

"The Impossible Takes a Little Longer."

THE FOSGATE RESEARCH MODEL 101A TATE II SURROUND STEREO SYSTEM



The Jim Fosgate name has long been associated with award winning innovative products. The Consumer Electronics Show bestowed 4 design awards on his products in a 3-year period. The technology incorporated in the Model 101-A is the culmination of more than 10 years research, by CBS Labs, Tate Audio, Jim Fosgate, and others. Jim worked for four years perfecting the directional control interface circuitry incorporated in the Tate II System. The circuitry is protected by the following CBS & Tate patents: 3632886, 3835255, 3971890, 3944735, 4063032 (others pending). The 101A is truly the highest technology product of its kind ever conceived, in fact it's one of a kind.

Appearance

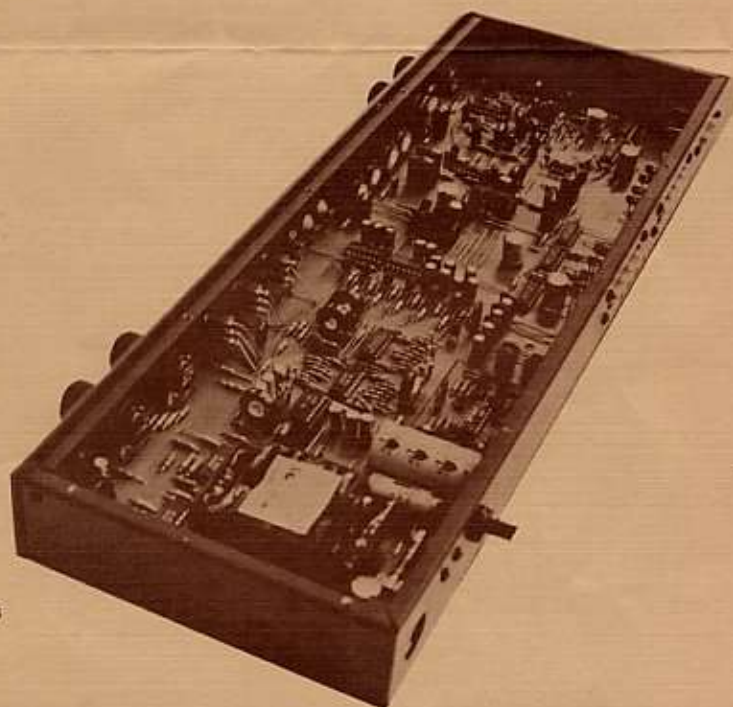
- Low profile 1 3/4" high styling
- Rack mounting adaptors included
- The reliability of a single circuit board
- Velvet smooth controls and switches
- Brushed aluminum front panel and knobs

Features

- Plays video source material
- Plays stereo material in surround or ambience
- Plays SQ. (Quadraphonic source material)
- Tape monitor switch
- Bypass switch, to completely bypass the unit
- Remote control unit available
- Input level, and balance control to accommodate variations in program sources
- 3-input monitor indicators to assure proper input level and balance

Circuit Refinements

- Class "A" signal amplification
- Directional signal detector monitors
Signals to below -60DB
- 3 custom Tate integrated circuits employed
- Integrated circuit power supply regulators
- J-FET input, operational amplifiers in signal path
- All film capacitors in signal path
- Integrated circuit "FET" switching
- Two internal time constants for different decoding dynamics
- Matrix multiplier circuit provides 35 to 50DB separation
- Signal to noise ratio better than -80DB
- Remote control disables front panel controls automatically
- Dual winding power transformer for 110 or 220V operation



