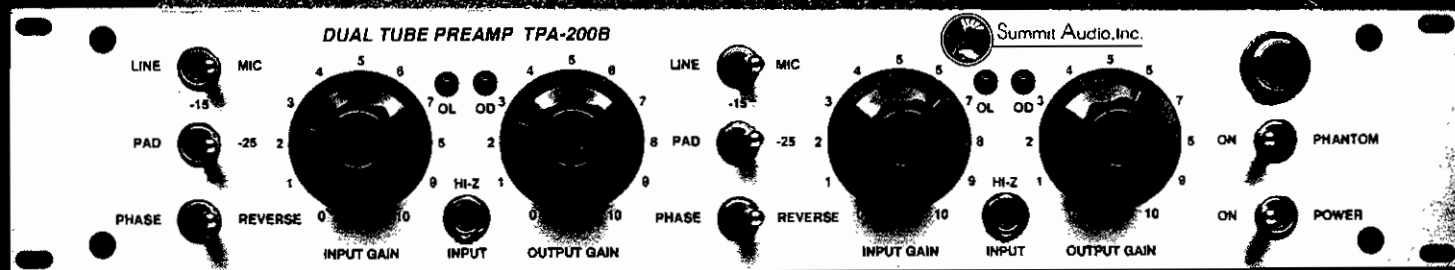


Dual Tube Preamplifier



The Summit Audio Dual Tube Preamplifier is a hybrid of vacuum tube and solid state technologies. This combination creates a device with the warm sound of tubes, while providing the reliability of solid state components. The TPA-200B is designed to work in a variety of applications using three input types: microphone input, line level input, and front panel Hi-Z input. Interfacing is made simple by using three-pin XLR connectors and quarter-inch jacks.

Features Include:

- EASE OF OPERATION
- CONTROLLABLE SOUND, CONTINUOUSLY VARIABLE FROM "CLEAN" TO "OVERDRIVE"
- LINE LEVEL BALANCED INPUT
- MIC LEVEL BALANCED INPUT
- PHASE REVERSAL SWITCHES
- PAD SWITCH: -15dB AND -25dB POSITIONS
- PHANTOM POWER FOR THE MIC INPUT
- FRONT PANEL HI-Z INPUT
- 990 BALANCED OUTPUT STAGE
- OVERLOAD AND OVER DRIVE INDICATORS
- HAND CRAFTED IN THE USA

Specifications:

Output: +4 dBu corresponds to 0 VU. The output is electronically balanced or unbalanced using 990 operational amplifiers. Output impedance is 75Ω. The recommended output load is 600Ω or more. Maximum output level is +25dBu.

Input: The input is transformer balanced. The mic input impedance is 1500Ω, the line level input impedance is 20K Ω and the Hi-Z input impedance is one mega-ohm. The mic and line inputs are balanced; the Hi-Z input is unbalanced.

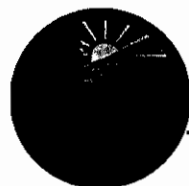
Panel Size: Standard 19" by 3.5" (two units of rack space).

Depth Behind Panel: 10.5" in addition to user's I/O cabling.

Power: 35 watts, 115 or 230 volts operation, 50 or 60 Hz.

Components: (3) selected 12AX7A vacuum tubes, (4) high reliability 990 discrete, operational amplifiers, (12) integrated circuits, (9) transistors.

Shipping Weight: 19 lbs. (8.62 kg.)



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APPROVED FOR ELECTRICAL SAFETY
DEPARTMENT OF BUILDING & SAFETY
CITY OF LOS ANGELES

Specifications subject to change without notice.
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IMPORTANT! CAREFULLY READ THE ENTIRE INSTRUCTION MANUAL BEFORE HOOKUP OR OPERATION OF THE *TPA-200B*.

WARNING! HIGH VOLTAGE!

THIS UNIT CONTAINS NO USER SERVICEABLE PARTS. SERVICING SHOULD BE DONE BY QUALIFIED SERVICE PERSONNEL OR FACTORY. DO NOT OPERATE THE *TPA-200B* WITH THE COVERS REMOVED.

**OPERATING MANUAL
MODEL TPA-200B
DUAL TUBE PREAMPLIFIER**

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INTRODUCTION

The Summit Audio Dual Tube Preamplifier uses tube and solid state technologies to produce the warm sound associated with tubes, with the reliability provided by solid state devices. The TPA-200 B is designed to work in a number of different applications with three different types of inputs; a microphone input, line level input, and a front panel Hi-Z input. Input connections are made by using two three-pin XLR connectors and one quarter-inch jack.

FEATURES:

- EASE OF OPERATION
- CONTROLLABLE SOUND, CONTINUOUSLY VARIABLE FROM "CLEAN" TO "OVERDRIVE"
- LINE LEVEL BALANCED INPUT
- MIC LEVEL BALANCED INPUT
- PHANTOM POWER FOR THE MIC INPUT
- FRONT PANEL HI-Z INPUT
- 990 BALANCED OUTPUT STAGE
- OVERLOAD AND OVER DRIVE INDICATORS
- HAND CRAFTED IN THE U.S.A.

