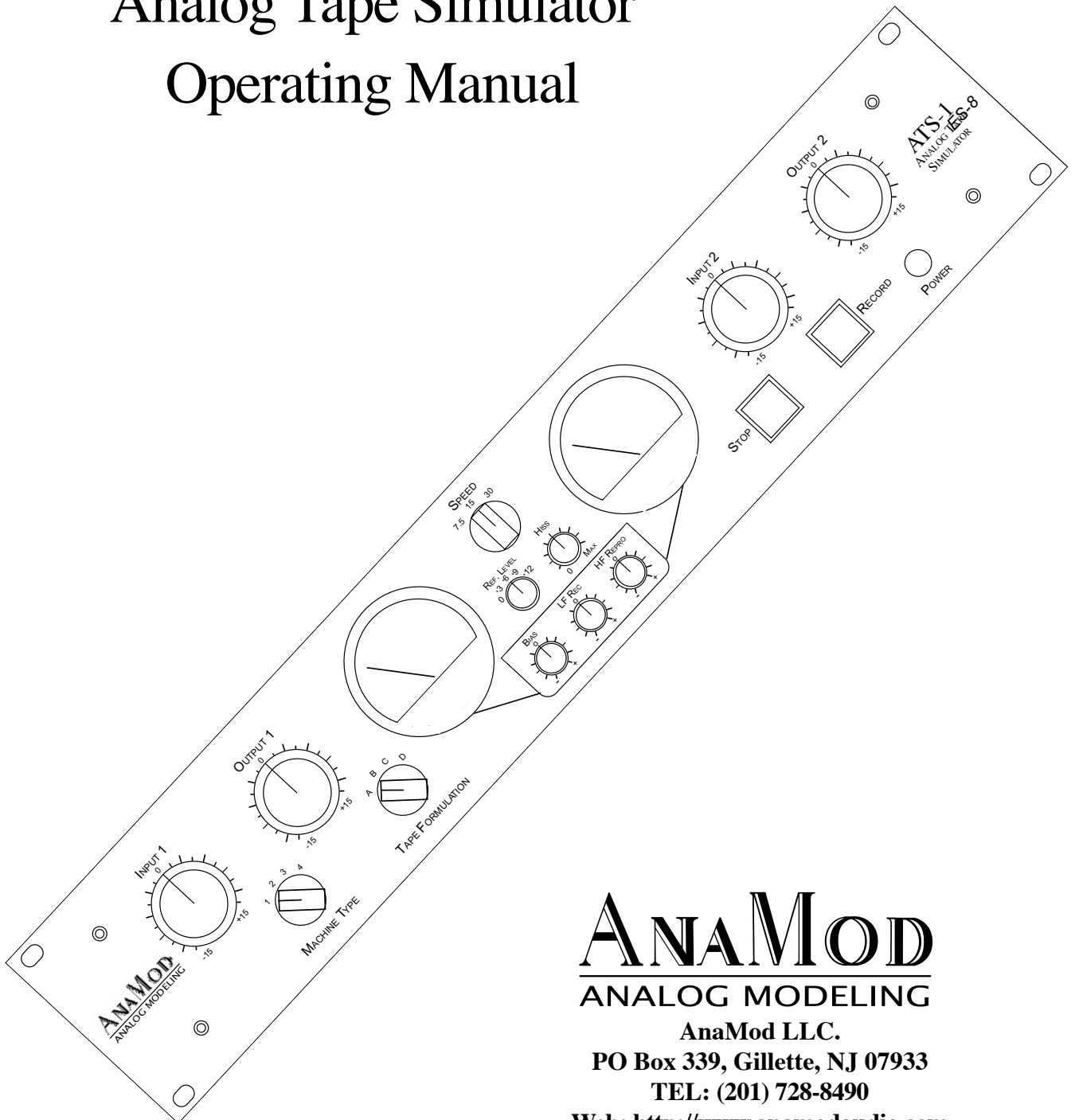


ATS-1

Analog Tape Simulator

Operating Manual



ANAMOD
ANALOG MODELING

AnaMod LLC.

