Film-Tech

The information contained in this Adobe Acrobat pdf file is provided at your own risk and good judgment.

These manuals are designed to facilitate the exchange of information related to cinema projection and film handling, with no warranties nor obligations from the authors, for qualified field service engineers.

If you are not a qualified technician, please make no adjuatments to anything you may read about in these Adobe manual downloads

www.film-tech.com

TA6300 Six Channel Power Amplifier
INSTALLATION & OPERATION MANUAL

Table Of Contents

SMART products are designed to deliver unsurpassed quality in workmanship and performance. The following information gives detailed instructions on the installation and operation of the SMART TA6300 Power Amplifier. We strongly encourage new owners of the TA6300 to thoroughly read this entire manual before placing their new SMART products into service. This will ensure that the TA6300 will be operated properly to give the superior performance that it was designed to deliver.

For service or installation assistance, please call our Technical Support Department between the hours of 8 a.m.-5 p.m. E.S.T., Monday - Friday
1-800-45-SMART

LIMITED WARRANTY: SMART products and accessories are warranted against malfunction or failure due to defects in workmanship or materials for a period of one year from the date of shipment. If a problem occurs during the warranty period, the unit will be repaired, or replaced at our option, without charge for materials or labor. If air frieght is requested by the dealer, the difference between air and surface charges will be billed to the dealer. This limited warranty does not cover products that have been abused, altered, modified, or operated in other than specified conditions. Prior factory approval is required on all returns. Returned equipment or defective parts must be shipped freight prepaid to us by the dealer or customer.

Our limited warranty doesn not cover damages resulting from accident, misuse or abuse, lack of responsible care, or failures not attributable to manufacturing defects, except as provided herein. SMART Devices, Inc. makes no warranties, express or implied, including warranties of merchantability or fitness for a particular purpose.

RETURN POLICY: Factory autorization MUST be obtained before returning any product. A 15% restocking charge will be issued on unused equipment (in original box) that is returned for credit. Credit is issued to the dealer's account. The credit may be used against future pruchases and no cash transactions are offered. All returns must be shipped freight prepaid by the dealer. Equipment returned without a factory RA (Return Authorization) will be refused.

SECTION 1
Introduction

The SMART model TA6300 is a professional six-channel amplifier featuring DC protection, quick interconnect with SMART companion products, soft clip speaker protection and massive heatsink extrusions with internal D.C. fan assist to make sure your amplifier stays cool even when the music is hot. TA6300 delivers 200 watts per channel into 8 ohms on five channels simultaneous with 400 watts into 4 ohms on the sixth (subwoofer) channel.

Circuit Description

To assure absolute long-term reliability, the output section of each channel incorporates multiple Motorola Power Transistors, which provide three times the amplifiers rated power in watts of dissipation per channel. The output stage is arranged in a fully complementary format for class AB/2 operation. The bias current is evenly distributed among all output devices. Bias thermal compensation is accomplished by thermally mating a bipolar semiconductor junction to the heat-producing output device. Triple diffused high power driver transistors are employed along with high speed, high voltage silicon annular devices for the pre-driver and inverter stages. Utilization of these components provide the required separation of FT break points for absolute stability. Fully complementary drive and loading is utilized throughout. Only 20dB of negative feedback is used to reduce forward transfer distortion to minimum levels. VI type energy limiters are incorporated for short circuit protection of the amplifier. Due to the unusually large safe operating area of output stage, the limiters do not actuate until driving a forty-five degree reactive load of under 2 ohms at full power.

Construction

The amplifiers are designed on an all-modular concept permitting rigorous pre-assembly module testing and maximum service accessibility. Each functional module is fully tested before final assembly. Although components of the highest quality are used throughout, each amplifier is burned in, prior to shipment, at the worst case operating point to eliminate any possibility of component malfunction. All chassis components are precision machined from high quality aluminum and 16-gauge sheet steel stock. The entire package concept is directed toward maximum efficiency of space and structure, accounting for the compact size and light weight.

