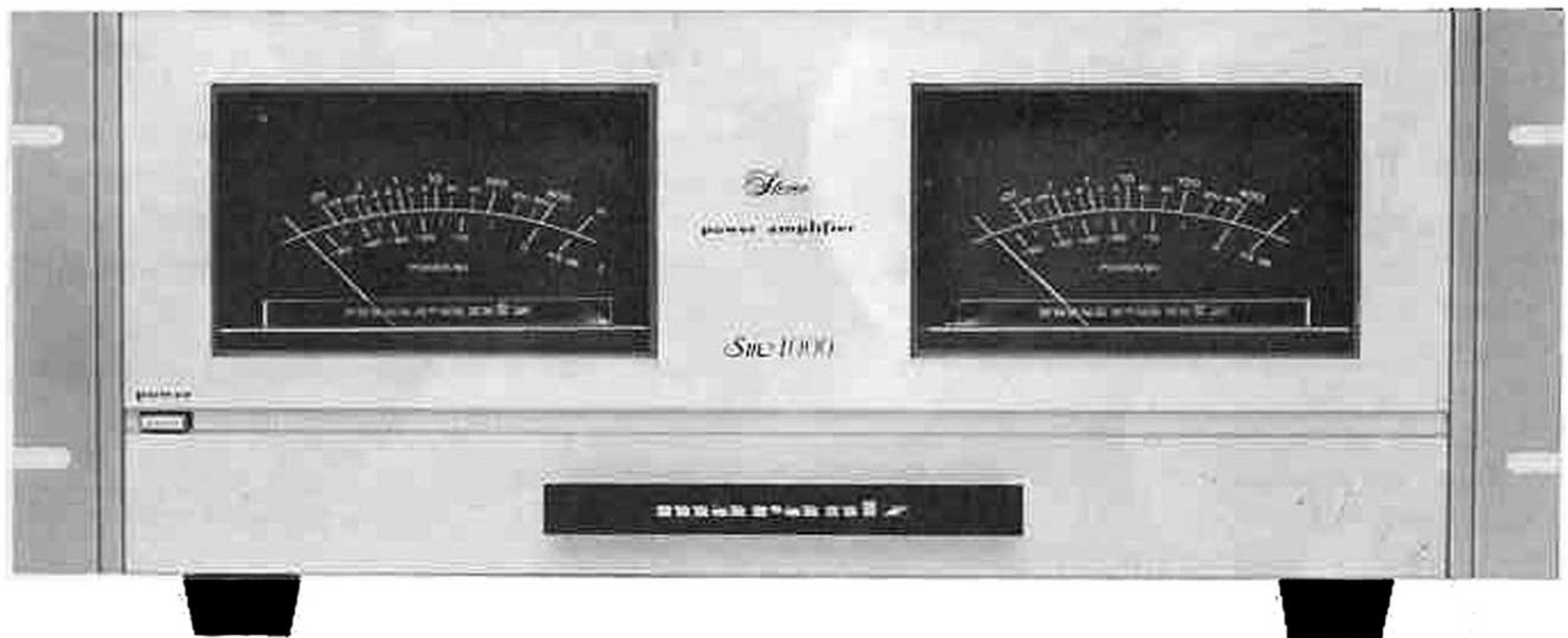


Model SM-1000

OWNER'S MANUAL

STEREO POWER AMPLIFIER



marantz®

MARANTZ CO., INC. 20525 NORDHOFF STREET, CHATSWORTH, CALIFORNIA 91311
A WHOLLY-OWNED SUBSIDIARY OF SUPERSCOPE INC., CHATSWORTH, CALIFORNIA 91311

FOREWORD

Congratulations! Judging by the stereo equipment you now own, you are no amateur when it comes to audio. Nevertheless, we urge you to study these instructions carefully. Our step by step procedures will assure you of receiving maximum enjoyment from the superb performance the Model Sm1000 is capable of giving.

To provide a means for readily distinguishing between references to the controls and connection facilities of Model Sm1000 and those of the other system components, **BOLDFACE** type is used for references to the Model Sm1000. Notice that the spelling and abbreviations of all such markings appear exactly as lettered on the front and rear panels of the instrument.

Your Marantz product has been specially prepared to comply with the household power and safety requirements that exist in your locale. Please check the alphabetical suffix following the serial number of your Marantz product. Refer to the following table to note the differences that exist between your unit and the unit pictured and described in this manual.

- C — Operating Voltage: 120V AC
Unit cannot be converted to be operated on other voltages.
- E — Operating Voltage: 220V ~
There is AC convenience outlet on the rear panel. A ground post is provided for connection to a bonified earth ground.
- P — Operating Voltage: 120V AC.
- T — Operating Voltage: 240V AC.

Should it become necessary to convert this unit to a different operating voltage, please note that a proper fuse must be substituted for the one currently in the unit.

AFTER UNPACKING

The original packing material is specifically designed to protect the unit, and replacement packing material from Marantz is expensive. Therefore, it is advisable to retain all original packing material to prevent damage should you wish to transport or ship the Model Sm1000 in the future (refer to page 9 for repacking and shipping instructions). Be careful that you do not inadvertently throw away or lose the parts packed with the unit.