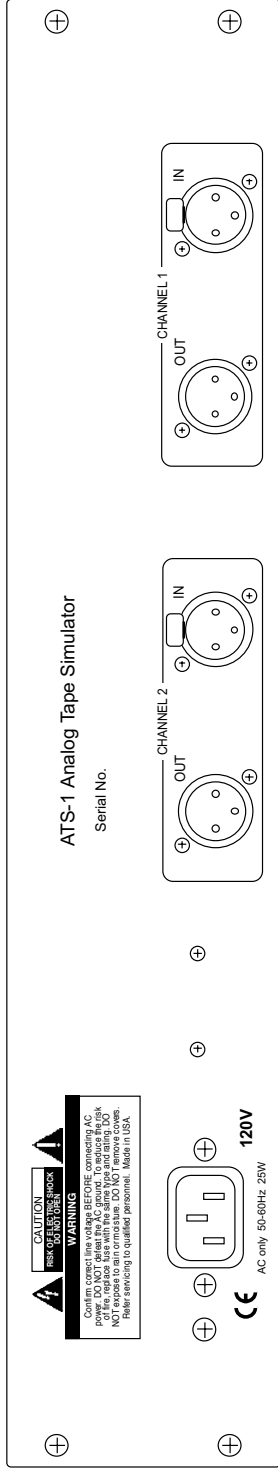
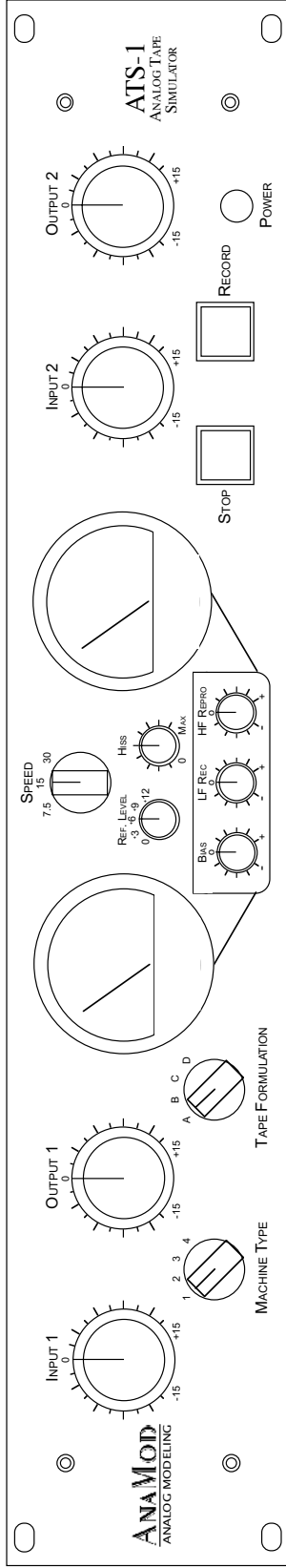
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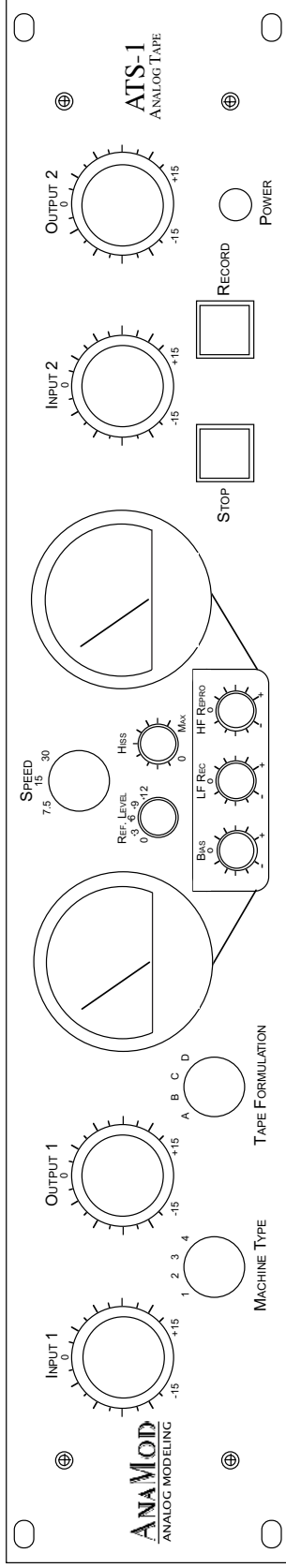
email: info@anamodaudio.com

