



APPLIED RESEARCH & TECHNOLOGY
215 TREMONT STREET
ROCHESTER, NEW YORK 14608 USA

1-585-436 2720 -Voice

1-585-436 3942 -Fax

Internet

<http://www.artproaudio.com>

E-mail: art@artproaudio.com

TUBE MP OPL™

Tube Microphone Preamp with OPL™

20020201RN

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USER'S GUIDE



The ART TUBE MP OPL™

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INTRODUCTION

Thank you for purchasing the Tube MP OPL™ - and congratulations: You now own one of the most versatile preamplifiers available. Offering a superb level of sound quality, the Tube MP OPL™'s hybrid solid state and tube circuit design combined with a straightforward user interface quickly and easily gives you access to all of its features.

The original ART Tube MP put professional-caliber tube preamplification into the hands of thousands of musicians and recordists that wanted great tube tone in a compact and flexible package.

The Tube MP OPL™ extends the range of applications by adding an output protection limiter (OPL) to precisely control output peaks.

The Tube MP OPL™ can be used in a wide variety of applications including recording, project and home studios, where its OPL circuitry really shines. It also functions as a direct box, with impedance matching and preamplification for instrument or line-level sources.

FEATURES:

- Built-in OPL (switch selectable)
- Over 60dB of gain
- Hand selected 12AX7A dual triode tube
- Balanced XLR inputs and outputs
- ¼" High impedance Instrument input and ¼" line level output
- +48V Phantom power (switch selectable)
- Phase Reverse Switch
- Gain (+20dB) Switch
- Input Gain Control
- Output Level Control
- Multifunction, dual color LED Power/Clip/Limit indicator
- Fully shielded all steel chassis
- Designed and developed in the USA

INSTALLATION

The Tube MP OPL™ may be used in a wide variety of applications and environments. Self-contained in an all-steel enclosure, the Tube MP OPL™ is designed for continuous professional use. Because the unit is compact and lightweight, mounting location is not critical. However, for greater reliability we recommend that you not place the Tube MP OPL™ on top of power amps or other sources of heat. The tube circuitry needs about a minute to "warm up" from a cold power up.

AC POWER HOOKUP

The Tube MP OPL™ has an external power supply designed to operate at 115 VAC @ 50 to 60 Hz. Units manufactured for use outside the United States of America have been modified to comply with the required electrical specifications. **Only use the adapter that came with the Tube MP OPL™.** If the adapter becomes lost or damaged, contact ART Customer Service for replacement. If you need to purchase one locally, just make sure that you specify 9 Volt AC (not DC), at 800 ma

AUDIO CONNECTIONS

Audio connections to and from the Tube MP OPL™ are balanced XLR (Pin 2 = Hot (+), Pin 3 = Cold (-), Pin 1 = Ground) and unbalanced ¼" (Tip = Hot (+), Sleeve = Ground). We recommend that you switch off the +48V Phantom Power whenever changing connections to the XLR input.

SAFETY PRECAUTIONS

Warning: To avoid the risk of shock or fire, do not expose this unit to moisture. Refer all servicing to qualified personnel. Do not remove the metal cover; there are no user-serviceable parts inside. Only use the power adapter that came with this unit or one obtained from ART's Customer Service Department.

CONTROLS & INDICATORS

INPUT CONTROL

The Input Control sets the amount of input gain of the Tube MP OPL™. Turn the control clockwise to increase gain and counterclockwise to decrease gain. You may control two ranges of gain with this control, +26 to +60dB and +6 to +40dB. Selection of the gain range is made with the +20dB gain switch.

+20DB GAIN SWITCH

Use the +20dB Gain Switch to set the gain range of the input control. When the switch is out, the Tube MP OPL™ operates in Normal mode. Depressing the switch adds 20dB of gain. This mode is indicated by the labeling in red and corresponds directly to the input control's red gain range labeling. For microphone applications, where more gain is needed, push the switch in. For hot line level inputs, set the switch in the out position.

PHANTOM POWER +48V SWITCH

The Tube MP OPL™ can power any microphone needing +48 volts DC Phantom power. Phantom power is supplied to pins 2 and 3 of the XLR Input jack when this switch is depressed. The Tube MP OPL™ slowly applies and removes the +48volts, to prevent damage to microphones.

Be sure to turn down or mute the output of the Tube MP OPL™ when engaging or disengaging Phantom power. Additionally, when disengaging, allow 30 to 45 seconds for the power to completely discharge. Most microphones will make a sound like air leaking from a tire when Phantom power is disconnected, but some can make some very noisy low rumbles and whines as well.

Dynamic microphones should not be affected or damaged if they are plugged into a line where Phantom power is present. However, if the mic doesn't need it, do not use it. Some things are best left untested!

