer to placement in manual). A single sensor will cover a 1600 sq. ft. enclosed classroom.
- **Ensure** that no other LT71/HM70 is operating on the same channel.
- **If** an external microphone is in use, try a another LightMic that is known to be working (if available) to isolate the problem. If static persists with "known good" microphone, the LT-71 input jack has damage and will need service.

Low Volume or Feedback:

- **Ensure** microphone is positioned appropriately, just below the collar bone. If a headset microphone is in use, the end of the mic boom should be positioned at the corner of the mouth.
- **Check** volume level on the REDCAT. If the volume is too high, feedback WILL occur. Adjust accordingly.

No Sound From Speaker

- **Turn** the REDCAT on. Confirm that the POWER light located on the front panel switch is on.
- **Confirm** signal is being received at the REDCAT. The IR signal light will be lit (red) indicating a signal is being received.

If you review these instructions and still have questions, write down the serial number and model number of your system and call LightSPEED Technical Services at 800.732.8999, 6:30 a.m. – 5 p.m. PST.

SYSTEM SPECIFICATIONS

OVERALL SPECIFICATIONS

Power Output	15 W
Amplifier Frequency Response	100 Hz to 20 kHz \pm 3 dB
Carrier Frequencies (IR).....	2.06/2.54
Signal-to-Noise Ratio	> 73 dB
Dynamic Range	> 73 dB
Maximum Deviation	\pm 50 dB

RECEIVER SPECIFICATIONS

Receiver Type	Superheterodyne
Receiver Sensitivity	6 μ V for 60 dB S/N
Image and Spurious Rejection.....	> 70 dB
Dimensions (W x D x H).....	22" x 3.25" x 10.5"
Weight	7 lbs.

TRANSMITTER SPECIFICATIONS

Audio Distortion	< 1 %
Built-in Microphone	Uni-directional Electret
Battery Power (1-year warranty)	2 AA NiMH Rechargeable
Inputs	Mic Level 3.5 mm Line Level 3.5 mm
Dimensions (W x D x H).....	1.375" x .75" x 4.625"
Weight	3.7 oz

INDIVIDUAL COMPONENTS & OPTIONAL ACCESSORIES

Part Number	Description
REDCAT	Infrared receiver/amplifier/mixer w/built-in charger
LT71	LightMic rechargeable microphone/transmitter w/lavaliere cord, batteries and charging cable
HM70	Handheld microphone/transmitter w/ batteries and charging cable
BA-NH1	Rechargeable AA battery (Nickel Metal Hydride)
BC-TXLT	Wall Charger (charges two LT-71 LightMics)
AC-LTCB	Lavaliere cord for LT-71
PS-24V-2.5	Power supply/battery charger for 850iR
Part Number	Description
AC-71CC	Cradle Charger (charges two LT-71 LightMics)
MC-TK250LTM	Noise-canceling headset microphone to be used with LT-71
CA-RCA6	6' dual RCA audio cable
CA-RCA24	24' dual RCA audio cable
CA-MMC3535	3.5 mm mono to 3.5 mm mono audio cable
CA-MMC2435	Audio patch cable (2.5 mm mono to 3.5 mm mono)

USER NOTES

Record your system serial numbers and purchase information. This is helpful when ordering additional components, accessories, and/or warranty service.

Components	Serial Number
REDCAT	
Microphones	
Charger	
Purchase Information	
Your School/Organization	
District	
Purchase Date	
Invoices	

USER NOTES

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