SPECIFICATIONS

- OUTPUT:** +4dBm corresponds to 0 VU. The output is balanced or unbalanced using 990 operational amplifiers. Output impedance is 75 ohms. The recommended output load is 600 ohms or more. Maximum output is +25 dBm.
- INPUT:** The input is transformer balanced. The mic input impedance is 1500 ohms. The line level input impedance is 40K ohms and the HI-Z input impedance is one mega-ohm. The mic and line inputs are balanced and the HI-Z input is unbalanced.
- OVER LOAD:** This LED (red) lights when the input stage is driven to 5 dBm below clipping.
- OVER DRIVE:** This LED (amber) lights when the second stage is driven to 5 dBm below clipping.
- PANEL SIZE:** Standard 19" by 3.5" (two units of rack space).
- UNIT DEPTH:** 10.5" behind front panel in addition to users I/O cabling.
- POWER:** 35 watts, 115-230 Volt 50, or 60 Hz.
- COMPONENTS:**(3) selected 12AX7A Vacuum tubes, (4) high reliability 990 operational amplifiers, (12) integrated circuits, (9) transistors.
- FUSE SIZE:** .5 Amp for 115 V A.C., .25 Amp for 230 V A.C.
- SHIPPING WEIGHT:** 16 Lbs.

Having found this manual, carefully unpack the TPA-200B and it's power cord. Save the carton and packing materials should it be needed for future shipping. Before powering up the unit, read this manual, observe the cautions for HIGH VOLTAGE, and proceed by doing the following:

- DETERMINE THE PROPER FUSE SIZE BY REFERRING TO THE SPECIFICATIONS.
- CHECK FOR PILOT LAMP ILLUMINATION WHEN POWERED UP.

THE CONTROLS

- LINE/MIC SWITCH:** Selects the input source for the channel.
- PAD SWITCH:** Selects 0, 15, or 25 DB of attenuation on the mic and line level inputs.
- PHASE SWITCH:** Selects normal or reverse phase of the line and mic inputs.
- INPUT GAIN:** Controls the gain of the first tube stage of amplification.
- OUTPUT GAIN:** Controls the level coming from the tube circuit.
- PHANTOM :** Turns the 48 volt mic supply on or off for both channels.
- POWER SWITCH:** Turns the A.C. power on and off.

OPERATION

The first step in the operation of any device using a vacuum tube is to apply power and let the unit warm up. This takes about 15 minutes.

The *TPA-200B* is a dual tube preamp designed to work in a number of different applications. It has three different types of inputs; a microphone input, a line level input, and a front panel Hi-Z input.

The Hi-Z input is for direct connection of a guitar or synthesizer into the audio chain. The microphone input will allow the creation of tube mic sounds from a non-tube mic. The line level input allows convenient processing of already recorded material or allows you to warm up the sound of a digital device.

There are two basic modes of operation; clean and overdrive. For the clean mode, the output gain should be set at 10 and the input gain should be between 1.5, and 6.0. If the input gain is less than 2, it may be necessary to use a pad. The internal pad has either a 15, or 25 dB loss.

The overload LED will light if you over load the first stage. To fix this you can use the pad on the mic or line inputs. If you are using the Hi-Z input, you will have to reduce the level of your source.

In the overdrive mode, first set the unit up for clean operation, then slowly increase the input gain while decreasing the output gain keeping the overall unit gain the same as the "clean" mode. By following this method, the overload will occur in the second stage amplifier. This will be mostly second harmonic distortion. Do not let the word "distortion" scare you as the second harmonic is an octave. If you carefully control it, you can do wonders in creating new sounds and fixing problems.

The overdrive LED will light as an indicator of over driving the second tube stage. You can use this as a reference in doing over drive effects and as a clipping indicator for the second stage. The output gain control will not affect the over drive LED.

Because of the different modes of operation, the *TPA-200B* may be thought of as a pre-amp and as an effects device.

