



McIntosh Laboratory, Inc. 2 Chambers Street Binghamton, New York 13903-2699 Phone: 607-723-3512 www.mcintoshlabs.com

MI502

Two Channel Power Amplifier

Owner's Manual





Thank You from all of us at McIntosh

You have invested in a precision instrument that will provide you with many years of enjoyment. Please take a few moments to familiarize yourself with the features and instructions to get the maximum performance from your equipment. If you need further technical assistance, please contact your dealer who may be more familiar with your particular setup including other brands. You can also contact McIntosh with additional questions or in the unlikely event of needing service.

McIntosh Laboratory, Inc.

2 Chambers Street
Binghamton, New York 13903

Technical Assistance (607) 723-3512
Fax (607) 724-0549

Customer Service (607) 723-3515
Fax (607) 723-1917

Email support@mcintoshlabs.com
Website www.mcintoshlabs.com

Please Take A Moment

For future reference, you can write down your serial number and purchase information here. We can identify your purchase from this information if the occasion should arise:

Serial Number: _____

Purchase Date: _____

Dealer Name: _____

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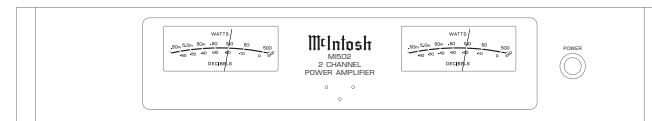
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Introduction

Now you can take advantage of traditional McIntosh standards of excellence in the MI502 Power Amplifier. The Two Channel Power Amplifier produces high power output per channel and will drive quality Loudspeakers to a high level of performance. The MI502 reproduction is sonically transparent and absolutely accurate. The McIntosh Sound is “The Sound of the Music Itself.”

General Information

1. The MI502 mutes the speaker output for approximately two seconds when first turned on.
2. Included with the MI502 are two Side Rack Mounted Brackets and screw fasteners. Refer to page 5 for installing the Side Rack Mount Brackets.



MI 502 with side mount brackets

3. For the best performance and safety it is important to always attach a single Loudspeaker with an 8 Ohm or 4 Ohm impedance to the Right or Left Channel output terminals. Refer to “How to Connect” on page 8.

Note: The impedance of a Loudspeaker actually varies as the Loudspeaker reproduces different frequencies. As a result, the nominal impedance rating of the Loudspeaker (usually measured at a midrange frequency) might not always agree with the impedance of the Loudspeaker at low frequencies where the greatest amount of power is required. Contact the Loudspeaker Manufacturer for additional information about the actual impedance of the Loudspeaker before connecting it to the McIntosh MI502.

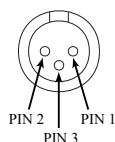
4. In the event the MI502 Channel(s) over heat, due to improper ventilation or Loudspeaker Impedance, the protection circuits will activate. The Front Panel Channel LED will change color and the audio will be muted. Refer to page 9. When the MI502 has returned to a safe operating temperature, Channel(s) normal operation will resume.
5. For additional information on the MI502 and other McIntosh Products please visit the McIntosh Website at www.mcintoshlabs.com.

Connector and Cable Information

XLR Connectors

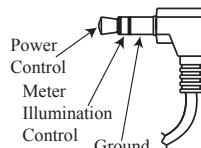
Below is the Pin configuration for the XLR Balanced Input, Input/Output Connectors on the MI502. Refer to the diagram for connection:

- PIN 1: Shield/Ground
- PIN 2: + Input/Output
- PIN 3: - Input/Output



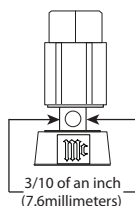
Power Control Connector

The MI502 Power Control Input receives an On/Off signal from +5 to +12 volts. The Power Control Output will in turn provide a +12 volt Output Signal with a total current up to 50mA. An additional connection is for controlling the illumination of the MI502 Meter Power Output Indicators. The 3.5mm stereo mini phone plug connects to a McIntosh Preamplifier or A/V Control Center Power Control Output.



Output Terminal Connector

When cables with spade lugs are used for Loudspeaker Connection, the spade lugs need an opening of at least 3/10 inch (7.6mm)



Performance Features

• Power Output

The MI502 consists of Two Power Amplifier Channels, each capable of 500 watts into 8 ohms 800 watts into 4 ohms Loudspeakers with distortion less than 0.05%.

• Loudspeaker Guard

The McIntosh Loudspeaker Guard Circuit prevents the amplifier from being over driven into clipping, with its harsh distorted sound that can damage your valuable Loudspeakers.

