MANLEY
LABORATORIES, INC.

FORCE®

FOUR CHANNEL MICROPHONE PREAMPLIFIER



OWNER'S MANUAL

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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.

MANLEY LABORATORIES, INC
FORCE

i) An Introduction To The Manley FORCE® Microphone Preamplifier

Thank you for selecting the Manley FORCE® Four Channel Microphone Preamplifier. This unit has been designed by MANLEY to perform under the most demanding situations. It offers excellent headroom, making it a perfect partner for virtually any microphone found in the studio today. The FORCE features four identical high quality vacuum tube microphone preamplifiers, housed in a single chassis. The circuit topology is based on our renowned and award winning CORE® mic preamp section. The FORCE possesses excellent channel separation, low noise, low distortion and a super flat frequency response.

Each FORCE features our hand wound MANLEY IRON® transformers and a Direct Instrument Input on the front panel, for keyboards, guitars and any other line-level equipment you may have. Each channel is equipped with a 48V Phantom supply, two gain settings, a High Pass filter, Phase Invert and a cool seven LED Peak Level Meter.

The Input Level control is a high quality conductive plastic potentiometer, demonstrating our attention to signal integrity and purity. The FORCE offers a very natural, clean sound with minimum coloration, making it a reliable workhorse in the studio. Thank you for choosing MANLEY FORCE. Enjoy!

ii) Manual Conventions

Please take a few moments to read through this manual carefully. It contains essential information for the proper operation of your Manley FORCE® Microphone Preamplifier.

Also in the following pages you will find useful hints and tips, allowing us to help you achieve the utmost performance from your equipment.

Below are the following conventions, used to pick out particularly important parts of the manual. The symbols are found in the margin next to the body of text of interest.



Especially Useful Tip



Important Information. Read Carefully



Caution! Pay Attention!



Refer to another section in this Manual

iii) Notice

This manual provides general and technical information for use, installation, and operating instructions for the MANLEY FORCE Four Channel Microphone Preamplifier. Manley Laboratories, Inc. reserves the right to make changes in specifications and other information contained in this publication without prior notice. Manley Laboratories, Inc. shall not be liable for errors contained herein or direct, indirect, incidental or consequential damages in connection with the furnishing, performance, or use of this material. No statement contained in this publication, including statements regarding suitability or performance of products shall be considered a warranty by Manley Laboratories, Inc. for any purpose or give rise to any liability of Manley Laboratories, Inc.

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1. Important Safety Instructions

1. **Water and Moisture** – Do not use The FORCE near any source of water or in excessively moist environments.
2. **Object and Liquid Entry** – Care should be taken so that objects do not fall, and liquids are not spilled, into the enclosure through the openings.
3. **Heat & Ventilation** – When installing The FORCE in a rack or any other location, be sure there is adequate ventilation. Improper ventilation will cause overheating, and can damage the unit. The unit should be situated away from heat sources, or other equipment that produce heat. As a general rule with tube equipment, it is wise to keep a 1U gap below and above if possible.
4. **Power Sources** – The FORCE has a universal power supply which can operate in any country. It has an input voltage range of 90-260 VAC at 50/60 Hz.
5. **Cleaning** - The FORCE can be cleaned with just a damp cloth, or alcohol/methylated spirits for more stubborn marks.
6. **Damage** - If after unpacking your FORCE there are signs of shipping damage, contact your dealer.
7. **Servicing** - Do not attempt any servicing without consulting your dealer or Manley Laboratories, Inc. The user should not attempt to service the unit beyond that described in the operating instructions. All other servicing should be referred to qualified service personnel. This unit has **high voltages** present, even after the power has been switched off.
8. **DO NOT** connect the AC supply cord until all other connections have been made. Afer initial power up the power LED will “blink” for thirty seconds. The unit remains in MUTE until this warm up period has elapsed.

2. Getting Started

Unpacking your MANLEY FORCE:

The FORCE is secured in its packing carton by two end-caps.

Hold the unit by the middle and simply lift the unit vertically straight out of the box.

After it has been unpacked, check that nothing is loose inside when handling the unit. The unit is shipped with the vacuum tubes installed. Make sure they are not loose by looking through the vent holes on the top cover. Ensure they are standing upright in their sockets.

