

FM-AV4

PORTABLE WIRELESS SOUND SYSTEM

OPERATING INSTRUCTIONS and trouble-shooting guide

LECTROSONICS, INC.
Rio Rancho, NM

INTRODUCTION

Thank you for selecting the FM-AV4 Portable Wireless Sound System. This system represents over 80 years of combined experience in the design of RF transmitters, receivers and Public Address systems. The FM-AV4 sets new standards for operational convenience, flexibility and mechanical ruggedness. The built-in wireless receiver, the rechargeable power supply and the high quality of the audio output set this system apart from any other portable PA system on the market.

This manual covers the FM870 RECEIVER, optional microphones and transmitters.

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GENERAL TECHNICAL DESCRIPTION

The FM-AV4 Portable Wireless Sound System consists of an FM870 combination wireless receiver/amplifier/speaker with a rechargeable battery pack, an M170 belt-pack transmitter and a microphone. Optional microphones, transmitters and accessories are available. These items will be discussed elsewhere in this manual.

The FM-AV4 features a VHF high band wireless microphone system with excellent operating range, freedom from "dropouts" and interference from other radio transmissions. The built-in receiver provides high selectivity and sensitivity with an automatic squelch circuit which requires no adjustment by the user. The M170 belt-pack transmitter uses the microphone cord as the antenna which eliminates the dangling wire antenna found on many other transmitters. The transmitter features a gain adjustment to perfectly match your voice with the microphone.

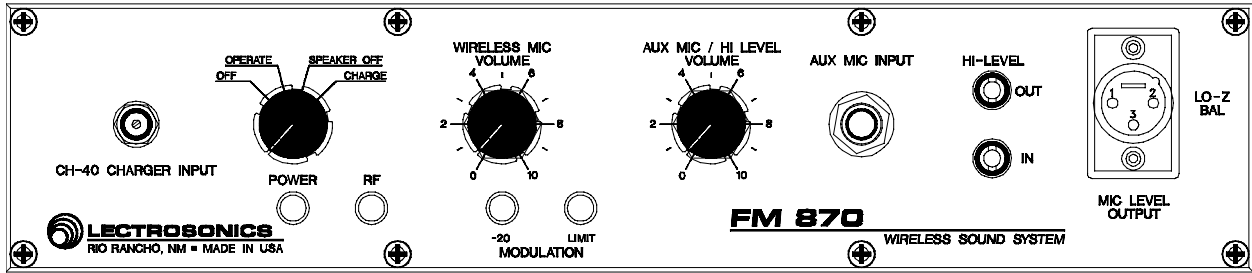
The FM870 receiver/amplifier offers inputs and outputs to accommodate virtually any application. In addition to the wireless, there is an auxiliary microphone input for dynamic microphones, a balanced, microphone level audio output, and both "line in" and "line out" jacks for external tape recorders. This allows the FM-AV4 to interface with other sound systems, video taping equipment or any type of "house" sound system. This versatility lets you use the wireless microphone, a hard-wired microphone, a tape recorder and the house sound system all at the same time.

The FM870 is powered by built-in rechargeable batteries and will easily operate for over 12 hours after an overnight charge. The sound output will cover an audience of several hundred.

RECHARGEABLE BATTERIES

The battery pack in the FM870 is charged by plugging the supplied CH-40 charger into the jack labeled **CH-40 CHARGER INPUT** on the control panel and moving the POWER switch to the CHARGE position. Connect the charger into a standard 110 Volt AC outlet. The red POWER lamp beneath the switch will light as long as the batteries are charging. There is no way to tell when the batteries are fully charged. To be on the safe side, charge the battery 12-15 hours to be sure. The batteries should be charged after using the system. You may leave the charger plugged in with no danger of damage to the system. They cannot be overcharged. In fact, we recommend charging the system whenever it is not in use, then the system will always be "ready to go".

CONTROLS AND FUNCTIONS



POWER/FUNCTION: A rotary switch which turns the power off and on and selects the operating mode.

OPERATE: Set in this position for normal use when the built-in speaker is to be used.

SPEAKER OFF: Set in this position for use with the FM870 plugged into the house sound system. The wireless microphone will operate, but the sound from the built-in speaker will be muted.

CHARGE: Set in this position to recharge the built-in battery pack.

POWER LED: A red LED indicates when the FM870 is turned on and the batteries are charged up enough to operate the system. This LED will also light up when the batteries are being recharged if the CH-40 charger is properly connected.

