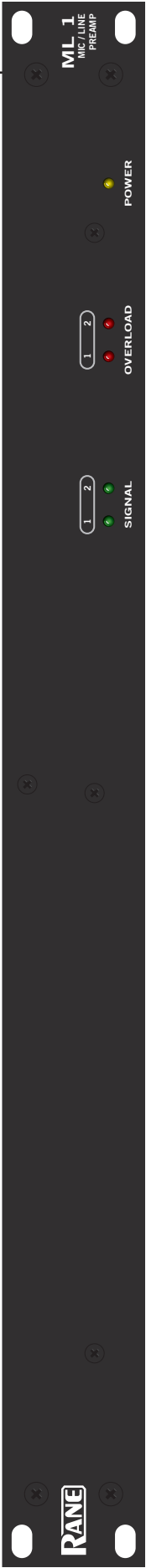




ML 1

MIC PREAMP



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 a dry cloth.
7. Do not block any ventilation openings. Install in accordance with manufacturer's instructions.
8. Do not install near any heat sources such as radiators, 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 third prong is 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 and plug from being walked on or pinched particularly at plugs, convenience receptacles, and the point where it exits from the apparatus.
11. Only use attachments and accessories specified by Rane.
12. Use only with the 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. The plug on the power cord is the AC mains disconnect device and must remain readily operable. To completely disconnect this apparatus from the AC mains, disconnect the power supply cord plug from the AC receptacle.
16. This apparatus shall be connected to a mains socket outlet with a protective earthing connection.
17. When permanently connected, an all-pole mains switch with a contact separation of at least 3 mm in each pole shall be incorporated in the electrical installation of the building.
18. If rackmounting, provide adequate ventilation. Equipment may be located above or below this apparatus, but some equipment (like large power amplifiers) may cause an unacceptable amount of hum or may generate too much heat and degrade the performance of this apparatus.
19. This apparatus may be installed in an industry standard equipment rack. Use screws through all mounting holes to provide the best support.

WARNING: To reduce the risk of fire or electric shock, do not expose this apparatus to rain or moisture. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.

WARNING



To reduce the risk of electrical shock, do not open the unit. No user serviceable parts inside. Refer servicing to qualified service personnel.

The symbols shown below are internationally accepted symbols that warn of potential hazards with electrical products.



This symbol indicates that a dangerous voltage constituting a risk of electric shock is present within this unit.



This symbol indicates that there are important operating and maintenance instructions in the literature accompanying this unit.

WARNING: This product may contain chemicals known to the State of California to cause cancer, or birth defects or other reproductive harm.

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION: Changes or modifications not expressly approved by Rane Corporation could void the user's authority to operate the equipment.

This Class B digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

INSTRUCTIONS DE SÉCURITÉ



1. Lisez ces instructions.
2. Gardez précieusement ces instructions.
3. Respectez les avertissements.
4. Suivez toutes les instructions.
5. Ne pas utiliser près d'une source d'eau.
6. Ne nettoyer qu'avec un chiffon doux.
7. N'obstruer aucune évacuation d'air. Effectuez l'installation en suivant les instructions du fabricant.
8. Ne pas disposer près d'une source de chaleur, c-à-d tout appareil produisant de la chaleur sans exception.
9. Ne pas modifier le cordon d'alimentation. Un cordon polarisé possède 2 lames, l'une plus large que l'autre. Un cordon avec tresse de masse possède 2 lames plus une 3^e pour la terre. La lame large ou la tresse de masse assurent votre sécurité. Si le cordon fourni ne correspond pas à votre prise, contactez votre électricien.
10. Faites en sorte que le cordon ne soit pas piétiné, ni au niveau du fil, ni au niveau de ses broches, ni au niveau des connecteurs de vos appareils.
11. N'utilisez que des accessoires recommandés par Rane.
12. N'utilisez que les éléments de transport, stands, pieds ou tables spécifiés par le fabricant ou vendu avec l'appareil. Quand vous utilisez une valise de transport, prenez soin de vous déplacer avec cet équipement avec prudence afin d'éviter tout risque de blessure.
13. Débranchez cet appareil pendant un orage ou si vous ne l'utilisez pas pendant un certain temps.
14. Adressez-vous à du personnel qualifié pour tout service après vente. Celui-ci est nécessaire dans n'importe quel cas où l'appareil est abîmé : si le cordon ou les fiches sont endommagés, si du liquide a été renversé ou si des objets sont tombés sur l'appareil, si celui-ci a été exposé à la pluie ou l'humidité, s'il ne fonctionne pas correctement ou est tombé.
15. La fiche du cordon d'alimentation sert à brancher le courant alternatif AC et doit absolument rester accessible. Pour déconnecter totalement l'appareil du secteur, débranchez le câble d'alimentation de la prise secteur.
16. Cet appareil doit être branché à une prise terre avec protection.
17. Quand il est branché de manière permanente, un disjoncteur tripolaire normalisé doit être incorporé dans l'installation électrique de l'immeuble.
18. En cas de montage en rack, laissez un espace suffisant pour la ventilation. Vous pouvez disposer d'autres appareils au-dessus ou en-dessous de celui-ci, mais certains (tels que des gros amplificateurs) peuvent provoquer un buzz ou générer trop de chaleur au risque d'endommager votre appareil et dégrader ses performances.
19. Cet appareil peut-être installé dans une baie standard ou un chassis normalisé pour un montage en rack. Visser chaque trou de chaque oreille de rack pour une meilleure fixation et sécurité.

