

HM-54

4-Channel Headphone Amplifier

OWNER'S MANUAL

MACKIE®

Important Safety Instructions

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with a cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This apparatus shall not be exposed to dripping or splashing, and no object filled with liquids, such as vases, shall be placed on the apparatus.
16. This apparatus has been designed with Class-I construction and must be connected to a mains socket outlet with a protective earthing connection (the third grounding prong).
17. This apparatus has been equipped with a single-pole, rocker-style AC mains power switch. This switch is located on the front panel and should remain readily accessible to the user.
18. This apparatus does not exceed the Class A/Class B (whichever is applicable) limits for radio noise emissions from digital apparatus as set out in the radio interference regulations of the Canadian Department of Communications.

ATTENTION — *Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de class A/de class B (selon le cas) prescrites dans le règlement sur le brouillage radioélectrique édicté par les ministere des communications du Canada.*

19. Exposure to extremely high noise levels may cause permanent hearing loss. Individuals vary considerably in susceptibility to noise-induced hearing loss, but nearly everyone will lose some hearing if exposed to sufficiently intense noise for a period of time. The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the permissible noise level exposures shown in the following chart.

According to OSHA, any exposure in excess of these permissible limits could result in some hearing loss. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels use hearing protectors while the equipment is in operation. Ear plugs or protectors in the ear canals or over the ears must be worn when operating the equipment in order to prevent permanent hearing loss if exposure is in excess of the limits set forth here.

PORTABLE CART WARNING



Carts and stands - The Component should be used only with a cart or stand that is recommended by the manufacturer. A Component and cart combination should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the Component and cart combination to overturn.

⚡	CAUTION AVIS	!
RISK OF ELECTRIC SHOCK DO NOT OPEN RISQUE DE CHOC ELECTRIQUE NE PAS OUVRIR		
CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK DO NOT REMOVE COVER (OR BACK) NO USER-SERVICEABLE PARTS INSIDE REFER SERVICING TO QUALIFIED PERSONNEL ATTENTION: POUR EVITER LES RISQUES DE CHOC ELECTRIQUE, NE PAS ENLEVER LE COUVERCLE. AUCUN ENTRETIEN DE PIECES INTERIEURES PAR L'USAGER. CONFIER L'ENTRETIEN AU PERSONNEL QUALIFIE. AVIS: POUR EVITER LES RISQUES D'INCENDIE OU D'ELECTROCUTION, N'EXPOSEZ PAS CET ARTICLE A LA PLUIE OU A L'HUMIDITE		



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 of sufficient magnitude to constitute a risk of electric shock to persons.
 Le symbole éclair avec point de flèche à l'intérieur d'un triangle équilatéral est utilisé pour alerter l'utilisateur de la présence à l'intérieur du coffret de "voltage dangereux" non isolé d'ampleur suffisante pour constituer un risque d'électrocution.



The exclamation point within an equilateral triangle is intended to alert the user of the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.
 Le point d'exclamation à l'intérieur d'un triangle équilatéral est employé pour alerter les utilisateurs de la présence d'instructions importantes pour le fonctionnement et l'entretien (service) dans le livret d'instruction accompagnant l'appareil.

Duration Per Day In Hours	Sound Level dBA, Slow Response	Typical Example
8	90	Duo in small club
6	92	
4	95	Subway Train
3	97	
2	100	Very loud classical music
1.5	102	
1	105	Tami screaming at Adrian about deadlines
0.5	110	
0.25 or less	115	Loudest parts at a rock concert

WARNING — To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture.

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Don't forget to visit our website at www.mackie.com for more information about this and other Mackie products.



Introduction

Thank you for choosing a Mackie HM-54 Four-Channel Headphone Amplifier. This 1U rackmount unit features left and right TRS main inputs, as well as left and right TRS “direct inputs” on each of the four channels.

The front panel provides an input select switch for each channel, allowing you to choose between the main stereo mix or the stereo “direct input.” In addition, each channel has its own headphone level control and two headphone jacks, one on the front for easy access and one on the back panel for hard-wired rackmount installations.

The HM-54 provides four separate headphone mixes, each of which can be switched between the main stereo mix or a custom mix, perhaps from a pair of subgroup outputs on the mixer, routed to the left and right phones input on the HM-54.

A Main Phones input jack allows you to use the headphone output on the mixer as the main input to the HM-54 instead of a left and right line-level output. A Main Input Level control is used to adjust the overall main input level.

The rugged construction of the HM-54 makes it a roadworthy companion to your arsenal of gear either inside or outside of a rack.

Please write your serial number here for future reference (i.e., insurance claims, tech support, return authorization, etc.)

Purchased at:

Date of purchase:

HOW TO USE THIS MANUAL

We know that many of you can't wait to get your new headphone amp hooked up, and you're probably not going to read the manual first (sigh!). So the first section after this introduction is a Quick-Start Guide called “Getting Started” to help you get the HM-54 set up fast so you can start using it right away. Right after that are the ever popular hook-up diagrams that show typical setups for live sound and recording.

Then, when you have time, read the Features Description section. This describes every knob, button, and connection point on the HM-54.

Throughout this section you'll find illustrations with each feature numbered. If you want to know more about a feature, simply locate it on the appropriate illustration, notice the number attached to it, and find that number in the nearby paragraphs.



This icon marks information that is critically important or unique to the HM-54. For your own good, read them and remember them. They will be on the final test.



This icon leads you to in-depth explanations of features and practical tips. While not mandatory, they usually have some valuable nugget of information.

A PLUG FOR THE CONNECTOR SECTION

Appendix B is a section on connectors: balanced connectors, unbalanced connectors, and the phones connectors used on the HM-54.

More resources on our website at www.mackie.com.

THE GLOSSARY: A Haven of Non-Techiness for the Neophyte

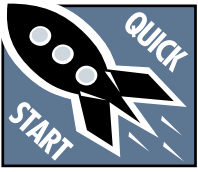
The “Glossary of Terms” is a fairly comprehensive dictionary of pro-audio terms. If terms like “clipping,” “noise floor,” or “unbalanced” leave you blank, refer to this glossary for a quick explanation.