• Balanced and Unbalanced Inputs

There are Balanced and Unbalanced Connections for both Power Amplifier Input Channels.

• Sentry Monitor and Thermal Protection

McIntosh Sentry Monitor power output stage protection circuits ensure the MI502 will have a long and trouble free operating life. Built-in Thermal Protection circuits guard against overheating.

• Illuminated Power Meters

The Illuminated Power Output Watt Meters on the MI502 are peak responding, and indicates the Power Output of the amplifiers.

• Power Control

The McIntosh Power Control Circuit allows for remote turn-on of the MI502 Power Amplifier from a McIntosh A/V Control Center or Preamplifier for a single or dual Zone System.

• Special Power Supply

A regulated Power Supply ensures stable noise free operation even though the power line varies.

• LED Solid State Front Panel Illumination

The even Illumination of the Front Panel is accomplished by extra long life Light Emitting Diodes (LEDs). The Metal and Glass Front Panel ensures the pristine beauty of the MI502 will be retained for many years.



Installation

The MI502 needs to be placed upright on its four feet. It also can be custom installed. Remove the four feet when it is custom installed and retain them with the fastening screws for possible future use. The required panel cutout, ventilation cutout and unit dimensions are shown in the drawing on the right side of this page.

It is necessary to provide adequate ventilation for cool operation, ensuring long life for the MI502. Do not install the MI502 above heat generating components. When the MI502 is installed in a cabinet with other components, use a ventilation fan to provide cool operating temperature.

A custom cabinet installation needs to provide the following minimum spacing for cool operation:

Allow at least 3 inches (7.6cm) above the top, 2 inches (5.08cm) below the bottom, 3 inches (7.62cm) behind the rear panel and 2 inches (5.08cm) on each side of the MI502, providing airflow. Allow 2½ inches (6.35 cm) in front of the mounting¹ panel for clearance. Be sure to cut out a ventilation hole in the mounting shelf according to the dimensions in the drawing.

¹ When the MI502 is installed together with other McIntosh Components, check clearances on all components before proceeding.

Installation of Side Rack Mount Brackets

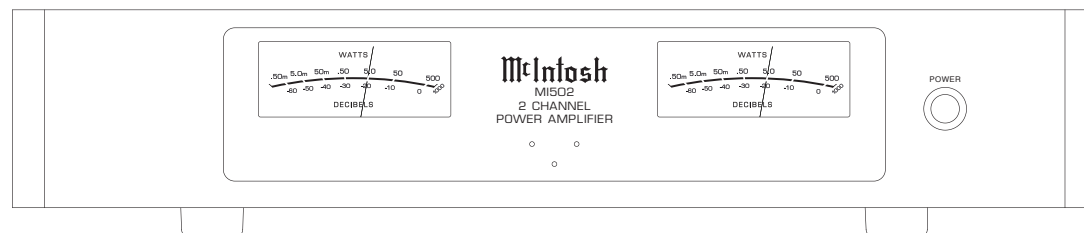
When desired, to install MI502 Side Rack Mounting Brackets, follow the steps below for one side at a time:

1. Refer to figure 1 to remove the two side screws and save them for possible future use.
2. Position the Side Rack Mounting Bracket as illustrated in figure 2. Then attach the Bracket to the Front and Side Panel of the MI502, using the screws supplied with the Bracket.
3. Perform steps 1 and 2 to mount the second Bracket to the other side of the MI502.

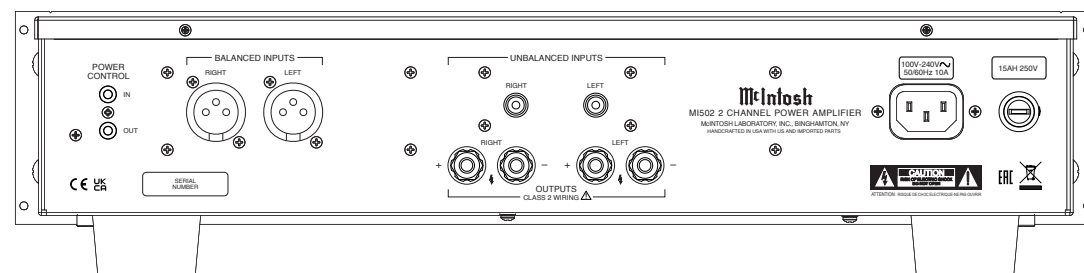
Dimensions

The following dimensions can assist in determining the best location for your MI502.

