

**MP4**  
**MP4-VCA**  
**MANUAL MIXER PREAMP MODULE**

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**OPERATING INSTRUCTIONS**  
**and trouble-shooting guide**

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**LECTROSONICS, INC.**  
Rio Rancho, NM

# INTRODUCTION

The MP4 Remote Controlled Mic Preamp Module provides 4 channels of balanced, low-noise pre-amplification of signals from microphone to line levels. The MP4 also provides means for using remote DC control of each channel via potentiometers or switches.

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## GENERAL TECHNICAL DESCRIPTION

The microphone preamp uses a discrete design for lowest equivalent input noise and low distortion. This preamp topology also provides a convenient means for adjusting preamp gain to maximize signal-to-noise ratio for any microphone. This is in contrast to many mixers which employ fixed gain microphone preamps.

In the MP4-VCA, a low noise, low distortion Voltage Controlled Amplifier (VCA) in each channel allows the gain of the Main send from each channel to be adjusted remotely. Audio taper scaling circuitry allows the use of a common linear taper pot, while providing an audio taper for the pot rotation versus attenuation characteristic.

48 Volt phantom power is supplied to each channel, and can be selected on a channel by channel basis.

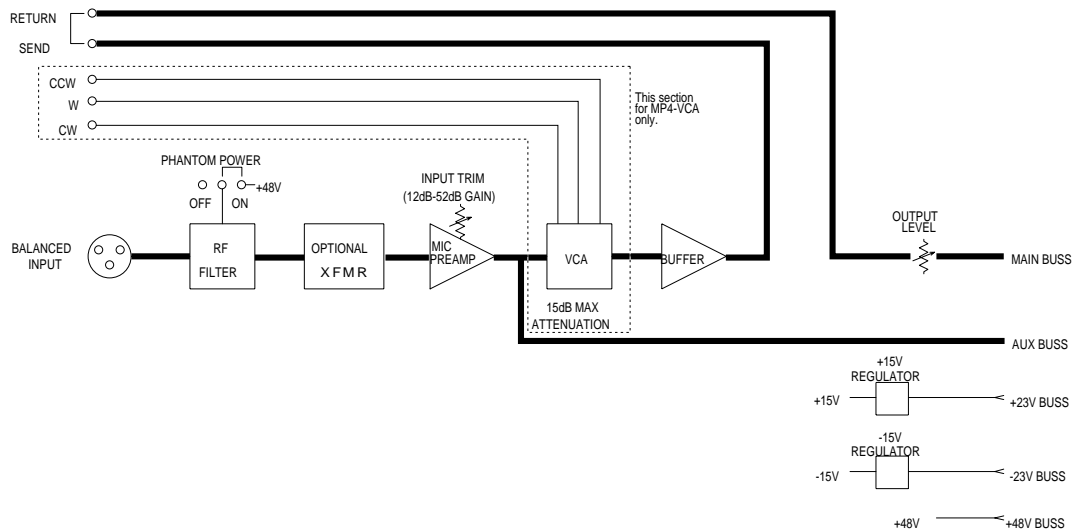


Figure 1 - MP4 / MP4-VCA Block Diagram

## INSTALLATION

Before installing the module, see the Operating Instructions section for guidance as to how to select Phantom Power On/Off. This function is selected via on-board jumpers.

The MP4 is installed from the rear of the Modular Audio Processor mainframe. While the MP4 can slide into any of the ten Modular Audio Processor slots, it is recommended that the MP4 (or the AP4) module be loaded from left to right (facing the front of the mainframe). This will both facilitate microphone cabling to the mic inputs and eliminate unwieldy cable runs from the Main or Aux outputs of the control module. This approach is particularly useful if other Modular Audio Processor system signal processing modules (EQN-1, XO2, XO3, etc.) are being used.