RF LED: A green LED lights when the companion transmitter is turned on and there is sufficient signal for good system operation. Internal circuits monitor both signal level and interference levels and decide if the transmitted signal is strong and "clean" enough for satisfactory operation. If not, the RF lamp will go out and the receiver will "squelch", shutting off the sound output. This action is automatic and requires no user adjustment.

MODULATION: The -20 and LIMIT LEDs continuously indicate the modulation level (audio level) of the received signal from the transmitter and are used when making initial adjustments to the transmitter. See items 10 and 11 in the section on "OPERATING INSTRUCTIONS" on page 10.

CONTROLS AND FUNCTIONS cont'd

**WIRELESS MIC
VOLUME:**

This control adjusts the volume of the built-in wireless microphone system. This knob **does not** affect the MODULATION LEDs located near it.

**AUX MIC/HI LEVEL
VOLUME:**

This control adjusts the volume of the AUX MIC INPUT and the HI LEVEL IN inputs.

AUX MIC INPUT:

This jack is a standard 1/4" phone jack and will accept a high impedance dynamic microphone. It is recommended that you use the LECTROSONICS RM-121S microphone with an MC-16C or MM-16 cord.

HI LEVEL OUT:

An RCA phono jack that provides a one Volt output signal to drive line level inputs of tape decks, cassette players and other P.A. systems.

HI LEVEL IN:

An RCA phono jack input used for playback of line level outputs from tape decks, cassette players and other P.A. systems.

MIC LEVEL OUTPUT:

A 3-pin XLR audio connector which provides a balanced, low impedance (200 Ohm), 10 millivolt, microphone level output suitable for microphone mixers and other units requiring a microphone level input. This balanced output also provides the means to connect to the house sound system.

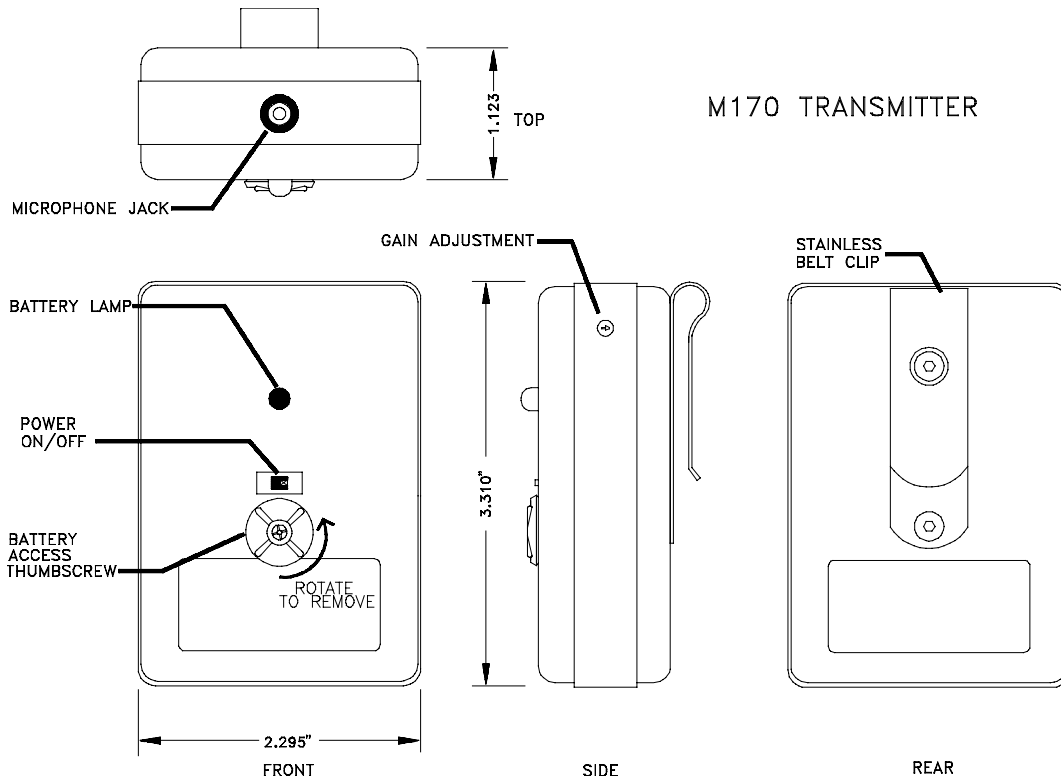
M170 SERIES TRANSMITTERS

Standard FM-AV4 systems include an M170 belt-pack transmitter which is designed to be used with a lavalier or headset microphone. The optional M170-XLR transmitter (see page 6) is similar to the M170 but is equipped with two microphone connectors - a locking micro jack for lavalier or headset microphones and an XLR connector for use with standard low impedance hand held microphones. If you have one of the other optional Lectrosonics transmitters, consult the supplied manual for that transmitter for the description and operating instructions.

