andromeda II

SUMO

TABLE OF CONTENTS

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INTRODUCTION

Welcome to the world of SUMO. ANDROMEDA II is the culmination of many years of audio amplifier research. It contains some of the most sophisticated circuitry offered to the audio community in recent years, and delivers a level of performance in sheer musical terms that promises to change our concept of reproduced music.

An electronic component as sophisticated as ANDROMEDA II places certain demands on its owner. Please read this operating manual carefully, so that you may come to realize the highest level of performance ANDROMEDA II is capable of.

UNPACKING

Immediately upon receiving ANDROMEDA II, inspect the carton for evidence of mishandling during shipment. Then carefully unpack the amplifier and inspect it for any sign of damage which might have occurred.

Please save the shipping carton and all associated packing materials for later use. The shipping materials have been carefully designed to transport your amplifier with a minimum of disturbance.

NOTE: In the unlikely event that you discover some damage that has occurred in shipping, please contact your dealer immediately.

PRECAUTIONS

ANDROMEDA II is a wide-band amplifier with substantial power output capability. Certain precautions must be taken to ensure that the amplifier is operating safely.

1. Be careful when lifting ANDROMEDA II. The unit weighs more than 50 lbs.

2. Never expose ANDROMEDA II to moisture.

3. Never plug an input cable into the amplifier while the power is on. This may cause extensive damage to loudspeakers.

4. Never apply the "thumb test" (touching the hot lead of the input cable with your finger) to the tip of the input cable or input jack of the amplifier. R-F rectification and/or hum will almost surely damage your speakers. Also, you may trip one or more of the resettable circuit breakers located on your amplifier's rear panel. **Please note:** SUMO is not responsible for damage to loudspeakers due to improper use of ANDROMEDA II.

5. Take care to see that a short circuit is not connected to the output of the amplifier. (The individual strands of wire found in some speaker cables must be twisted tightly so they do not unravel and short across the output terminals.)

6. Avoid restricting the airflow around the amplifier. Air circulation is necessary for proper operation. (If the amplifier is installed within wood cabinetry, adding a small fan will improve ventillation.)

7. Do not plug ANDROMEDA II's AC power cord into a preamplifier's convenience outlets, since they are unlikely to be able to accomodate the amplifier's power requirement.

8. Avoid rocking ANDROMEDA II's power switch on and off repeatedly within a short period of time, since doing so may damage the power supply.

9. Make certain that any speakers used with your amplifier can comfortably handle its power at the corresponding impedance. ANDROMEDA II's warranty does not cover damage to loudspeakers caused by abuse or misuse.

INSTALLATION

Although ANDROMEDA II contains over 1,000 square inches of heat dissipating area, cooling can severely reduced should the air flow to the heatsinks be restricted. Avoid locating the amplifier in cabinetry which might choke the air flow. Provide adequate vents or ports behind and above the amplifier. Care should be taken to see that ANDROMEDA II is not installed near hot air vents, nor stacked on other heat generating components.

When installing ANDROMEDA II into a standard 19" component rack, we recommend that you isolate the chassis and metalwork from the rack so as to insure no electrical contact between the two. Ground loops resulting in audible hum may occur if this precaution is not observed.

ELECTRICAL CONNECTIONS

ANDROMEDA II is supplied with a detachable power cord. The power socket meets acceptable international standards, which allows the user to change the power cord from country to country as necessary.