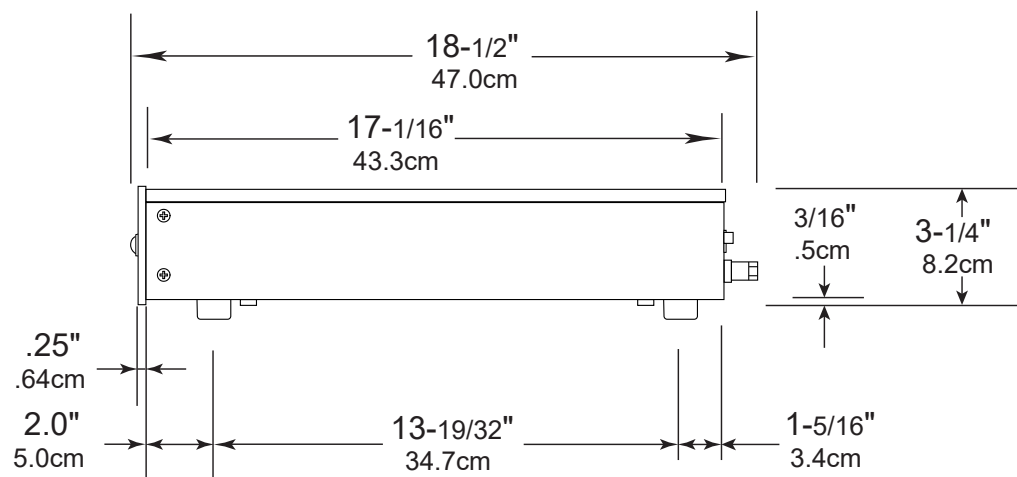
Front View



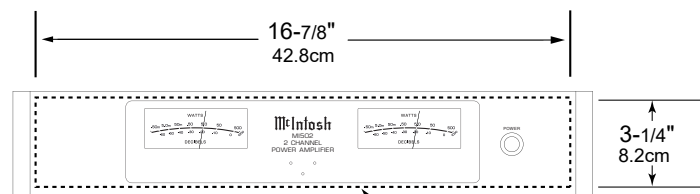
Rear View



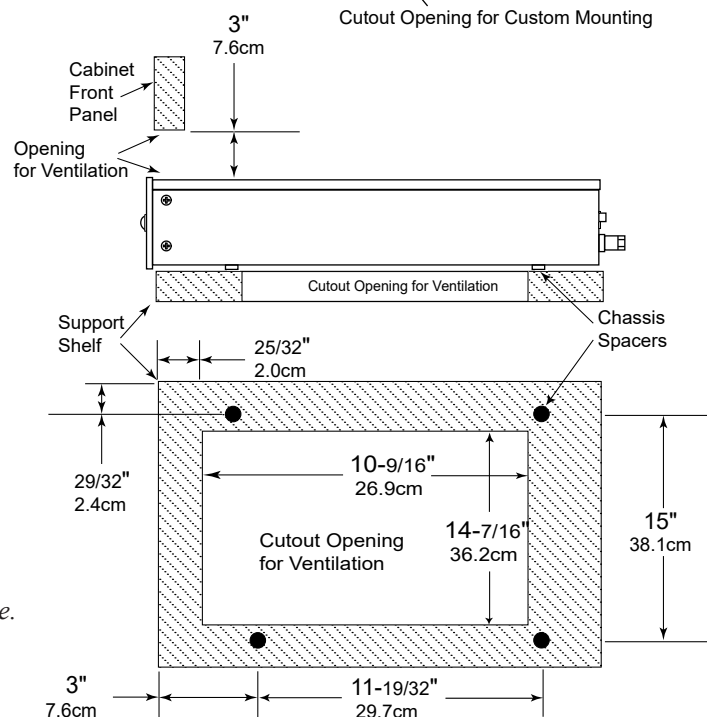
Side View



MI502 Front Panel Custom Cabinet Cutout

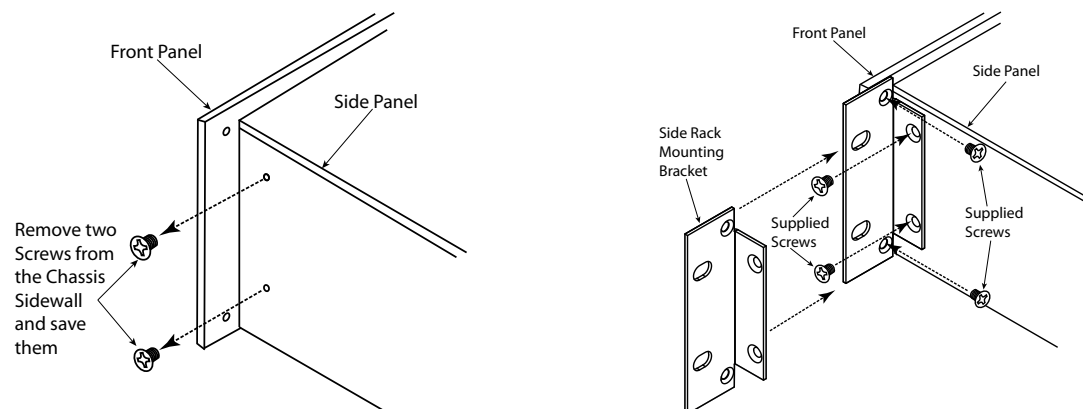


MI502 Side View in Custom Cabinet



MI502 Bottom View in Custom Cabinet

Note: Center the cutout horizontally on the unit. For clarity, illustration not drawn to scale.



Output Terminals

When connecting the Loudspeaker Hookup Cables to the MI502 Amplifier Output Terminals please follow the steps below:

1. Rotate the top of the Output Terminal Post counterclockwise until an opening appears. Refer to figures 1 and 2.

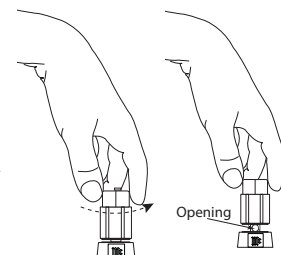