SECTION 2
Installation

All SMART amplifiers are designed for mounting in a standard 19-inch equipment rack, or many of the 19-inch rack type portable cases available. The TA6300 require 7 inches of vertical panel space, with 15" inches required behind the panel. Total depth including the handles is 16-3/8" inches. Front panels are machined from solid aluminum stock, with a black powdercoat finish and sturdy rack mount handles.

Placement of the amplifier is not critical for normal operation, provided sufficient airflow is allowed to reach the heatsink array. If the unit is to be placed on a shelf, or a similar unenclosed area, allow four inches of clearance behind the fan air intake to permit airflow through the array. If the amplifier is to be mounted in an equipment rack or cabinet with heat producing equipment, be sure that environmental operating temperatures do not exceed 55 degrees C (131F). Should overheating occur because of inadequate ventilation, the temperature protection circuitry will automatically protect the amplifier. When a safe operating temperature is restored, the amplifier will return to normal operation.

Because the amplifiers are capable of delivering high power from a relatively small physical package, considerable heat can develop in cabinets containing several components. A good rule of thumb to adopt is to provide forced air cooling in any enclosure containing four or more electronic components.

SECTION 3
Features

Power Connections

The SMART TA6300 power amplifiers are specified for operation from 120/240 Volt 50/60 Hz mains supply.

Equipment for domestic (USA) consumption includes a captive cord with a three pin polarized plug. DO NOT REMOVE THE CENTER GROUNDING PIN!

In new installations and portable sound systems, or any situation in which the mains power is suspect, it is wise to confirm appropriate voltage and line polarity BEFORE connecting the instrument to power sources.

Thermal Protection

Certain conditions of operation (restricted airflow cooling, sustained high power operation into low impedance loads) can result in a rise in output device case temperature sufficient to affect the amplifier's performance.

Should the heatsink reach 95 C, the output will automatically be disconnected from the load (loudspeaker) and will remain disconnected until the temperature drops below 95 C. The action of removing the load has the effect of eliminating output current. This, in turn, results in an immediate and rapid drop in temperature. The load will automatically be reconnected when the temperature drops below 95 C.

Fan Assist Cooling

The SMART TA6300 is equipped with a convection cooling system utilizing massive heatsink extrusions and two fans.

Soft Clip Speaker Protection

The SMART TA6300 incorporates Soft Clip Speaker circuitry. This circuitry prevents the amplifier from being driven into a hard clip state, which prevents speaker damage caused by the amplifier being over driven or into DC state.

Selectable Input Sensitivity

The SMART TA6300 is equipped with selectable input sensitivity. The factory setting is 1 v for rated output, .775v and 1.5v are also available. If you would like to change the setting set by the factory you may contact the factory for instructions.

Front and Rear Panel Controls

POWER SWITCH/CIRCUIT BREAKER
To turn the Amplifier ON or OFF, press the right or left portion of this switch rocker. This switch also serves to break power in the event of a surge.

POWER INDICATING LED
This LED when illuminated indicates that the amplifier is on.

SIGNAL STATUS INDICATORS
Six green LED indicators are normally off with no signal present and illuminate when signal is present.

CLIP INDICATORS
Six red LED indicators illuminate when the input signal levels exceed 3 dB above clipping. Ad-

just the source level control to minimize clipping.

12 POSITION PHOENIX INPUT CONNECTION

The six unbalanced inputs are connected via 12 position phoenix connector. The pinouts are labeled on the rear of the TA6300.

GROUND LIFT SWITCH

The GROUND/LIFT is provided to eliminate ground loops between this amplifier and a preamplifier that can occur in certain installations.

OUTPUT CONNECTIONS

Output connections are via five-way binding posts, identified as to polarity with red and black terminals. We suggest the use of dual banana plugs as a convenient and reliable method of hook-up. They allow rapid removal for polarity reversals. This feature is often necessary in the check out and adjustment of multi-element biamplified and triamplified sound systems. Heavy Class 11 wire may be used by unscrewing the large plastic portion of the output terminal and inserting the wire into the hole provided. Note: It is extremely important when making wire connections that no wire stand or end touches an adjacent terminal!