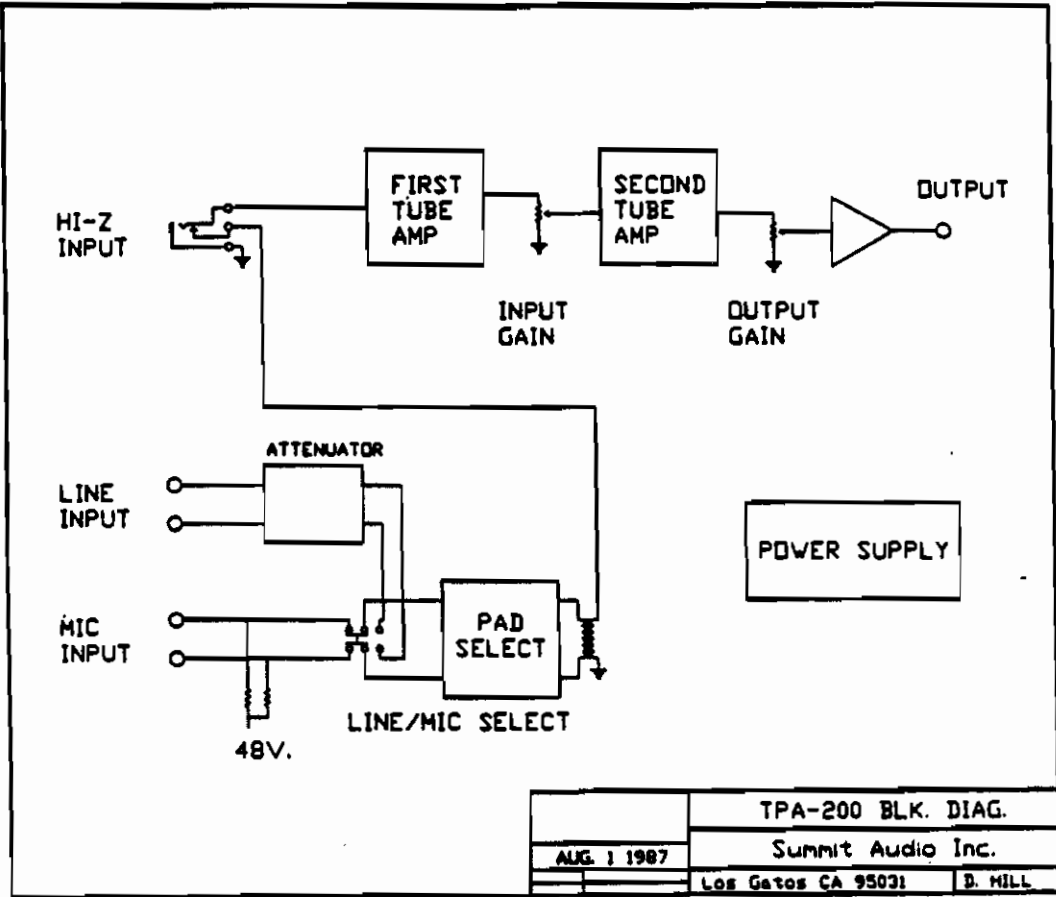
When using the mic input with devices that do not require phantom power, turn the phantom power off.

With a little experimentation, the *TPA-200B* will prove itself to be a valuable tool in the challenge to get rich non-harsh sounds onto tape or in the audio chain.

CIRCUIT EXPLANATION

The *TPA-200B* is two independent tube pre-amps. All signal gain occurs in the tube portion of the circuit. The 990 op amp used for the low impedance output stage is made of discrete components and then potted for stability. The line and mic inputs are transformer coupled. They are also wired for balanced operation. A quarter inch plug inserted onto the HI-Z input disconnects the line and mic inputs, and feeds the grid of the tube directly. The input gain control is between the first and second tube stages. The second stage amplifier has a cathode follower for lower output impedance. The output gain control is between the cathode follower and the 990 output stage. The tubes are operated class A with no negative feedback. This design was chosen because it worked best in the "overdrive" mode, and sounds most like tube microphones in the clean mode. The power supply is all solid state and regulated. The tube heaters are D.C. operated.

The overload indicator circuit is made of a HI-Z amplifier that is used for signal pick off from the first tube stage. The amplifier is designed so it does not affect the operation of the tube circuit. The sampled signal is then fed to a comparator circuit that turns the LED on when the signal is -5dBm with respect to clipping. The overdrive indicator works the same way, but instead of picking up the signal on the plate of the first tube, it picks up the signal on the cathode of the last tube.



ELECTRICAL CONNECTIONS

INPUT CONNECTIONS:

- HI-Z INPUT: QUARTER INCH JACK
 TIP= SIGNAL
 SLEEVE= GROUND
- LINE INPUT: QUARTER INCH JACK
 TIP= SIGNAL +
 RING= SIGNAL -
 SLEEVE= GROUND
- MIC INPUT: 3 PIN XLR CONNECTOR
 PIN 1= GROUND
 PIN 2= SIGNAL -
 PIN 3= SIGNAL +

OUTPUT CONNECTIONS:

- UNBALANCED: 3 PIN XLR CONNECTOR
 PIN 1= GROUND
 PIN 2= CONNECT TO PIN 1
 PIN 3= SIGNAL +
- BALANCED: 3 PIN XLR CONNECTOR
 PIN 1= GROUND
 PIN 2= SIGNAL -
 PIN 3= SIGNAL +

NOTE: When using an unbalanced output connection, connect pin 2 to pin 1 in your connector.

Because the *TPA-200B* contains heat generating devices, it needs plenty of ventilation. Good ventilation will give long, trouble free operation.

THINK TUBES!