

## QUICK START

This section is provided as a convenience for those in a rush. If you are experienced with this unit or other Rane products, these few words will refresh your memory.

**INPUTS 1 through 4** may be microphone or line level. The choice between the two is made by setting the **LINE** push-buttons through the access holes on the front of the unit near the **INPUT LEVELS**. Follow the silk-screening on the rear for proper wiring hookup.

Choose between **MIC** or **LINE** output levels at each of the XLR **OUTPUT** connectors. If the MLM 82 is connected directly to a power amplifier, equalizer or recorder input, choose **LINE** level. If the MLM 82 is connected to a microphone jack of an existing sound system, choose **MIC** level. Follow the silk-screening on the rear for proper wiring hookup.

Once Inputs, Outputs, and power are properly connected, with the **OUTPUT LEVELS** counterclockwise (*off*), set the Input **LEVELS** as high as possible without causing the **SIG/OL** indicators to blink red more than occasionally during extreme signal peaks. Now slowly raise the **OUTPUT LEVELS** as desired.

*Never connect anything except an approved Rane power supply to the red thing that looks like a telephone jack on the rear of the MLM 82.* This is an AC input and requires special attention if you do not have a power supply *exactly* like the one that was originally packed with your unit. See the full explanation of the power supply requirements on page Manual-3.

## MLM 82 CONNECTION

When connecting the MLM 82 to other components in your system for the first time, leave the power supply for last. This gives you a chance to make mistakes and correct them without damage to your fragile speakers, ears and nerves.

### INPUTS

The sixteen jacks at the Inputs of the MLM 82 are balanced. They will also accept unbalanced connectors. Use only shielded cable for Inputs. For best noise rejection use two-conductor-plus-shielded wire, even for unbalanced operation. Connect the shield at both ends to help insure proper grounding. See the Sound System Interconnection RaneNote included with this manual for all cable adaptations.

**MONO INPUTS 1-4.** Connect up to 4 sources to these XLR jacks. Rane follows the AES recommended practice of pin 2 positive, pin 3 negative, and pin 1 to shield. Switch any Input connected to a microphone to the *mic* position by the associated “limited access” switches on the front panel (LED *off*). When connecting line level signals, switch the input to the **LINE** position (LED *on*). Use a small probe such as a #0 Phillips screwdriver to actuate the switch.

**STEREO INPUTS 5-8.** The 1/4" connectors are line level stereo/mono balanced/unbalanced Inputs. If the MLM 82 is to be used with unbalanced sources (such as CD players),

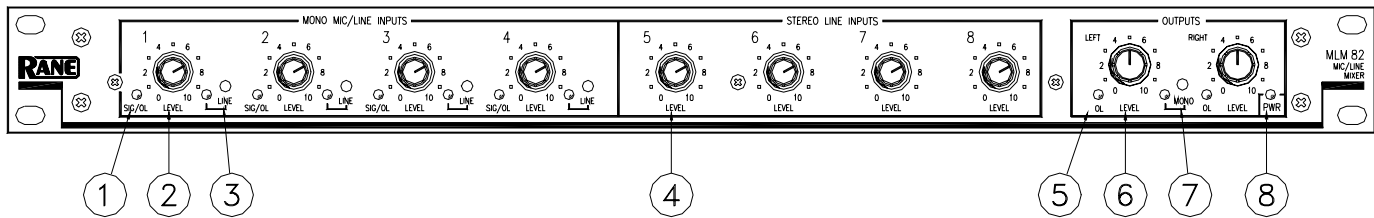
consult the Sound System Interconnection RaneNote included with this manual for proper wiring using 1/4" TRS input connectors. Stereo Inputs use both **RIGHT** and **LEFT** jacks at each **INPUT**.

**INPUTS 5 through 8** also serve as mono Inputs by either using the XLR inputs (always mono) or by plugging into only one of the 1/4" jacks. Automatic switching occurs when only one of these 1/4" jacks are used at any Input, splitting the mono signal to both Outputs. Connect to just one of these jacks and the MLM 82 does the rest. If you only want the signal to come out of one channel and not the other, plug an unwired “dummy” 1/4" plug into the other channel.

