~Sebatron~

Innovative Australian Audio

AXIS 200VU

Dual Valve Preamp Operating Manual

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1. Introduction

-Introduction to the AXIS 200VU

The **AXIS 200VU** microphone Preamplifier has been designed to give the Professional and Home recording Engineer a High Quality Valve Microphone and Direct Input Preamplifier at a reasonable cost.Great care has been taken in circuit layout and design to create not only an accurate and transperent sonic tool but one that can also overdrive with symmetry and subtly dynamically control or 'compress' the input signal in a manner which is musical and close to the operation of the human ear.

As is common knowledge , Valves are distinctly different to Transistors and Intergrated Circuits in the sense that they have a unique operating region that does not terminate in an abrupt brick wall as Solid State Technology does.It is in this region that the valve expresses most of its harmonic qualities.Operating in a clean or transperent manner is also possible when the gain of the valve is dialed right back and degress of negative feedback are introduced to increase linearity and bandwidth of the audio circuit.

The AXIS200VU presents you with not only a practical and neutral audio amplifying device but one that can provide an enhancement of the audio signal only achieved through equipment costing many thousands of dollars more.Standing on the shoulders of the VMP series , the AXIS preamp provides yet another sonic pallet for the engineer or producer who endevours to turn the recording process into an artform. There are no chips in the audio path which means , above all else , the unit is very difficult to damage with an incorrect interface. Chips , or intergrated circuits , are often a weak point in consumer-level hybrid valve designs because they fail easily when overloaded.This is not the case with the AXIS preamp , being a true valve design , it is free of such failings and is ruggedly dependable.

-AXIS 200VU Features :

- Fully balanced Transformer coupled XLR microphone input
- High Impedence unbalanced ' Direct Input ' for Guitar , Bass , Keyboards or line level signals etc.
- Fully balanced and unbalanced XLR and phono inputs and outputs
- A variable ' pad/gain ' control that changes the colour of the signal as well as acting as a pad or gain control increasing overall sonic flexibility
- Quality 12AT7/ecc81 Valve running on a High Voltage rail providing steller musical signal amplification and enhancement
- A gentle 40Hz to 400Hz variable High Pass Filter for removal of unwanted lower frequencies without signal annomalies
- 180 degree mic input phase reversal switch
- +48VDC Phantom power for condenser microphones
- Output level control for transperent control of the final output signal
- Wide swing and internally calibrated accurate VU metering
- Wide Bandwidth and Low Noise quality Class A circuitry
- Quality switches , potentiometers and components used throughout

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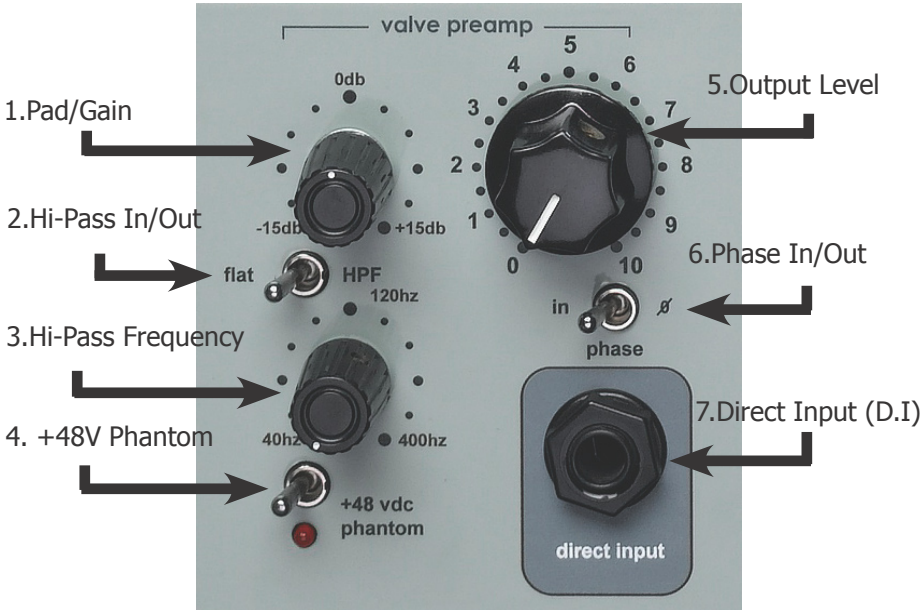
2. Controls



-1.Pad/Gain

The Pad/Gain control is a dual feature parameter that acts as a pad for dealing with heavy mic/line signals and also acts as a gain boost when turned towards the right.This is done by varying the amount of interstage coupling and negative feedback through a double ganged potentiometer. Everything from close miced drums to gentle acoustic overheads can be directed and controlled through the useage of the variable pad/gain control. Setting the colour control right down to zero to obtain a very clean signal if required is advised.

In addition to mic preamp work , this control allows the user to directly inject heavy line level signals for additional valve processing and gradually wind in some 'Harmonic Distortion' or colour subtlely into the signal for enhancement or creative purposes. The pad/gain control provides just over 30db swing that allows the user to comfortablely deal with heavy audio signals (up to +10db)with a very transperent reponse but also able to drive a signal into mild to heavy distortion if required.

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2. Controls (cont.)

-2.Hi-Pass In/Out

Activates variable Hi-Pass Filter for frequencies 40hz to 400hz.

-3.Hi-Pass Frequency

Adjusts frequency as to when High Pass Filter becomes effective.

This filter is useful on many sources particularly voice or guitar to eliminate very low frequencies that will subsequently eat into the dynamic range of the signal yet offer little or no real musical value.Easy to put back in at mix time if needed , but better eliminated earlier on in the tracking phase rather than latter.By switching this feature into the signal path , there is no added noise , distortion or colouration.
The filter has a smooth slope and can be very subtle depending on the setting.