Please inspect your Stereo High Power Amplifier carefully for any signs of shipping damage. Our very strict quality control and professional pride ensure that each amplifier left the factory in perfect condition. If the unit is damaged or fails to operate, immediately notify your dealer. If the unit was shipped to your directly, notify the transportation company without delay. Only you, the consignee, may institute a claim against the carrier for shipping damage. Save the carton and all packing material as evidence of damage for their inspection. Should assistance be required, the Marantz Company will cooperate fully in assisting your claim. We strongly recommend that you retain a copy of your sales receipt in order to prove date of purchase in case warranty service is required.

PURCHASER'S RECORD

MODEL NO. _____
(Located on Front of Unit)

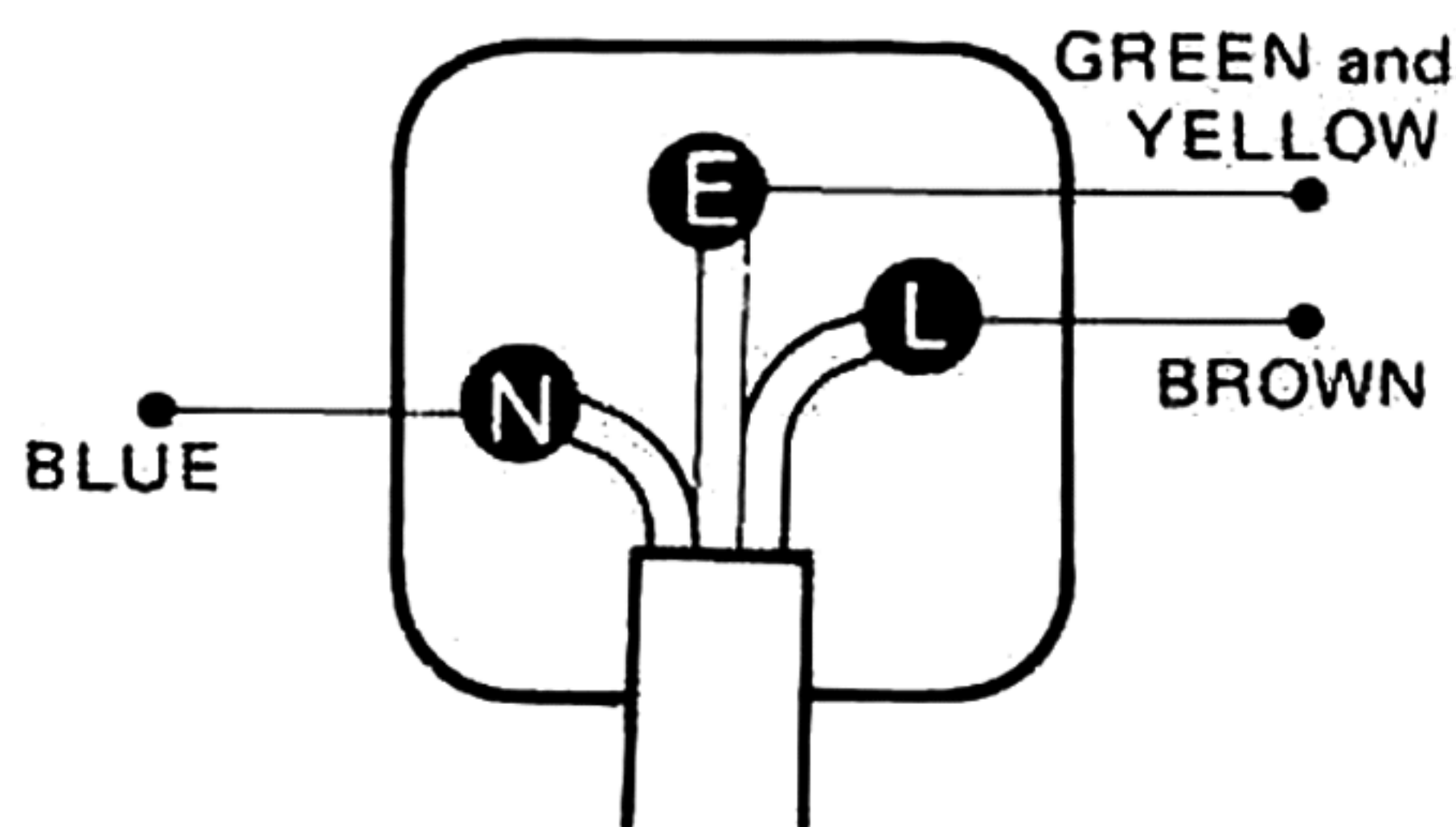
SERIAL NO. _____
(Located on Rear of Unit)

Cost _____ Date _____

This information becomes your permanent record of a valuable purchase. It should be filled in promptly then kept in a safe place along with your purchase receipt to be referred to as necessary for insurance purposes or when corresponding with Marantz .