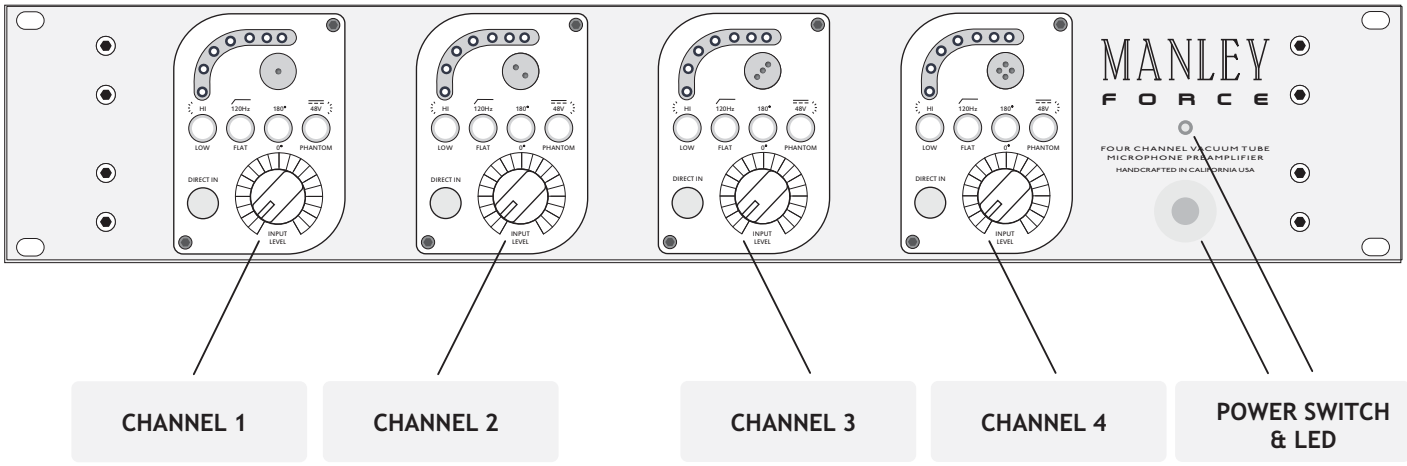
It is advisable to keep the original packaging. In the event of servicing or relocating, the original packaging ensures that the unit will always be shipped safely.

This package contains the following;

1 x Manley FORCE Reference Channel Strip
1 x Manley FORCE Owner’s Manual
1 x IEC Power Cable
1 x Warranty Registration Card
1 x Warranty Statement

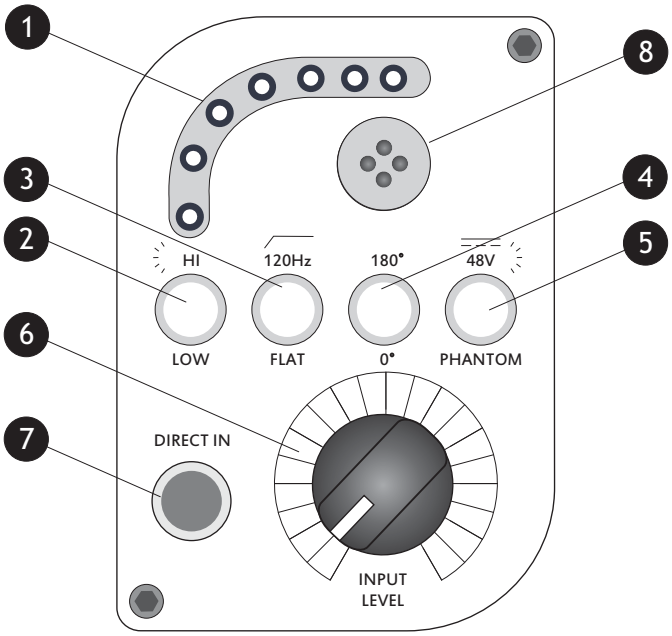
3. Front Panel

Diagram 1



4. System Controls

Diagram 2



The controls for each channel are identical to each other. When the push button switches are engaged and illuminated the top row of switch labels are in operation.

❶ **PEAK LEVEL METER -** The seven LED Peak Level Meter indicates that signal is present. The first green LED illuminates when there is a signal greater than -20dBu. The first yellow LED illuminates when the signal is greater than +17dBu. The last red LED illuminates when the signal level reaches +24dBu. This peak red LED acts as an aid so the user does not overload the next stage in the chain, as +10dB of headroom is still available in the FORCE after this LED is lit.

❷ **HI / LOW GAIN -** The HI/LOW gain switch adds 10dB of gain (or when the internal jumper is set, 20dB of gain) to the circuit when engaged. For most applications, this switch can be in the LOW position, but for low output microphones or quiet sources, extra gain may be needed. (Note: If the internal 20dB jumper is used, noise floor will also increase.)

❸ **HIGH PASS FILTER -** The 120Hz high pass filter position is useful for reducing breath “pops,” or any time a reduction of low frequencies such as air conditioning rumble or stage rumble.