Figure 1 Figure 2

2. Insert the Loudspeaker hookup cable into the Output Terminal Post opening or the cable spade lug around the center post of the Output Terminal. Refer to figure 3.

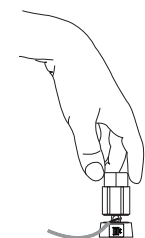


Figure 3

3. Rotate the top of the Output Terminal Post clockwise until it is finger tight. Refer to figure 4.

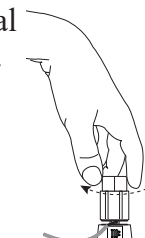


Figure 4

4. Place the supplied McIntosh Wrench over the top of the Output Terminal and rotate it one quarter of a turn (90°) to secure the Loudspeaker Cable Connection. **Do not over tighten.** Refer to figure 5.

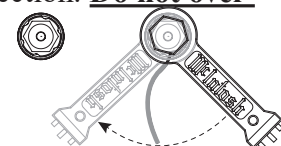
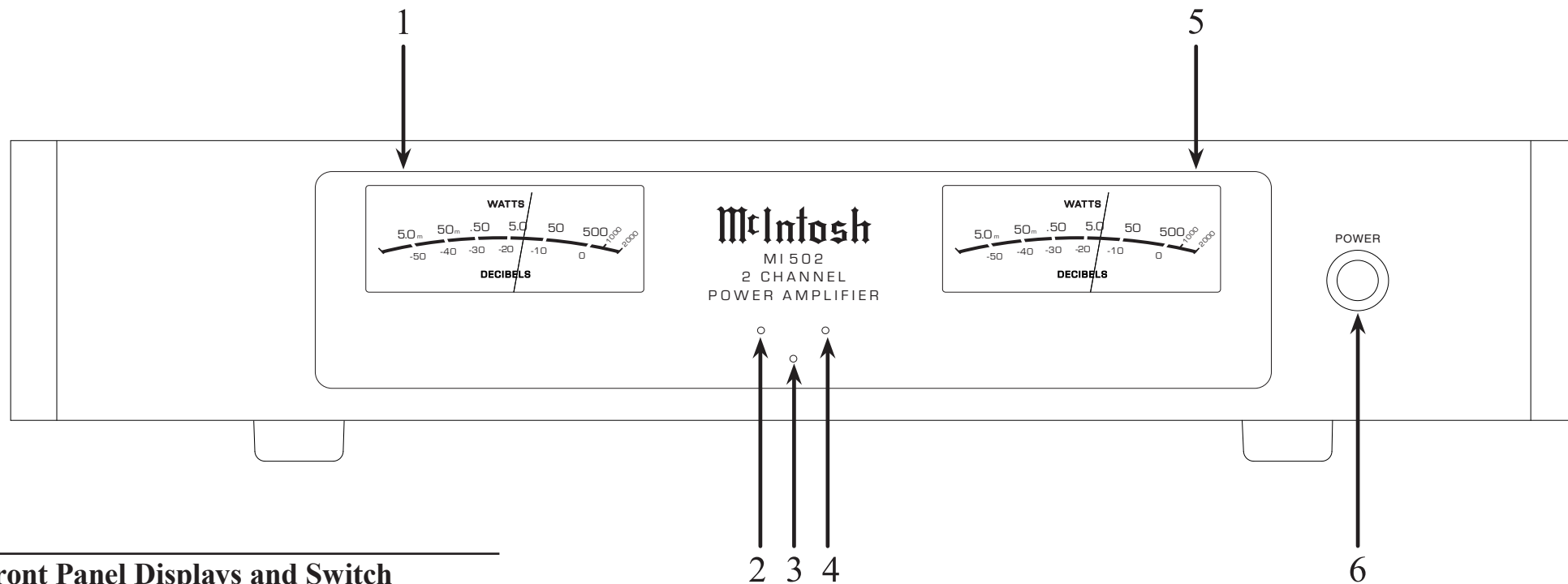