ATS-1 Condensed Operating Instructions

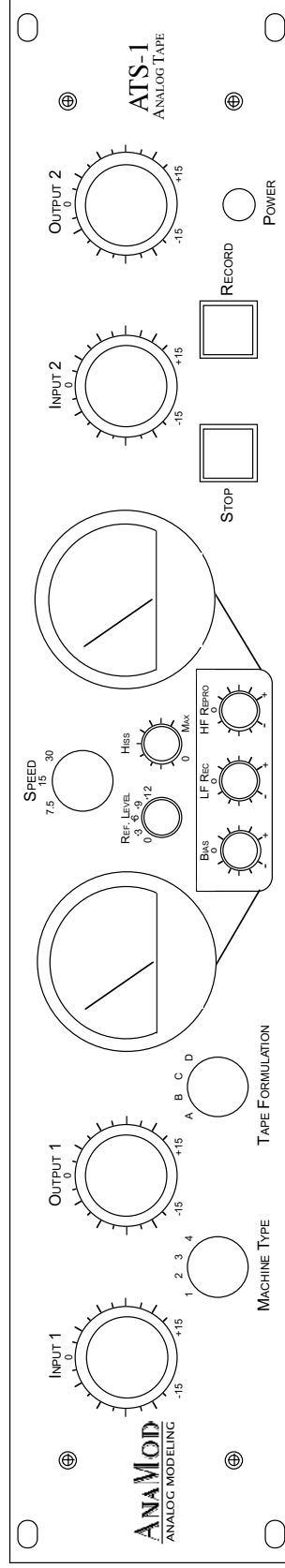


- Input** The INPUT controls are continuously adjustable from -15dB to +15dB. Unity gain is at the center position.
- Output** The Output controls are continuously adjustable from -15dB to +15dB. Unity gain is at the center position.
- Record** Pressing RECORD activates the tape simulation and illuminates the switch. If the switch flashes, either the Machine Type or Tape Formulation selectors are set to an empty card slot.
- Stop** Pressing STOP switches the unit into 'hard' bypass and illuminates the switch. If the switch flashes, either the Machine Type or Tape Formulation selectors are set to an empty card slot.
- Ref. Level** The VU meters indicate input level. The reference level can be adjusted from 0dB (185 nW/m) to +12 in 3dB increments. Standard operating level is +4dBu, which is 0VU at +6 ref. level.
- Hiss** The Hiss level can be set from off to a lot. Useful as analog dither.
- Machine Type** Selects one of four possible tape machine simulations, as determined by the SIMM cards installed in slots 1-4.
- Tape Formulation** Selects one of four possible tape simulations, as determined by the SIMM cards installed in slots A-D.
- Speed** Selects 7.5, 15 or 30 ips operation.
- Bias** Sets the effective Bias level in the record circuit. The center position is the standard amount of overbias per tape formulation.
- LF Record** The LF Record control adjusts the LF EQ in the record circuit. The center position is standard alignment.
- HF Repro** The HF Repro control adjusts the HF EQ in the playback circuit. The center position is standard alignment.
- Inputs and Outputs** The XLR input and outputs are active-balanced with pin 2 hot. To operate the outputs unbalanced, pin 3 MUST be grounded.