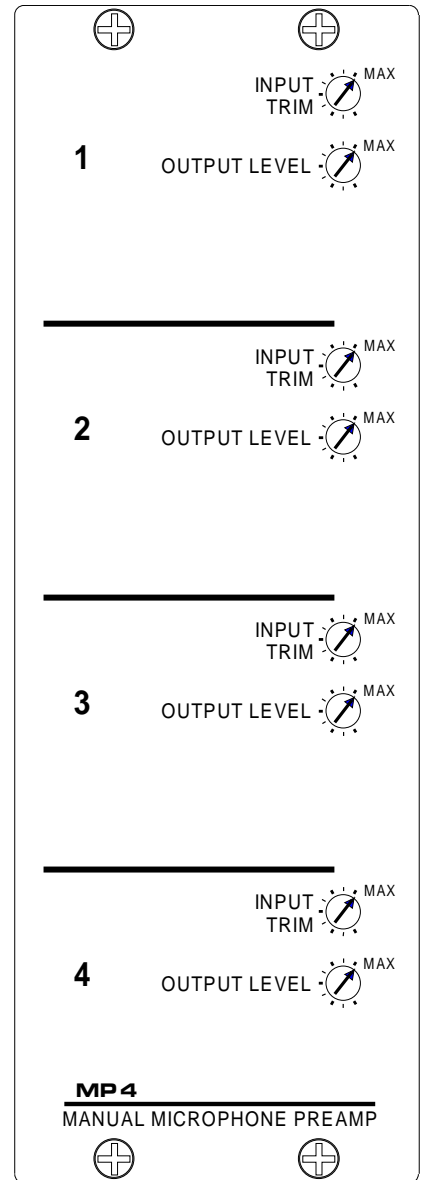
The only case in which MP4 modules would not be loaded into the left end of the Modular Audio Processor Mainframe is when any RF modules are in use. RF modules should always be placed in the far left slot(s). Care should be taken when aligning the circuit board with the card guides. Once the module is aligned, slide the card forward in the mainframe until the female edge connector on the module seats firmly onto the male pins of the main bus board. Again, care should be taken to insure proper mating of the connectors.

Eight #4 machine screws are provided with the MP4 module. Four are used to secure the rear panel to the top and bottom rails of the mainframe. After this is accomplished, fit the front panel (also supplied) over the front of the module and secure it, using the other four #4 machine screws, to the front panel of the Modular Audio Processor mainframe. Once these eight screws are in place, the installation is complete.

## FRONT PANEL DESCRIPTION

**INPUT TRIM** - Controls the gain of the microphone preamp. Mic preamp gain ranges from 15dB to 55dB. This range is more than sufficient to accommodate all types of microphones. Maximum gain occurs when this control is fully clockwise.

**OUTPUT LEVEL** - Controls the level of signal from the channel sent to the main bus. Maximum gain occurs when this control is fully clockwise.



**Figure 2 - MP4 / MP4-VCA Front Panel**

## MP4 REAR PANEL DESCRIPTION

**MIC INPUT** - Accepts balanced or unbalanced signal. Can accommodate signal levels from mic to line. Fully balanced differential input, RF filtered, internally selectable 48 Volt phantom supply. XLR type connector, Pin 2 is "+", Pin 3 is "-", and Pin 1 is ground.

**SEND** - Outputs the preamplified pre-channel level signal. For use if additional signal processing devices are desired on a per channel basis. This output is unbalanced. Pin 1 on the terminal strip.

**RETRN** - Accepts an unbalanced input signal. Signal is then routed through the channel level control to the main bus. SEND and RETRN are connected together for normal use. Pin 2 on the terminal strip.