Figure 5



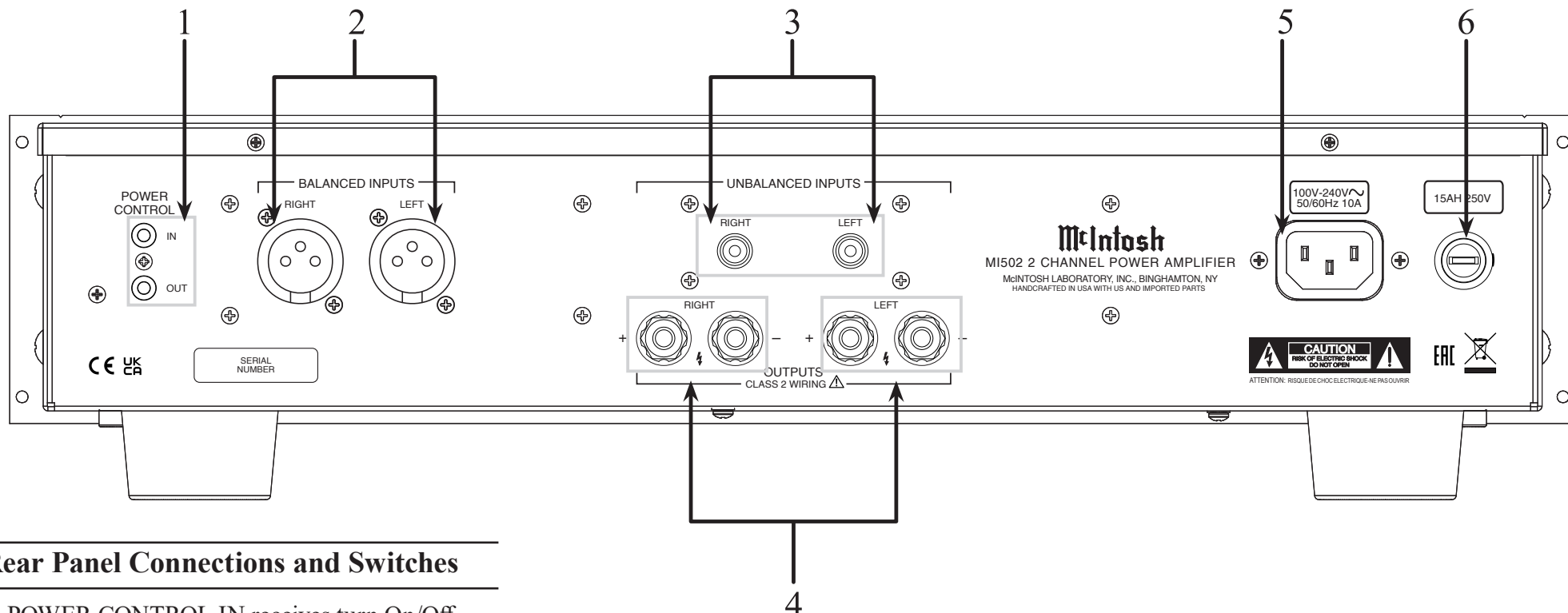
Front Panel Displays



Front Panel Displays and Switch

1. Meter indicates Left Channel Amplifier Output
2. LED indicates various Left Channel Circuitry Functions
3. LED Standby Power On Indicator
4. LED indicates various Right Channel Circuitry Functions
5. Meter indicates Right Channel Amplifier Output
6. POWER Push-Button switches AC Power On or Off