4. System Controls (continued)

4 **PHASE INVERT - 0^0 / 180^0** The Mic phase switch inverts the signal by 180 degrees when engaged.

5 **PHANTOM -** The 48 Volt "PHANTOM" power is applied to the Mic input XLR when this switch is engaged. This should only be used for microphones that require phantom power. Please make sure this switch is not lit when changing microphones, as this could damage a microphone that is not designed for Phantom power.

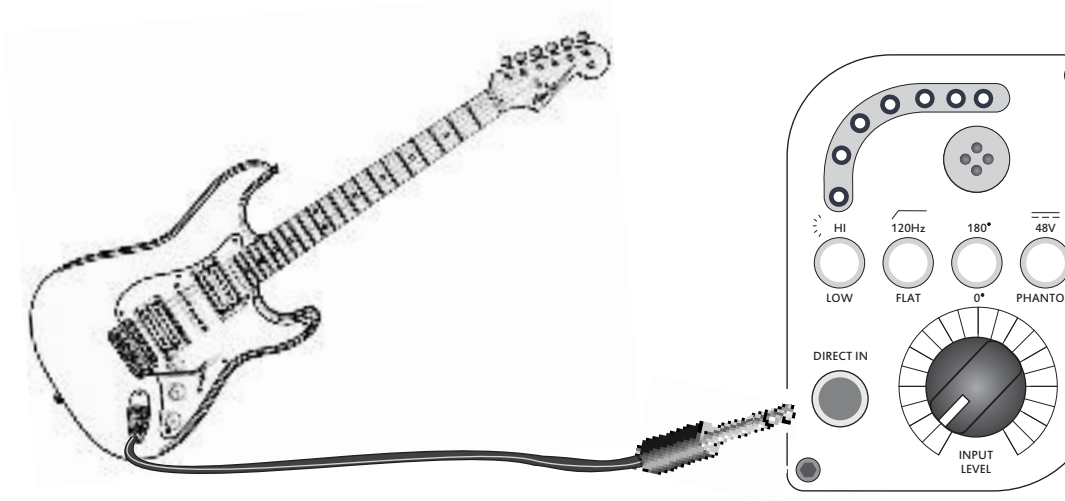
6 **INPUT LEVEL -** The INPUT LEVEL control is an input attenuator. It functions like a variable pad. It acts on the Direct In (DI) and Mic inputs. Fully counter-clockwise is off, and clockwise rotation increases the level. For the Mic input, fully clockwise represents 40dB of gain. With the gain switch set to LOW and the input level set fully clockwise the MIC input will yield 40dB of gain and the DI/LINE input will produce about 20dB of gain. Think of this control as a variable input pad. Start with this control mostly wide open or fully turned clockwise.

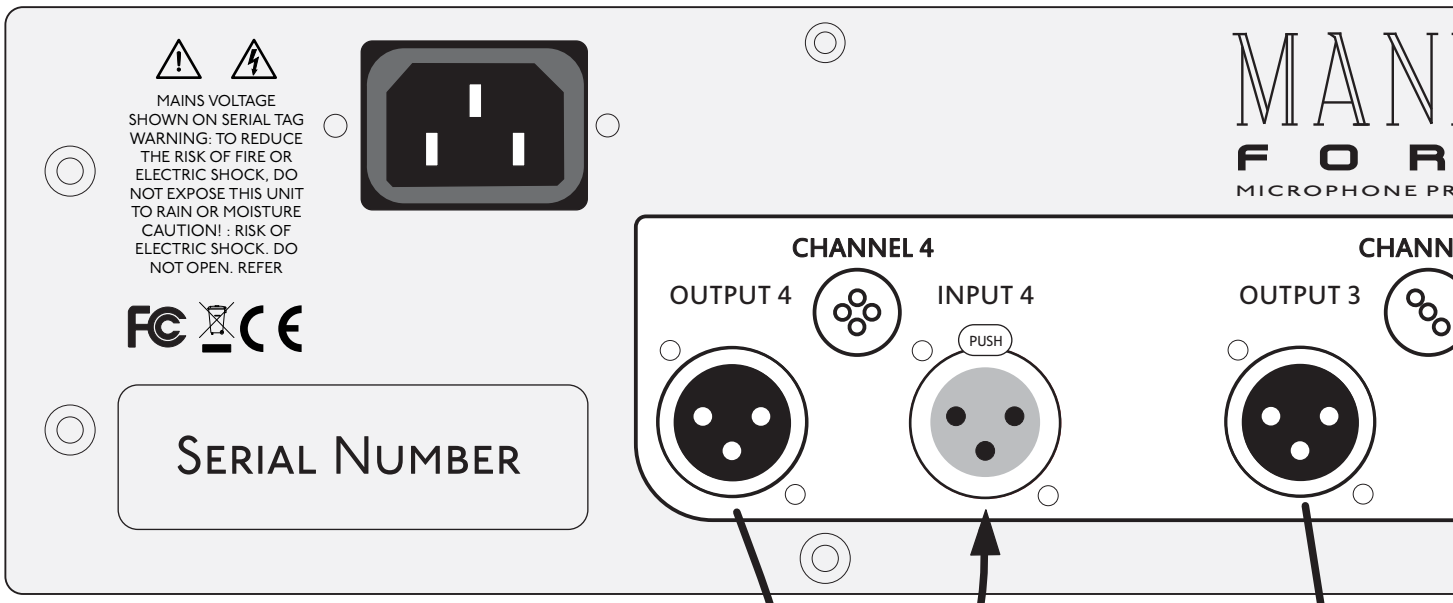
7 **DIRECT IN** - The DI or Direct Input is an Instrument or Line Level input. This unbalanced 1/4 inch input jack is for use with guitars, keyboards, or any other instrument. When a plug is inserted, the FORCE will automatically switch to the DI input. The DI input is an unbalanced 10 MegOhm input that will not load down Hi Z instruments such as a guitar. The connections on this TS Jack are TIP-HOT, SLEEVE-GROUND.