ATTENTION: afin d'éviter tout risque de feu ou de choc électrique, gardez cet appareil éloigné de toute source d'humidité et d'éclaboussures quelles qu'elles soient. L'appareil doit également être éloigné de tout objet possédant du liquide (boisson en bouteilles, vases,...).

ATTENTION



Afin d'éviter tout risque de choc électrique, ne pas ouvrir l'appareil. Aucune pièce ne peut être changée par l'utilisateur. Contactez un SAV qualifié pour toute intervention.

Les symboles ci-dessous sont reconnus internationalement comme prévenant tout risque électrique.



Ce symbole indique que cette unité utilise un voltage élevé constituant un risque de choc électrique.



Ce symbole indique la présence d'instructions d'utilisation et de maintenance importantes dans le document fourni.

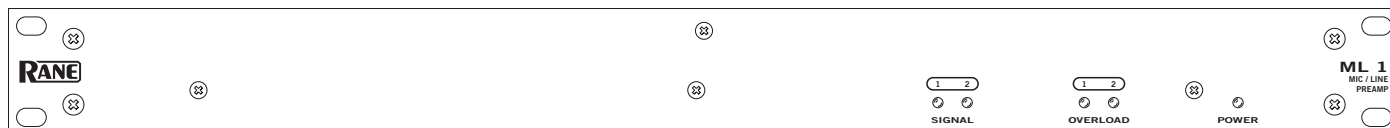
REMARQUE: Cet équipement a été testé et approuvé conforme aux limites pour un appareil numérique de classe B, conformément au chapitre 15 des règles de la FCC. Ces limites sont établis pour fournir une protection raisonnable contre tout risque d'interférences et peuvent provoquer une énergie de radiofréquence s'il n'est pas installé et utilisé conformément aux instructions, peut également provoquer des interférences aux niveaux des équipements de communication. Cependant, il n'existe aucune garantie que de telles interférences ne se produiront pas dans une installation particulière. Si cet équipement provoque des interférences en réception radio ou télévision, ceci peut être détecté en mettant l'équipement sous/hors tension, l'utilisateur est encouragé à essayer de corriger cette interférence par une ou plusieurs des mesures suivantes:

- Réorienter ou déplacer l'antenne de réception.
- Augmenter la distance entre l'équipement et le récepteur.
- Connecter l'équipement à une sortie sur un circuit différent de celui sur lequel le récepteur est branché.
- Consulter un revendeur ou un technicien radio / TV expérimenté.

ATTENTION: Les changements ou modifications non expressément approuvés par Rane Corporation peuvent annuler l'autorité de l'utilisateur à manipuler cet équipement et rendre ainsi nulles toutes les conditions de garantie.

Cet appareil numérique de classe B est conforme à la norme Canadienne ICES-003.

Cet appareil numérique de classe B est conforme à la norme Canadienne NMB-003.



Quick Start

This section intends to help with the physical connections necessary to get up and running with your snazzy new ML 1. If you don't read this entire manual, at least read this section.

As a safety precaution, turn all devices (especially power amplifiers) *off* when making connections. Doing so gives you a chance to find and correct wiring mistakes and prevent damage to your amplifiers, speakers, ears and spilling a hot drink in your lap.