IMPORTANT

WHEN SEEKING WARRANTY SERVICE, IT IS THE RESPONSIBILITY OF THE CONSUMER TO ESTABLISH PROOF AND DATE OF PURCHASE. (YOUR PURCHASE RECEIPT OR INVOICE IS ADEQUATE FOR SUCH PROOF.)



IMPORTANT

The wires in this main leads are colored in accordance with the following code:

Green-and-yellow — Earth = E
 Blue — Neutral = N
 Brown — Live = L

As the colours of the wires may not correspond with the terminal identification in your plug, proceed as follows:

- ★ Connect brown wire to the terminal marked "L" or coloured brown or red.
- ★ Connect blue wire to the terminal marked "N" or colored blue or black.
- ★ Connect green-and-yellow wire to the terminal marked "E" or by safety earth symbol \equiv or coloured green-and-yellow.

For 13A plugs, conforming to BS 1363, use a 3A fuse.

For other plugs, use a 5A or lower fuse in the plug or adaptor or at the distribution board.

WARNING
THIS APPARATUS MUST BE
EARTHED

FEATURES

- **400W x 2, High Power Output Reproducing Dynamic Marantz Sound**

The first stage and the second stage of the power amplifier are push-pull differential amplifiers using dual transistors. They are coupled via an emitter follower buffer amplifier. Thus, all the circuits from the input to the final stage are pure complementary push-pull circuits. The final stage uses super linear 3-stage Darlington construction with three circuits each of which consists of three drivers and power transistors connected in parallel are connected in parallel. A total of 36 power transistors are used for both channels and they are mounted on a TUNNEL HEAT DISSIPATOR which achieves highly efficient heat dissipation.

- **Large Size Logarithmic Compression Type Peak Power Meters**

Model Sm1000 is equipped with large size power meters for checking output levels and balance. These power meters detect peak values of output power and they are graduated in rms values. Meter readings indicate output power into an 8Ω load. The scale is subject to logarithmic compression, so that a wide range of power can be read without switching the range. These meters have a flat frequency response over a wide frequency range and can follow music signals with rapid rises. The meters indicate R.M.S.

- **Two Highly Stable Stacked Power Supplies Exclusively for Each Channel**

Each channel is provided with an exclusive power transformer, resulting in stable characteristics. The primary lines of both transformers are wired independently, and therefore, if one channel is defective, the other channel can operate without any problem.

- **Protective Circuits Causing No Degradation of Music**

The overload protection circuit detects excessive output current and voltage to keep the operation of the drive transistors within the preset area of safety operation. This protection circuit has fast response so that reproduced programs are not degraded even if the circuit operates.

- **DC Amplifier with Low TIM Achieving High Fidelity Waveform Transmission**

DC amplification achieves high fidelity waveform transmission and at low frequencies, there are no phase shift. To protect speaker systems from being damaged by erroneous connection, pop noise, etc., **INPUT COUPLING** selectors are provided.

- **Input Jacks**

Figure 1 shows the positions of the input jacks and speaker terminals. All connections must be done with the power off. For input, **RCA** pin jacks and **CANNON** type connectors are provided. In a **CANNON** type connector, Pins 1 and 2 are the cold (—) side and Pin 3 is the hot (+) side. The input level required for the Sm1000 to output the rated power is 2.83V_{rms}.

- **Speaker Output Terminals**

The Sm1000 has three systems of output terminals; **DIRECT**, **SUB1** and **SUB2**. The SUB1 and SUB2 systems are selected with the **SUB SPEAKER** selectors in the control box. From the **DIRECT** terminals, signals which do not pass through the **SPEAKER** selectors can be obtained.

- **Muting**

The main block of Sm1000 is subject to electronic muting for about 2 seconds after the power is turned on until the circuits are stable. The time delay circuit works on the input signals for about 7 seconds until the precontrol-amplifier becomes stable.

- **Circuit (Power Amplifier Block)**

All stages of the power amplifier have push-pull structure, ideal for audio amplifiers. The input signals are applied to the first stage differential cascode amplifier, then transmitted to the second stage differential amplifier via the buffer amplifier. The second stage output drives the final power amplifier stage. The power amplifier is a three stage Darlington amplifier. 18 power transistors with a P_D of 200W are used for each channel. They are operated in the area where h_{fe} has a good linearity. To improve reliability, glass epoxy double-sided through-hole printed circuit boards are used. For important points, dual transistors and diode arrays which have uni-

form temperature and electrical characteristics are used. These parts are mounted symmetrically on the printed circuit board to balance their electrical and temperature characteristics. No active measures are taken against DC drift, but little DC drift can be measured.

- **Circuit (Power Supply Block)**

Two monaural amplifiers are built in the Sm1000, therefore, two independent power supplies are provided. An 800VA cut-core transformer is used for each power supply. Two carefully selected 20000 μ F, 125V audio capacitors are used in each power supply to feed the power stably to the final stage. To improve the characteristics at the time high power is output, a voltage which is higher than that fed to the final stage is fed to the main voltage amplification stage. The primary circuits of the transformers are also independent of each other. Therefore, even if a fuse of one channel blows, the other channel can be used normally. The cooling fan, relays and meters are automatically connected to the normal channel power supply.