The **POWER ON/OFF** switch, located on the side opposite the belt clip, turns the power on and off. The red LED above the on/off switch indicates the condition of the battery. As long as this LED glows, even dimly, the battery is sufficient to operate the transmitter.

The **GAIN ADJUSTMENT** matches the audio gain of the transmitter to different microphones, individual voices, and other inputs. (see item 10 and 11 on page 10 in the section on OPERATING INSTRUCTIONS). **This adjustment is extremely important.**

The **BATTERY ACCESS THUMB SCREW** is turned counterclockwise to remove the side cover to replace the battery. The battery will only fit in one way. Observe the battery contact pad before inserting the battery. The positive contact is the smaller one and fits into the compartment closest to the bottom of the transmitter. Insert the battery contact end first, then push down the other end for a snug fit. To remove the battery, push the exposed bottom edge of the battery with your fingernails toward the contacts and lift it up and out.



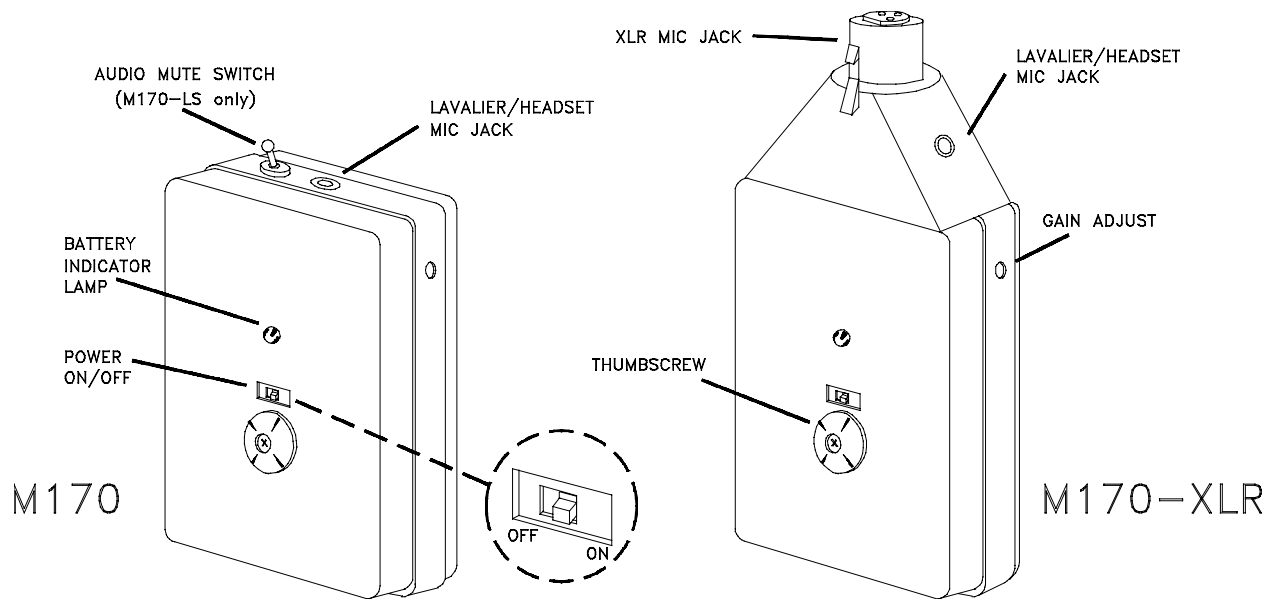
M170 SERIES TRANSMITTERS cont'd

The **BATTERY** used in the transmitter should be a 9 Volt **alkaline** battery which will provide up to 15 hours or more of operation. These are available almost anywhere. Carbon zinc batteries, even if marked "heavy duty" or "super heavy duty", will only operate up to 4 hours. Make sure "alkaline" is marked on the battery.