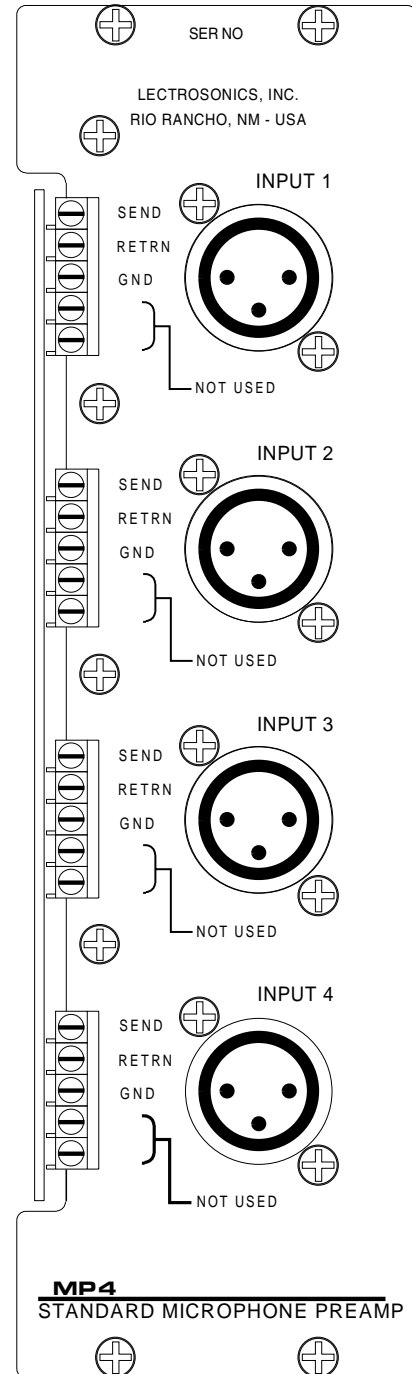


Figure 3 - MP4 Rear Panel

## MP4-VCA

Either potentiometers, switches, or external voltages may be used as remote control elements for the MP4-VCA. Linear taper pots with values less than or equal to 100K ohms should be used for the remote control element. The clockwise lead of the control pot should be connected to the **CW** terminal (Pin 3) of the rear panel terminal block. The wiper lead of the control pot should be connected to the **W** terminal (Pin 4) of the rear panel terminal block. The counter-clockwise lead of the control pot should be connected to the **CCW** terminal (Pin 5) of the rear panel terminal block. Using this connection scheme, the volume will increase as the pot is rotated clockwise. If only On/Off control is desired as opposed to volume control, a simple single pole switch can be connected between the **W** terminal (Pin 4) and the **CCW** terminal (Pin 5). When the switch is **closed**, the channel will be off. When the switch is **open**, the channel is on. If for some reason no remote control is desired on a channel, simply leave the **CW**, **W**, and **CCW** terminals unconnected.

There are no special requirements as to what type of wire to use to connect the MP4 to the remote pots/switches. Since there is no appreciable current flow in the control wires, small gauge wire is acceptable.

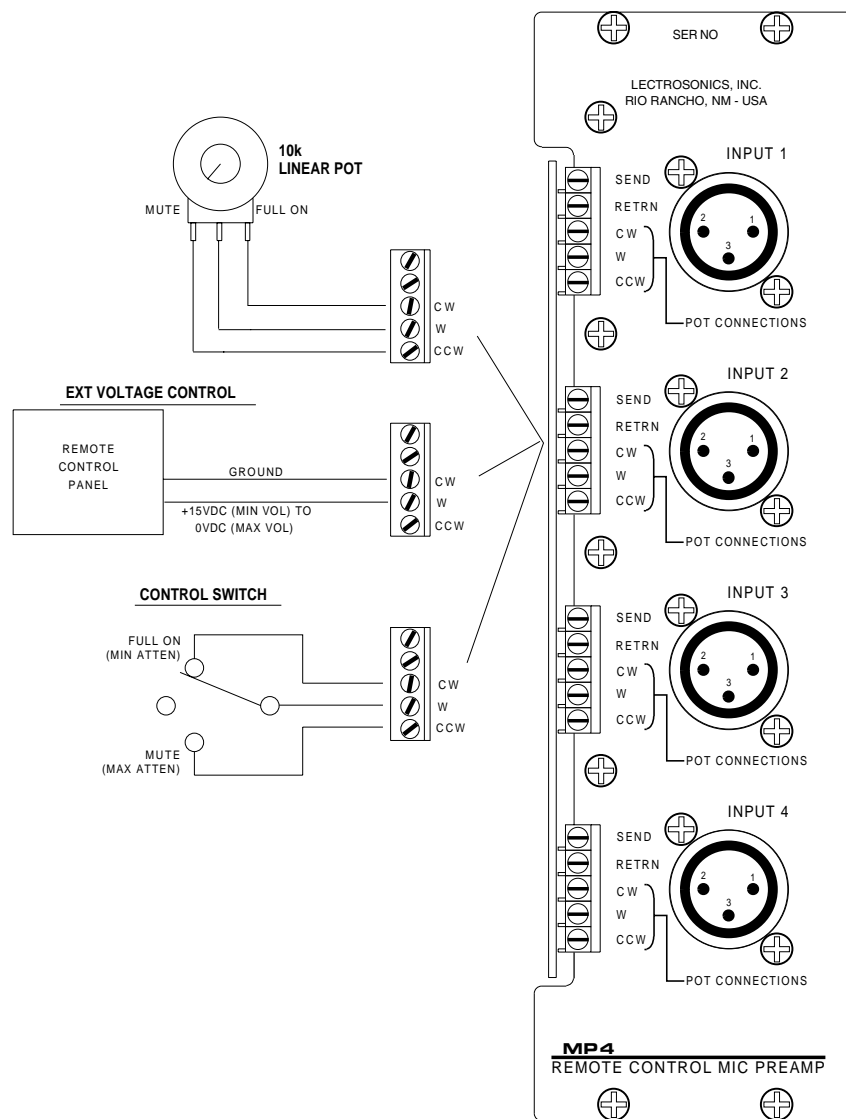
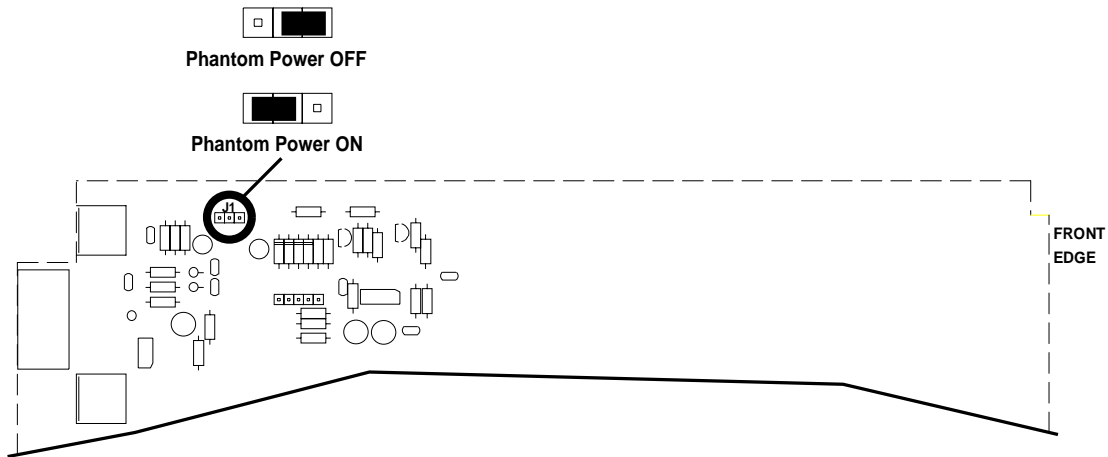