What is most significant about the 101A is its unparalleled ability to transport the listener to the live performance, even in very small listening rooms. The soundfield is unbelievably spacious, spreading beyond the walls in all directions. The sound can best be described as very musical with incredible depth, and an openness never heard before. Sounds will not emerge merely from the front of the room as in stereo but will be suspended in space all the way around the listener, even up and down. The ideal listening position is not limited to one area; changing positions is like changing seats at a live performance. The listener can stand next to one speaker and still hear the system image out in all directions. Nothing artificial has been added or taken away from the original signal. There is no audible distortion, noise, or change in tonal balance. 101A listeners overwhelmingly agree that the improvement in listening enjoyment is even more dramatic than when changing from monophonic to stereo. After listening for one night you will probably never be able to live with regular stereo again. No matter how simple or complex the sound system, the 101A will re-awaken your record and tape collection. You will hear nuances you've never before noticed, and control your sound field like never before. Surround or ambience recovery as it should be. Every effort has been made to provide a versatile unit with impeccable performance, pleasing appearance, and ease of installation. Conservatively operated close tolerance components are used in its construction. Manufacturing techniques that have proven through the years to provide the highest reliability, (not the lowest cost) are employed exclusively. Every component is installed in the epoxy circuit board with its leads bent over on the bottom and hand soldered with "old world craftsmanship." This subjects the components to a minimum amount of heat and insures the strongest possible solder connection for greatest reliability.



Winner of the Hi-Fi Grand Prix

THE MARRIAGE OF
AUDIO AND
VIDEO

EXPLANATION OF CONTROLS

Input Balance Control

This control is used in conjunction with the yellow balance indicator to insure that the input signal to the 101A is **Exactly** balanced. Channel balance can vary from one source to another and even one record to another.

Input Level Control

This control is used in conjunction with the clipping and minimum level indicator as a means of adjusting the input level to the 101A for optimum performance. Signal levels can vary from source to source and even from one record to another.

Input Monitor Indicators

To attain maximum performance it is most important that the input signal to the 101A be of the correct level and be properly balanced. Three leds are provided on the front panel to facilitate the adjustments.

Tape-Main-Mono Switch

This dual purpose control selects the tape monitor or main input. When it is desired to have information coming from the back channels on a mono source, placing this switch in the mono position reduces front to back separation to just 3DB instead of the normal 35 to 50DB.

Bypass-Normal-Alternate Switch

This dual purpose control is used to completely bypass the 101A and listen to normal stereo. In the bypass mode the main input signal travels through an "Integrated Circuit FET Switch" and directly to the front output jacks, and the signal is removed from the back channels. There is a strapping option on the P.C. board that will connect the stereo signal to the back channels as well as the fronts.

The normal-alternate switch positions change internal time constants that control decoding dynamics. Exhaustive listening tests have proven that if the 101A is optimized for maximum performance on properly recorded source material it may become unsmooth and produce some distortion on recordings with phase abnormalities, or FM broadcast with a degraded signal. We chose not to compromise the set-up of the 101A, but instead have incorporated circuitry which optimizes internal time constants to take care of different program signal situations.

Surround-Cinema-SQ Switch

This control selects three modes of operation to accommodate different types of recordings and to suit personal tastes. Basically the surround position images the farthest to the back, the cinema position images farther forward and the SQ position images still further forward. The surround position is used when playing stereo material when it is desired to surround the listener with not only ambience information in the back, but primary sound sources as well. In this position the in phase information from the left and right stereo channels is wrapped around the room like a giant horseshoe. Certain out of phase information is directed to the front channels and other out of phase information is directed to the back channels. The cinema position is recommended for playing video material encoded in the multi-channel process, films, video discs, and tapes. The SQ position is used when playing SQ encoded material and properly decodes all four channels as the recording engineer intended. SQ material can also be played in cinema position. The correct decoding code is still observed, but the soundfield will image further back due to different phase relationships of the back channels. Stereo material can be played in any switch position; classical music listeners will usually prefer the cinema or SQ positions which direct mostly ambience information to the back channels, keeping the primary instruments up front. The Surround-Cinema-SQ switch is duplicated on the remote control to facilitate adjustments from the listening position.

Output Balance Control

This control is used to balance the soundfield front to back depending on listener position, program material, and personal taste. This control is duplicated on the remote control and provides adjustment from the listening position.

Output Volume Control

This control adjusts the volume level from all four channels simultaneously. Overall system balance is maintained at any volume setting due to the excellent tracking of the control. This control is also duplicated on the remote for adjustment from the listening position.

Remote Jacks

There are two remote jacks, one located on the front panel and one on the rear. When the remote control unit is plugged in it mutes the front panel "Front-To-Back Balance," "Output Volume," and "Surround-Cinema-SQ" Switch. If you leave the

remote at your easy chair and are standing in front of your equipment and want to change the volume you can unplug the remote and the front panel controls work again; thus the reason for the front panel jack. Some users will rack mount the unit in a glass front cabinet and the remote must be plugged into the rear. The rear jack may be used if you wish to conceal most of the connecting cord by routing the cable around the walls.