### OUTPUTS

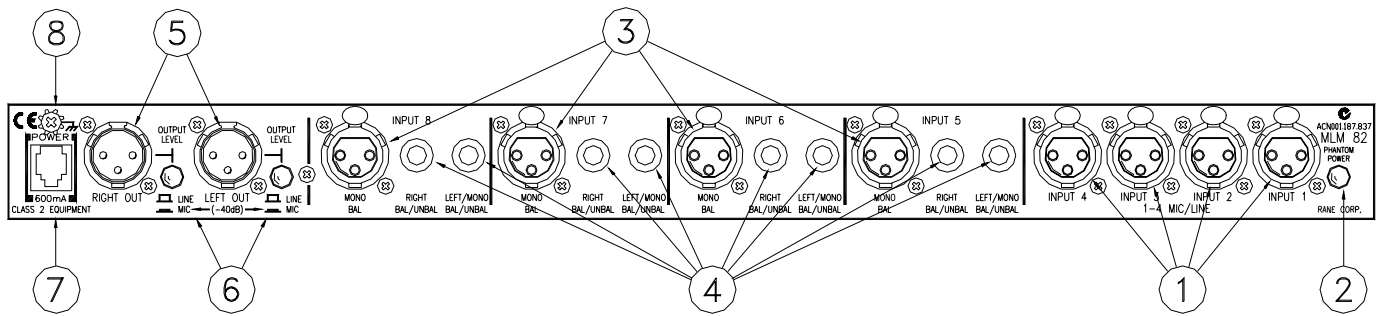
The MLM 82's **OUTPUTS** are balanced. The same wiring conventions as the XLR Inputs apply. The type of device following the MLM 82 must be considered when setting the Output Level switch. Choose between **LINE** (0 dB) or **MIC** (-40 dB) output levels. If the MLM 82 is connected directly to a power amplifier input, choose **LINE** level. If the MLM 82 is connected to a microphone jack on an existing sound system, choose **MIC** level. For unbalanced **OUTPUT** connections do not tie pin 3 (i.e. “-”) to ground.

## FRONT PANEL DESCRIPTION



- ① **SIGNAL present/OverLoad LED.** This bi-color LED lights green for a -30 dBu signal, and turns red when the Input is within 3 dB of clipping.
- ② **MONO MIC/LINE INPUT LEVEL controls 1-4** determine the amount of microphone or line signal to be delivered at equal levels to both Outputs.
- ③ **LINE/Mic Input selectors** switch the sensitivity and input impedance for either a microphone or line input. An illuminated LED indicates that LINE is chosen, and Phantom Power is deactivated for that Input. Conversely, a dark LED indicates that the Input is set for mic level, and Phantom Power (if activated, see Rear Panel ②) is enabled for this Input. Use a small probe (such as a #0 Phillips screwdriver) to actuate the switches.
- ④ **STEREO LINE INPUT LEVEL controls 5-8** determine the amount of stereo or mono line Input to be delivered to the Outputs.
- ⑤ **OUTPUT OverLoad LED** illuminates within 3 dB of an approaching overload condition. To avoid this, the associated OUTPUT LEVEL control may be decreased, or the problem-causing individual Input may be decreased.
- ⑥ **LEFT and RIGHT OUTPUT LEVEL controls** are either Left and Right Output Level controls, or zone 1 and zone 2 Level controls from mono sources.
- ⑦ **MONO switch** mixes the Left and Right channels together with the *ratio set by the two OUTPUT LEVEL controls*. When active, the associated LED lights, and the Left and Right Output connectors have exactly the same level.
- ⑧ **POWER LED** is lit whenever adequate power is applied to the unit.

## REAR PANEL DESCRIPTION



- ① **MIC/LINE INPUT jacks 1-4.** These XLRs connect either balanced Microphone or Line signals, depending on the recessed front panel LINE switch setting (see Front Panel, ③). Rane adheres to the international and U.S. standard for balanced pin configurations: Pin 1 is chassis ground (neutral), pin 2 is positive, and pin 3 is negative.
- ② **PHANTOM POWER switch** applies 15 volt phantom power to Inputs 1-4 that are mic-selected (front panel LINE LED off).
- ③ **MONO BALANCED LINE INPUT jacks 5-8.** These XLR inputs split the Input signal to both Left and Right Outputs equally. Wiring is per #1 above. Choose between this XLR or the 1/4" jacks (see ④ below), they do not sum.
- ④ **1/4" LINE INPUT jacks.** These pairs of balanced Tip-Ring-Sleeve jacks accommodate stereo line level signals using Left and Right connections. If the source signal is mono, use the LEFT/MONO jack and the internal switching auto-splits to both Outputs equally. These are TRS (tip-ring-sleeve) 1/4" jacks accommodating either balanced or unbalanced signals. In most cases an unbalanced signal may utilize a mono 1/4" plug (tip-sleeve). For balanced signals use microphone cable (two conductor with shield) with TRS 1/4" plugs. See the Sound System Interconnection RaneNote included with this manual for proper connector wiring.
- ⑤ **LEFT and RIGHT OUTPUT jacks.** These XLRs connect the main Outputs to a power amplifier, signal processor, recorder, or sound system, with the OUTPUT LEVEL switch (see ⑥ below) set for the correct level. Pin connections are the same as above in ①.
- ⑥ **OUTPUT LEVEL switches** attenuate the available line level down to a level compatible with microphone preamp inputs. Put these in the *out* position when LINE level Outputs are desired, and depress them *in* for MIC level Outputs.
- ⑦ **POWER supply input.** *This is not a telephone jack.* The MLM 82 is supplied from the factory with an RS 1 remote power supply suitable for connection to this input jack. The power requirements call for an 18 volt AC center-tapped transformer only. Call the Rane factory for replacement or substitution.
- ⑧ **Chassis ground point.** A #6-32 screw is provided for chassis grounding purposes. See the note below for details.