- **Circuit (Speaker Protector Block)**

No speaker protection relay is used in the Sm1000, so that the output signals are directly fed to the speaker systems. Any factor which degrades sound has been eliminated. If a DC component appears at a speaker terminal, the SCR clover leaf circuit detects the DC component, makes the primary fuse blow and discharges the energy in the power supply capacitors. This circuit operates faster and more securely than any relay protectors to protect the speakers.

■ **Protection Circuit**

The protection circuit built in the Sm1000 operates in the following cases and protects the amplifier and speakers.

1. When a large pop noise is input.
2. When a very low frequencies from DC to 2.5 Hz are applied to the input jacks in the DC mode and a voltage of $\pm 3V$ or more appears at the speaker terminals.

When the protection circuit operates, the protection fuses on the rear panel blow. In this case, turn the **POWER** switch off and check the cause. Take appropriate countermeasures before turning on the power again. The fuse used must be of the specified type. Any fuse other than the specified type may cause trouble and is not guaranteed. If one of the protection fuses blew, the other channel can be used normally.

■ **Keep Good Ventilation!**

The air intake is located on the left side panel and the exhaust port on the right side panel. Therefore, leave sufficient space around the both sides of the amplifier for ventilation.

■ **Keep the Air Filter Clean**

Periodically clean the air filter located at the left rear of the top panel. The cleaning interval depends on the ambient conditions. Clean it at frequent intervals until you have established a suitable waiting period.

REAR PANEL CONNECTIONS

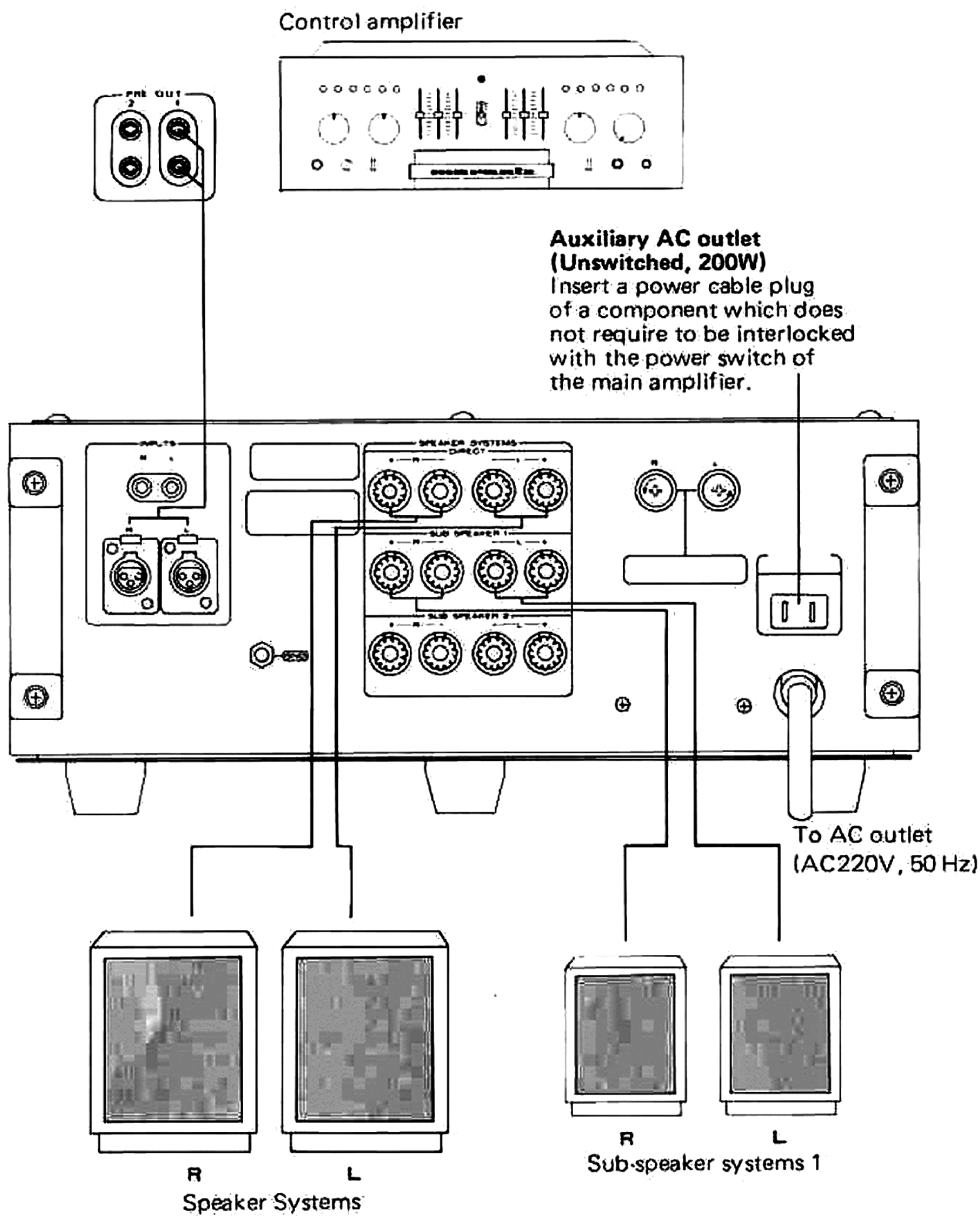


Figure 1.