PHASE REVERSE SWITCH

The Phase Reverse switch is provided to reverse the phase of the signal. This switch works on Pins 2 and 3 of the XLR output jack and also reverses the polarity of the ¼" output jack. In the Normal position, the signal is in-phase. In the Reverse (or "in") position, Pins 2 and 3 are reversed and the signal is changed to 180 degrees out of phase.

In multiple microphone applications, mic placement can affect the phase of the signals. If two microphones pick up the same signal from different locations, the result can be a hollow or frequency "shifted" sound. In some cases it may sound as if an instrument disappears if it happens to be 180 degrees out of phase. Depressing the Phase switch can remedy this. In general, if your sound is "thin" or "out of position", try reversing the phase to correct the problem.

OPL (PEAK LIMITER) SWITCH

Depressing this switch engages the OPL (Output Protection Limiter) circuitry. This circuit precisely and accurately controls the output peak signal level. This FET (field effect transistor) peak limiter has a fast attack for peaks and slow release time. This helps you to prevent clipping or overload of equipment that follows the Tube MP OPL™, such as the A/D converters on a sound card or digital recorder, in-ear monitor systems, or live monitoring system. When engaged, the output signal is limited to approximately 0dBu at the ¼" output jack and +6dBu at the XLR output jack, with the Output control all the way up. The LED indicator reflects the OPL circuit's action.

POWER/CLIP/LIMIT LED

The bi-color Power/Clip/Limit LED lights green after power is applied and with lower level signals. If OPL is not being used, then the LED will serve as a signal clip indicator. It will light red whenever the signal at the tube's output is about to clip. If the LED is constantly lit, reduce the signal level with the Input gain control, or Activate the OPL circuitry.

When the OPL circuit is engaged, the LED will turn red whenever the output signal peaks exceed the limiter's threshold, at which point the limiter will reduce gain automatically, to prevent output clipping.

OUTPUT CONTROL

The Output Control sets the output level of the Tube MP OPL™. When the control is fully counterclockwise, there is no output. Turning the control clockwise increases the level of the output signal.

CONNECTIONS

Despite the Tube MP OPL™'s sophistication, it is easy to interface the unit with a wide variety of equipment. All inputs and outputs, are located on the rear panel. Standard ¼" and XLR inputs and outputs make patching simple.

¼" INPUT JACK

The ¼" Input jack is for instrument and line level inputs. It has a high input impedance to minimize any loading effects on instrument pickups. It can also handle up to +22 dBu signals for line level signals.

Though not normally suggested, both input jacks can be used simultaneously, in a pinch, to sum two signals. The signal present at the XLR jack will tend to attenuate the signal of the ¼" input.

XLR INPUT JACK

The XLR Input jack is primarily intended for microphone input, and as such can furnish Phantom Power when needed. It can handle up to +14 dBu signals, which is the hottest signal you would get out of any microphone. For even hotter input signals, you should use the ¼" input jack. The XLR Input jacks medium input impedance is extremely flat over a wide frequency range, which allows it to be musically neutral to virtually any microphone (one of the Tube MP's lesser known secrets).

XLR OUT PUT JACK

The XLR Output jack of the Tube MP OPL™ is active balanced. You may use it in an unbalanced configuration without harm to the output circuitry. The XLR output can provide a hefty signal level (+28dBu) at a low impedance, so make sure that you do not overdrive equipment with sensitive inputs. When using it on the front end of a mixer, go into the mixer's line in or insert inputs and not necessarily into the mixer's microphone input, unless the mixer can pad that input's level.

1/4" OUT PUT JACK

The 1/4" Output jack is unbalanced and should be used for sending signals to amps, processors, or other unbalanced configurations.

Both balanced and unbalanced output connections may be used simultaneously. This is particularly useful when using the Tube MP OPL™ as a direct box for instruments or line level signals. Make sure that both pieces of equipment connected to the Tube MP OPL™'s outputs are connected to the same earth ground, beforehand, to avoid electrical shock.

If you experience a grounding hum when using both output connectors (one to a console, one to an instrument amp) simultaneously, a ground loop may be the problem. To remedy this problem, disconnect the ground wire (pin 1) from the XLR cable plugged into the Tube MP OPL™'s output. This interrupts the ground path and therefore breaks the loop.

POWER JACK

An external 9 Volt AC adapter powers the Tube MP OPL™. Plug the adapter into the PWR jack and then into a power outlet. Only use the adapter that came with the Tube MP OPL™. If the adapter ever becomes damaged, immediately discontinue use. They can be purchased locally or directly from ART. Just make sure that you specify 9 Volt AC (not DC), at 800 ma.