ARCANE MYSTERIES ILLUMINATED

“Arcane Mysteries” discusses some of the down ‘n’ dirty practical realities of microphones, fixed installations, grounding, and balanced versus unbalanced lines. It's a goldmine for the neophyte, and even the seasoned pro might learn a thing or two.

Getting Started

READ THIS PAGE!!



Even if you're one of those people who never reads manuals, all we ask is that you read this page now before you begin using the HM-54. You'll be glad you did!

Zero the Controls

1. Turn down all the INPUT LEVEL controls.
2. Set all push button switches to their "out" positions.
3. Turn the POWER switch off.

Connections

1. Connect the left and right outputs from your mixer to the LEFT and RIGHT MAIN LINE INPUTS on the rear of the HM-54.
2. Connect any specific outputs (mix buses, subgroups, or aux sends can be used, or a direct output from a specific device will also work) to the desired headphone amp LEFT and RIGHT DIRECT INPUT.
3. Plug in four sets of headphones to the front of the unit. If you are hard-wiring the installation, you may want to use the rear output jacks.
4. Connect the detachable linecord to the AC socket on the back, connect it to an AC outlet properly configured for your particular model, and turn on the HM-54's power switch.

Set the Levels

1. On your mixing console, get a reasonable stereo mix going.
2. Using the subgroup or aux send that you have connected to headphone amp 1's direct inputs, create a unique headphone mix. *Leave the master subgroup or aux send level control all the way down.*
3. Turn the MAIN INPUT LEVEL halfway up to the center detent position. This is just a starting point. We can adjust it later, if necessary.

4. With music going through the main mix, don the headphones for headphone amp 1 and S-L-O-W-L-Y turn up the LEVEL control on the front panel for the corresponding headphone amp. Adjust for a comfortable listening level.

Note: If the volume gets really loud, really fast, turn down the MAIN INPUT LEVEL control until you can turn up the headphone amp LEVEL control at least halfway. Conversely, if you have to turn the headphone amp LEVEL control all the way up, turn up the MAIN INPUT LEVEL control a little more.

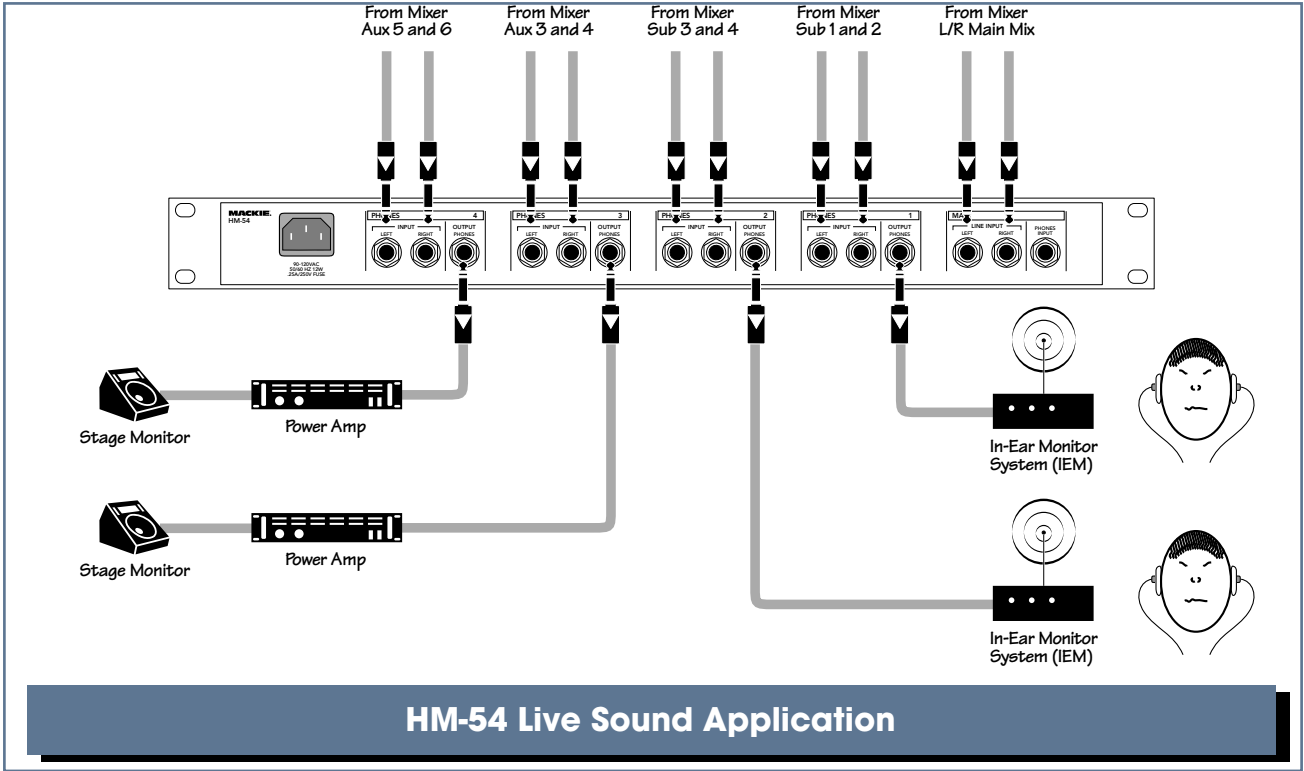
5. Push in the SOURCE select switch on headphone amp 1 and S-L-O-W-L-Y turn up the master subgroup or aux send level control feeding the DIRECT INPUT to headphone amp 1. Adjust for a comfortable listening level, equivalent to the volume level of the main mix.
6. Repeat for headphone amps 2-4.
7. Now the individual performers can tweak their own headphone mixes to suit their individual tastes.