Rear Panel Connections



Rear Panel Connections and Switches

1. POWER CONTROL IN receives turn On/Off signal from another McIntosh component
POWER CONTROL OUT sends a turn On/Off signal to another McIntosh component
2. BALANCED input RIGHT Channel
BALANCED input LEFT Channel
3. UNBALANCED input RIGHT Channel
UNBALANCED input LEFT Channel
4. Left and Right channel loudspeaker connections
5. Connect MI502 Power Cord to an AC Outlet
6. Main Fuse, refer to the rear panel for the correct fuse size and rating

How to Connect in a Multi Channel System

Caution: Do not connect the AC Power Cord to the MI502 Rear Panel until after the Loudspeaker Connections are made. Failure to observe this could result in Electric Shock.

The connection instructions below, provide an example of a typical Multi-channel System. Your system may vary from this, however the actual components would be connected in a similar manner. For additional information refer to “Connector and Cable Information” on page 3.

1. For Remote Power Control, connect a power control cable from the A/V Control Center Power Control Trigger/Output 1 to the Amplifier PWR CNTRL Power Control Input.

Note: When the Power Control Cable is connected between the MI502 and an A/V Control Center or pre-amplifier, the AUTO OFF Signal Sensing Circuitry is automatically disabled.

2. Connect XLR cables from the Balanced Outputs of an A/V Control Center or pre-amplifier to the MI502 BALANCED INPUTS.

Note: The MI502 UNBALANCED Inputs may be used in place of the Balanced Inputs when the A/V Control Center or pre-amplifier has Unbalanced Output Connections instead of Balanced Connections.

This McIntosh MI502 Power Amplifier is designed for Loudspeakers with an impedance of 4 ohms or 8 ohms. Connect a single Loudspeaker only to the Channel Output Terminals.

When connecting Loudspeakers to the MI502 it is very important to use cables of adequate size, so there is little to no power loss in the cables.

The size is specified in Gauge Numbers or AWG (American Wire Gauge). The smaller the Gauge number, the larger the wire size:

Loudspeaker Cable Distance vs Wire Gauge Guide			
Loudspeaker Impedance	25 feet (7.62 meters) or less	50 feet (15.24 meters) or less	100 feet (30.48 meters) or less
4 Ohms	14AWG	12AWG	10AWG
8 Ohms	16AWG	14AWG	12AWG

3. Prepare the Loudspeaker Hookup Cable for attachment to the MI502 Power Amplifier:

Bare wire cable ends:

4. Carefully remove sufficient insulation from the cable ends. If the cable is stranded, twist the strands together as tightly as possible, refer to figure 6.

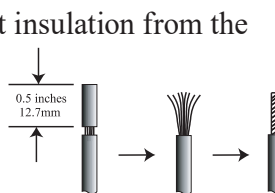


Figure 6

*Note: 1. If desired, the twisted ends can be soldered to keep the strands together.
2. The prepared bare wire cable ends may also be inserted into spade lug connectors.*

5. Attach the previously prepared bare wire cable ends into the banana plugs and secure the connections. Refer to figure 7.

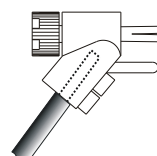


Figure 7

Note: Banana plugs are for use in the United States and Canada only.

6. Referring to figure 8, connect the Loudspeaker hookup cables with banana plugs into the hole at the end of the MI502 Negative and Positive Output Terminals, making sure to match up channel designation with Loudspeaker location.

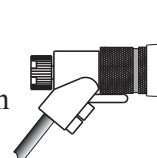


Figure 8

7. Connect the Loudspeaker hookup cables to the MI502 Output Terminal being careful to observe the correct polarities, making sure to match up channel designation with Loudspeaker location.
8. Insert the spade lug connector or prepared section of the cable end into the terminal side access hole. Then tighten the terminal cap until the cable is firmly clamped into the terminals so the lugs or wire cannot slip out. Refer to figures 9, 10 and 11.

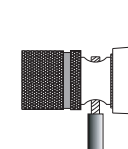


Figure 9

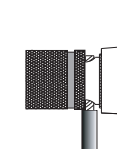


Figure 10



Figure 11

WARNING: Loudspeaker terminals are hazardous live and present a risk of electric shock. For additional instruction on making Loudspeaker Connections contact your McIntosh Dealer or McIntosh Technical Support.