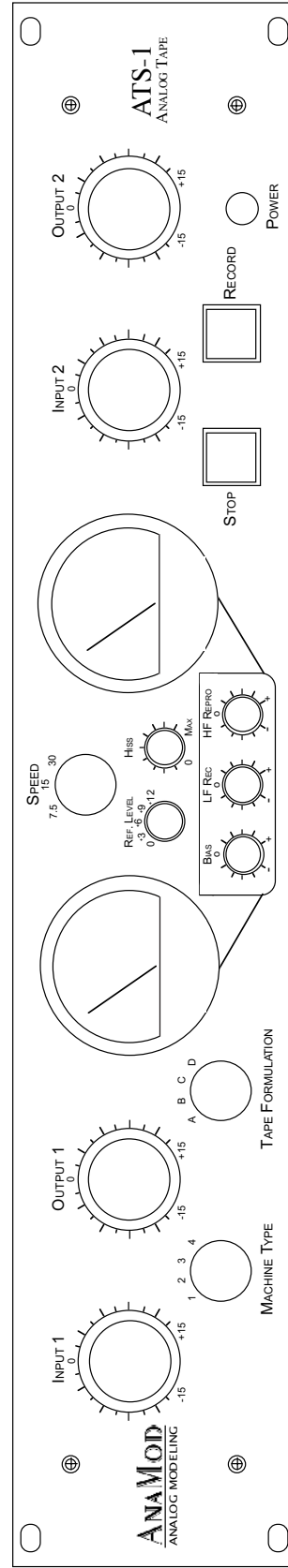
ATS-1 Recall Sheet



Session: _____ Date: _____ Source: _____ Notes: _____



Session: _____ Date: _____ Source: _____ Notes: _____



Session: _____ Date: _____ Source: _____ Notes: _____

ATS-1 Analog Tape Simulator

Features

- Two channels of analog tape simulation
- Up to four Tape Machine models
- Up to four Tape Formulation Models
- Three speeds: 7.5, 15 and 30 ips
- Bias, LF and HF EQ adjustments
- Stereo Hiss
- User-installable Machine Type and Tape Formulation cards

Introduction

Thank you for purchasing the AnaMod ATS-1 Analog Tape Simulator, a unique audio processor that is designed to simulate the characteristics many different types of analog tape machines and analog tape formulations. It is an all-analog product, and can be used as a creative tool for tracking, mixing, and mastering. In short, it can be used anywhere you'd want the distinctive, and often magical sound of analog tape.

All of the important features of a two-track analog tape machine are found in the ATS-1, including Speed selection, Bias, LF Record and HF Repro EQ, and the option of adding tape hiss, if desired. The reference 'record' level, as indicated on the illuminated VU meters, can be adjusted from 0 to +12 dBu in 3 dB increments. By popular demand, wow and flutter and bias rocks have not been included. The ATS-1 accurately models the behavior of specific tape machines and tape formulations, and allows the user to select from up to four machine and tape types. Optional machine and tape types are available on easy-to-install SIMM cards.

What is AnaMod?

The ATS-1 Analog Tape Simulator is the first product to use the AnaMod Process™ for modeling complex analog circuitry entirely in the analog domain. What exactly is the AnaMod Process™?

In simple terms, it's a way of taking the same analysis one would use to create a digital plug-in, but use it to create analog hardware that does the same thing. Instead of writing software code to describe how a complex audio system behaves, we developed special analog building blocks that are 'coded' to emulate the behavior of the audio system. These building blocks are used to simulate frequency response, distortion, dynamic response, and all the other parameters that define exactly what an audio signal is. Long before digital computers existed, complex mathematical calculations were done using analog computers. They consisted of analog circuitry that was 'programmed' by adjusting analog circuit parameters. For example, the first atomic bomb, which was developed in the early 1940s, was designed using analog computing techniques. Here, we've taken this process one step further, by developing programmable audio building blocks and grouping them together to form an "audio analog computer". It is 'programmed' by choosing component values, rather than writing lines of software code.

While the analysis used for an AnaMod model might be the same as used in a digital model, we believe there are distinct advantages to using the AnaMod process for audio. Unlike digital plug-ins or processor-based outboard gear, The AnaMod process has no latency, and no A/D or D/A conversions to compromise the sound. The result is a faithful recreation of the original response, without using the original analog hardware, or digitizing the audio.