CONNECTION OF SPEAKER SYSTEMS

SPEAKER SYSTEM

Use cables which have low DC resistance and inductance to connect the speaker systems. Their length should be as short as possible.

If the length of any speaker cable exceeds 10m, use cables designed as speaker cables for both speaker systems.

Remove about 10mm of the covering of one end of the cable and twist wires to prevent them from becoming loose. Check the polarity which is generally indicated by color or a mark on the covering or plating the conductors. To obtain better separation and frequency response, the phase of the speaker systems must be correct, that is, the "**POSITIVE**" terminal of the speaker system must be connected to the (+) terminal of the Sm1000 and the "**NEGATIVE**" or "**COMMON**" terminal of the speaker system to the (—) terminal of the Sm1000.

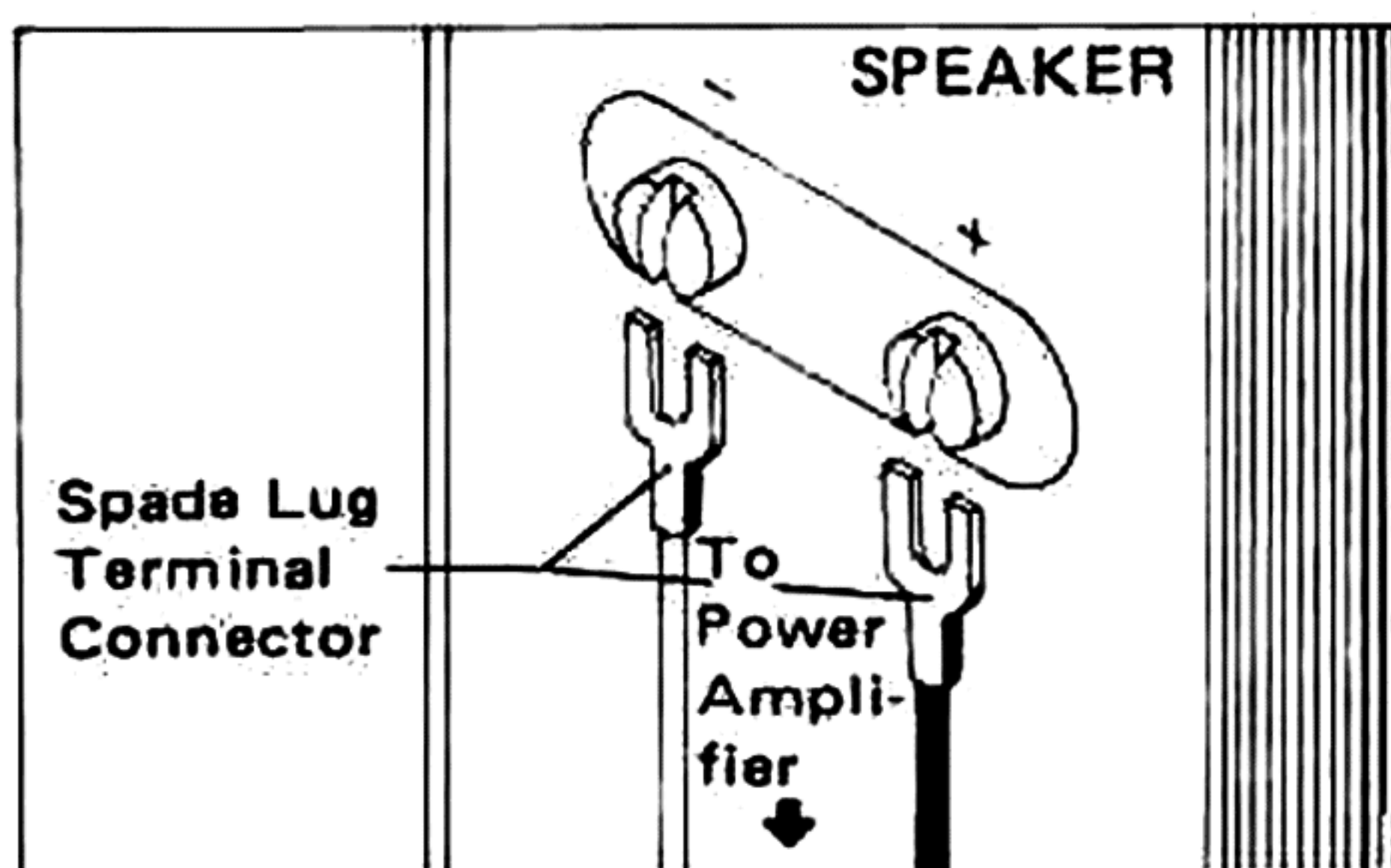
When your speaker system employs screw type terminals, it is recommended to attach a solderless U-lug to the ends of the cables. Refer to the below figure.