9. Connect the MI502 power cord to an active AC outlet.

How to Operate

Power On

The LED STANDBY/ON Indicator illuminates to indicate the MI502 is connected to AC Power. To switch ON the MI502, press the POWER button on the Front Panel or switch On the Audio Source Component providing there is a Power Control Cable Connection to the MI502. Refer to figure 12.



Figure 12

- Notes:
1. It will take about 6 seconds for the MI502 to complete the initialization of the internal circuitry when switched On.
 2. There must be a power control connection between the MI502 and the Audio Source Component in order for the Remote Control Operation Power ON/OFF to function.
 3. When the MI502 is receiving a Power Control ON Signal, the Front Panel POWER Push-Button becomes inactive.

Auto Off Function

The MI502 incorporates Power Save Circuitry to automatically place the MI502 into the power saving Standby Mode approximately 30 minutes after there has been an absence of an audio input signal on both channels.

When there is a Power Control Connection between the MI502 and a Preamplifier or Source Component, the AUTO OFF Function is bypassed.

Channel Operational Indication

The MI502 Front Panel has two LEDs. The LEDs indicate the current functioning status for each of the two channels.

MI502 Channel Operation Functions	
LED COLOR	Functional Status
Amber	Indicates when maximum Power Output for the Channel has occurred with prevention of Audio Clipping
Red	Indicates current limit or short circuit for the Channel Loudspeaker Output Connection

Power Output Meters

The MI502 Power Output Meters indicate the power delivered to the Loudspeakers. Refer to figure 13. The meters respond to all the musical information being produced by the Amplifier. They indicate to an accuracy of at least 95% of the power output with only a single cycle of a 2,000Hz tone burst.

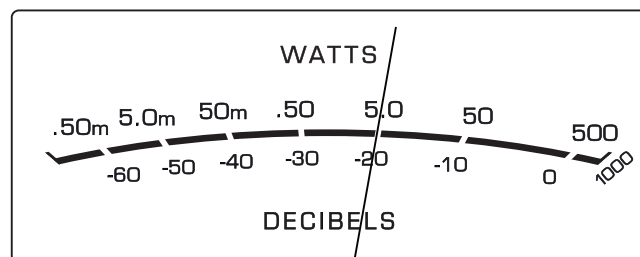


Figure 13



Specifications

Power Output

Minimum sine wave continuous average power output per channel, both channels operating is:

500 watts into a 8 ohm load

800 watts into a 4 ohm load

Output Load Impedance

8 and 4 ohms

Rated Power Band

20Hz to 20,000Hz

Total Harmonic Distortion

0.05% maximum harmonic distortion at any power level from 250 milliwatts to rated power, 20Hz to 20,000Hz

Dynamic Headroom

2.7dB, 8 ohm load

3.7dB, 4 ohm load

Frequency Response

+0, -0.9dB from 20Hz to 20,000Hz

Input Sensitivity for rated output (8 ohm load)

4.8 Volt Balanced

2.4 Volt Unbalanced

Input Sensitivity for rated output (4 ohm load)

4.2 Volt Balanced

2.1 Volt Unbalanced

Signal To Noise Ratio (A-Weighted)

81dB (98dB below rated output)

Intermodulation Distortion

0.1% maximum, if the instantaneous peak power output does not exceed the rated power output for any combination of frequencies from 20Hz to 20,000Hz.

Wide Band Damping Factor

Greater than 85

8 ohm Load

Greater than 45

4 ohm Load

Input Impedance

32,000 ohms Balanced

18,000 ohms Unbalanced

Voltage Gain

28dB

Power Control Input

5-15VDC, less than 1mA

Power Control Output

12VDC, 50mA maximum total

Power Requirements

100 - 120 / 220 - 240Volts

50-60Hz at 15 Amps

Standby: less than 0.5 watt

Overall Dimensions

Width is 17-1/2 inches (44.5cm)

Width with side mount brackets is 19 inches (48.3cm)

Height is 4-5/16 inches (11.0cm) including feet

Depth is 21 inches (53.3cm) including the Front Panel and Cables

Weight

21.5 pounds (9.8 kg) net, 37.9 pounds (17.2 kg) in shipping carton

Shipping Carton Dimensions

Width is 26-1/2 inches (67.3cm)

Height is 11-3/4 inches (29.9cm)

Depth is 24-1/4 inches (61.6cm)