Unpacking

The unit was carefully packed at the factory to protect against damage in transit. Nevertheless, be sure to inspect the unit and shipping carton for any signs of damage that may have occurred during shipment. If there is any damage, notify us immediately for further instructions. It's also a good idea to save the carton and packing materials should you ever need to return the unit for repair. The shipping carton should contain the following items: the ATS-1, an IEC 3 prong power cord, and this operating manual.

Mounting

The ATS-1 uses two EIA-standard rack spaces, and can be mounted in any standard 19 inch (483mm) equipment rack. If the ATS-1 is mounted in a mobile rack or road case, it is important that the rear of the chassis is supported to prevent possible damage from mechanical shock and vibration. Excessive shock and vibration can cause damage or premature failure. Please avoid rough handling.

Ventilation

For proper operation, it is important that adequate ventilation is provided. Heat generated inside the unit is radiated out through the ventilation holes in the top and side panels. Do not block these vents. Never operate the ATS-1 inside a road case where the side panels are blocked.

Power Requirements

The ATS-1 is equipped with a 3-prong IEC power connector and detachable cord. Never operate the ATS-1 with the ground on the power cord defeated. Unless otherwise stated, this unit operates from 115-120V/60 Hz only. Before the unit is plugged in, make sure the ac voltage is correct. The ac fuse is accessible from inside the top panel, and is rated at 0.5A/250V (3AG). To check or replace the fuse, make sure the unit is unplugged.

Servicing

Other than installing or changing the SIMM cards, the user should not attempt to service the ATS-1 beyond that described in this manual. Never remove the covers or attempt to install cards until the unit has been disconnected from the AC power source, and all circuits inside have been allowed to discharge for a period of at least 1 minute. Some components can become hot once the unit has been turned on, and they should not be touched until they have cooled to room temperature. To reduce the risk of fire or electrical shock, do not expose to rain or moisture, or operate it where it is exposed to water. Since potentially lethal voltages are present inside the unit, it should be opened only by qualified service personnel. Refer all servicing, or any questions about servicing, to AnaMod LLC.

Hookup

Please refer to the rear panel layout (see the Condensed Operating Instructions) for the location of the inputs, outputs and ac power. Make all connections to the ATS-1 before applying power.

Inputs and Outputs

On the right hand side of the rear panel are the XLR input and output jacks for channels 1 and 2. Connect line-level sources to the ATS-1 using standard balanced XLR cables. Pin 1 = ground. Pin 2 = + (positive phase), pin 3 = - (negative phase). Do not connect the outputs of the ATS-1 to an input that has +48V phantom power applied to it. NOTE: For unbalanced operation of the outputs, pin 3 MUST be grounded!

AC Power

- On the left side of the rear panel is the IEC input socket. Connect to a 120V/60Hz receptacle (or 230V/50Hz if configured for overseas use) with the 3 prong IEC power cable supplied with the ATS-1. The correct AC input voltage for the ATS-1 is set at the factory and is clearly labeled on the

rear panel. For safety reasons, do not lift the ground on the power plug by using a 3-to-2 ground lift adapter.

- Turn on the power to the unit using the AC power switch located on the lower right-hand side of the front panel. The meters will illuminate immediately. The amber ‘STOP’ switch will illuminate after the power-up sequence is completed.

Operation

While the operation of the ATS-1 may appear to be rather straightforward, there are a few features that may differ from what you’re accustomed to seeing on audio equipment. You may find it useful to refer to the Condensed Operating Instructions at the beginning of this manual to quickly identify the operation of the front panel controls. However, we suggest you read through this section to take advantage of all its features, and to make sure you are operating the ATS-1 in the way most appropriate for the type of recording you’re doing.

Please refer to the front panel layout (see the Condensed Operating Instructions) for the location of all switches and controls discussed below.