* Using a pair of speaker systems

Connect the speaker systems to the **DIRECT** terminals from which the output signals are output directly from the power amplifier, not through the **SPEAKER** selector.

Using two pairs of speaker systems

When each pair of speaker systems is to be used independently, connect them to the **SUB1** and **SUB2** output terminals. When two pairs of speakers are sometimes used together, connect the main speakers to the **DIRECT** terminals and the sub-speakers to the **SUB1** or **SUB2** terminals. (When two or three pairs of speaker systems are used together, the resultant impedance must not be lower than 4Ω.)



PHASE OF SPEAKERS

To check that the phase of the left and right speaker systems is correct, take the following steps.

1. Perform connection required to reproduce a program source from the speaker systems.
2. Place the speaker systems in the center of the room.
3. Enhance bass frequencies and lower the overall volume in the pre-amplifier. Play a record (or other source) in the monaural mode. Adjust the **BALANCE** control so as to balance the sound volume heard from both speaker systems.
4. Place the left and right speaker systems 16 cm apart. Bring your head close to the speaker systems and listen to the low frequencies.
5. Turn the power off. Reverse the connection of the right speaker system. Turn the power on and listen to low frequencies again. When the volume of low frequencies is higher than that heard in Step 4, the current connection is correct. When it is lower than before, turn the power off and return the connection to the original state.
6. When an additional pair of speaker systems is used, the phase relation between all speaker systems must be checked. Adjust the **BALANCE** control so that only left or right channel sound can be heard. In necessary, reverse the connection of the additional speaker system. Do not change the connection of the existing speaker systems.
7. After all the speaker systems are phase-adjusted, mark the cables and terminals so that no adjustment will be required in the future.

When a speaker system with a power supply such as an electrostatic speaker system is connected to Model Sm1000, pay attention to connection: the common terminal of such a speaker is connected to the ground of the power supply of the speaker system via a capacitor.

To prevent distortion and overload, be sure to connect the (—) terminal of the Sm1000 to the "**COMMON**" terminal of such a speaker system.

Note: Never connect the speaker terminals of one channel in parallel to those of the other channel. Any damage due to this connection is not guaranteed.

