

ELECTRA

OWNER'S MANUAL

SUMO
SUMO ELECTRIC COMPANY LIMITED

SPECIFICATIONS

All derived at 3 Volts output into 5K Ohm load except TAPE which is driven into a 10K Ohm load.

	GAIN 1000 Hz	SENSITIVITY 3V RMS-1KHz	NOISE* 20-20KHz	S/N RATIO below 3V	THD and IM below 3V	OVERLOAD CHARACTERISTICS		
						20 Hz	1 KHz	20 KHz
MC (PHONO 1)	64 dB	115 μ V	65 μ V	65 dB	0.01%	0.64 mV	6.4 mV	60 mV
MM (PHONO 2)	42 dB	2.3 mV	0.65 μ V	70 dB	0.01%	12.5 mV	125 mV	1.2 V
TUNER, AUX, TAPE	21 dB	315 mV	2.7 μ V	100 dB	0.01%	Infinity	Infinity	Infinity

Frequency Response: 20Hz- 20 KHz \pm 0.1 dB
2Hz-100 KHz \pm 3 dB

Low Filter: (Quasi-2nd order) - 3 dB @ 20 Hz

RIAA Deviation: MC (PHONO 1) 20Hz- 20 KHz \pm 0.5 dB
MM (PHONO 2) 20Hz- 20 KHz \pm 0.4 dB

Crosstalk: (Worst case between any inputs at 20 KHz - 50 dB or better
or input functions, between channels) at 1 KHz and below - 80 dB or better

Tone Controls: (Automatically removed with dials set in vertical positions) + 14 dB, - 18 dB @ 20 Hz
+ 11 dB, - 14 dB @ 20KHz

Turnover Points: (Maximum position) Boost 200 Hz, 4.5 KHz
Cut 180 Hz, 2.5 KHz

Size: 19" (48.5cm) X 3.5" (9cm) X 9" (23cm) Shipping Weight: 13 lbs (6 Kg)

*Referred to input.

ELECTRA PLUS

CONGRATULATIONS. You have purchased one of the very finest preamplifiers and control centers available in audio. In the ELECTRA PLUS SUMO pays particular attention to phase compensation and out-of-band ultra high frequency response shaping, resulting in a preamplifier that is a study in speed, symmetry, and focus.

Although the ELECTRA PLUS represents an extensive redesign and a significant improvement over its predecessor, the highly regarded SUMO ELECTRA, connection, function, and operation are essentially identical. For this reason, you will find the attached ELECTRA owner's notes more than adequate.

Differences you will want to be aware of:

- A) The MC input impedance is 100 ohms, not 1000 ohms as in the ELECTRA.
- B) The ELECTRA PLUS has a dedicated CD input with ultra high frequency response shaping. The ELECTRA does not.

We are proud to play a role in your enjoyment of music. We wish you many hours of pleasurable listening.

Sumo Products Group, 21300 Superior St., Chatsworth, CA 91311. (818) 407-2426

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INTRODUCTION

Thank you for purchasing this SUMO product. The ELECTRA FM tuner represents a culmination of the very latest technological advances in audio engineering and delivers a level of performance which is simply unapproached by competitive products.

In order to achieve the maximum performance of which ELECTRA is capable, please read this manual thoroughly before attempting to operate the unit. If you have any questions concerning the use or maintenance of ELECTRA, please contact your dealer or SUMO Customer Service, ~~31516 Via Colinas, Suite 102, Westlake Village, CA. 91362, telephone (213) 991-9990.~~

SUMO PRODUCTS GROUP
21300 SUPERIOR ST.
CHATSORTH, CALIF. 91311
(818) 407-2426

PRECAUTIONS

1. Always turn the level control to minimum between program or source selections, and when turning the power on or off.
2. Do not change any rear-panel connections while ELECTRA is turned on.

CAUTION: To prevent fire or shock hazard, do not expose this unit to rain or moisture.

UNPACKING

Immediately upon receiving ELECTRA, carefully unpack and inspect it for any sign of damage. If any damage is evident, please contact your dealer immediately. Please save the shipping carton and all associated packing materials for future use. They have been carefully designed to transport your ELECTRA with a minimum of disturbance.

Shipment to the factory for any purpose must be made in the original carton and packing. If the original is lost or damaged, contact SUMO Electric Company for replacement.