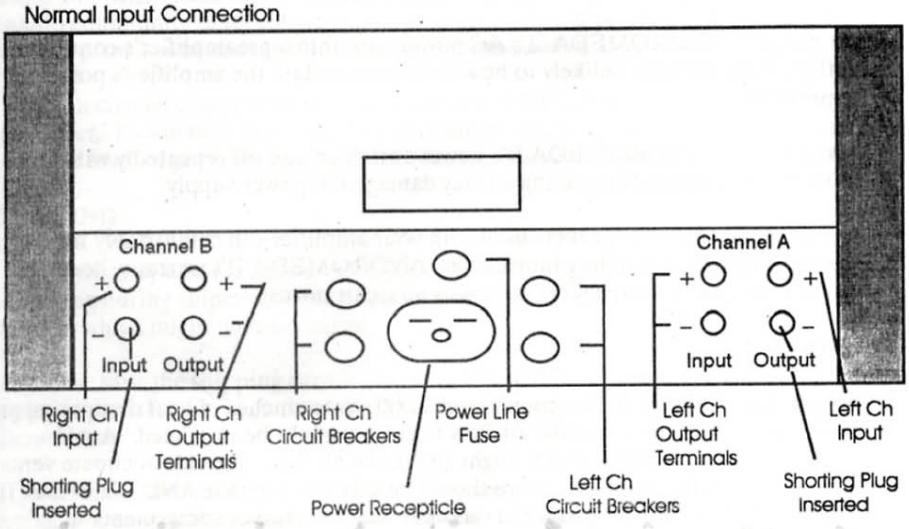
Plug the power cord into the rear chassis of ANDROMEDA II, but leave it disconnected from the wall. All connections should be made with the AC power cord in this position and the amplifier's power switch in the off position. Under no circumstances should you attempt to make any input or output connections while the power is on.

NORMAL INPUT CONNECTIONS

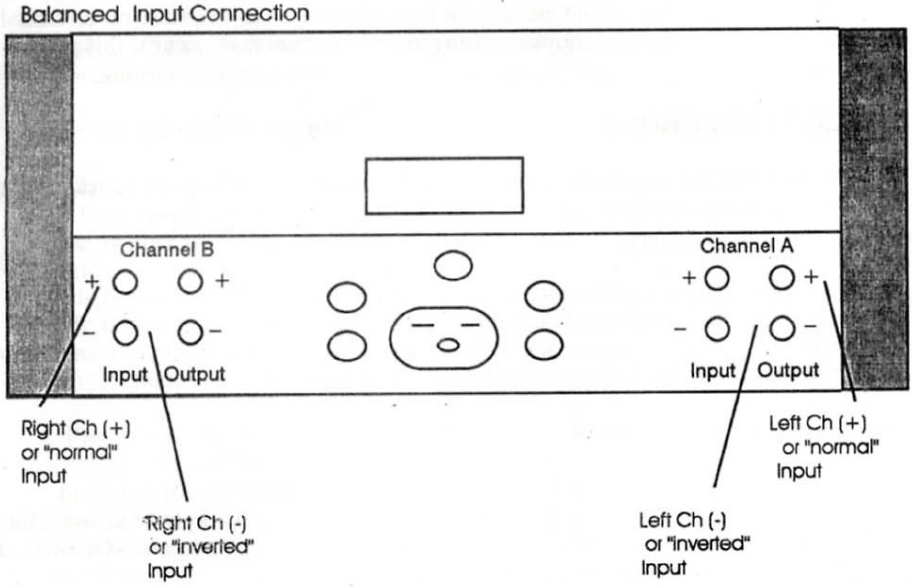
One pair of high quality shielded audio cables will be required for normal input connection to ANDROMEDA II. You will note, however, that each amplifier channel has two separate inputs, labeled (+) and (-). In this case, these markings indicate NORMAL and INVERTED, rather than positive and ground.

Andromeda II
Rear Panel Drawings

Normal Input Connection



Balanced Input Connection



When connecting Andromeda II to a preamp that has conventional outputs, i.e., a single output per channel, it is important that you leave the shorting plugs in ANDROMEDA II's INVERTED (-) inputs as supplied from the factory. Then simply connect the preamp's left and right channel outputs to ANDROMEDA II's L (+) and R (+), NORMAL, inputs respectively.

Please note: YOU MUST LEAVE THE SHORTING PLUGS IN THE INVERTED INPUTS FOR NORMAL CONNECTION TO ANDROMEDA II.