Other Nuggets of Wisdom

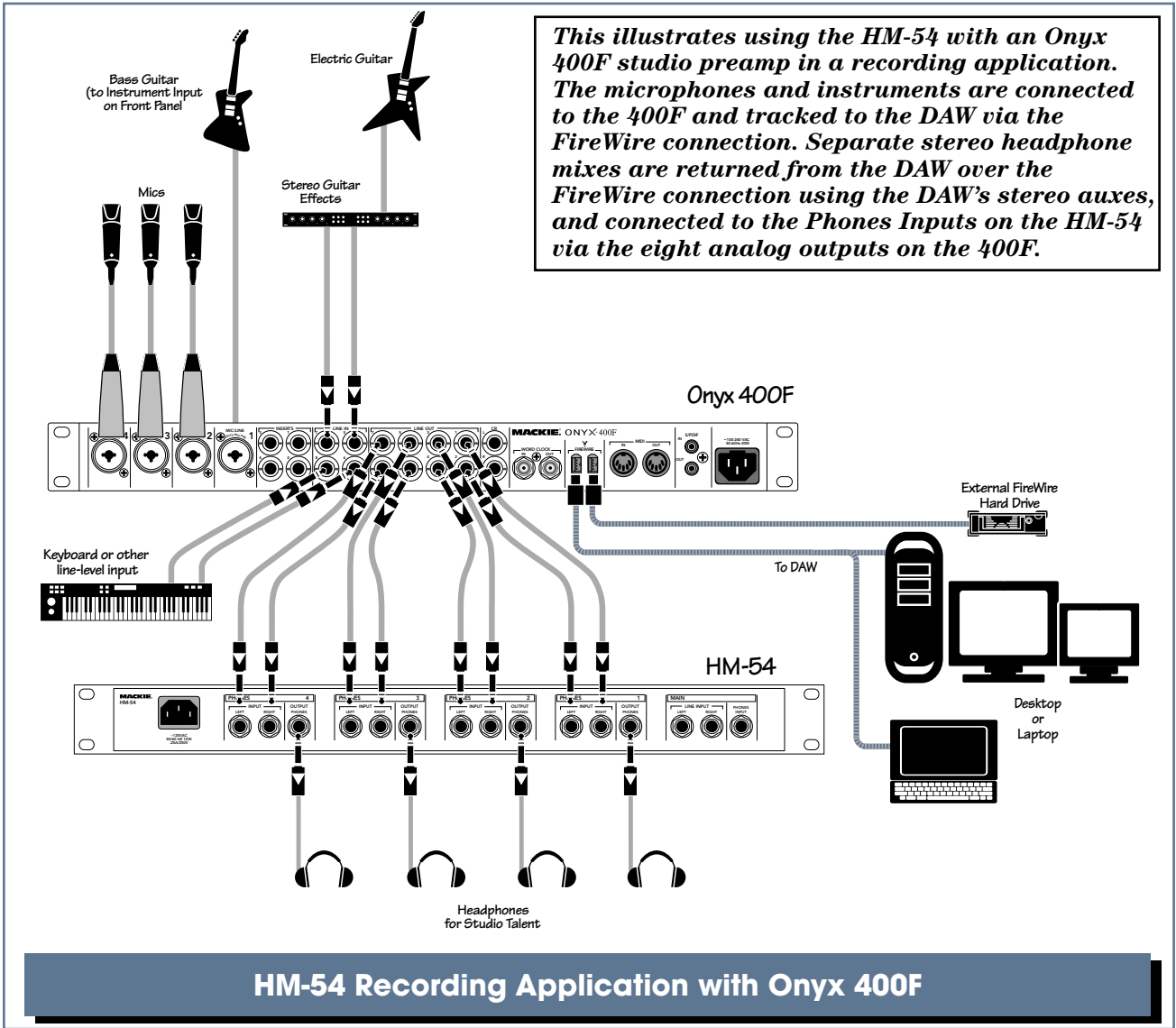
- Always turn the HM-54 off before making or changing connections.
- When you shut down your equipment, turn off the amplifiers first. When powering up, turn on the amplifiers last.
- Never listen to loud music for prolonged periods. Please see the Safety Instructions on page 2 for information on hearing protection.
- Save the shipping box! You may need it someday, and you don't want to have to pay for another one.

That's it for the "Getting Started" section. Next comes the "Hookup" section that shows you some typical ways that you might use the HM-54 in real applications. After that, you can take the grand tour of the HM-54, with descriptions of every knob, button, input, and output. We encourage you to take the time to read all of the feature descriptions, but at least you know it's there if you have any questions.