Figure 4 - MP4-VCA Rear Panel Connections

# OPERATING INSTRUCTIONS

**1) Phantom Power Selection** - Phantom power is selected using the 3 pin jumper in the upper left of each channel layout on the printed circuit board. Connecting the left and middle pins applies phantom power to that channel. Connecting the right and middle pins defeats phantom power. The factory setting is Phantom Power defeated (i.e. not on).



**Figure 5 - MP4 / MP4-VCA Phantom Power Jumper**

- 2)** Begin the setup procedure with the both the Channel Level and Input Trim controls at the mid position. If remote control pots are being used (MP4-VCA), they should be fully clockwise. If remote switches are used (MP4-VCA), they should be in the On position. If a remote voltage is used (MP4-VCA), it should be adjusted to +15 Volts.
- 3)** Turn the Main Level control (on the SC1) clockwise to the 12 o'clock position. If this setting causes feedback, reduce the level to the desired system sound level.
- 4)** If the system level is not adequate with the Main Level at the 12 o'clock position, adjust the Trim Level controls on each MP4 channel until sufficient sound system level is reached for each microphone.

## TROUBLESHOOTING

**SYMPTOM**  
**1) No sound from system**

- POSSIBLE CAUSE**
- 1) Main level control not turned up
  - 2) Channel level not turned up
  - 3) Trim Level not turned up
  - 4) Remote control pots turned down
  - 5) Remote control switches turned off

## 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:

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



# SPECIFICATIONS

|                                    |  |
|------------------------------------|--|
| <b>Trim Gain Range:</b>            | 15dB-55dB                                |
| <b>EIN, 20-20KHz:</b>              | -128dBu                                  |
| <b>THD, 20-20KHz:</b>              | Less than .1%<br>(40dB gain, 0dBu out)   |
| <b>IMD, 60/7KHz:</b>               | Less than .1%<br>(40dB gain, 0dBu out)   |
| <b>Input Impedance:</b>            | 6K ohms, balanced<br>3K ohms, unbalanced |
| <b>Input:</b>                      |  |
| <b>Type:</b>                       | Electronically balanced<br>RF filtered   |
| <b>Maximum Input Level:</b>        | +5dBu<br>(Gain set at 15dB)              |
| <b>Phantom Power:</b>              | +48 Volts, internal jumper               |
| <b>Send (SND) Maximum Output:</b>  | +20dBu                                   |
| <b>Return (RTN) Maximum Input:</b> | +20dBu                                   |
| <b>Power Consumption:</b>          | +/- 175mA at 15 Volts                    |

## **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.**

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