8 **CHANNEL NUMBER -** The dice inspired channel graphic signifies channel 1 to 4

POWER SWITCH AND LED - The push button power switch turns the FORCE on when pushed in. The blue power LED blinks for 30 seconds while the unit warms up. It remains in MUTE condition for these 30 seconds, after which the LED returns to full brightness and stops blinking. The FORCE is now ready for use.

5. Connections







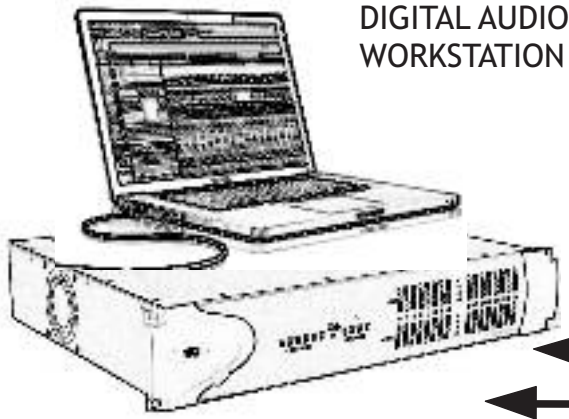
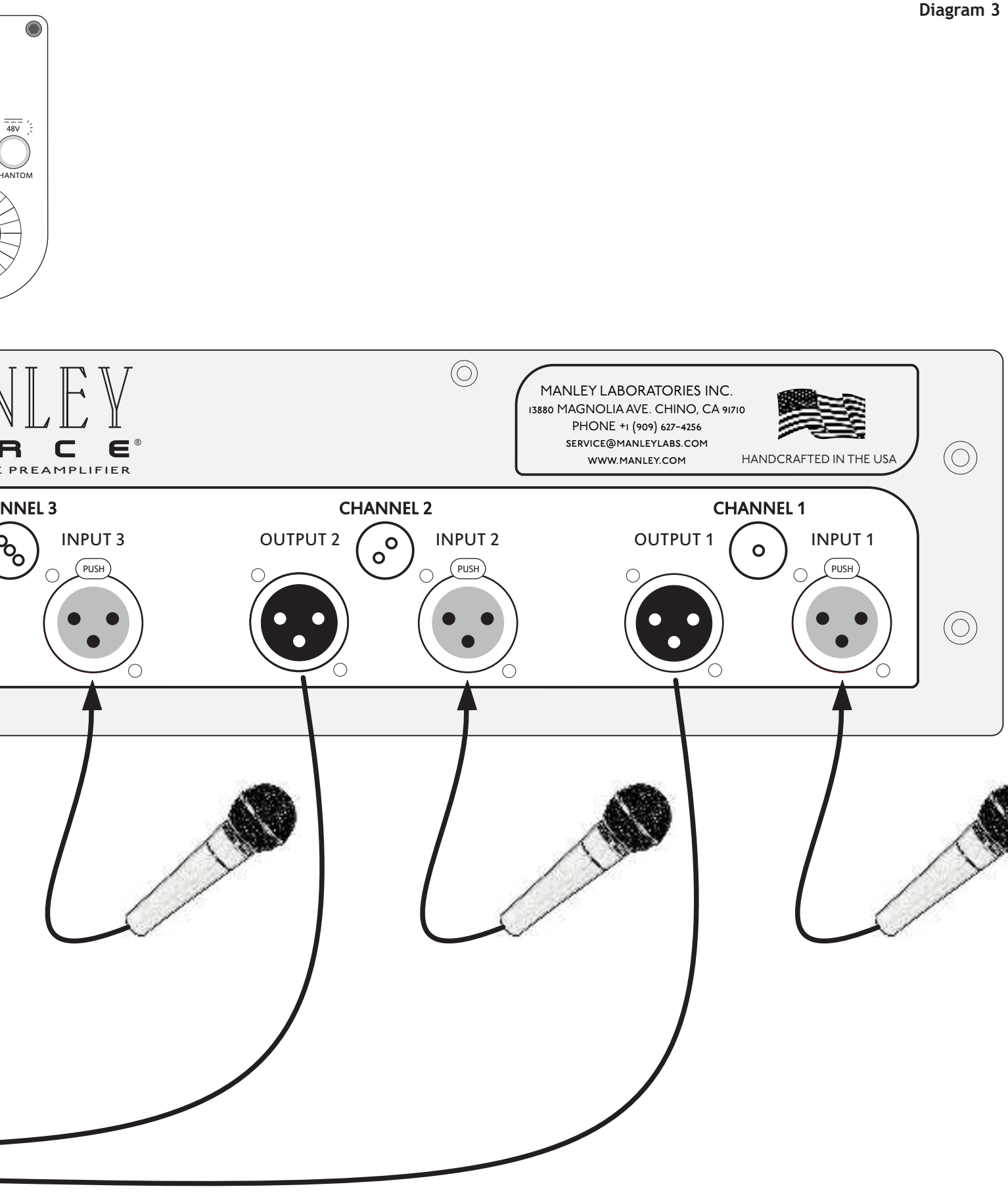