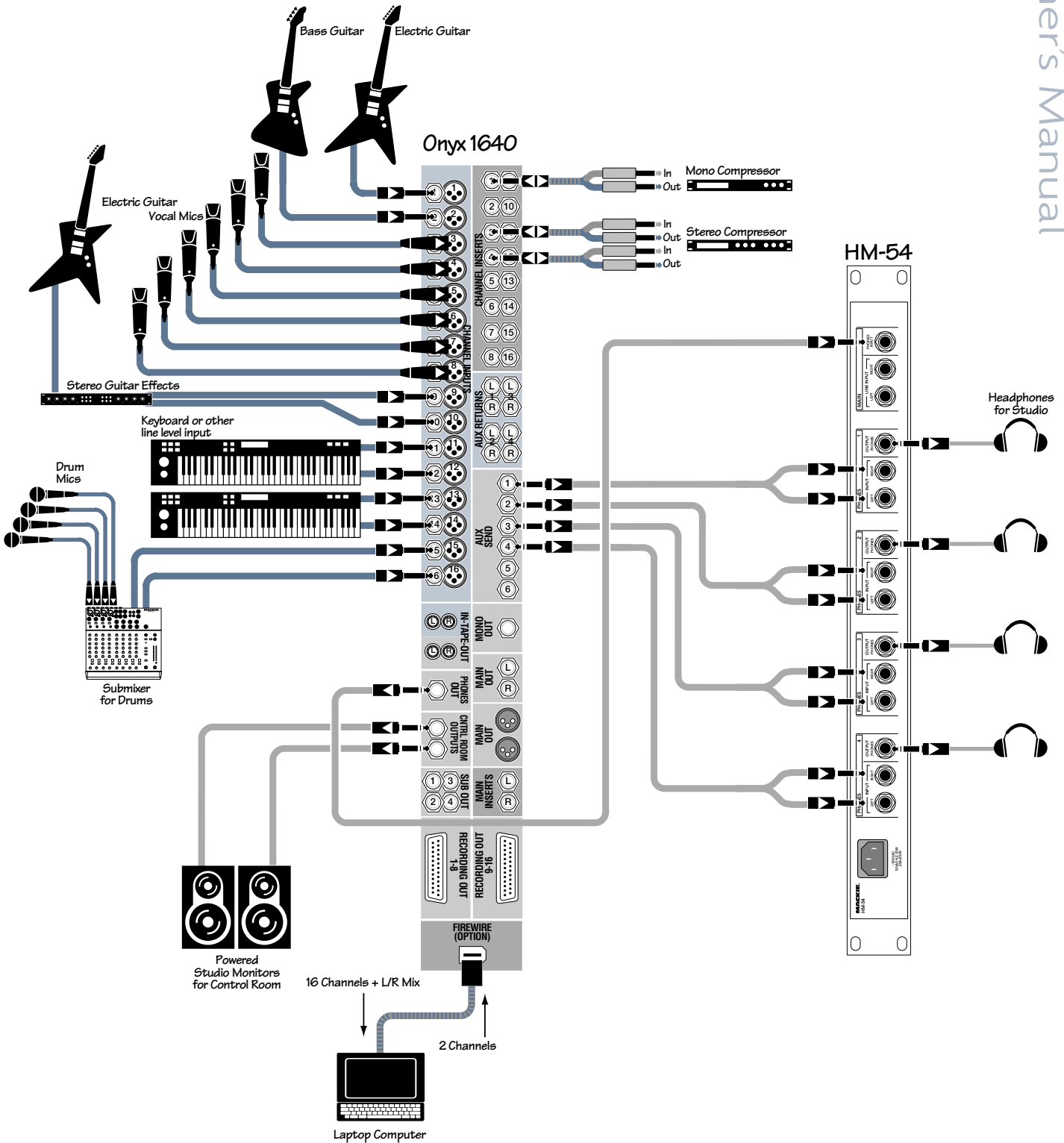
Hookup Diagrams



HM-54 Live Sound Application



HM-54 Recording Application with Onyx 400F



This example demonstrates how to use an Onyx 1640 mixer with the optional FireWire card in a recording application. Four aux sends from the 1640 provide four separate mono headphone mixes to the HM-54. The Phones output from the 1640 is connected to the Main Phones Input on the HM-54, allowing the talent to listen to either the same mix as the engineer in the control room (i.e., stereo return from the DAW for overdubbing), or to their own individual headphone mix (tracking). If the talent and engineer are in the same room, each musician can adjust their own headphone mix on the Onyx mixer by tweaking their own aux send.

HM-54 Recording Application with Onyx 1640

HM-54 Features

Front Panel

All four headphone amplifiers share the same features:

- Dual-sources for each channel
- Individual front panel level controls
- Front and rear panel phone outputs for each channel
- Balanced inputs

1. MAIN INPUT LEVEL

This adjusts the main mix input signal level coming into the HM-54 LINE INPUT and PHONES INPUT jacks on the rear panel.

2. PHONES Jack

Plug your headphones into this jack. It carries the same signals that appear on the rear panel PHONES OUTPUT jacks [8].

You can also connect an in-ear monitor (IEM) system to the PHONES jack to provide an individual monitor mix.

Note: Since the PHONES output delivers a higher signal level than a standard line-level output, you may need to turn the PHONES LEVEL control down more than usual.

Note: Plugging headphones into the front panel PHONES jack automatically disconnects the signal from the rear panel PHONES jack.



WARNING: The headphone amps are designed to drive any standard headphones to a very loud level. We're not kidding! They can cause permanent hearing damage. Even intermediate levels may be painfully loud with some headphones.

BE CAREFUL! Always start with the PHONES level turned all the way down before connecting headphones to the PHONES jack. Keep it down until you've put on the headphones. Then turn it up slowly. Why? Always remember: *"Engineers who fry their ears, find themselves with short careers."*

3. SOURCE Select Switch

This switch allows you to select either the main mix input signal or the direct input signal for the headphone amp source.



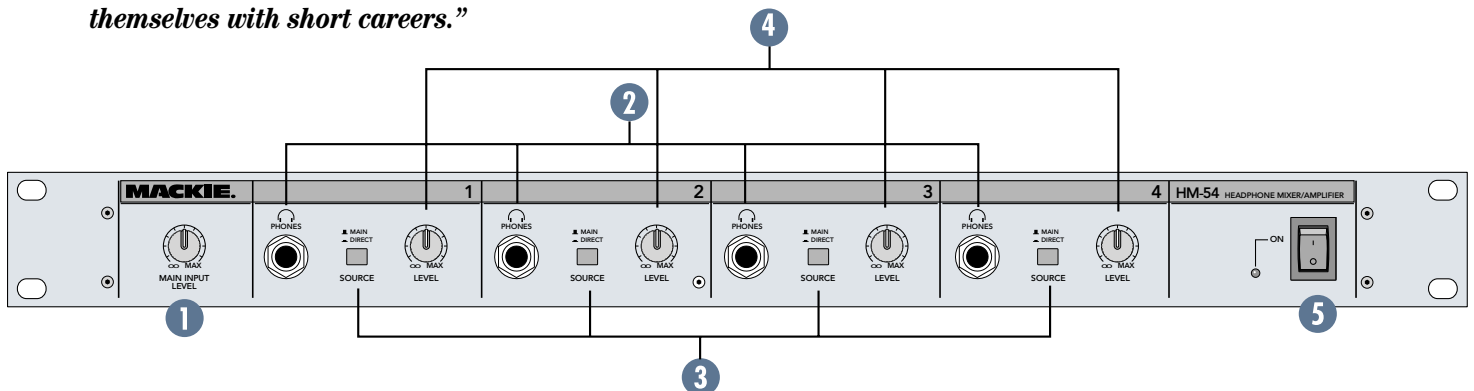
CAUTION: Make sure the main mix input signal and the direct input signal are roughly equivalent in volume before switching between the two. If you have the headphone amp LEVEL control [4] adjusted for one, and the other signal is considerably louder, you could damage your hearing. Follow the procedure described in "Set the Levels" on page 5.