INSTALLATION

ELECTRA is designed primarily for mounting on a shelf. If ELECTRA is to be inserted into a panel a 17-6/16 inch by 3-5/16 inch cutout must be provided.

SUMO highly recommends that the input and output connections to ELECTRA be checked periodically. Since the possibility of oxidation is always present, these connections should be rotated or twisted in position every few months to make sure that a clean contact is made. This simple procedure will prevent many of the problems that occur in home stereo installations.

ELECTRICAL CONNECTIONS

With the power switch in the OFF position, plug the line cord into any 105-125V, 50 or 60 Hz outlet. Do not turn ELECTRA on until all other connections have been completed.

CONVENIENCE OUTLETS

Three convenience outlets have been provided on the rear panel to power associated components in your system. Of these outlets, two are controlled by the front panel's on/off switch (600 Watts total) for use with tape recorders and medium-power amplifiers. The one remaining outlet is unswitched and may be used for turntables that have built-in power switches mechanically linked to disengage their wheels.

NOTE: We do not recommend using these outlets with high-power amplifiers. A SUMO Model NINE should be powered directly from a wall outlet.

SIGNAL CONNECTIONS

MAIN OUTPUTS

Two stereo pairs of audio output jacks are provided for connection to power amplifiers or electronic crossovers. Special audio cables have been supplied for this purpose. The high quality coaxial cable with braided shield insures highest possible isolation from external electrostatic and electromagnetic radiation. Additional cable sets are available from your dealer.

The stereo output jacks are labeled MAIN 1 and 2. They are electrically connected in parallel and can be used for installations requiring multiple amplifiers or crossovers. Make certain that the cable plug contacts are fully engaged so that no loss of circuit ground occurs. A very loud hum or buzz will be heard if this condition exists.

The source impedance of the two main outputs are each 100 Ohms, low enough to permit the use of shielded cables up to 100 feet in length.

TAPE OUTPUTS

One pair of stereo output jacks are provided on the rear panel for connection to any tape recorder having a minimum load impedance of 6.5K Ohms or higher. Unlike the main outputs, the tape output signals are independent of balance, volume, and tone control settings, and are at a level equal to the selected source input level (Tuner, Aux, et cetera).

SOURCE CONNECTIONS

TUNER INPUT

This is a high-level input with a rated sensitivity of 315 mV. Although labeled TUNER (AM or FM), this input may be used with any high-level source. The input impedance varies with the volume control setting between 35K Ohms and 50K Ohms.

NOTE: As a result of ELECTRA's circuit design, the high-level inputs cannot be overloaded by any normal signal source.

AUXILIARY INPUT

The stereo input labeled AUX is identical in operation and sensitivity to the TUNER input described above. It can be used with any auxiliary equipment having adequate output, such as tape recorders, tuner, et cetera.

TAPE INPUT

A stereo input labeled TAPE IN is provided for connection to tape recorder line outputs. It has the same impedance and sensitivity as the above.

PHONO INPUTS

Two sets of phono inputs are provided. Phono 1, labeled MC, is for use with low-output moving-coil cartridges. Phono 2, labeled MM, is for use with standard moving-magnet types.

MOVING COIL: Any moving-coil cartridge except high-output types may be used with this input. The input impedance is 1000 Ohms, and overload occurs at 6.4 mV at 1K Hz.

NOTE: Do not connect a moving-magnet cartridge to the MC input. While no damage will occur to ELECTRA, the large amount of gain in the MC stage may send out a signal high enough to damage the power amplifier or, especially, the loudspeakers.

MOVING MAGNET: All conventional magnetic cartridges, high-output moving coil cartridges, and other types which require RIAA playback equalization but do not require input sensitivities below 0.5mV (@ 5cm/sec recording velocity) may be used with this input. The input impedance is 47K Ohms (100 pF shunt capacitance), which is standard for magnetic cartridges. The overload capability is 125mV at 1K Hz.

Well-shielded cable is recommended for connection of the cartridge to the phono input. It is usually supplied with the turntable or changer. It is not recommended that the phono cable length exceed five feet or audible degradation of high frequencies may occur.

Ordinarily, an additional grounding wire is provided with the turntable which should be connected to the grounding post on the rear panel of ELECTRA. In some systems it might be found that

this connection actually creates hum. In this case, no ground connection should be made. Be careful to keep all large transformers (such as exist in power amplifiers) away from the phono cartridge to prevent magnetically-induced hum.