STOP/RECORD

When the yellow STOP switch is pressed, the switch is illuminated and the ATS-1 is placed in bypass. In STOP mode, the unit is entirely out of the signal path. This is also the default mode when the unit is powered up. When the red RECORD switch is pressed, the ATS-1 tape simulation is activated, and the switch is illuminated. Either switch will flash if the Machine Type or Tape Formulation switches (see below) are set to a slot where no card is installed, and the unit is placed in bypass.

INPUT (1/ 2)

The INPUT controls determine the gain of the input stages for Channel 1 and 2, and thus the ‘Record’ level of the ATS-1. The INPUT is continuously variable from –15dB to +15dB, with unity gain (0dB) at the 12:00 position. Use the INPUT to set the overall operating level of the ATS-1, as indicated by the VU meters on the front panel (see below). As with any tape recorder, the input level determines how linear or non-linear the recording process will be. As the input level is increased, the non-linear effects of tape saturation and overload will be more apparent, which can be used as a creative tool.

OUTPUT (1/2)

The OUTPUT controls determine the gain of the output stages for Channel 1 and 2. The OUTPUT is continuously variable from –15dB to +15dB, with unity gain (0dB) at the 12:00 position. Use it to match the output level of the ATS-1 to the device it is driving. For example, output level can be increased to match the input requirements of an A/D converter (+20dBu), or decreased to match the input of a +4dBu insert. The input and output controls are scaled to interface easily with digital or analog devices. Unlike the INPUT Control, the OUTPUT level does not influence the characteristics of the tape simulation.

SPEED

The ATS-1 can be operated at speeds: 7.5, 15, or 30 ips (inches per second). The SPEED selection affects the overall frequency response, as well as other characteristics. In general, higher speed extends high frequency response, but limits low frequency response and sacrifices linearity below 500 Hz. When using a tape machines, a ‘best compromise’ is chosen based on the type of music or other artistic factors. With the ATS-1, you’re not locked into one choice for all your tracks. These differences can be used creatively to enhance the sound of each individual track.

Machine Type

This 4 position rotary switch (labeled 1-4) selects any one of four Machine Type card slots. Up to four Machine Personality cards can be installed in these 72 pin SIMM sockets, which are accessible under the top cover of the ATS-1. Installation of the SIMM cards is described in the section entitled “Installing Machine and Tape Cards”. The characteristics of specific tape machines are coded into the analog circuitry on these cards. If the switch selects a card slot that is not occupied, the Record or Stop switch will flash and the ATS-1 is placed in bypass.

Tape Formulation

This 4 position rotary switch (labeled A-D) selects any one of four Tape Formulation card slots. Up to four Tape Formulation cards can be installed in these 72 pin SIMM sockets, which are accessible under the top cover of the ATS-1. Installation of the SIMM cards is described in the section entitled “Installing Machine and Tape Cards”. The characteristics of specific tape stock are coded into the analog circuitry on these cards. If the switch selects a card slot that is not occupied, the Record or Stop switch will flash and the ATS-1 is placed in bypass.

Bias

The BIAS control sets the effective bias level in the record circuit. The center position is the standard amount of overbias per tape formulation. Rotate the BIAS control clockwise from the center position to increase the bias level, or counterclockwise to decrease it. It is an effective tone-shaping tool.

LF Rec

The LF RECORD control adjusts the low frequency EQ in the record circuit. The center position is standard alignment. Rotate the LF RECORD control clockwise from the center position to boost the LF EQ, or counterclockwise cut LF EQ. It is an effective tone-shaping tool.

HF Repro

The HF REPRO control adjusts the high frequency EQ in the playback circuit. The center position is standard alignment. Rotate the HF REPRO control clockwise from the center position to boost the HF EQ, or counterclockwise cut HF EQ. It is an effective tone-shaping tool.

Rec. Level

The 5 position RECORD LEVEL switch selects the sensitivity of the input meters. The reference level of the VU meters (0VU) can be adjusted from 0dB (185nW/m) to +12dB. If a standard reference level of +4dBm is applied to the inputs of the ATS-1, and the input controls are set for unity gain (0dB), the meters will read 0VU when the RECORD level is set to +6 (370nW/m). Use the RECORD LEVEL switch to rescale the meters when working at input levels significantly lower or higher than the standard level. The switch position only affects the meter scale, not the audio level.