4. LEVEL Control

This adjusts the volume for each individual headphone output. It affects both PHONES OUTPUT jacks (front and rear panel).

5. Power Switch

This one is self-explanatory. When the power switch is turned ON (up), power is supplied to the HM-54 and the power ON indicator lights up.



Rear Panel

The rear panel is where you make all your analog audio connections to the HM-54 (except for the convenient additional headphone jacks on the front).

6. IEC Power Receptacle

This is a standard 3-prong IEC power connector. Connect the detachable linecord (included in the box with your HM-54) to the power receptacle, and plug the other end of the linecord into an AC outlet properly configured for your particular model.

7. LEFT and RIGHT PHONES INPUT

These 1/4" TRS jacks accept a balanced or unbalanced line-level input signal. This is the signal that you select when you push in the SOURCE select switch [3] on the front panel, so connect the individual headphone mix from the mixer to these inputs.

The 1/4" TRS inputs are wired as follows:

- Sleeve = Shield or ground
- Tip = Positive (+ or hot)
- Ring = Negative (- or cold)

If you are connecting a mono input signal to these inputs, use a Y-Cord splitter to connect the signal to both inputs (otherwise you will only hear the signal in one side of the headphones). See "Mults and Y's" in Appendix B for more info.

8. PHONES OUTPUT

This is another headphone output that duplicates the PHONES [2] output on the front panel. Typically, you would use these when installing the HM-54 in a rack and hard-wiring the headphone outputs to a patch panel in the rack.

Note: Plugging headphones into the front panel PHONES jack automatically disconnects the signal from the rear panel PHONES jack.

9. LEFT and RIGHT MAIN INPUT

These 1/4" TRS jacks accept a balanced or unbalanced line-level input signal. This is the signal that you select when you leave the SOURCE select switch [3] on the front panel in the out position, so connect the main mix output from the mixer to these inputs.

The 1/4" TRS inputs are wired as follows:

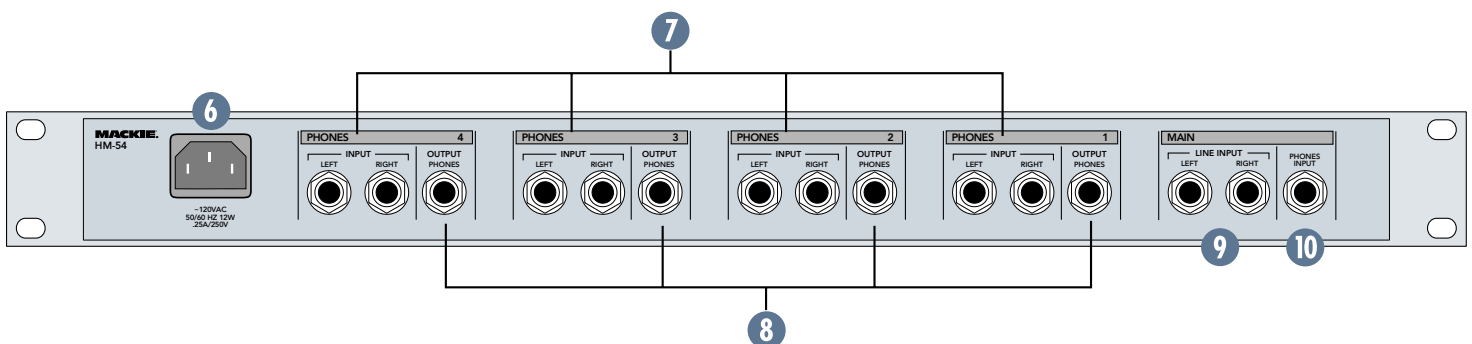
- Sleeve = Shield or ground
- Tip = Positive (+ or hot)
- Ring = Negative (- or cold)

If you are connecting a mono input signal to these inputs, use a Y-Cord splitter to connect the signal to both inputs (otherwise you will only hear the effects in one side of the headphones). See "Mults and Y's" in Appendix B for more info.

10. MAIN PHONES INPUT

This is a 1/4" TRS headphone input jack. This allows you to use the headphone output from your mixer to provide the main mix signal to the HM-54. Simply use a TRS-to-TRS cable to connect the PHONES output from the mixer to this input on the HM-54.

Note: Plugging the main mix signal into the MAIN PHONES INPUT jack automatically disconnects the LEFT and RIGHT MAIN INPUT [9] jacks.



Appendix A: Service Information

Warranty Service

Details concerning Warranty Service are spelled out in the Warranty section on page 15.

If you think your HM-54 has a problem, please do everything you can to confirm it before calling for service. Doing so might save you from the deprivation of your headphone amp and the associated suffering.

These may sound obvious to you, but here are some things you can check. Read on.

Troubleshooting

No Power

- Our favorite question: Is it plugged in?
- Make sure the power cord is securely seated in the IEC socket [6] and plugged all the way into the AC outlet.
- Make sure the AC outlet is live (check with a tester or lamp).
- Is the POWER [5] switch on? Make sure the POWER switch on the front panel is in the ON position (up) and the power LED is lit.
- Are all the lights out in your building? If so, contact your local power company to get power restored.
- If the power LED is not illuminated on the front panel, and you are certain that the AC outlet is live, it will be necessary to have your HM-54 serviced. *There are no user serviceable parts inside.* Refer to “Repair” at the end of this section to find out how to proceed.

Bad Channel

- Is the input LEVEL control [4] for the channel turned up?
- Is the signal source turned up? Make sure the signal level from the selected input source is high enough to drive the line-level inputs on the HM-54.
- Try the same source signal in another channel, set up exactly like the suspect channel.

Bad Output

- If you are listening to a PHONES OUTPUT [8] on the rear panel, make sure that nothing is plugged into the corresponding PHONES out on the front panel.
- If only one side of the stereo headphones is working, make sure you have a signal at both inputs. There must be a signal present at both inputs [7][9][10] to get a signal in both sides of the headphone output.