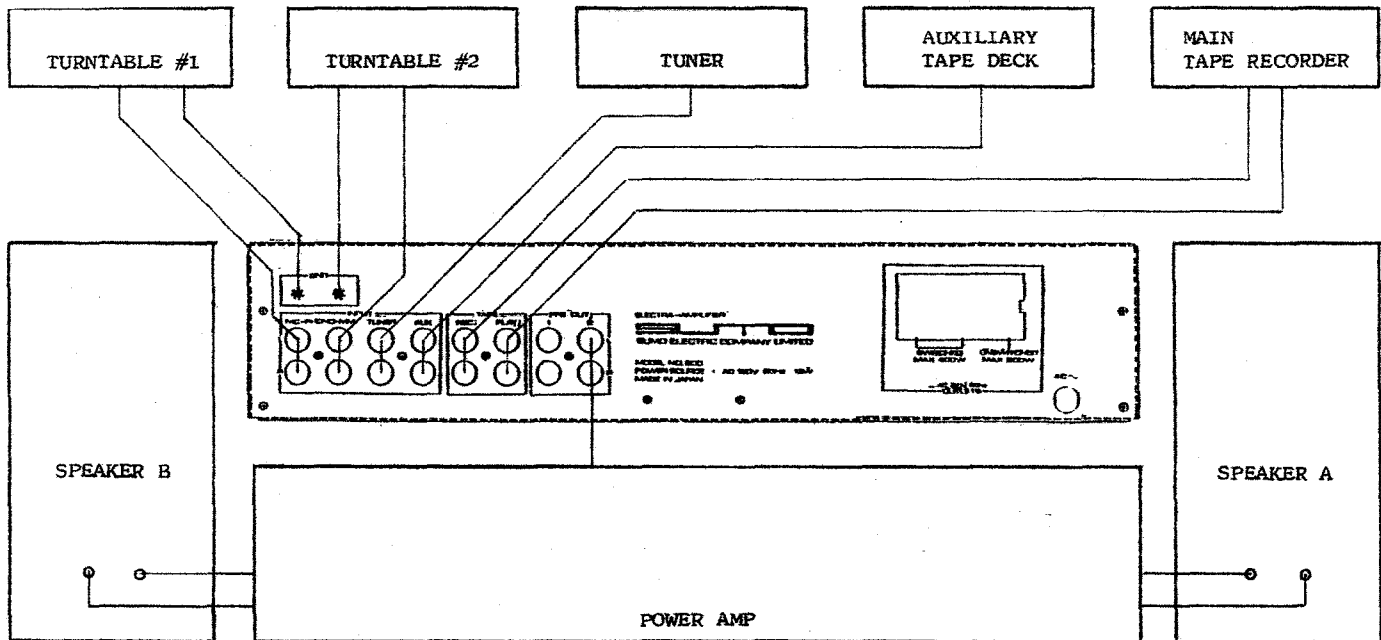
SPECIAL NOTES ON HUM REDUCTION

Unfortunately, some components are more prone to hum than others, and no cable made is entirely immune to it. Therefore, all cables in the system must be oriented for the lowest hum level.

The connecting cables from the turntable ordinarily are more susceptible to hum than any other source. These cables must be oriented for maximum hum cancellation. All wires carrying AC power should be located as far away from the turntable and preamp input as is physically possible. Under no circumstances should you ground the turntable or grounding post to a water pipe or other such ground.

Hum can also be introduced by a poor connection from the outer grounding shell of the audio cable plug to the audio input jacks. Be certain that the outer shells of the RCA-type phono plugs are squeezed together sufficiently so that a solid ground connection results. Try rotating the plugs one half turn to obtain a solid ground.

TYPICAL HOOKUP



OPERATION

When first operating ELECTRA, set the controls as follows:

TAPE MONITOR:	Off
LOW FILTER:	Off
BASS and TREBLE:	Flat (mid-position)
BALANCE:	Mid-position
LEVEL:	Minimum
SELECTOR:	Desired Source

Push the AC power switch; the pilot light will then glow green. Increase the volume control to the desired loudness. For detailed operation of each control, read the following:

POWER SWITCH

This switch turns on ELECTRA along with any equipment that has been plugged into the switched convenience outlets. Be certain that the volume control is always set at minimum before turning on ELECTRA. Power turn-off is instantaneous when the switch is pressed again. Prior to turning ELECTRA off, turn the volume control to minimum.