Packing Instructions

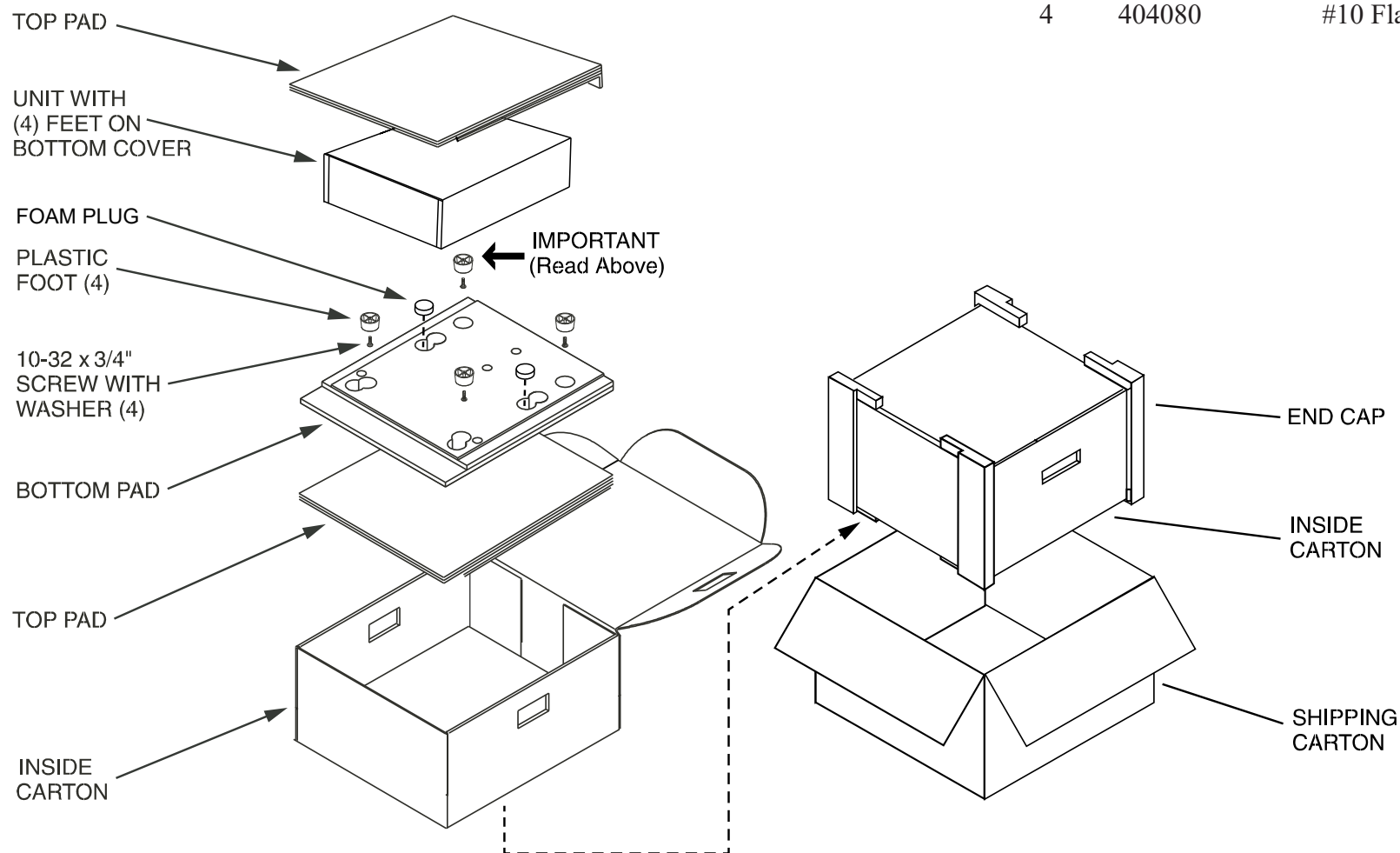
In the event it is necessary to repack the equipment for shipment, the equipment must be packed exactly as shown below.

It is very important that the four plastic feet are attached to the bottom of the equipment. This will ensure the proper equipment location on the bottom pad. Failure to do this will result in shipping damage.

Use the original shipping carton and interior parts only if they are all in good serviceable condition. If a shipping carton or any of the interior part(s) are needed, please call or write Customer Service Department of McIntosh Laboratory. Refer to page 2. Please see the Part List for the correct part numbers.

Part List

Qty	Part Number	Description
1	033838	Shipping carton only
2	034669	End cap
1	033836	Inside carton only
2	033725	Top pad
1	034576	Bottom pad
4	017937	Plastic foot
4	400159	#10-32 x 3/4" screw
4	404080	#10 Flat washer





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The continuous improvement of its products is the policy of McIntosh Laboratory Incorporated who reserve the right to improve design without notice.

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