BALANCED INPUT CONNECTIONS

When using ANDROMEDA II with a preamplifier that has true balanced differential outputs, you will then use a PAIR of interconnects PER CHANNEL. In this case, you will simply connect the preamplifier's NORMAL, or (+), outputs to ANDROMEDA II's (+) inputs; and the preamp's INVERTED, or (-), outputs to the amplifier's (-) inputs.

Whether connected in true balanced fashion as described above, or with a single input per channel as described earlier, ANDROMEDA II still operates as a balanced differential power amplifier.

The input jacks on the ANDROMEDA II have been gold plated to provide low contact resistance, long life, and minimal susceptibility to corrosion. Be sure to use only high quality, shielded cable with standard RCA type pin jacks to connect your preamplifier to ANDROMEDA II.

OUTPUT CONNECTIONS

Although the output terminals are labeled (+) and (-), this does <u>not</u> mean that negative is ground, but rather indicates the relative phasing of the terminals.

ANDROMEDA II uses full-wave balanced-bridge circuitry--there are NO common grounds except at the input. DO NOT connect the outputs into any switching systems of any kind, whether speaker switchers or headphone boxes, until you have determined that they contain no common connections. To determine whether there are common connections, simply connect a continuity tester (available at most parts stores) to the left and right channel ground positions on the device in question. If the indicator light illuminates, then there is indeed a common path between the two grounds. DO NOT connect ANDROMEDA II in this instance.

Output connections on ANDROMEDA II are made via 5-way gold plated binding posts. They accept most high quality terminations, including those accepted by audiophiles as providing best connections, for example, spade lugs, banana jacks, pins, bare wire, etc.

ANDROMEDA II AND BRIDGING ADAPTERS

Under no circumstances should you attempt to use ANDROMEDA II with any

type of active or passive bridging adapter.Because it is already bridged internally, it cannot be bridged externally for either mono or stereo operation.

PROTECTION

ANDROMEDA II has no internal protection circuitry or current limiting of any kind. The elimination of this restrictive and invasive circuitry is an important reason why ANDROMEDA II sounds as good as it does.

ANDROMEDA II is protected, however, by in-line circuit breakers found on the rear of the chassis panel. There are two breakers per channel. Should the amplifier inadvertently be operated into a shorted speaker lead, or a common ground, one or more breakers will trip, shutting down operation. A quick examination of the rear panel will show the breaker locations. In the event that a circuit breaker trips, turn ANDROMEDA II off. Look for an obvious cause, and where possible remedy it. Reset the breaker. Then after a 30 second wait, turn the amplifier on. It should function properly again.

SPEAKER PHASING

To obtain proper stereo reproduction it is important that your left and right stereo speakers be connected in phase. Proper connection will ensure that the speakers work together (in phase), rather than in opposition (out of phase). Connecting a system out of phase will not result in damage, just poor sound reproduction.

To connect your system in phase, observe the speaker cable being used, and note any indication (typically a groove, ridge, or perhaps simply a marking) that differentiates one lead from the other. Whatever the method employed, identify the lead which is attached to the (-) terminal on the amplifier. Connect the other end of this same lead to the (-) terminal of the loudspeaker system. Similarly connect the (+) terminal on the amplifier to the (+) terminal on the loudspeaker. Follow the same procedure to connect the second channel. Once this has been done, your speakers should be properly connected and in phase.

Verification of proper phasing is achieved by noting a unity of sound when solo vocalists perform during stereo operation. A more obvious verification can be observed by setting the preamplifier for monaural operation (left and right channels blended) and playing a mono recording. A precise center image should exist, with vocalists and instruments fixed in space midway between the two speakers. Poor imaging and loss of bass response are indications that you have connected your speakers out of phase.

OPERATION

Other than caution concerning the power output capabilities of this amplifier, there are no special notes on operation. It is recommended that when powering your system up, you turn your other components on first. After waiting a few seconds then turn ANDROMEDA II on. A great many pieces of associated equipment emit large transients at turn-on and continue to do so several seconds afterwards. Therefore, protect your speakers by the proper

sequencing. The reverse procedure applies when turning off the system--always turn the amplifier off first, waiting at least 15 seconds for the power supply to discharge. Then turn off the rest of the system.