Bad Sound

- Is the input connector plugged completely into the jack?
- Is it loud and distorted? Make sure the input LEVEL [4] control for the channel is set correctly. Reduce the signal level on the input source if possible.
- If possible, listen to the signal with headphones plugged into the input source device. If it sounds bad there, it's not the HM-54 causing the problem.

Noise/Hum

- If connecting an unbalanced source to the balanced inputs on the HM-54 using a TS-to-TS 1/4" cable, it could cause a ground loop. Refer to “Unbalancing a Line” for more info on connecting an unbalanced source to a balanced input.
- Sometimes it helps to plug all the audio equipment into the same AC circuit so they share a common ground.

Repair

Service for Mackie products is available at a factory-authorized service center. Service for Mackie products living outside the United States can be obtained through local dealers or distributors.

If your HM-54 needs service, follow these instructions:

1. Review the preceding troubleshooting suggestions. Please.
2. Call Tech Support at 1-800-898-3211, 7 am to 5 pm PST, to explain the problem and obtain a Service Request Number. Have your HM-54's serial number ready.
You must have a Service Request Number before you can obtain factory-authorized service.
3. Keep this owner's manual and the detachable linecord. We don't need them to repair the HM-54.
4. Pack the preamplifier in its original package, including endcaps and box. This is **VERY IMPORTANT**. When you call for the Service Request Number, please let Tech Support know if you need new packaging. *Mackie is not responsible for any damage that occurs due to non-factory packaging.*
5. Include a legible note stating your name, shipping address (no P.O. boxes), daytime phone number, Service Request Number, and a detailed description of the problem, including how we can duplicate it.
6. Write the Service Request Number in **BIG PRINT** on top of the box. Units sent to us without the Service Request Number will be refused.
7. Tech Support will tell you where to ship the preamplifier for repair. We suggest insurance for all forms of cartage.
8. We'll try to fix the HM-54 within three to five business days. Ask Tech Support for the latest turn-around times when you call for your Service Request Number. The HM-54 must be packaged in its original packing box, and must have the Service Request Number on the box. Once it's repaired, we'll ship it back the same way in which it was received. This paragraph does not necessarily apply to non-warranty repair.

Note: You must have a sales receipt from an Authorized Mackie Dealer to qualify for a warranty repair.

Need Help?

**You can reach a technical support representative
Monday through Friday
from 7 AM to 5 PM PST at:**

1-800-898-3211

**After hours, visit www.mackie.com and click Support,
or email us at: techmail@mackie.com**

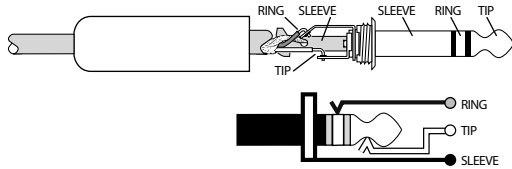


Appendix B: Connections

1/4" TRS Phone Plugs and Jacks

"TRS" stands for Tip-Ring-Sleeve, the three connection points available on a stereo 1/4" or balanced phone jack or plug. TRS jacks and plugs are used for balanced signals and stereo headphones.

Balanced Mono



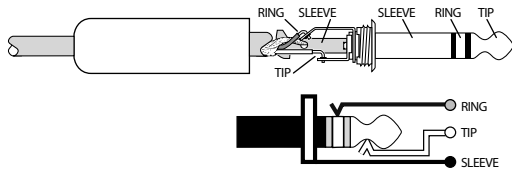
1/4" TRS Balanced Mono Wiring:

Sleeve = Shield

Tip = Hot (+)

Ring = Cold (-)

Stereo Headphones



1/4" TRS Stereo Unbalanced Wiring:

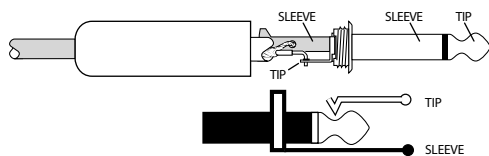
Sleeve = Shield

Tip = Left

Ring = Right

1/4" TS Phone Plugs and Jacks

"TS" stands for Tip-Sleeve, the two connection points available on a mono 1/4" phone jack or plug. They are used for unbalanced signals like the high-impedance instrument inputs on the Onyx 400F.



1/4" TS Unbalanced Wiring:

Sleeve = Shield

Tip = Hot (+)

Unbalancing a Line

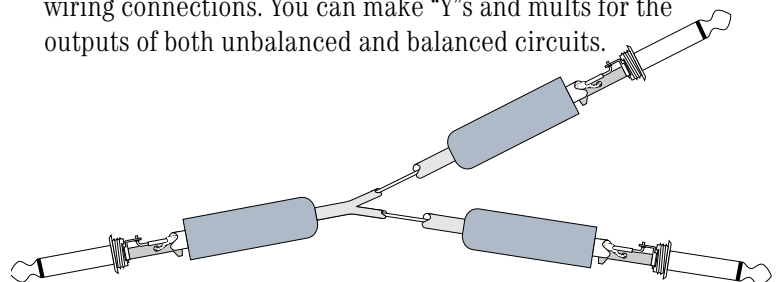
In most studio, stage, and sound reinforcement situations, there is a combination of balanced and unbalanced inputs and outputs on the various pieces of equipment. This usually will not be a problem in making connections.

- When connecting a balanced output to an unbalanced input, use a 1/4" TRS plug on the balanced end and a 1/4" TS plug on the unbalanced end. Be sure the signal high (hot) connections are wired to each other (tip to tip), and that the balanced signal low (cold, ring) goes to the ground (earth, shield) connection at the unbalanced input. In most cases, the balanced ground (earth) will also be connected to the ground (earth) at the unbalanced input. If there are ground-loop problems, this connection may be left disconnected at the balanced end.
- When connecting an unbalanced output to a balanced input, use a 1/4" TS plug on the unbalanced end and a 1/4" TRS plug on the balanced end. Be sure that the signal high (hot) connections are wired to each other (tip to tip). The unbalanced ground (earth) connection should be wired to the low (cold, ring) and the ground (earth, shield) connections of the balanced input. If there are ground-loop problems, try disconnecting the unbalanced ground (earth) connection from the balanced input ground (earth) connection, leaving the unbalanced ground connected to the balanced input low (cold) connection only.