Hiss

The Hiss level can be set from off to way too much. By adding small amounts of this “analog dither” (as we affectionately like to call it), the tonal character of a source can be changed. Try it!

Installing and Removing the Machine Personality and Tape Formulation Cards

Make sure that ac power is removed before starting this procedure!

Card Installation

1. Unplug the ATS-1. Remove the nine screws on top of the ATS-1. Remove the top cover.
2. Determine the slot where the board is to be inserted. The Machine Personality cards are on the left side of the ATS-1 while you are facing the front panel. The Tape Formulation cards are to your right. The cards are numbered 1 through 4 for the Machine Personality cards with 1 being the card closest to you and A through D for the Tape Formulation cards with A being the card closest to you.
2. While facing the front panel, orient the board so that the cutout on the edge of the board is on your right.
3. Grasp the board at the top edge and insert the contact pad edge into the card slot of the connector at an angle of approximately 30 degrees toward you (see figure 1).
4. Maintaining an even pressure over the length of the board and rotate the board forward until the edges of the board ends snap behind the latch tabs of the connector. A slight force may be required to engage the latch tabs at both ends of the connector with the latches engaging simultaneously.
5. Replace top cover.

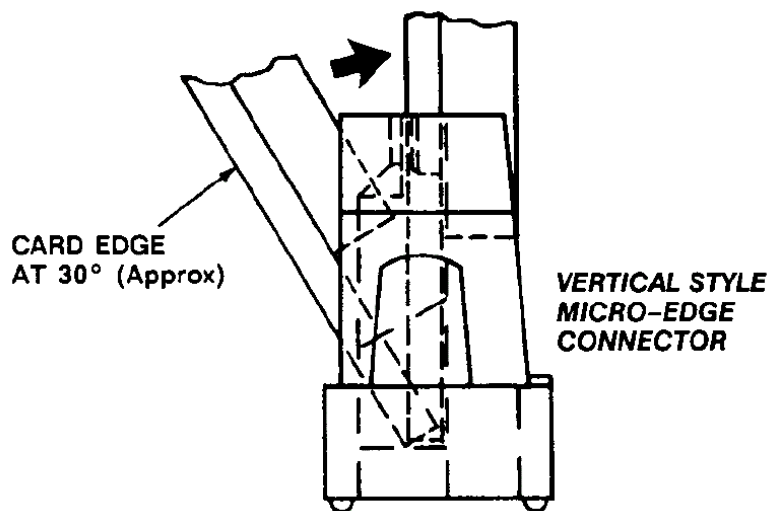


Figure 1

Card Removal

1. Unplug the ATS-1. Remove the nine screws on top of the ATS-1. Remove the top cover.
2. Determine the slot where the board is to be removed. The Machine Personality cards are on the left side of the ATS-1 while you are facing the front panel. The Tape Formulation cards are to your right. The cards are numbered 1 through 4 for the Machine Personality cards with 1 being the closest to you and A through D for the Tape Formulation cards with A being the card closest to you.
3. Place the tips of the index fingers on the ends of the connector housing of the board to be removed (see figure 2).
4. Place the thumbs (or thumbnails) over the latch tabs and deflect the tabs outward, thereby releasing the board. Make sure that the latch tabs are completely clear of the board ends before proceeding.
5. Allow the board to rotate forward (thereby releasing contact pressure upon the board edge) and remove the board from the card slot by evenly pulling outward at an angle of approximately 30 degrees.
6. Replace top cover.