POWER LINE FUSE

For 120v operation, replace only with a 7 1/2 amp slo-blo type; (a 5 amp slo-blo fuse is required for 220 or 240v operation). Using a higher than recommended fuse will void the warranty and risk damage to the amplifier.

TESTING

Since ANDROMEDA II is unique in the sense of having a totally balanced output, you cannot test it in a normal, traditional way.

Please read the following carefully, in order to fully understand the required procedures.

1. ABSOLUTELY ALL TEST EQUIPMENT MUST BE TOTALLY FLOATING. The third wire ground must be disconnected or otherwise eliminated on all instru ments.

2. The chassis or grounds of ALL test equipment must be isolated from each other. Do not violate this rule.

3. The generator output ground must never be connected in any way to any other piece of test equipment other than the input ground of the amplifier under test.

4. Since the outputs of the amplifier are totally floating and isolated from each other (channel to channel), you can measure only one channel at a time.

5. Do not test the amplifier at or near full power into 4 Ohm loads for extended periods of time as this will cause the circuit breakers to trip.

6. Do not attempt to connect either of the output terminals to a chassis ground or any of the test equipment chassis grounds.

NOTE: The sole exception to the rule is when using Sound Technology equipment which has true balanced differential inputs. Under these circumstances, the jack on the Sound Tech, labeled chassis, may be connected to a screw on the rear of the amplifier chassis. Do not connect this lead to the minus (-) output terminal or the input ground.

CIRCUIT DESCRIPTION

The circuit topology of the ANDROMEDA II benefits from two inherent design advantages. First, as with all SUMO amplifiers, ANDROMEDA II is designed to operate sympathetically with modern loudspeakers. Amplifier and speaker influence each other to a

greater extent than any other two components in an audio system. It has been the focus of SUMO engineering to ensure that our amplifiers perform as well under real life conditions as they do on a test bench.

Second, the rapid advancement of transistor technology has quite recently developed into a watershed, resulting in solid-state devices of truly outstanding capability. ANDROMEDA II takes advantage of the very latest advances in MOSFET technology. As implemented in this design, even if no feedback were applied, the output stage of ANDROMEDA II would exhibit a distortion factor of less than 0.05%. ANDROMEDA II, therefore, represents up-to-the-minute engineering.

Although the concepts of balanced bridge operation are not new, previous attempts have not been very rewarding due to lack of appreciating all of the parameters involved in the applications of these concepts. All the circuits in these amplifiers are 100% completely balanced utilizing push-pull quadrature feedback from EACH side of the speaker load.

ANDROMEDA II's circuit topology is a step beyond and in many ways the logical extension of the concept of complementary symmetry push-pull amplification. It guarantees perfect symmetry of positive and negative cycles, or in phase and out of phase signals. The resulting control that is maintained over loudspeakers is genuinely without peer.

GENERAL MAINTENANCE AND SERVICE

Great care has been taken by SUMO to ensure that ANDROMEDA II is as flawless is appearance as it is in performance. The front panel is finished with a high grade anodizing process for durability as well as beauty. It can best be cleaned with a soft cloth and a mild cleaning solution such as Windex. Under no circumstances should a lye cleaning solution or any abrasive cleanser be used on any part of the unit.

In the event that the unit must be returned to the factory, an authorization number must be requested from SUMO before the unit is returned. Under no circumstances should the unit be shipped to SUMO without prior authorization. Please contact:

SUMO Customer Service
21300 Superior Street
Chatsworth, CA 91311
(818) 407-2427

PERFORMANCE SPECIFICATIONS

Power output: 200 Watts per channel into 8 Ohms both channels driven from 20Hz to 20kHz with less than 0.05% THD.

SMPTE IM distortion: Less than 0.05% (.25W to 200W at 8 Ohms).