-4.+48V Phantom Power

Provides +48VDC to drive condenser microphones.

-5.Output Level Control

The Output level control provides up to another 30db of gain , however control is clean and transperent through the whole scale.
From mic input to final output , the AXIS preamp stage can provide up 70db of gain with an infinite range of tonal and sonic textures available inbetween.

-6.Phase In/Out

Adjusts the polarity of the audio signal by shifting phase of the signal by 180 degrees.

-7.Direct Input (D.I)

Unbalanced input for Bass , Guitar , Keyboards or line level signals.Can handle rather hot line level signals if colour control is dialed right...unless you want distortion of course...

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3. Operation

-Microphone Recording :

1. Plug microphone into back XLR input of AXIS.
If microphone is of a condenser type , then activate the +48v phantom power switch.
2. Plug output of AXIS preamp (using balanced or unbalanced output and cables) into soundcard etc.
3. Start with pad/gain control fully left and slowly bring up the output level control until the desired recording level is attained.
4.If more colour is required , then slowly rotate the pad/gain control to the right to bring the level up while at the same time keeping an eye on the final output level so as to not clip the next piece of equipment connected to the AXIS preamp.Adjust the output level control to suit requirements.

-Direct Input (D.I.) Recording :

1. Plug Bass , Guitar , Keyboard or any other unbalanced output electronic instrument into the Direct Input socket on the front panel.
2. Plug output of AXIS preamp (using balanced or unbalanced output and cables) into soundcard etc.
3. Start with pad/gain control fully left and slowly bring up the output level control until the desired recording level is attained.
4.If more colour is required , then slowly rotate the pad/gain control to the right to bring the level up while at the same time keeping an eye on the final output level so as to not clip the next piece of equipment connected to the AXIS preamp.Adjust the output level control to suit requirements.

-Processing Line Levels :

AXIS is capable of handling relatively strong line level signals.By carefully running line level signals into the AXIS preamp it is possible to wam up your mixes and give them that special sonic texture that they may require.
1. There are two inputs to choose from when running line level signals into the AXIS preamplifier.You can either use the XLR balanced line signals on the back or the Direct Input signals on the front.Neither has any special sonic advantages , the bulk of the colouration is obtained from the valve.Generaly speaking though , we recommend the Direct Input on the front panel as this is a direct path to the grid of the valve.
2. Plug output of AXIS preamp (using balanced or unbalanced output and cables) into soundcard etc.
3. Start with pad/gain control fully left and slowly bring up the output level control until the desired recording level is attained.
4.If more colour is required , then slowly rotate the pad/gain control to the right to bring the level up while at the same time keeping an eye on the final output level so as to not clip the next piece of equipment connected to the AXIS preamp.Adjust the output level control to suit requirements.

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4. Servicing and Maintenance

-Replacing Valves :

Valve Type: 12AT7 (equivilants : ECC81 , CV4024)

The AXIS preamp comes stocked with brand new J.J valves.We use J.J valves because of low microphony , consistency and of course the sound which is generally regarded as neutral.Valve life varies from valve to valve but is generally three to five years with average useage and up to ten years if used sporadically and kept in a good enviroment. As valves approach the end of their lifespan there usually is a rise in noisefloor (hiss-noise) and a narrowing of the sonic bandwidth , or in other words , Bass and Treble response start to drop off.Irronically , this can somtimes work in ones favour as the sound becomes a little more focussed and may sit in a mix easier. However , usually the difference is negligable and it won't be apparent until new fresh valves are installed.If useage is minimal and within 10 hours a week on average , then we would recommend valve replacement around the four to five year mark.Heavier useage , twenty hours a week and upwards for example , we would recommend valve replacement within three years.

In all cases , useage is simply having the unit on , not necessarily passing signals. Even in an idle state with no signals there are still transformers and valves operating and it is recommended that for general useage that the unit be left on for periods of no longer than eight hours at a time . If longer periods are required it is recommended that the unit be switched off for at least half an hour for some cooling to occur before proceeding with the next shift.

-Mains Voltage Selector :

On the back of the unit near the mains power input you will see a small rectangle cut into the chassis so that access can be gained to the Mains Power Switch. This switch should be set to your mains power voltage.
This switch is usually set in the factory for the appropriate voltage that the unit is destined for , however , in cases of re-sale etc. it is always recommended to check this switch before initial power up.

There are two scenarios if the switch is incorrectly set.One of the scenarios may be fatal to your unit (causing internal damage) . This would be where local power is 220/240VAC and the unit is set to 110/120 VAC. If the unit is powed up in this mode , damage starts to occur within seconds.If caught in time there may be no damage at all.Just for the record , the first components to perish in this way would be the smoothing capacitors in the power supply.

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5. Specifications

Frequency Response : 20Hz - 90 KHz +/- 2db
Maximum Input level (mic) : +4db
Maximum Input Level (D.I) : +10db
Maximum Output Level : > +30dbm balanced
Total Gain : < 68 db
Input Impedance (mic) : 1K ohm
Input Impedance (D.I) : 100K ohm
Output Impedance : Less than 600 ohm

Power:
Externally switchable 110/120/220/240 VAC for global useage.
Build:
Chassis is 1.2mm mild steel powder coated 'Tectured Black'.
Front Panel is 3mm mild steel powder coated 'Transformer Grey'.
Single sided printed circuit boards.
Modular P.C.B preamp for easy servicing and modifications.
Topology:
Topology is all discrete and Class A Valve and Solid State signal path running on +300V and +60V rails respectively.
Circuitry:
Class A Discrete and low noise.
Two Dual Triode 12AT7/ecc81 and High Voltage Silicon Transistors.

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