### CHASSIS GROUNDING

The MLM 82 is supplied with an external power supply (the RS 1). **This power supply does not ground the unit.** On the rear chassis a 6-32 screw is provided to allow for attachment of the grounding wire. This chassis ground point must be connected to earth ground either through another product which utilizes a three-prong grounded AC power cord or by attaching the wire to a known earth ground, (the screw on a grounded AC outlet.)

If after hooking up your system it exhibits excessive hum or buzzing, there is an incompatibility in the grounding configuration between units somewhere. Your mission, should you accept it, is to discover how your particular system wants to be grounded. Here are some things to try:

1. Try combinations of lifting grounds on units that are supplied with ground lift switches or links.
  2. If your equipment is in a rack, verify that all chassis are tied to a good earth ground, either through the line cord grounding pin or the rack screws to another grounded chassis.
  3. Try moving the device away from high magnetic field sources, such as large transformers used in power amplifiers.
- Please refer to the RaneNote "Sound System Interconnection" for further information on system grounding.

# OPERATING INSTRUCTIONS

## MONO MICROPHONE/LINE LEVEL INPUTS 1-4

The microphone preamps in the MLM 82 have gain range trim combined with the Level control. The LEVEL control adjusts the input dynamic range automatically as the gain is changed. There is no need for the typical gain trim controls found in complex mixers.

The PHANTOM POWER switch activates 15V for all Inputs selected for microphone use (LINE LED's *off*). With an Input's LINE selected, Phantom Power is defeated only in that Input. 15 volts is sufficient power for all but the most esoteric condenser microphones. If in doubt, check the manufacturer's microphone specs.

Since these Inputs are mono, the signal appears at both the Left and Right Outputs at equal levels.

## SIGNAL PRESENT/OVERLOAD INDICATORS

The MLM 82 has four bi-color Indicators for Signal Present/Overload (green/red). Green indication occurs when there is a signal present above -30 dBu. This lamp should be glowing green when signal is present. If this lamp is *off*, check these possibilities:

- A. The Input may not be connected.
- B. There is little or no signal present at the moment.
- C. There is a mic connected to a channel switched to LINE.
- D. The mic needs Phantom Power (See Rear Panel, #2).
- E. The LEVEL control needs to be increased (clockwise).
- F. The cable is not wired properly (See the Sound System Interconnection RaneNote).

Occasional red blinking during extreme signal peaks is permissible. A red glowing LED indicates that the levels are so high that distortion due to clipping is occurring or imminent. Check these conditions:

- A. The LEVEL control may be turned too high.
- B. The output of the preceding device may need to be reduced.
- C. The Input may be switched to *mic* but the source may be line level. Switch the Input to LINE (LED *on*).

The STEREO LINE INPUTS 5 through 8 do not have overload indicators because they are unity gain and can't be overloaded by a +20 dBu signal.

The LEFT and RIGHT OUTPUT LEVELS are at the master summer and have their own OverLoad indicators. Although the main summer is unity gain for a single Input, multiple active Inputs mixed together can overload the summer amp. If the summer approaches overload and the OL indicators illuminate, just turn down the OUTPUT LEVELS until the overload stops—the mix ratios of all the inputs will not change.

## STEREO LINE LEVEL INPUTS 5-8

The INPUT LEVEL controls adjust both Left and Right Inputs equally. Use the OUTPUT LEVEL controls together for overall output adjustment, or separately to control balance.

If the MLM 82 is used with mono Inputs, the two OUTPUT controls may be used for 2 different zones. *To have one of the sources go to one zone and not the other, insert a signal in one channel, and a dummy plug in the opposite channel. Do not activate the MONO switch in this configuration.*

If an installation requires independent left-right control for an Input, use the dummy plugs as described in the preceding paragraph, with one in the left channel of one Input, and the other in the right channel of the next Input. This allows independent control of the left and right Input signal.

The Output MONO switch sends all Input signals to both Outputs. The overall mono mix is controlled by the sum of the two OUTPUT LEVEL controls. Stereo sources may be connected, and their outputs will be mixed to mono.