TIM:	Unmeasurable.
Hum and noise:	110dB below rated power. 95dB below 1 Watt.
Frequency response:	± .1dB from 20Hz to 20kHz. -3dB from 0.1Hz to 170kHz.
Input sensitivity at rated output:	1.8 volts RMS.
Input sensitivity at 1 Watt:	130 mv RMS.
Input impedance:	47k Ohms.
Damping factor:	Greater than 500.
Rise time:	Less than 2 μ seconds.
Separation:	Greater than 80dB.
Dimensions:	19" W x 7" H x 16 ¾" D. 48cm H x 18cm H x 43cm D.
Shipping weight:	55 lbs. 25 kg.

LIMITED WARRANTY

THIS PRODUCT IS WARRANTEED UNDER THE FOLLOWING CONDITIONS:

1. PRODUCT IS PURCHASED THROUGH AN AUTHORIZED SUMO DEALER.
2. WARRANTY COVERS NORMAL OPERATING CONDITIONS OF HOME USE.
3. WARRANTY PERIOD BEGINS AS OF DATE OF SALE PROVIDED IT IS REGISTERED BY THE AUTHORIZED SUMO DEALER WHERE THE PRODUCT WAS PURCHASED. REGISTRY PERIOD IS 20 DAYS.
4. DELIBERATE MISUSE, MISHANDLING FAILURE TO REPORT RECEIVING DAMAGED MERCHANDISE, OR UNAUTHORIZED TAMPERING WITH OR MODIFYING OF THIS MERCHANDISE AUTOMATICALLY VOIDS ALL WARRANTIES.
5. WARRANTY PERIOD FOR ALL SUMO FACTORY WIRED PRODUCTS (EXCLUDING FUSES) IS 3 YEARS COVERING BOTH PARTS AND LABOR. TRANSPORTATION CHARGES TO AND FROM THE DEALER OR FACTORY ARE EXCLUDED.
6. WARRANTY ON ALL SUMO PRODUCTS USED IN ANY OTHER FASHION THAN STATED ABOVE SHALL REDUCE THE WARRANTY TIME PERIOD AND OTHER CONDITIONS TO NEGOTIATIONS BETWEEN SUMO AND PROSPECTIVE USER.
7. THIS WARRANTY SHALL EXTEND TO EACH SUCCESSIVE OWNER, PROVIDED SUMO IS NOTIFIED BY REGISTERED MAIL WITHIN 20 DAYS OF RESALE BY INITIAL OR PRESENT OWNER. THIS NOTIFICATION SHALL CONSIST OF DATE OF SALE, NAME AND ADDRESS OF NEW OWNER.
8. SUMO GUARANTEES THAT ITS PRODUCTS ARE FREE FROM DEFECTS IN MATERIALS AND/OR WORKMANSHIP FOR THE REQUIRED WARRANTY PERIOD.
9. THIS WARRANTY IS NOT VALID UNLESS ACCOMPANIED BY SALES SLIP VALIDATION OR PROPERLY STATED INVOICE (COPY).
10. THIS WARRANTY IS VALID ONLY IN THE UNITED STATES. SERVICE IN OTHER COUNTRIES WILL BE PROVIDED BY THE EXCLUSIVE SUMO REPRESENTATIVE OR HIS AGENTS. BECAUSE OF VARYING GOVERNMENTAL REGULATIONS AND CONDITIONS, THE SERVICE PERIOD MAY DIFFER FROM COUNTRY TO COUNTRY. HOWEVER, IN EVERY INSTANCE, THE SERVICE AGREEMENT CAN BE HONORED ONLY IN THE COUNTRY WHERE THE UNIT WAS PURCHASED.

If your unit requires service, contact your nearest authorized SUMO dealer or factory service department. DO NOT send the unit for warranty service without obtaining factory RETURN AUTHORIZATION.

21300 SUPERIOR STREET • CHATSWORTH, CA 91311 • PHONE (818) 407-2426 • FAX (818) 407 2405 SUMO CORP WKVG