In some cases, you may have to make up special adapters to interconnect your equipment. For example, you may need a balanced XLR female connected to an unbalanced 1/4" TS phone plug. Many common adapters can be found at your local electronics supply store.

Mults and "Y"s

A mult or "Y" connector allows you to route one output to two or more inputs by simply providing parallel wiring connections. You can make "Y"s and mults for the outputs of both unbalanced and balanced circuits.



Y-Cord Splitter

Appendix C: Technical Info

HM-54 Specifications

Frequency Response

Main Input to any Output (Level @ 12 o'clock):
+0, -1 dB, 20 Hz to 20 kHz

Distortion (THD & IMD)

Main Input to any Output (@ +4 dBu output):
THD+N: < 0.01%, 20 Hz to 20 kHz BW,
1 kHz input @ +4 dBu, Level @ 12 o'clock

Noise

Residual Output Noise:
-103 dBu (all outputs off, 600Ω load)
-97 dBu (all outputs @ 12 o'clock, 600Ω load)

Input Sensitivity

0 dBu = 1.5 mW/600Ω (Level @ 12 o'clock)

Input Gain Control Range

Main Input to any Output:
4 dB maximum

Rated Output

Maximum Rated Output (1 kHz):
100 mW ±0.5 dB @ 1% THD
(60Ω load, all channels driven)
140 mW ±0.5 dB @ 1% THD
(60Ω load, one channel driven)
150 mW ±0.5 dB @ 1% THD
(240Ω load, all channels driven)
195 mW ±0.5 dB @ 1% THD
(240Ω load, one channel driven)

AC Power Requirements

Power Consumption: 12 watts
U.S. and Canada: 120 VAC, 50/60 Hz
AC Connector: 3-pin IEC 250 VAC

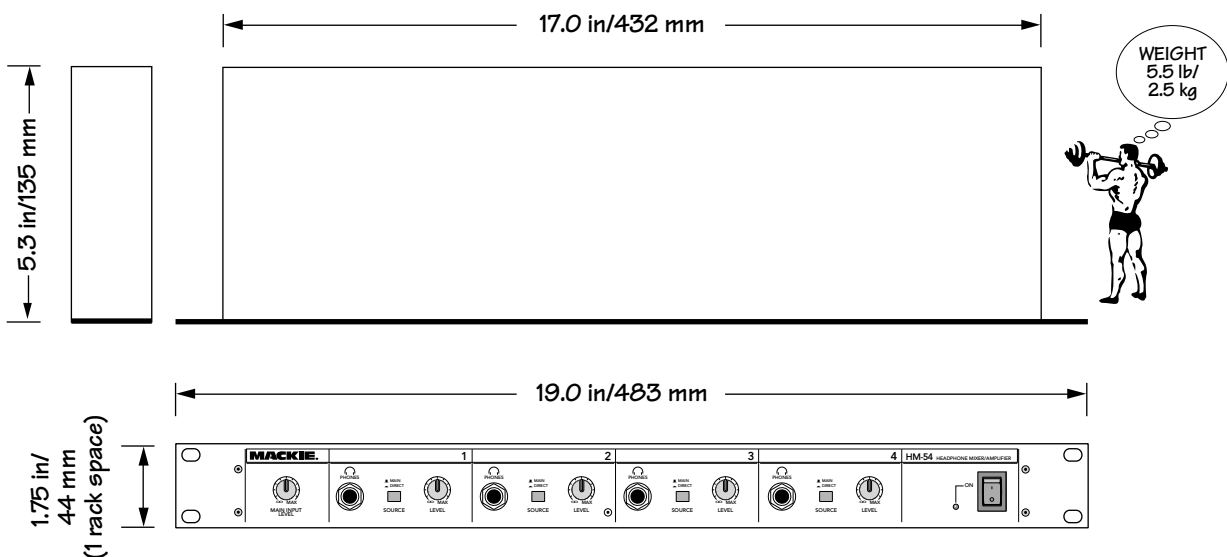
Physical Dimensions and Weight

Height: 1.75 in/44 mm
Width: 17.0 in/432 mm (main body of unit)
19.0 in/483 mm (with rack ears)
Depth: 5.3 in/135 mm
Weight: 5.5 lb/2.5 kg

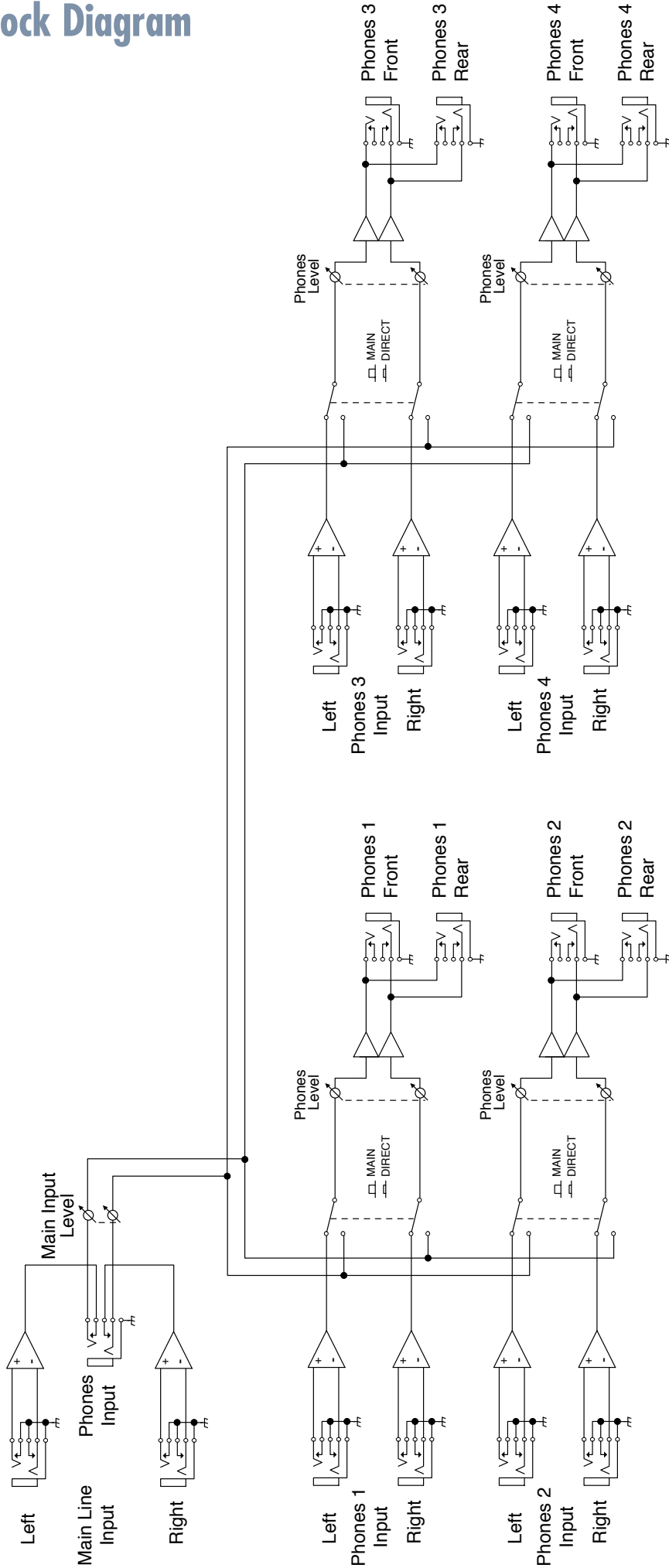
LOUD Technologies Inc. is always striving to improve our products by incorporating new and improved materials, components, and manufacturing methods. Therefore, we reserve the right to change these specifications at any time without notice.