Fill in the following information for your reference:

Date of purchase _____

Purchased from _____

SERIAL NUMBER _____

OPERATION

The main application of the Tube MP OPL™ is a microphone preamplifier. Plug any microphone directly into either input and set the input and output controls to provide an appropriate level into the next stage of your system.

Use the Tube MP OPL™ as an acoustic or piezo pickup preamplifier to run directly into a console, amp, processor, recorder, or sound card.

The Tube MP OPL™ is ideal for use as a DI box. Plug the instrument into either input and use the XLR or 1/4" (or both) outputs to connect to your recorder, board or PA system.

Because of its low noise and excellent tonal qualities, the Tube MP OPL™ is ideal for running mixes through before recording to DAT or cassette. Used as a mastering device, the Tube MP OPL™ is capable of adding warmth and gentle tube compression to the signal. Variable Input and Output level controls make the Tube MP OPL™ ideal for level matching material in postproduction situations.



WARRANTY INFORMATION

Limited Warranty

Applied Research and Technology will provide warranty and service for this unit in accordance with the following warrants:

Applied Research and Technology, (A R T) warrants to the original purchaser that this product and the components thereof will be free from defects in workmanship and materials for a period of **one** year from the date of purchase. Applied research and Technology will, without charge, repair or replace, at its option, defective product or component parts upon prepaid delivery to the factory service department or authorized service center, accompanied by proof of purchase date in the form of a valid sales receipt.

Exclusions:

This warranty does not apply in the event of misuse or abuse of the product or as a result of unauthorized alterations or repairs. This warranty is void if the serial number is altered, defaced, or removed.

A R T reserves the right to make changes in design or make additions to or improvements upon this product without any obligation to install the same on products previously manufactured.

A R T shall not be liable for any consequential damages, including without limitation damages resulting from loss of use. Some states do not allow limitations of incidental or consequential damages, so the above limitation or exclusion may not apply to you. This warranty gives you specific rights and you may have other rights, which vary, from state to state.

For units purchased outside the United States, an authorized distributor of Applied Research and Technology will provide service.

SERVICE

The following information is provided in the unlikely event that your unit requires service.

- 1) Be sure that the unit is the cause of the problem. Check to make sure the unit has the proper power supplied, all cables are connected correctly, and the cables themselves are in working condition.
- 2) If you find the unit to be at fault, write down a complete description of the problem, including how and when the problem occurs. Please write down a description of your complete setup before calling Customer Service.
- 3) Contact our Customer Service Department at 1-585-436 2720 for your Return Authorization number or questions regarding technical assistance or repairs. Customer Service hours are 9:00 AM to 5:30 PM Eastern Time, Monday through Friday.
- 4) Pack the unit in its original carton or a reasonable substitute. The packing box is not recommended as a shipping carton. Put the packaged unit in another box for shipping. Print the RA number clearly on the outside of the shipping box. Print your return shipping address on the outside of the box.
- 5) Include with your unit: a return shipping address (we cannot ship to a P.O. Box), a copy of your purchase receipt, a daytime phone number, and a description of the problem.
- 6) Ship only your unit and its power supply (keep your manual!) to:

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ROCHESTER, NEW YORK 14608
RA# _____

TUBE MP OPL™ SPECIFICATIONS

Dimensions	5.0"H x 5.5"W x 2.0"H
Weight	1.5 lbs.
Input Connections	XLR (balanced), ¼" TS
Output Connections	XLR (balanced), ¼" TS
Input Impedance XLR, ¼"	2K ohms, 840k ohms
Output Impedance XLR, ¼"	600 ohms, 300ohms
Maximum Input Level, XLR	+14dBu
Maximum Input Level, ¼"	+22dBu
Maximum Output Level, XLR	+28dBu
Maximum Output Level, ¼"	+22dBu
CMRR	>75dB (typical @ 1kHz)
Frequency Response	10Hz to 30kHz, +/- .5dB
Dynamic Range	>100dB (20-20kHz) typical
Total Harmonic Distortion (THD)	<0.1% (typical)
Maximum Gain	
XLR to XLR	65dB (typical)
¼" to ¼"	49dB (typical)
XLR to ¼"	59dB (typical)
¼" to XLR	55dB (typical)
Equivalent Input Noise (EIN)	
XLR to XLR	-129dBu (A weighted)
¼" to ¼"	-105dBu (A weighted)
Tube Type	12AX7A, Dual Triode, Hand Selected
Power Requirements	USA 9VAC @ .8A (typ.) Export units onfigured for country of destination

ART maintains a policy of constant product improvement. ART reserves the right to make changes in design or make additions to or improvements upon this product without any obligation to install same on products previously manufactured. Therefore, specifications are subject to change without notice.

Applied Research & Technology

215 Tremont Street
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E-mail: art@artproaudio.com

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