The **BATTERY INDICATOR** will light when the transmitter is turned on and will stay lit as long as the battery is good. If the battery is low, the battery indicator will grow dim and finally go out. Even after the indicator goes out, there may still be up to an hour or more of use remaining. When the battery is too low for proper operation, the sound from the wireless system may be intermittent or totally absent. When the transmitter is first turned on, it may require several minutes to get a "true" battery reading. For example, if a dead battery were not used for a day or so, and then was used in the M170, it might indicate for a minute or so that it was good. This is just like the "dead" batteries in a flashlight that will shine brightly for a few minutes then rapidly go dim.

If you are experiencing short battery life (six hours or less), you are probably not using alkaline batteries. In most cases, we have found short battery life to be due to the use of batteries that are not alkaline.

The **MIC JACK** is a threaded, locking, micro jack that supplies phantom power for electret microphones such as the M140 lavalier model and the headset models. Insert the microphone plug into this jack and rotate it clockwise to lock it. The microphone cord is the antenna for the transmitter. The standard 3-pin **XLR CONNECTOR** is designed for best performance with standard, balanced, 50 to 600 Ohm impedance microphones, although it will work with high impedance microphones. If your microphone has selectable impedance, set or wire it for 150 or 200 Ohms, or set it to the "low impedance" position.



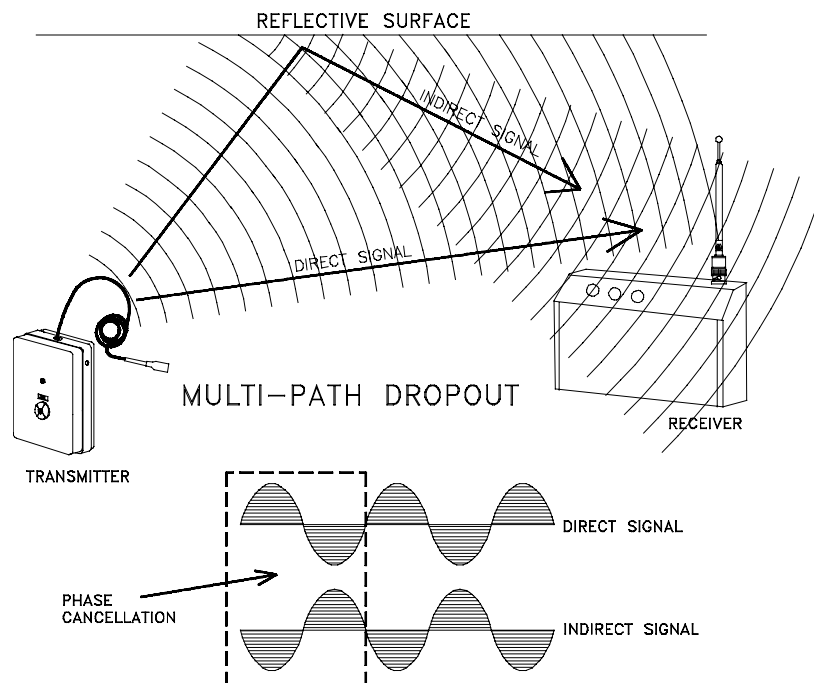
SYSTEM SETUP

This section includes some basic steps that will ensure trouble-free operation of your FM-AV4 system:

- 1) Make sure the transmitter battery is good, or better yet, new.
- 2) Charge up the battery pack in the FM870 fully before you use the system.
- 3) Extend the antenna fully. Position the FM870 so that the antenna is not touching or within 3 or 4 feet of large metal surfaces such as air conditioning ducts. It is also good practice to position the unit so that there is a direct "line of sight" between the transmitter and the FM870 antenna.

A wireless transmitter sends a radio signal out in all directions. This signal will often bounce off nearby walls, ceilings, etc. and a strong reflection can arrive at the receiver antenna along with the direct signal. If the direct and reflected signals are out of phase with each other, as depicted in the figure below, a partial or complete cancellation of the received signal will occur. The result will be a "dropout." A dropout sounds like either a hum or hiss, or in severe cases, may result in a complete loss of the sound when the transmitter is positioned in certain locations in the room. Moving the transmitter even a few inches may change the sound of the hum or hiss, or eliminate it. A dropout situation may become either better or worse as the crowd fills or leaves the room.