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HM-54 Block Diagram



HM-54 Limited Warranty

Please keep your sales receipt in a safe place.

A. LOUD Technologies Inc. warrants all materials, workmanship and proper operation of this product for a period of **one year** from the original date of purchase. If any defects are found in the materials or workmanship or if the product fails to function properly during the applicable warranty period, LOUD Technologies, at its option, will repair or replace the product. **This warranty applies only to equipment sold and delivered within the U.S. by LOUD Technologies Inc. or its authorized dealers.**

B. Failure to register online or return the product registration card will not void the one-year warranty.

C. Service and repairs of Mackie products are to be performed **only** at a factory-authorized facility (see D below). Unauthorized service, repairs, or modification will void this warranty. To obtain repairs under warranty, you must have a copy of your sales receipt from the authorized Mackie dealer where you purchased the product. It is necessary to establish purchase date and determine whether your Mackie product is within the warranty period.

D. To obtain factory-authorized service:

1. Call Mackie Technical Support at 800/898-3211, 7 AM to 5 PM Monday through Friday (Pacific Time) to get a Service Request Number. Products returned without a Service Request Number will be refused.
2. Pack the product in its original shipping carton. Also include a note explaining exactly how to duplicate the problem, a copy of the sales receipt with price and date showing, and your return street address (no P.O. boxes or route numbers, please!). If we cannot duplicate the problem or establish the starting date of your Limited Warranty, we may, at our option, charge for service time.
3. Ship the product in its original shipping carton, **freight prepaid** to the authorized service center. The address of your closest authorized service center will be given to you by Technical Support.

IMPORTANT: Make sure that the Service Request Number is plainly written on the shipping carton.

E. LOUD Technologies reserves the right to inspect any products that may be the subject of any warranty claims before repair or replacement is carried out. LOUD Technologies may, at our option, require proof of the original date of purchase in the form of a dated copy of the original dealer's invoice or sales receipt. Final determination of warranty coverage lies solely with LOUD Technologies.

F. Any products returned to one of the LOUD Technologies factory-authorized service centers and deemed eligible for repair or replacement under the terms of this warranty will be repaired or replaced within thirty days of receipt. LOUD Technologies and its authorized service centers may use refurbished parts for repair or replacement of any product. Products returned to LOUD Technologies that do not meet the terms of this Warranty will be not be repaired unless payment is received for labor, materials, return freight, and insurance. Products repaired under warranty will be returned freight prepaid by LOUD Technologies to any location within the boundaries of the USA.

G. LOUD Technologies warrants all repairs performed for 90 days or for the remainder of the warranty period. This warranty does not extend to damage resulting from improper installation, misuse, neglect or abuse, or to exterior appearance. This warranty is recognized only if the inspection seals and serial number on the unit have not been defaced or removed.

H. LOUD Technologies assumes no responsibility for the quality or timeliness of repairs performed by an authorized service center.

I. This warranty is extended to the original purchaser and to anyone who may subsequently purchase this product within the applicable warranty period. A copy of the original sales receipt is required to obtain warranty repairs.

J. This is your sole warranty. LOUD Technologies does not authorize any third party, including any dealer or sales representative, to assume any liability on behalf of LOUD Technologies or to make any warranty for LOUD Technologies Inc.

K. THE WARRANTY GIVEN ON THIS PAGE IS THE SOLE WARRANTY GIVEN BY LOUD TECHNOLOGIES INC. AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS AND IMPLIED, INCLUDING THE WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. THE WARRANTY GIVEN ON THIS PAGE SHALL BE STRICTLY LIMITED IN DURATION TO ONE YEAR FROM THE DATE OF ORIGINAL PURCHASE FROM AN AUTHORIZED MACKIE DEALER. UPON EXPIRATION OF THE APPLICABLE WARRANTY PERIOD, LOUD TECHNOLOGIES INC. SHALL HAVE NO FURTHER WARRANTY OBLIGATION OF ANY KIND. LOUD TECHNOLOGIES INC. SHALL NOT BE LIABLE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES THAT MAY RESULT FROM ANY DEFECT IN THE MACKIE PRODUCT OR ANY WARRANTY CLAIM. Some states do not allow exclusion or limitation of incidental, special, or consequential damages or a limitation on how long warranties last, so some of the above limitations and exclusions may not apply to you. This warranty provides specific legal rights and you may have other rights which vary from state to state.

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