AC POWER CONNECTION

The power supply section of the 101A incorporates integrated circuit power supply regulators for absolute rock solid regulation. Units are shipped with dual winding power transformers for operation on either 110V or 220V line voltage 50 or 60HZ. The 110V version is standard with 220V available. The power supply can be changed from one voltage to another by changing jumpers on the printed circuit board.

MULTI CHANNEL VIDEO MATERIAL

There are a large number of films encoded in a four channel process intended for playback in motion picture theaters with a special decoder, which by the way, is built around the "Tate" integrated circuits. Many of these films have been transferred to video discs and tapes with the four channel information on the sound track. Someday they will also appear on "stereo television."

The system works like this: There is a left front channel positioned to the left of the screen, a center dialogue channel positioned in the center of the screen, a right front channel positioned to the right of the screen, and a surround channel with multiple speakers positioned around the sides and rear of the theater. When the Model 101A is in the cinema position information intended for the left front channel is directed to the left front channel. Information intended for the right front channel is directed to the right front channel. Information intended for the center dialogue channel is reproduced in the center front of the room as a phantom channel. The information intended for the surround channel is reproduced in both back channels.

REVIEWS

Stereo Review technical editor Larry Klein had this to say after first hearing the Tate System: "...If I hadn't known there was an SQ disc on the turntable, I would have assumed I was hearing discrete four-channel tapes — the separation and localization were that good. On some program material it was possible to stand alongside one of the four speakers and still hear the other three playing simultaneously."

MCS Review Magazine said "...Its performance is characterized by smoothness of operation, incredible depth and dimension, and startling separation. The impact from SQ encoded sources is practically identical to the discrete four channel master. Separation between all channels is a dazzling 35 to 50 DB, that's discrete! The SQ mode, in addition to decoding SQ sources with astonishing accuracy, provides a sound image from stereo recording in which ambience on the rear channels add a sense of spaciousness to the direct sounds, which remain on the front channels. Your classical recordings never sounded so real. Put on a stereo recording and switch the 101A to the surround mode. The sound field will wrap around you in a 270° arc; and with many recordings, voices and instruments localized along that arc. With sound coming at you from all directions, you may swear you are listening to an SQ recording..."

Evolution Magazine said "...Fosgate and friends have done to the 101A what transistors did for the electronics industry. They have taken the idea of ambience and surround sound and have thrust it past all previous limits to attain a high tech, incredible, universal product. A unit of the future. I played old CD-4 albums through the SQ mode and was bowled over by the separation that was once only obtainable through a CD-4 demodulator. In fact, it was better than any demodulator ever delivered. Audiophile recordings sounded open and the walls of the listening area seemed to vanish completely. Instrumentation could be placed all around you without any listener fatigue occurring even after prolonged periods of time. Classical music became a total sonic immersion. In closing, all we can say is that if you intend on listening through four speakers, the only way to do so is through the 101A Tate II System - there is no other substitute..."

A LITTLE BIT OF HISTORY

In the mid 50's hi-fidelity monophonic sound gave way to stereo — the listener was treated to a multi-dimensional listening experience. Recording and playback was inching closer. However, even with two speakers, something was still missing. Then came the inventive quadraphonic systems, a noble attempt to "surround" the listener with music from four speakers. Along with quadraphonic sound came the re-surgence of psychoacoustics, a science that dealt with sound localization, as detected by the human ear and mind. The results have seen various "time delay," ambience recovery, and imaging devices. After more than 10 years of research, the Tate II Surround Stereo System takes its place at the top of the list in the annals of audio history for its ability to virtually recreate a live performance.

ALL THAT'S NEEDED

If you already own a time delay or quadraphonic system, then all you need to add is the Model 101A. However, if you own a stereo system, you will need to add two extra speakers for rear channels and a stereo amplifier. That's it! The 101A slips between the signal source and the amplifier sections. The 101A includes a tape monitor switch, with tape inputs and outputs so you won't lose any valuable tape monitoring functions. Also, the 101A is completely compatible with DBX, Dolby, and CX noise reduction units.