In the event that you do encounter a dropout problem, first try moving the FM870 at least 3 or 4 feet from where it was. This may alleviate the dropout problem. If dropouts are still a problem, try moving the FM870 to an entirely different location in the room.



SYSTEM SETUP cont'd

- 4) If you have more than one transmitter on the same frequency, turn on only one transmitter at a time. You cannot use the two transmitters at the same time with a single FM870. You will need to "alternate" back and forth between the transmitters. Failure to do so will result in an obnoxious whining sound from the system, and the audio will probably not be understandable.
- 5) Use the minimum volume that will enable everyone to hear. It doesn't have to be loud to be heard. Placing the FM870 in the back of the room works well in most instances, since this places the speaker far enough away from the microphone to minimize feedback and close enough to the most distant listeners to provide adequate sound coverage.
- 6) The FM870 should be elevated for best coverage. The unit should ideally be at least 2 feet higher than the audience. For example, with an audience standing on flat ground, the number of people who can hear clearly will double if you raise the unit from 5 feet above the ground to 7 feet above the ground. See page 9 for more detailed information on placement of the unit.
- 7) During actual operation, the FM870 should be aimed so that the sound from the speaker is directed toward the audience and away from the microphone. This will reduce feedback problems. "Feedback" is a loud squealing sound coming from the speaker when the volume is too high or the microphone is too close to the FM870. Feedback is generally more of a problem when using lavalier (lapel) type microphones than with hand-held or headset type microphones because the microphone is farther from the mouth. See page 9 for more details on feedback.
- 8) The standard FM-AV4 system includes an M140 cardioid lavalier microphone. This directional microphone will minimize background noise and provide resistance to feedback when properly positioned on the user's body. Clip the microphone on the lapel or tie as close as possible to the mouth. If the system is to be used outdoors or near an air conditioner duct, use the foam windscreen provided with the mic. This will reduce "wind noise" caused by air movement across the microphone. Refer to the Microphone Choices section on page 12 for optional microphones.

OPERATING TIPS

WHAT ARE THE CAUSES OF FEEDBACK?

Feedback (squealing) occurs when the sound from the speaker re-enters the microphone, comes back out of the speaker again and re-enters the microphone, and so on. At a given distance between the microphone and speaker, the sound can only be turned up so loud before feedback occurs. Moving the mic further away from the speaker (or the speaker away from the mic) will allow a louder setting of the sound system.

MAXIMIZING GAIN

1. Place the microphone as close to your mouth as is practical. This will increase the input level for the microphone so that you are clearly picked up by the mic but background noise will be reduced.
2. Place the speaker (the main unit) as far as you can from where you'll be speaking and in a position that will cover your most distant listener.

OPERATING INSTRUCTIONS

This section covers the initial adjustments to the FM870 and the companion transmitter that must be made before the system is placed into operation:

- 1) Make sure the antenna is extended fully.
- 2) Connect the audio output cable as required. If you are connecting into a "house" sound system or external audio or recording equipment, make those connections before turning on the power.
- 3) Turn both volume controls on the FM870 control panel to minimum (fully counter-clockwise).
- 4) Rotate the FM870 power/function switch to OPERATE. Verify that the POWER lamp lights.
- 5) Position yourself behind the FM870 (or sound system speakers) so that the sound from the speaker output will be directed away from the microphone.
- 6) Plug your microphone into the transmitter. Rotate the plug clockwise to make sure the connection is locked. Do not over-tighten the plug.
- 7) Turn the transmitter power on and verify that the red light on it lights. If the lamp is very dim or does not light, replace the battery.
- 8) Observe that the RF lamp on the FM870 control panel is lighted. This verifies that the unit is receiving a useable signal from the transmitter.
- 9) Position the microphone on your person in the same location it will be in during actual operation. The microphone should ideally be within 6 to 10 inches from the mouth to minimize "feedback".
- 10) A small screwdriver is supplied with the transmitter. The screwdriver is used to adjust the audio gain of the transmitter to match the microphone with your voice. The adjustment is made while observing the MODULATION lamps on the FM870 control panel as shown in the figure on page 11.
- 11) Speak at the voice level you will be using during actual operation. While speaking, adjust the transmitter gain until the -20 lamp is lighted or flickers and LIMIT lamp blinks only on the loudest words. Raise and lower your voice while observing the lamps. The LIMIT lamp should only blink occasionally.
- 12) You may now adjust the WIRELESS MIC VOLUME control to a level which will allow everyone in the audience to hear clearly.