Diagram 3


48V
HANTOM
NLEY
R C E®
E PREAMPLIFIER
MANLEY LABORATORIES INC.
13880 MAGNOLIA AVE. CHINO, CA 91710
PHONE +1 (909) 627-4256
SERVICE@MANLEYLABS.COM
WWW.MANLEY.COM
HANDCRAFTED IN THE USA
NNEL 3
INPUT 3
CHANNEL 2
OUTPUT 2
INPUT 2
CHANNEL 1
OUTPUT 1
INPUT 1
PUSH
PUSH
PUSH

7. Operational Notes

MIC INPUT: This is a transformer balanced, microphone input to the preamplifier.
The pinout is PIN 1: Ground, PIN 2: HOT (+), PIN 3: COLD(-).

All pins must be connected. DO NOT “float” PIN 2 or PIN 3.

OUTPUTS 1 -4 : Are impedance balanced outputs directly after the tube gain stage. The pinout is PIN 1:Ground, PIN 2: HOT (+), PIN 3: COLD(-). An unbalanced input can be connected with PIN3 grounded or open/floated.

DIRECT IN 1-4 (ON FRONT PANEL): This is an unbalanced input.

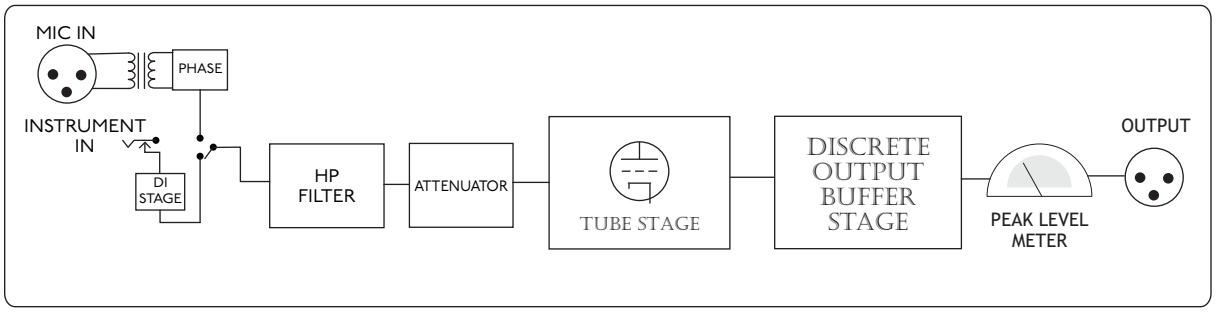
PEAK LEVEL METER

The Peak Level Meter is designed to show that signals are present. This meter is connected on the output of the preamplifier not the input. As there are only seven LED’s across the range of the meter this only indicates approximate signal level. If higher resolution for level indiction is required a secondary meter is recommended on your DAW or mixer.