BACK CHANNEL AMPLIFIER REQUIREMENTS

Component amplifiers, integrated amplifiers, and receivers can be used for back channel amplification. The amount of power needed will depend on back speaker efficiency, and how loud the fronts are able to play. Ideally the back channels should be able to attain the same volume levels as the fronts. If all four speakers are of the same efficiency, the back amplifier should be of approximately the same power as the front amplifier. If the back speakers are more efficient than the front, then lower power will be sufficient. For every 3DB more back speaker efficiency you will need only half as much power in the back amplifier as the front amplifier.

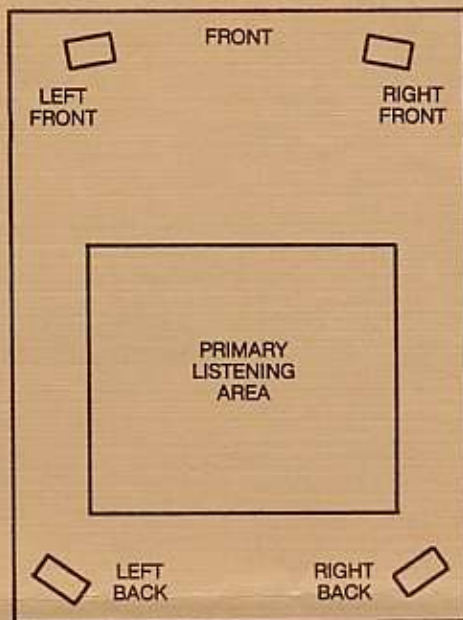
Some listeners can tolerate a back channel amplifier/speaker combination that goes into clipping sooner than the front channels. On most program material the front channels are the more predominant channels which means much of the time the back channels are running at slightly lower levels than the fronts, however there will be times when the back channels will be called upon to provide the same loudness as the front channels. If back channel clipping does occur it is somewhat masked by the front channels. The 101A is designed to operate from any preamplifier or receiver which can supply a normal 300MV high level stereo output level.

SPEAKER SELECTION

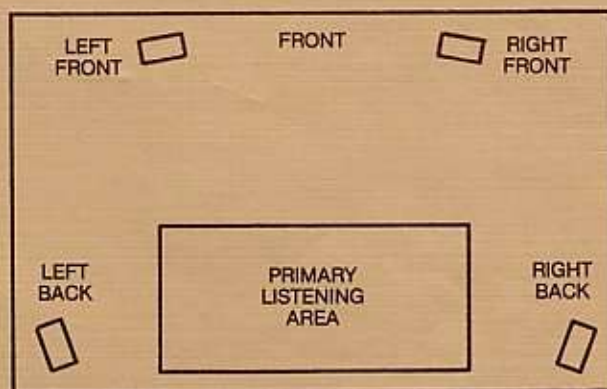
For optimum performance we recommend that all four speakers be of the same type. Satisfactory results can be obtained if the back speakers sound similar to the fronts above 200HZ. In other words, all four speakers should sound as similar as possible in the upper mid-bass range, mid-range and top end. Since most low bass frequencies are recorded in-phase and with equal volume on most stereo records the bass will be located predominantly in the front channels, therefore, a roll off of back channel low frequency response is acceptable to most listeners. There are however, a few stereo and SQ recordings that do produce powerful bass fundamentals in the back channels and it is more enjoyable if it can be reproduced. Subwoofers can be used very effectively when connected to the front channels. We prefer summing the front channels together and passing the signal through a low pass filter with an upper cutoff frequency (3DB down) at 75HZ and then driving the amplifier and subwoofer. Bass frequencies are fairly non-directional below 75HZ and no loss of directionality should be noticed. The subwoofer should be positioned directly in between the front channel speakers.

SPEAKER PLACEMENT

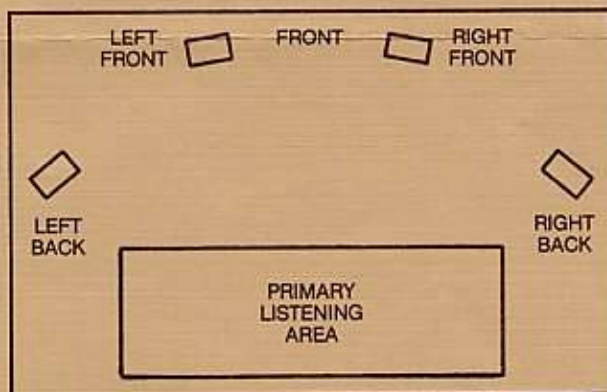
There are basically three ways to position the speakers — the final choice will depend on the dimensions of your listening room and your personal preference. You may need to audition several positions before making a final decision.