REMEMBER--the transmitter gain control is used only to adjust for proper MODULATION lamp indications. DO NOT use it to adjust the output volume of the FM870. Different voices and different microphones will usually require readjustment of the transmitter gain control, so check the adjustment frequently. If several different people will be using the system and there is not time to make the adjustment for each individual, adjust it for the loudest voice.

OPERATING INSTRUCTIONS cont'd

USING HARD-WIRED MICROPHONES

Any low impedance, unbalanced, dynamic microphone can be plugged into the AUX MIC INPUT.

- 1) Make sure the volume knobs are set at "0."
- 2) Plug an auxiliary cord (a MM-16 or MC-16C will work) into your microphone and into the AUX MIC INPUT.
- 3) Flip the switch on the microphone and bring the AUX MIC VOLUME up slowly to the desired volume. If the speaker squeals, the microphone is too close to the speaker. A longer microphone cord will reduce this noise.

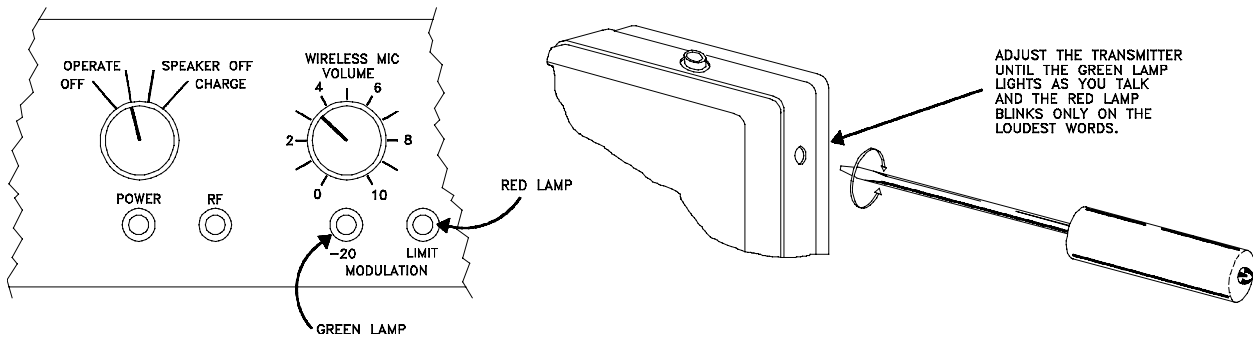
TAPE RECORDING AND PLAYBACK

- 1) To record, connect the HI LEVEL OUT on the unit with the AUDIO IN (line input) on the tape recorder.
- 2) To playback, connect the HI LEVEL IN on the unit with the AUDIO OUT (line level) on the tape recorder. Set the AUX MIC/HI LEVEL at about "6" then adjust the volume control on your tape player to get the desired volume.

Not all tape recorders will work with the FM-AV4. Low cost tape recorders may not have "line level" inputs and outputs required for quality recording and playback.

CONNECTING INTO HOUSE SOUND SYSTEMS

- 1) Connect MIC LEVEL OUTPUT to the house sound system. This should be a balanced microphone level input with an XLR connector.
- 2) The volume of the MIC LEVEL OUTPUT is controlled by the AUX MIC/HI LEVEL VOLUME. Be sure the WIRELESS MIC VOLUME is set at "0" when using the house sound system.



MICROPHONE CHOICES

M140 - This is the microphone supplied with the standard FM-AV4 system. It is a cardioid (directional) microphone for lavalier ("lapel") use. Due to the directional pickup pattern, this model will generally provide more gain (loudness) before feedback than the M130 omni-directional model. The M140 has a "brighter" sound than the M130 (the treble is boosted). This brighter sound normally improves the clarity that is sometimes lost with lavalier type microphones. The M140 is subject to wind noise and generally works best indoors, however, it is supplied with a foam windscreen which helps to reduce noise caused by wind.

M130 - This is a very small, omni-directional mic used as a lavalier ("lapel") microphone. It may be prone to feedback since it is usually placed so far away from the users mouth; however, it has a very flat response and excellent tone quality. As is true of most omni-directional type microphones, the M130 is very free from wind noise and clothing "rattle".

M121S - This is a cardioid, dynamic, hand-held microphone. It can be plugged directly into the AUX MIC INPUT jack on the control panel of the FM870 using a standard microphone cord (MM-16 or MC-16C). The M121S is available as an accessory item.