VOLUME CONTROL

This controls the output of both channels simultaneously. The stepped control maintains inter-channel balance within 1.0 dB at all settings. It has no effect on the signal at the TAPE OUTPUT jacks.

BALANCE CONTROL

This controls the ratio of loudness between the left and right channels. It may be used to balance the volume when the speakers are located at different distances from the listener, or if the speakers are of different efficiencies. The center of the control is detented.

BASS CONTROL

This controls the low-frequency response of the two channels with turnover points of 300 Hz (boost) and 250 Hz (cut). The stepped control insures channel-to-channel accuracy within 1.0 dB throughout its range. When used in conjunction with the low filter a wide range of corrective alteration is made possible, partially negating deficiencies in speakers and source material.

TREBLE CONTROL

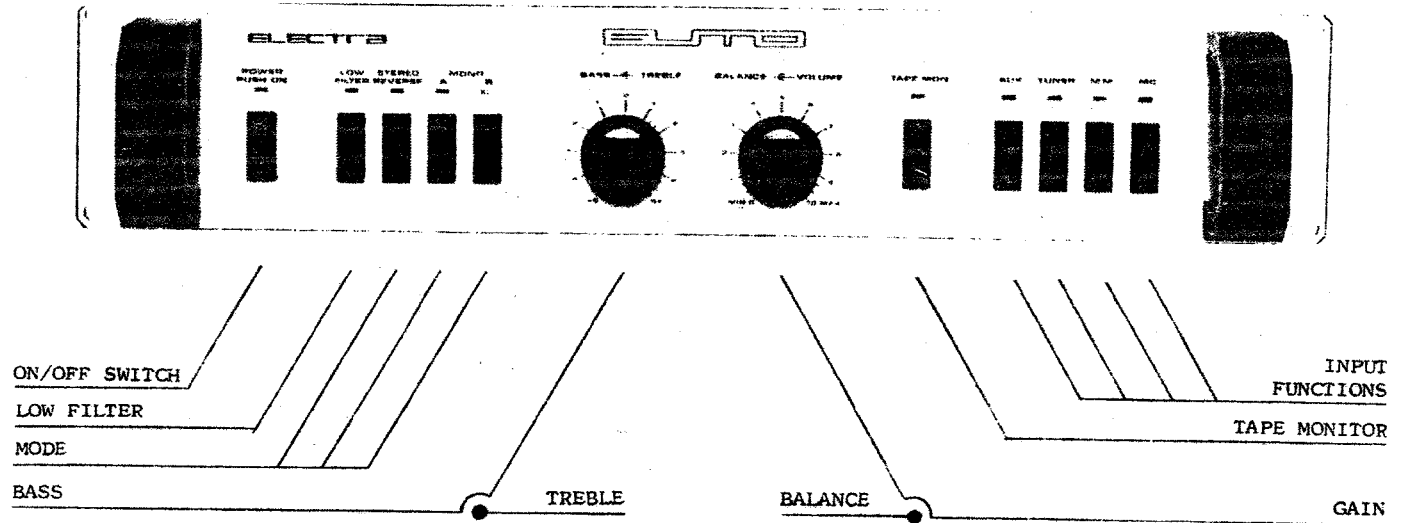
This control alters the high-frequency response of the two channels with turnover points of 3.5K Hz (boost) and 2K Hz (cut). It is otherwise identical to the BASS control.

LOW FILTER

A subsonic frequency filter has been provided to reduce acoustic feedback or other types of low-frequency noise. This filter will attenuate only frequencies below 20 Hz and will not degrade the bass response of your system.

CONTROL FUNCTIONS

NOTE: Industry standard is CH "A" LEFT



MODE SELECTION

These switches, illuminated in green or red, determine how the A and B components of the stereo signal are channeled to the outputs of ELECTRA.

	<u>A SWITCH</u>	<u>B SWITCH</u>
STEREO	A: green	B: green
MONO (A+B)	A: red	B: red
CHAN A	A: green	B: red
CHAN B	A: red	B: green

NOTE: All of the above functions will have their outputs reversed when the STEREO REVERSE switch is engaged (red light on).