This placement is best for total surround and will literally immerse you in sound. It can image all the way around a 360° circle, even up and down. This is our favorite for electronic music, live recordings, and rock music. It's also very good for classical.



This placement offers tremendous depth and width with less sound coming from the back. It is of particular interest for classical music lovers who do not want primary instruments located behind them.



This placement provides the equivalent of **SUPER** stereo across the front of the room with tremendous depth and width, with no sound coming from the back. Obviously there are variations of the positions shown. If space is limited, the back speakers may be suspended in the upper back corners of the listening room and pointed downward slightly.

"SQ" is a trademark of CBS Inc.

Tate System, and Tate II Surround Stereo are trademarks of Tate Audio Limited.



REMOTE CONTROL UNIT

An optional Remote Control Unit is available for the Model 101A which provides adjustment of the Volume, Front-To-Back Balance, Left-To-Right Output Balance, and Surround-Cinema-SQ Switch, directly from the listening position where the effect is most noticeable.

The standard remote cable length is 20 ft. and is available in any extra length at a nominal extra charge to cover the cost of the extra wire. The remote can be operated at great distances from the main unit due to the fact that no audio signal travels through the cable, only D.C. control voltages.



	SPECIFICATIONS
SEPARATION:	35 TO 50 DB DEPENDING ON SIGNAL DIRECTION
T.H.D.:	TYPICALLY .05% @ 1 KHZ. 0.1 MAX 20 HZ TO 20 KHZ @ 1/2 VOLT OUTPUT, VOLUME CONTROL IN MID POSITION
FREQUENCY RESPONSE:	± 1/2 DB 20 HZ TO 20 KHZ
INPUT LEVEL:	300 MV RMS MINIMUM FOR FULL OUTPUT
INPUT IMPEDANCE:	60,000 OHMS
OUTPUT LEVEL:	ADJUSTABLE TO 3.5 VOLTS RMS
OUTPUT IMPEDANCE:	500 OHMS
NOISE:	-83 DB DOWN FROM FULL LEVEL (UNWEIGHTED)
VOLUME CONTROL TRACKING:	± 1/2 DB FOR 70 DB CONTROL RANGE
CONTROLS:	INPUT LEVEL INPUT BALANCE OUTPUT VOLUME OUTPUT LEVELS FRONT TO BACK BALANCE BYPASS-NORMAL-ALTERNATE DYNAMICS SWITCH TAPE-MAIN-MONO SWITCH SURROUND-CINEMA-SQ MODE SWITCH REMOTE CONTROL JACKS (FRONT AND REAR)
INDICATOR LEDS:	INPUT BALANCE INDICATOR (YELLOW) CLIPPING LEVEL INDICATOR (RED 0DB) MINIMUM LEVEL INDICATOR (GREEN -10DB)
SIZE:	1 3/4" HIGH X 17 1/4" WIDE X 5 3/4" DEEP 19" WIDE WITH RACK MOUNT ADAPTERS INSTALLED
REMOTE CONTROL:	LEFT TO RIGHT BALANCE FRONT TO BACK BALANCE MODE SWITCH VOLUME
REMOTE SIZE:	5" LONG X 1 7/8" WIDE X 1" DEEP 20' CONNECTING CORD
FRONT PANEL FINISH:	BLACK ANODIZED BRUSHED ALUMINUM STANDARD OPTIONAL SILVER PANEL AVAILABLE
WEIGHT WITH REMOTE:	NET WEIGHT 7.1 LBS. SHIPPING WEIGHT 10 LBS.
SOLID STATE DEVICES:	22 INTEGRATED CIRCUITS, 10 TRANSISTORS, 26 DIODES

INNOVATION IN QUALITY AUDIO COMPONENTS

FOSGATE
RESEARCH INC
 714 CLUBHOUSE DR. PRESCOTT, ARIZONA 86301
 602-445-6999