FRONT PANEL FEATURES

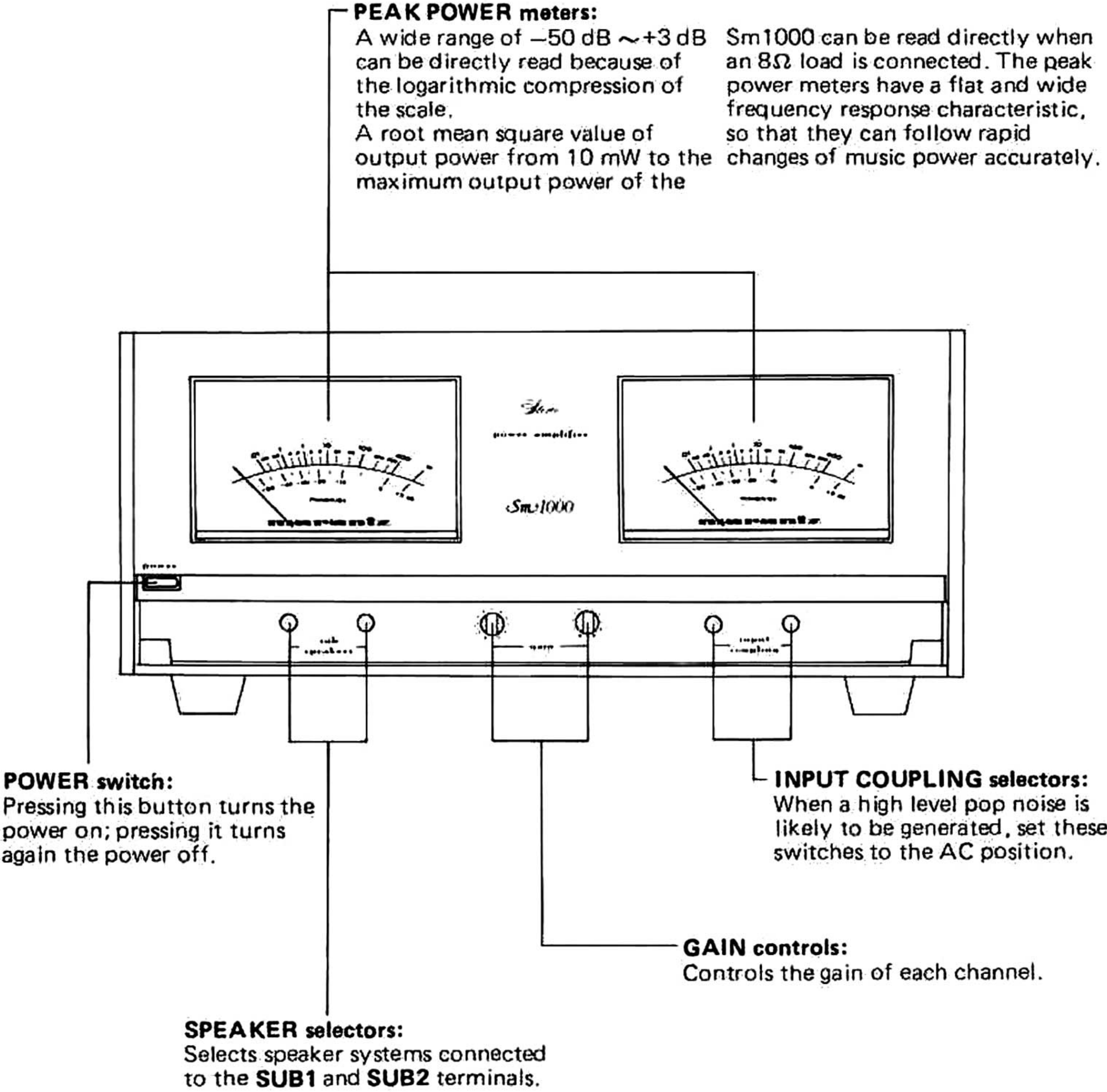


Figure 2.

SIMPLIFIED OPERATING PROCEDURES

Check connections before taking the following steps.

- Step 1: Set the **INPUT COUPLING** selectors in the control box to the AC position.
- Step 2: Set the **GAIN** controls in the control box to the minimum.
- Step 3: Set the volume control of the preamplifier to the minimum.
- Step 4: Turn on the power of the Sm1000 and then turn the power of the preamplifier on.
- Step 5: Increase the **GAIN** controls of the Sm1000 5 ~ 7 seconds after the power has been turned on. Generally, the **GAIN** controls are set to maximum. In case of a multi-amplifier system, adjust the gain appropriately. The Sm1000 is provided with a protection circuit which cut off the input signals until the circuits become stable. Normally, 5 ~ 7 seconds is necessary for the circuits to become stable.
- Step 6: Gradually increase the volume control of the preamplifier. When you are familiar with relationship between the sound volume and the gain control positions, it is not necessary to set the **GAIN** controls of the Sm1000 to minimum before turning the power on. Be careful not to input pop noise to the Sm1000.
- Step 7: After you confirm that no pop noise affecting the speaker systems is generated when power is switched on and off, set the **INPUT COUPLING** selectors to the DC position.

IS IT REALLY TROUBLE?

If trouble is not solved after taking the following measures, please contact your Marantz dealer, or service center.

When the amplifier does not work even if the power switch is turned on:

- Is the power cable plug securely inserted to the AC outlet?
- Is the preamplifier connected correctly?
- Is the fuse blown?

When either of channels does not function:

- Is any of speaker cables and shielded cables short-circuited or broken?
- Are speaker cables and shielded cables connected correctly?
- Is the balance control of the preamplifier turned fully to the left or right?
- Is the **GAIN** control turned fully counter-clockwise?

When no sound is heard although speaker cables and shielded wires are normal, take the following procedures.

1. Turn the power of the preamplifier off. Exchange the right and left shielded cables at the preamplifier. When the channel from which no sound is heard changes, replace that channel's shielded cable with a new one.
2. When the same channel still does not function after Step 1, turn the power off and change the speaker cables at the power amplifier.

When the same speaker still does not function, the speaker system or the speaker cable may be defective. When the other speaker does not function, the amplifier may be defective.

MAINTENANCE

CLEANING

The satin gold anodized finish of the knobs and heavy aluminum front panel will last indefinitely with proper care and cleaning. **NEVER** use scouring pads, steel wool, scouring powders, or harsh chemical agents, such as lye solution. These will mar the finish. Clean with a soft, lintfree cloth or cotton swab slightly dampened with a mild solution of detergent and water.

FUSE REPLACEMENT

Your Amplifier is protected by an AC line fuse of the proper type and rating to suit the voltage available in your locale. In the event the fuse opens, replace it **ONLY** with a fuse of the same type (Normal Blow Type) and rating. Replacement with a fuse of a higher rating will not protect the instrument and will void the warranty.

REPAIRS

Only the most competent and qualified service technicians should be allowed to service your amplifier. The Marantz Company and its factory-trained warranty station personnel have the knowledge and special equipment needed for repair and calibration of this precision instrument. In the event of difficulty, refer to the list of Authorized Marantz Service Stations

packed with your amplifier or write directly to the location listed below for the name and address of the Marantz Authorized Service Station nearest your home or business. Please include the model and serial number of your unit together with a full description of what you feel is abnormal in its behavior.

REPACKING FOR SHIPMENT

Should it become necessary to repack your Amplifier for shipment to the factory, to an authorized service station, or elsewhere, please observe the following precautions:

- a. Pack the unit carefully, using the original material.
PLEASE NOTE that if you have discarded, lost, or damaged the packing material, new packing material may be obtained by writing to the Marantz Technical Service Department. The carton, its fillers, and packing instructions will be returned to you at a nominal charge.
- b. Ship via a reputable carrier (do not use Parcel Post) and obtain a shipping receipt from the carrier.
- c. Insure the unit for its full value.
- d. Be sure to include your return address on the shipping label.