Getting the most from your FORCE®

There is no rule that says you can't put a line-level signal in the Mic input. Try it! Many different transformer or tube saturation effects can be made this way. The transformer coupled input won’t be damaged. If you are using an unbalanced signal then PIN 3 must be grounded otherwise the signal will not pass through the transformer.

⚠ Just be careful not to engage the PHANTOM power 48V switch if you have anything other than a phantom-powered microphone plugged into the MIC INPUT.



OPERATIONAL BLOCK DIAGRAM (ONE CHANNEL)

8. Questions & Troubleshooting

Q: "Where's the -20dB pad switch?"

Because the input attenuator precedes the tube gain stage, the input level control acts as a variable input pad. It should be used to either reduce the level of a hot input signal, or to simply set the overall gain of the preamp. For best performance keep the GAIN switch set to LOW. HIGH gain should be used only if there is not enough gain with the INPUT LEVEL knob turned to maximum.

Q: "I am having problems with troubleshooting ground loops?"



Try and resolve any grounding issues in your setup by using dedicated cabling etc. If you cannot remove a ground loop in your setup, you can disconnect the Signal Ground from the Chassis ground on the FORCE® by removing the Ground Lift jumper, as shown in diagram 4. It is labeled P4 on the circuit board.

Q: Why do I hear some hiss at the higher GAIN settings?

The input control is an ATTENUATOR, not a volume control. It is used to reduce the level of a hot signal, not boost the level of a weak one. The default position on this control is FULL CLOCKWISE. Turning this control up does not raise the noise level, but stepping up the gain DOES. The lowest noise performance is going to be with the INPUT control fully CW (Clockwise), and with the GAIN switch set at the lowest setting (40db). When set to the 50db gain setting, you might hear some hiss. (Gain can be increased to 60dB with the internal jumper, which will also increase noise level)

Q: Why is my FORCE not completing its power-up cycle?

The FORCE utilizes a custom designed, sophisticated high voltage switched-mode power supply. This power supply features protection circuitry to stop any damage being caused to itself. If at anytime the unit will not power-up the protection circuitry may have been triggered. It is in protection mode if after switch-on the power LED blinks for a fraction of second then after a pause it blinks again. The PSU is now in protection mode as the supply is trying to reset. This condition will occur if the unit suffers excessive heat exposure or there is a damaged tube or component. Allow the unit to cool and try powering-up again. If the protection mode persists, the unit will have to be returned for service.

Useful Tips

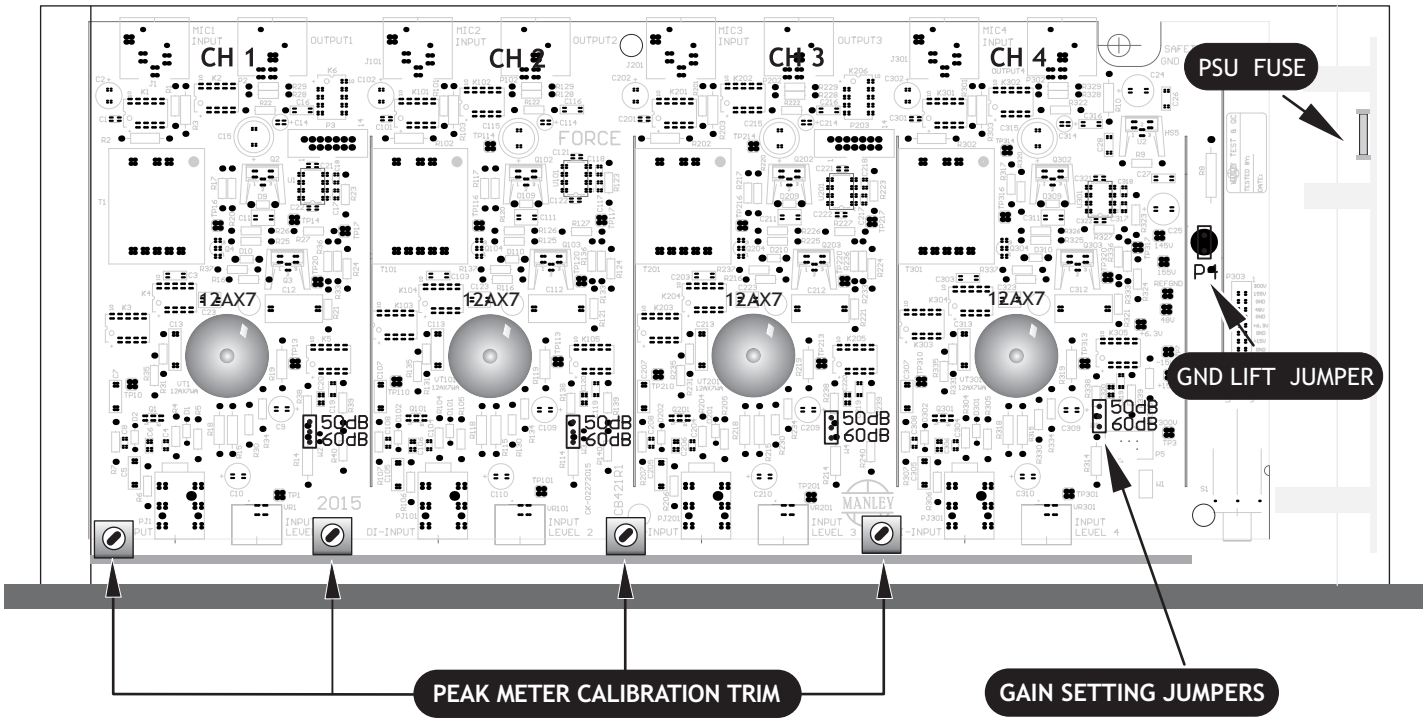
Any poor mic connection will be extra noisy with phantom turned on. This goes for cables, patchbays, patch cords etc. Avoid running mic signals through patchbays. Some patchbays "ground" all the "sleeves" which can add a ground loop into your delicate mic signal.