A 9 pin D-type subminiature connector is provided for quick connection to SMART's MN600 Cinema STEREOCHECK booth monitor through a standard 9 pin D-type male to female cable.

AIR INTAKE

Two DC fans are provided. Fan guards are provided to protect from any large debris stopping the fans or getting inside the amplifier. Fan air filters may be purchased from the factory. NOTE: Air filters must be clean at all times to assure proper amplifier cooling. A periodic maintenance schedule is recommended depending on environmental conditions.

AC POWER CORD

The TA6300 is pre-wired at the factory for the voltage indicated on the rear panel or on the power cord of the amplifier. Plug the power cord into an AC outlet that will deliver the proper voltage and current for amplifier operation.

CAUTION:

The TA6300 amplifier is a product of the most advanced technology and manufacturing techniques and is fully protected against overheating, input overload and shorted or mismatched loads. As is the case with any precision instrument, some care should be taken in the unit's operation. The following precautions should be noted and adhered to. Damage resulting from their omission is not covered under the terms of the warranty.

DO NOT PARALLEL THE OUTPUTS OF ANY CHANNELS BY CONNECTING THEM TOGETHER OR PARALLELING THEM WITH ANY OTHER AMPLIFIER OUTPUT. UNDER NO CIRCUMSTANCES SHOULD THE AMPLIFIER BE OPERATED WITH THE COVER REMOVED. THERE ARE NO USER SERVICEABLE COMPONENTS INSIDE. AVOID POTENTIALLY DANGEROUS SHOCK HAZARDS, KEEP THE COVER CLOSED AT ALL TIMES!

SECTION 4
SPECIFICATIONS

Type:
Six Channel audio amplifier

Power Output: Continuous Average Power (120 VAC)
200 Watts into 8 Ohms, 1 Channel Driven
300 Watts into 4 Ohms, 1 Channel Driven
450 Watts into 2 Ohms, 1 Channel Driven
150 Watts into 8 Ohms, 6 Channels Driven
250 Watts into 4 Ohms, 6 Channels Driven
300 Watts into 2 Ohms, 6 Channels Driven

Intended Specification For Theater Application:
200 Watts into 8 Ohms, 5 Channels and 400 Watts into 2 Ohms, 1 Channel (Subwoofer)

Gain:
30.5dB

Controls and Indicators:
(Front Panel) AC Mains Power Switch
Power-on LED Indicator, Left, Center, Right, Left Surround, Right Surround and Subwoofer Signal Status Indicators (green active / red clip)
(Rear Panel) Ground Lift Switch.

Turn-On Delay:
3 second, solid state activated

Special Feature:
“Soft Clip” speaker protection

Cooling:
Two fans with rear to front cooling.

Crosstalk:
-80 dB

Damping Factor:
500:1 at 1 kHz

Slew Rate:
Closed-loop, greater than 40V per micro second

Frequency Response:
Plus/minus 0.25 dB
20 Hz-20kHz

Distortion:
No more than 0.1 percent THD or IM, 0.01W to rated output, 20 Hz to 2O kHz (typically 0.01 percent)

Hum and Noise:
101 dB below rated output (unweighted, 20kHz bandwidth)

Input Sensitivity:
Factory Selectable, .775v, 1.0v, 1.5v, shipped at 1.0v for rated output

Input Impedance:
15 kOhms nominal

Input Connectors:
One 12 position Phoenix (unbalanced)

Output Connectors:
Six 5-way binding posts; One 9 pin D-type subminiature port

Mains Input:
2400W 30A/15A 100/240 VAC 50/60Hz

Dimensions:
Slimline 7" height, 19" standard rack mount width, 14" depth overall (less handles)

Weight:
45 lbs. (20.51 kg)