Connect balanced audio sources or microphones to the Euroblock or XLR INPUT connectors. You may connect either or both jack types (if you wish) of the OUTPUTS to your mixer, recorder or amplifier. Set the GAIN control to the half-way (12:00) position. Set the MIC / LINE switch to "LINE" for a

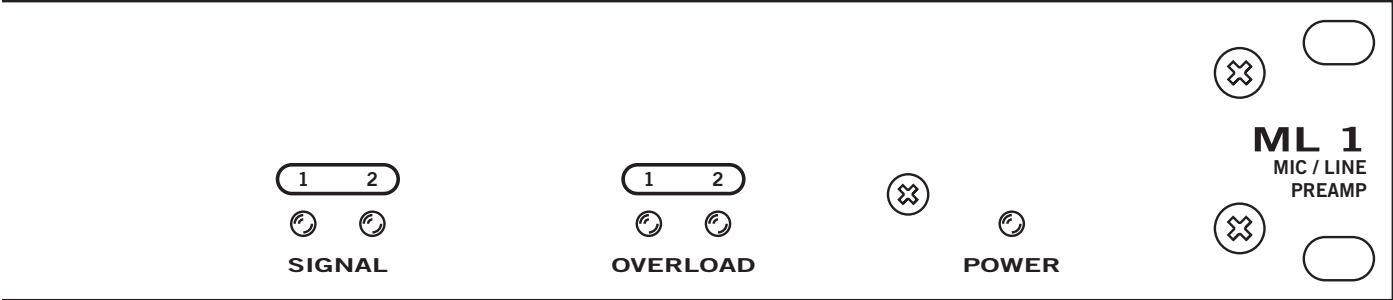
gain of +3 dB, or to the "MIC" position for a gain of +35 dB. If a microphone requires phantom power, punch in the "PHANTOM POWER" switch and the corresponding red LED will light up.

If the ML 1 is being used as a dual analog preamp, connect balanced audio OUTPUTS to the Euroblock or XLR connectors. To talk to the digital audio world, connect to your choice of AES3, SPDIF or TOSLINK digital audio outputs.

Connect the IEC320-C5 power cord. Observe that the POWER LED on the front panel illuminates.


Now you may turn on any power amps and make final adjustments with the GAIN controls.

Operation Details



Analog Connections

The ML 1 has two balanced analog Inputs, two balanced analog Outputs on XLR and euroblock connectors. Feel free to use either Input (*but not both*). Both Output types may be used simultaneously if desired. For each Input or Output Euroblock connector:

- Connect the (positive) audio line to the ‘+’ terminal.
- Connect the (negative) audio line to the ‘-’ terminal.
- Connect the cable shield to the  terminal.

The XLRs use the polarity convention per IEC/ANSI/AES standards of pin 2 positive, pin 3 negative and pin 1 shield. The ML 1 does not invert the signal. For optimum Electromagnetic Interference (EMI) immunity, connect the shields at both ends of the cable. See the RaneNote “Sound System Interconnection” (included) for more information on system connections and proper grounding practices.

Analog Input Stage

Each analog input uses a studio-grade microphone preamp and a 32 dB pad for use as a line-stage input. The mic preamp has a single analog gain stage. When the Mic / Line switch is in MIC position the gain control adjusts between 18 to 64 dB. When the Mic / Line switch is in LINE position then a 32 dB pad is inserted on the input to yield a gain range from -14 dB to +32 dB. This configures the input of the ML 1 as a high-performance line stage that happily accepts the hot +24 dBu signals from professional audio sources.

When using non-pro -10 dBV audio sources, set the GAIN control to +12 dB line gain by rotating it to the 2:00 position.

When you’re hooking up a consumer DVD player with a single-ended output (for example) and you really need an extra 6 dB of gain (for a total of 18 dB of front-end gain), set the GAIN control just past the 3:00 position.

Analog Output Stage

Analog output is real easy. Just hook it up. All gain in the ML 1 is adjusted at the Inputs just as it should be. It’s OK to use all of the analog Outputs at the same time and to use the analog and the digital outputs together.

Digital Outputs

The ML 1 has one AES3 Digital Output, one SPDIF Digital Output and one Optical Digital Output (also called TOSLINK).

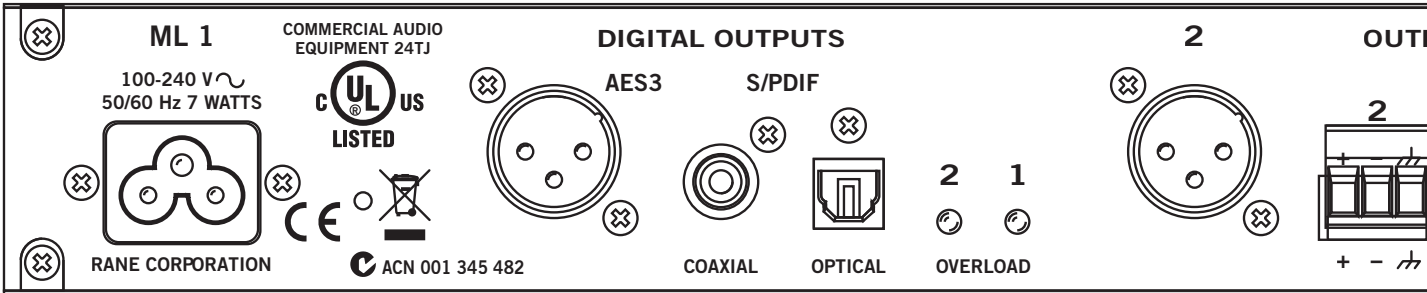
AES3 is a 2-channel (stereo) digital audio interface found on professional digital audio equipment. Each channel of the AES3 digital stream is treated independently within the ML 1.