Ideally, set up the FORCE in the studio near the mic and use a short mic cable. Why ? Microphones often have "light duty" line drivers and you can lose an audible amount of signal in long cables. You can get the best fidelity by having the Mic Pre close to the mic at the "cost" of having to walk into the studio to adjust a level control. You also avoid almost all of that phantom power / patching problem because now you are patching the line level output signal only.

Go to www.manley.com and read our extensive FAQ for more information about the care and feeding of vacuum tubes!

9. Servicing

Diagram 4



⚠ **Please ensure the unit is unplugged and switched off before attempting any of the procedures below.**

VACUUM TUBES

The FORCE microphone preamplifier utilizes one 12AX7 per channel. Equivalent tube types are 12AX7WA, ECC83, 7025, CV4004. The lifespan of these tubes is in the order of 5000-6000 hours, after which time the tubes should be replaced. If the FORCE has become noisy, this could be related to tube wear. Consult your dealer or purchase new tubes from Manley Labs. We suggest low noise and graded quality. Simply hold the tube firmly at its base and vertically pull upwards, freeing the tube from its socket. When inserting a new tube ensure all the pins are straight and align with the receptacles of the tube base before pressing down firmly to locate the tube correctly.

GAIN SETTING JUMPERS

The FORCE is shipped factory set for 50dB of gain for the HI gain setting. (*Diagam 2-switch (2)*) If required the unit can deliver a further 10dB of gain so the overall gain of the preamplifier would be increased to 60dB, which may be required for some users. Each channel is equipped with a jumper to select the desired gain. The jumper is red and is located to the right of each tube. Please refer to diagram 4, for their locations. With the red jumper in the top position 50dB of gain is selected and with the jumper in the lower position 60dB of gain is selected.



GROUND LIFT JUMPER

If necessary the Circuit Ground can be disconnected from the Chassis Ground. This practice is usually required if hum-loops cannot be cured in any other way. Removing the jumper at P4 will break the ground.

PEAK METER CALIBRATION

These trim pots are initially set at the factory for the LED Peak Level meter and should not require any additional adjustment by the user, as the solid-state circuitry does not drift over time.

PSU FUSE

The PSU fuse is a safety fuse rated at 2A (T) 250V AC. If this fuse fails the switched-mode PSU has suffered a catastrophic failure and it is unlikely that it can be repaired. The unit will have to be returned for service.

10. Specifications

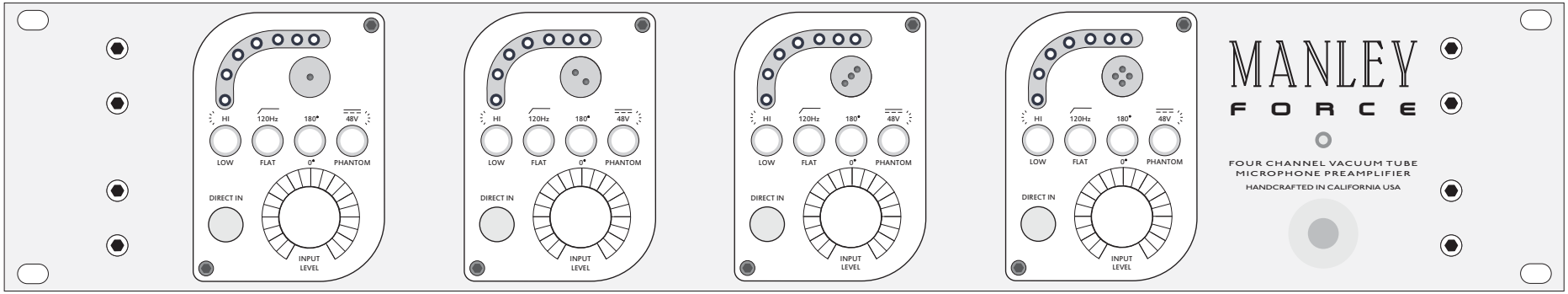
MANLEY FORCE FOUR CHANNEL MICROPHONE PREAMPLIFIER