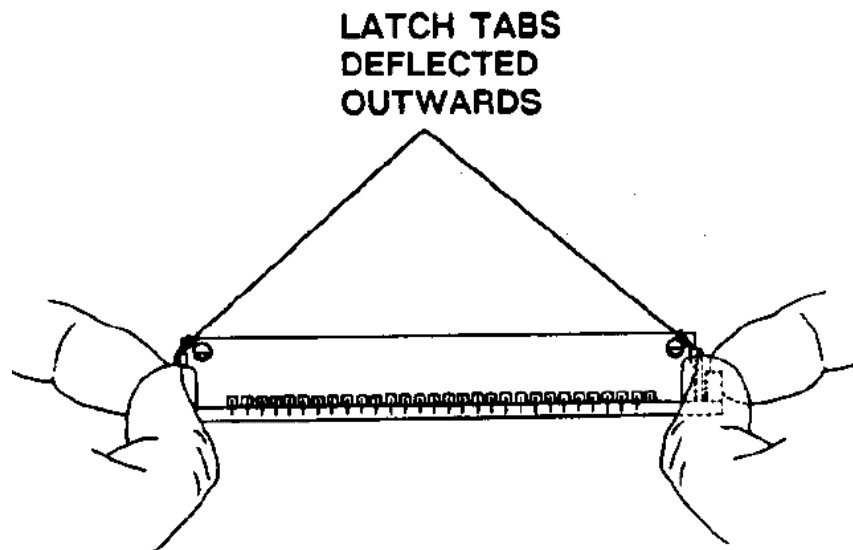


Figure 2

ATS-1 Specifications

Circuit Type:	audio analog computer with circuit cards coded for analog tape simulation
Input Sensitivity:	+4dBu
Input Impedance:	20k Ω , balanced
Freq. Response:	varies in a specific way according to machine, speed and tape model selected
Noise:	varies according to machine and tape model selected but typically > 70dB below +4dBu, 20Hz-20kHz, for low noise tape models
Distortion:	varies in a specific way according to input level, machine and tape model selected
Output:	balanced, with level compensation for unbalanced operation
Max. Output Level:	+27dBu into 600 Ω load

General

Power:	120V or 240Vac, 25W
Dimensions:	2U enclosure, 19" x 3.5" x 12.5" (48.2 x 8.8 x 31.8 cm)
Weight:	10.3 lbs (4.7kg)

Note: Standard operating level is +4dBu = 1.228v = 0VU at +6 meter reference level.
Unless otherwise stated, all measurements are referenced to +4dBu, 0-80 kHz bandwidth.
All specifications are subject to change without notice.

Limited Warranty

AnaMod LLC warrants to the first purchaser of a new AnaMod ATS-1 Tube Recording Channel that the unit is free of manufacturing defects in materials and workmanship for a period of one (1) year from the date of purchase. AnaMod LLC's sole obligation under this warranty shall be to provide, without charge, parts and labor necessary to remedy defects, if any, which appear within one (1) year from the date of purchase. All warranties expressed or implied made by AnaMod LLC, including warranties of merchantability and fitness, are limited to the period of this warranty. AnaMod LLC is not responsible for indirect, incidental or consequential damages arising from the use or failure of this product, including injury to persons or property.

This warranty does not cover damage due to: misuse, abuse, modification, accident or negligence. The warranty does not apply if the unit is repaired or altered by persons unauthorized by AnaMod LLC in such a manner as to injure, in AnaMod LLC's sole judgment, the performance, stability or reliability of the unit. The warranty does not apply if the unit is connected, installed or used otherwise than in accordance with the instructions furnished by AnaMod LLC,

If the equipment requires warranty repair, return authorization must be obtained from AnaMod LLC prior to shipment. Equipment should not be shipped to AnaMod LLC until return authorization and the proper shipping address is obtained from us. The equipment (with all its components parts and connecting cables) must be suitably packaged, including a note with the owner's name, address, telephone number and a description of the reason for return. The owner pays two-way shipping (we recommend UPS), and we suggest that the shipment be insured for its full value.

This limited warranty is in lieu of all other warranties, expressed or implied, and no representative or person is authorized to represent or assume for us any liability in connection with the sale of our products than set forth herein. This limited warranty gives you specific legal rights, and you may also have other rights which vary from state to state.