HM142V - This single-band headset microphone is normally worn on the head, but can also be worn around the neck for hands-free operation. It provides maximum gain before feedback since the microphone is very close to the user's mouth. The built-in volume control helps control feedback in difficult environments, such as when the user must move in close to the FM870 speaker. Worn on the head, the microphone will remain at a constant distance from the user's mouth, which keeps the volume of the sound system constant as the head moves. The headset can also be worn around the neck.

HM152V - A double-band headset microphone intended to be worn on the head. The pickup element and tonal characteristics are the same as the single-band HM142V, but it is more securely mounted and in most cases, more comfortable, due to the fully adjustable dual headband. The same volume control is provided to help control feedback.

The best matched microphones are:

For hand-held use:

M121S dynamic cardioid, with ON/OFF switch

For headset use:

HM142V single headband model

HM152V double headband model

For lavalier use:

M140-micro

Other brands of microphones may be used, provided they are the correct type, with an appropriate connector. Consult the factory or your dealer if you are not sure.

TROUBLESHOOTING

Before going through the following chart, be sure that you have a good battery in the transmitter. It is important that you follow these steps in the sequence listed.

SYMPTOM	POSSIBLE CAUSE
FM870 POWER LAMP NOT ON OR DIM	<ol style="list-style-type: none">1) Power/function switch in OFF position2) Batteries completely discharged3) Battery connections loose
TRANSMITTER BATTERY LED OFF	<ol style="list-style-type: none">1) Transmitter power switch off.2) Battery is inserted backwards.3) Battery is dead.
FM870 RF LAMP OFF	<ol style="list-style-type: none">1) Transmitter not turned on.2) Transmitter battery is dead.3) Receiver antenna missing or improperly positioned.4) Transmitter and receiver not on same frequency. Check labels on transmitter and receiver.5) Operating range is too great.
NO SOUND AND RECEIVER MOD LEVEL LED ^s ARE OFF	<ol style="list-style-type: none">1) Transmitter in not getting an audio signal.2) Defective mic or mic cable.3) Transmitter gain control set much too low.4) Transmitter audio muted. Check to see that the audio is not muted on your transmitter, if this feature is available on your model transmitter.
NO SOUND BUT RECEIVER MOD LEVEL LED ^s ARE ON	<ol style="list-style-type: none">1) FM870 power/function switch set to SPEAKER OFF position.2) WIRELESS or AUX MIC VOLUME control turned completely down.3) Sound system or recorder input is turned down.4) Defective speaker
DISTORTED SOUND	<ol style="list-style-type: none">1) Transmitter gain (audio level) is too high. Speak into the transmitter and check mod level lamps on transmitter and receiver. See page 10.2) Receiver output may be mis-matched with the sound system or recorder input.3) Excessive wind noise or breath "pops."4) FM870 batteries very low - recharge.
HISS AND NOISE -- AUDIBLE DROPOUTS	<ol style="list-style-type: none">1) Transmitter gain (audio level) too low.2) Receiver antenna missing or obstructed.3) Operating range too great.
EXCESSIVE FEEDBACK	<ol style="list-style-type: none">1) Transmitter gain (audio level) too high. Check gain adjustment and/or reduce receiver output level.2) Microphone too close to speaker system. Move transmitter closer to the user's mouth.

ACCESSORIES AND REPLACEMENT PARTS

ITEM	DESCRIPTION	USE
CH-40	Battery Charger	Replacement
HM142V	Single headband Headset Microphone	With locking micro plug for M170 series transmitters.
HM152V	Double headband Headset Microphone	With locking micro plug for M170 series transmitters.
M121S	Dynamic Microphone	For hand-held use plugged into the AUX MIC INPUT jack of the FM870 (cord not supplied).
MC-16C	Microphone Cord	16 ft. coiled cord (1/4" male to male) for M121S
MM-16	Microphone Cord	Straight cord (1/4" male to male) for M121S
MM-36	Audio Patch Cord	36" RCA (male to male) for interconnecting HI LEVEL IN and OUT jacks with other equipment.
RK-51	Wind Screen	For M121S microphone
RK-119	Wind Screen	For M140 microphone
RK-142	Wind Screen	For HM142V and HM152V headset microphones

SPECIFICATIONS

OVERALL FM-AV4 SYSTEM

Operating frequency:	150 to 216 MHz
Wireless operating range:	Up to 750 feet
FM deviation:	+ or - 15 KHz
Distortion:	less than 1%