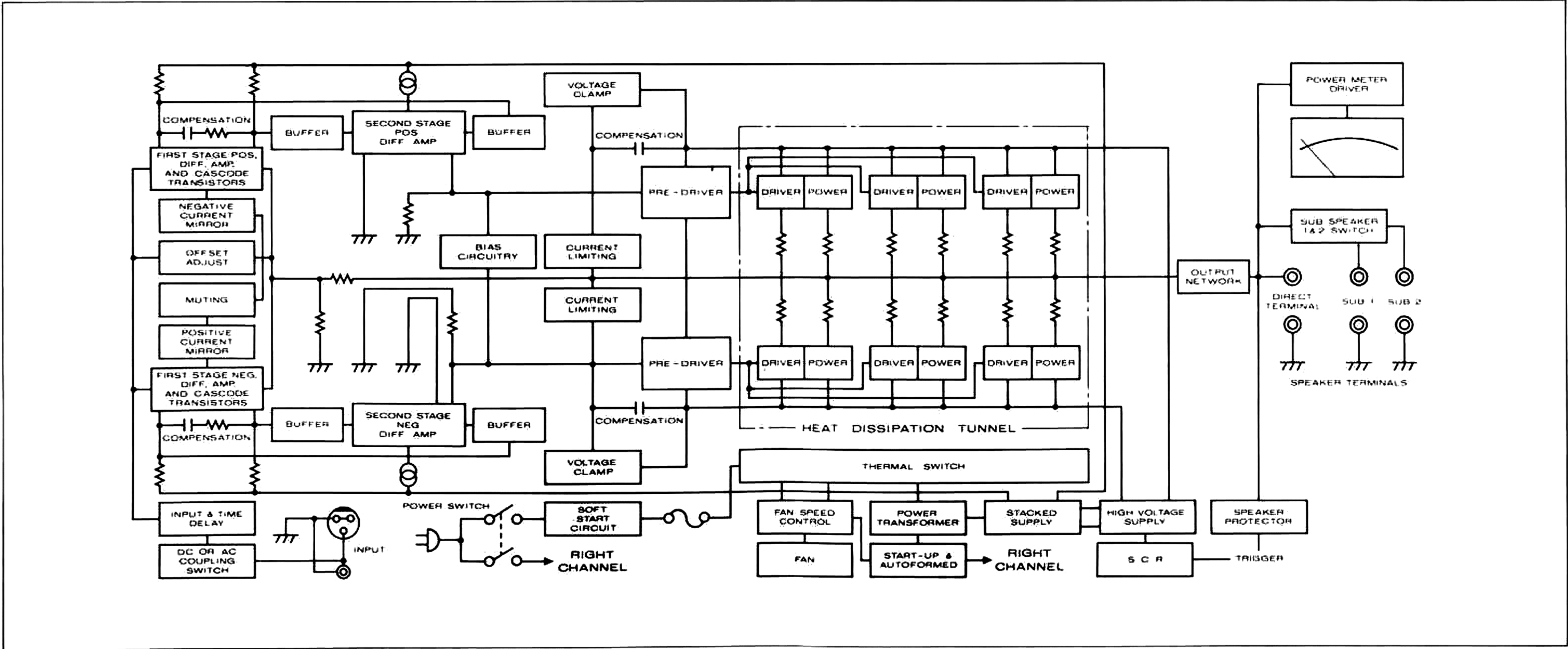
Marantz Company, Inc. National Service Dept. P.O. Box 577, Chatsworth CA 91311, U.S.A.	Marantz Germany GmbH Max-Planck-Straße 22, D-6072 Dreieich West Germany	Marantz Audio UK, Ltd. 203, London Road STAINES, Middlesex United Kingdom	Marantz Norske A.S. Brogaten 1 Oslo 1 Norway
Superscope Canda, Ltd. 3710 Nashua Drive Mississauga, Ontario Canada L4V 1M5	Marantz Europe, S.A. 326, Avenue Louise Boite 32 1050 Brussels Belgium	Superscope Australasia 32 Cross Street Brookvale, N.S.W. 2100 Australia	
Marantz France 4 Rue Bernard Palissy 92600 Asnieres France	Marantz Belgium 45 Rue Auguste Van Zande 1080 Brussels Belgium	Marantz Svenska A.B. Franzengatan 6 10425 Stockholm Sweden	

SPECIFICATIONS

Rated output (20 Hz ~ 20 kHz, both channels)	400W x 2 (8Ω)
Total harmonic distortion (20 Hz ~ 20 kHz, 8Ω load)	0.015%
Inter-modulation distortion	0.015%
Frequency response (20 Hz ~ 20 kHz)	+0, -0.2 dB
(+0, -1 dB)	DC ~ 100 kHz
Input sensitivity and impedance	2.83V/27 kΩ
Damping factor (8Ω load, 1 kHz)	300 or more
Others	
Power supply	AC 220V 50 Hz
Power consumption	985W
Dimensions	438 mm(W) x 178 mm(H) x 550 mm(D)
Weight	43 kg

Specifications and appearance may be changed without notice for improvement.

BLOCK DIAGRAM



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