- Four channel vacuum tube microphone preamplifier, utilizing 1 x12AX7WA per channel for gain
- Silent conductive plastic INPUT attenuator
- AUTOMUTE warmup delay: 30 seconds
- Balanced MANLEY IRON® Transformer Coupled XLR Microphone Input
- Unbalanced 1/4" Direct /Line Input (Instrument Input)
- XLR Balanced Output
- 7-segment LED PEAK METER

All measurements typical, 20Hz - 20kHz, unweighted unless otherwise specified

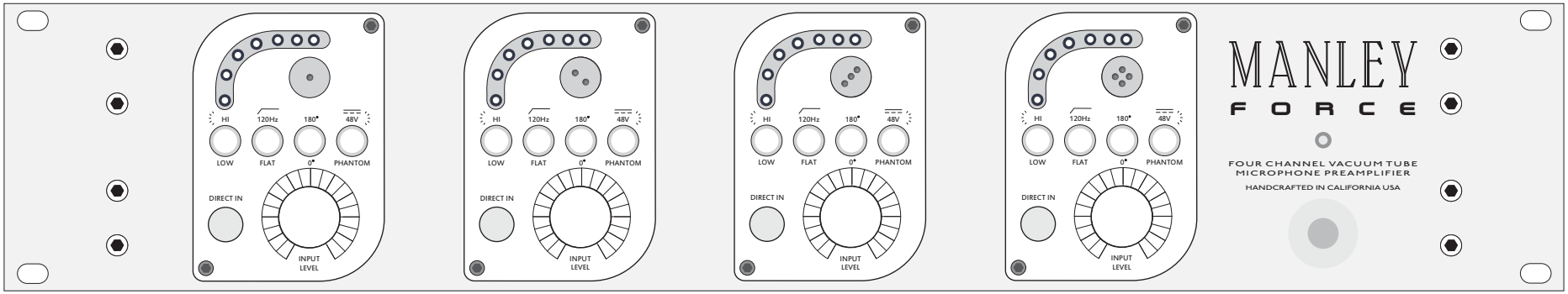
- Microphone Input Impedance: 1250 Ohms
- Direct Input Impedance: 10 Meg Ohm
- Output Impedance: 50 Ohms
- Microphone Input Gain: 40dB LOW GAIN, 50 or 60dB HI GAIN (internal jumper setting)
- Maximum Output (1kHz Sine, 0.1% THD+N): +36 dBu
- Output Headroom (Reference to +4dBu): 32dB
- Mic Input Frequency Response:-3dB @ 20Hz, +1.0dB @ 20Khz
- Direct Input Frequency Response:-0.2dB @ 20Hz, -0.1dB @ 40Khz
- THD & Noise (1Khz @ +4dBu BW 22Hz-22KHz) LOW Gain: Typical All Channels 0.01%
- Noise Floor @ 40dB Gain (Input Att Max, 150 Ohm Source): -86 dBu
- Dynamic Range (reference to Max Output) LOW Gain: 122 dB
- Signal to Noise ratio (reference to +4dBu) Low Gain: 90dB
- EIN (with 150 Ohm source impedance): -126dB
- Low Signal Green LED (Output Level): -21dBu to -22 dBu
- High Signal Red LED (Output Level): +24dBu
- Power consumption: 31 Watts
- Operating mains voltage: 90 to 254 VAC (internal universal supply)
- Mains Voltage Frequency: 50~60Hz

- MECHANICAL SPECIFICATIONS
- Dimensions: 19" x 3 ½" x 7" (occupies 2u)
- Unit weight: 8.6 lbs.
- Shipping weight: 11.8 lbs.



ARTIST _____ INSTRUMENT / TRACK _____ DATE _____

SONG _____ MIC NOTES _____ ENGINEER _____



ARTIST _____ INSTRUMENT / TRACK _____ DATE _____

SONG _____ MIC NOTES _____ ENGINEER _____

Designed & Handcrafted in the USA

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