AMPLIFIER

Audio power output:	6 Watts, RMS
Amplifier freq. response:	50 Hz - 20 KHz; +0, -3 dB
Speaker:	6" x 9" full range cone
Audio outputs:	XLR - 200 Ohm, balanced; 100 mV maximum RCA - 1k Ohm, 1 Volt maximum
Audio inputs:	RCA - high level "line" 1/4" - electret mic; + 5V bias
Power supply:	Two 6 Volt "gel-cell" batteries
Operating time per charge:	Up to 40 hours - 30 hours typical

FM870 RECEIVER

Sensitivity:	1.0 uV for 20dB SINAD 2.0 uV for 50dB S/N ratio
RF signal-to-noise ratio:	96dB flat, 100dB A-weighted
Squelch quieting:	Greater than 100dB
AM rejection:	-40dB (10 uV to 100 mV input)
Spurious/image rejection:	Greater than 100dB

M170 TRANSMITTER

Operating Frequency:	150 to 216 MHz
RF Power Output:	50 mW
Deviation:	+ or - 15 KHz
Spurious radiation:	60dB below carrier
Frequency stability:	+ or - .002%
Equivalent input noise:	-126dB
Input sensitivity:	8 mV to 1.6 V for full modulation
Input compressor:	Soft compressor; 12dB range
Electret bias:	+5 Volts DC (positive bias)
Antenna:	Input cord or microphone
Size:	1.1 x 2.3 x 3.3 inches
Weight:	4 ozs. including battery

M170 and M170-XLR transmitters are FCC type accepted under the following parts:

Part 90 (150-172 MHz)
Part 74 (174-216 MHz)

SERVICE AND REPAIR

If your system malfunctions, you should attempt to correct or isolate the trouble before concluding that the equipment needs repair. Make sure you have followed the setup procedure and operating instructions. Check out the inter-connecting cords and then go through the TROUBLE SHOOTING section in the manual

We strongly recommend that you **do not** try to repair the equipment yourself and **do not** have the local repair shop attempt anything other than the simplest repair. If the repair is more complicated than a broken wire or loose connection, send the unit to the factory for repair and service. Don't attempt to adjust any controls inside the units. Once set at the factory, the various controls and trimmers do not drift with age or vibration and never require readjustment. **There are no adjustments inside that will make a malfunctioning unit start working.**

LECTROSONICS service department is equipped and staffed to quickly repair your equipment. In-warranty repairs are made at no charge in accordance with the terms of the warranty. Out of warranty repairs are charged at a modest flat rate plus parts and shipping. Since it takes almost as much time and effort to determine what is wrong as it does to make the repair, there is a charge for an exact quotation. We will be happy to quote approximate charges by phone for out of warranty repairs.

RETURNING UNITS FOR REPAIR

You will save yourself time and trouble if you will follow the steps below:

- A. DO NOT return equipment to the factory for repair without first contacting us by letter or by phone. We need to know the nature of the problem, the model number and the serial number of the equipment. We also need a phone number where you can be reached 8 am to 4 pm (Mountain Standard Time).
- B. After receiving your request, we will issue you a return authorization number (R.A.). This number will help speed your repair through our receiving and repair departments. The return authorization number must be clearly shown on the outside of the shipping container.
- C. Pack the equipment carefully and ship to us, shipping costs prepaid. If necessary, we can provide you with the proper packing materials. UPS is usually the best way to ship the units. Heavy units should be "double-boxed" for safe transport.
- D. We also strongly recommend that you insure the equipment, since we cannot be responsible for loss of or damage to equipment that you ship. Of course, we insure the equipment when we ship it back to you.

Mailing address:

Lectrosonics, Inc.
PO Box 15900
Rio Rancho, NM 87174
USA

Shipping address:

Lectrosonics, Inc.
581 Laser Rd.
Rio Rancho, NM 87124
USA

Telephones:

(505) 892-4501
(800) 821-1121
FAX: (505) 892-6243

World Wide Web: <http://www.lectrosonics.com>

email: sales@lectrosonics.com

LIMITED ONE YEAR WARRANTY

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

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

This warranty applies only to items returned to us, shipping costs prepaid, within one year from the date of purchase.

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

LECTROSONICS, INC.

**581 LASER ROAD
RIO RANCHO, NM 87124 USA**

August 17, 1996