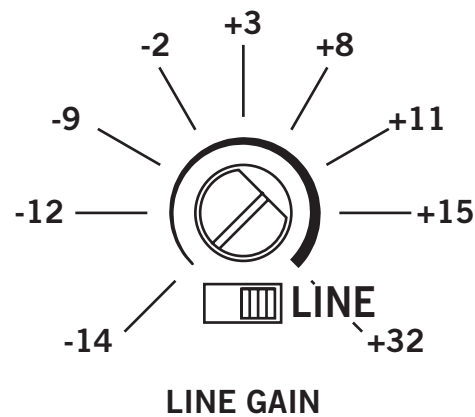
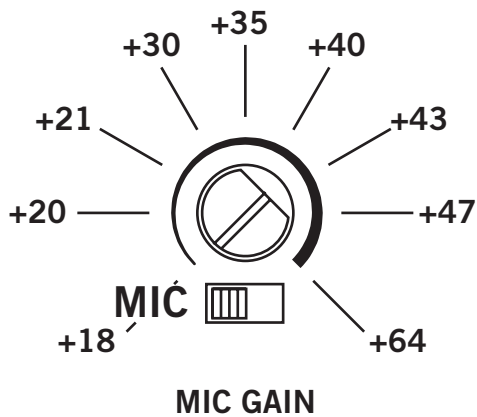
Use the AES3 Output to:

- Feed audio to an RPM 88/44/22/26z or HAL2 to create a 2-channel digital “bus” between devices.
- Connect directly to the AES3 input of a digital mixer.
- Connect directly to the AES3 input of a digital recorder.

The SPDIF coaxial and optical digital outputs allow the ML 1 to interface with a wide variety of commercial and semi-pro equipment. Just verify that the device connected to the ML 1’s SPDIF digital outputs can accept 24-bit audio at a 48 kHz rate.

All three digital outputs are always active and can be used simultaneously.





PHANTOM POWER

When the Phantom Power button is selected, two things happen. First, a red LED illuminates so that there is little doubt that phantom power is on. Second phantom power is turned on only for inputs that have the mic/line switch in the “MIC” position. Microphones can be plugged into the XLR connectors or the euroblock connectors and both connectors have phantom power available. Microphones receive a full 48 volts of Phantom Power from the ML 1.

MIC / LINE Switch

Phantom Power is only available on an Input when the Mic/Line switch is in the MIC position *and* Phantom Power is turned on — the input impedance for that channel is 2.6 kΩ. When the Mic/Line switch is in the LINE position, phantom power is disabled, the gain for the channel is reduced by 32 dB and the input impedance for that channel is 96 kΩ.

GAIN Controls

The GAIN controls set the gain through the ML 1 for each channel. The approximate gain when the Mic/Line switch is in the either setting is shown in the figure above.

A security cover is included to cover just the GAIN controls for those installations needing a little protection.

SIGNAL LEDs

There is a green input LED for each channel on both the front and back of the ML 1. These light up when an input signal is at a high enough level to trigger the LED. For the math inclined, the amount of signal required to light the LED is equal to the negative of the ML 1 Gain minus 6 dBu.

The formula is: Threshold dBu = – (Gain dB) – 6 dB.

So if the ML 1 Gain is set to 20 dB, the input LED threshold is -26 dBu measured at the input jacks.

Another example: if the ML 1 Gain is set to -10 dB then the input LED threshold is +4 dBu measured at the input jacks.

The bottom line is if there is an input signal present and the gain of the ML 1 is set high enough, the green input LED of the ML 1 should be on.

OVERLOAD LEDs

There is a red overload LED for each channel on both the front and back of the ML 1. The LED lights red if the output waveform clips, telling you to back down on the channel Gain to prevent signal distortion.

POWER LED

This LED lights up yellow when the IEC320-C5 power jack is properly receiving 100 to 240 volts from any power source in the whole wide world. That should be just about everywhere you would want an ML 1.