TAPE MONITOR

The normal position for this control is OUT. When OUT, the signals selected by the source buttons will be heard. When you wish to monitor the tape recorder connected to the TAPE IN jacks, simply depress this switch.

While in the TAPE MONITOR position, the signal selected by the source selector will be disconnected and the signal from the tape recorder will be substituted. The originally selected source will, however, continue to play into the TAPE OUT jacks. Thus, by switching between tape monitor and source positions the two signals can be compared while recording. Of course, this direct monitoring can be achieved only with three-head decks equipped for this purpose.

GENERAL MAINTENANCE AND SERVICE

Great care has been taken by the SUMO staff to insure that ELECTRA is as flawless in 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 dampened with a solution of liquid detergent and water. UNDER NO CIRCUMSTANCES should a lye solution or any abrasive cleanser (scouring powder, etc.) be used on any part of the unit.

SUMO Electric Company has a Customer Service program to answer all questions regarding the installation and operation of your SUMO components. Please feel free to write us at any time and we will attempt to offer prompt advice.

Please address inquiries to:

SUMO PRODUCTS GROUP
21300 SUPERIOR ST.
CHATSWORTH, CALIF. 91311
(818) 407-2426

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

TROUBLE SHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	POSSIBLE REMEDY
1. Unit will not turn on.	A. Not plugged into AC outlet. B. Blown fuses.	A. Connect AC line cord to outlet or try different outlet. B. Refer to Service Agency.
2. Unit turns on but no sound is heard.	A. Switches in wrong mode. B. Cables connected wrong. C. TAPE MON switch on.	A. Check switch positions. B. Check cables connections. C. Depress TAPE MON to OFF position.
3. One or both channels inoperative.	A. Defective cables.	A. Replace cables.
4. Unit hums.	A. Unit too close to transformer of amplifier. B. Inadequate shielding between components. C. Phono cartridge.	A. Reorient unit away from amplifier. B. Insert MU-metal shield between components if reorientation impossible. C. Check cartridge ground connection; move tonearm while operating to see if hum level varies; if yes, turn tonearm turntable away from other components.
5. RF Interference.	A. Poor cable shielding.	A. Shorten cables or replace with properly shielded ones.
6. Tape recorder will not record MC, MM, TUNER, AUX.	A. Cables bad or improperly connected.	A. Check cable connections or replace cables.

LIMITED WARRANTY

THIS PRODUCT IS WARRANTED UNDER THE FOLLOWING CONDITIONS:

1. PRODUCT IS PURCHASED THROUGH AN AUTHORIZED SUMO ELECTRIC CO. LTD. 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 ELECTRIC CO. LTD. 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 ELECTRIC CO. LTD. FACTORY WIRED PRODUCTS IS 1 YEAR FROM THE DATE OF PURCHASE BY THE ORIGINAL OWNER COVERING BOTH PARTS AND LABOR. TRANSPORTATION CHARGES TO AND FROM THE DEALER OR FACTORY ARE EXCLUDED.
6. WARRANTY ON ALL SUMO ELECTRIC CO. LTD. PRODUCTS USED IN ANY OTHER FASHION THAN STATED ABOVE SHALL REDUCE THE WARRANTY TIME PERIOD AND OTHER CONDITIONS TO NEGOTIATIONS BETWEEN SUMO ELECTRIC CO. LTD. AND PROSPECTIVE USER.
7. SUMO ELECTRIC CO. LTD. GUARANTEES THAT ITS PRODUCTS ARE FREE FROM DEFECTS IN MATERIALS AND/OR WORKMANSHIP FOR THE REQUIRED WARRANTY PERIOD.
8. THIS WARRANTY IS NOT VALID UNLESS ACCOMPANIED BY SALES SLIP VALIDATION OR PROPERLY STATED INVOICE (COPY). THIS WARRANTY IS NOT TRANSFERRABLE.
9. THIS WARRANTY IS VALID ONLY IN THE UNITED STATES. SERVICE IN OTHER COUNTRIES WILL BE PROVIDED BY THE EXCLUSIVE SUMO ELECTRIC CO. LTD. 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.

SHIPPING ADDRESS SUMO PRODUCTS GROUP
21300 SUPERIOR ST.
CHATSWORTH, CALIF. 91311
(818) 407-2426

TELEPHONE (219) 901-5800

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