

Digital Processing Control Amplifier

Operating Instructions

TA-E1000ESD

WARNING

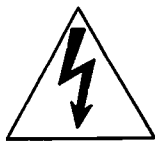
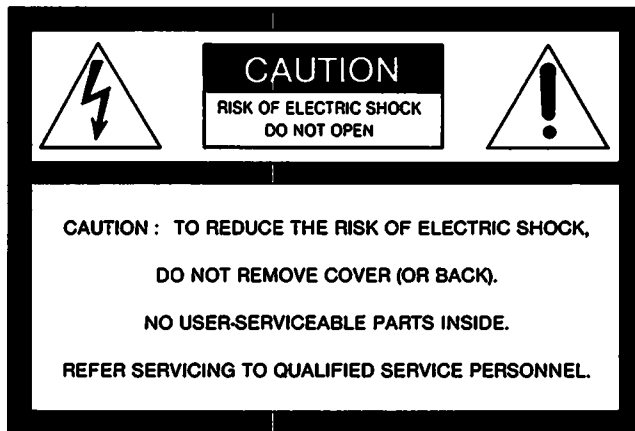
OWNER'S RECORD

The model and serial numbers are located at the rear. Record the serial number in the space provided below. Refer to these numbers whenever you call upon your Sony dealer regarding this product.

Model No. TA-E1000ESD Serial No. _____

WARNING

To prevent fire or shock hazard, do not expose the unit to rain or moisture.



This symbol is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



This symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

INFORMATION

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient the receiving antenna
- Relocate the equipment with respect to the receiver
- Move the equipment away from the receiver
- Plug the equipment into a different outlet so that equipment and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful:

"How to Identify and Resolve Radio-TV Interference Problems". This booklet is available from the U.S. Government Printing Office, Washington, DC 20402, Stock No. 004-000-00345-4.

For the customers in Canada

This apparatus complies with the Class B limits for radio noise emissions set out in Radio Interference Regulations.

CAUTION:

TO PREVENT ELECTRIC SHOCK, DO NOT USE THIS POLARIZED AC PLUG WITH AN EXTENSION CORD, RECEPTACLE OR OTHER OUTLET UNLESS THE BLADES CAN BE FULLY INSERTED TO PREVENT BLADE EXPOSURE.

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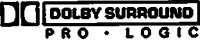
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Overview

The TA-E1000ESD is a control amplifier with a built-in digital signal processor. You can enjoy various audio and video program sources with this unit.

Digital surround system

- The TA-E1000ESD electronically reproduces the reflected sound (early reflections) and reverberative sound (reverberation) by using its digital signal processor, and allows you to obtain the acoustics of various situations.
-  * decoder reproduces the specially encoded surround sound of Dolby surround video programs.

* Manufactured under license from Dolby Laboratories Licensing Corporation. Additionally licensed under one or more of the following patents: U.S. numbers 3,632,886, 3,746,792 and 3,959,590; Canadian numbers 1,004,603 and 1,037,877.

"DOLBY" and the double-D symbol  are trademarks of Dolby Laboratories Licensing Corporation.

Digital parametric equalizer

- You can enjoy program sources with equalization curve by adjusting the level of 3 frequency bands.

Digital dynamics controller

- You can use the compressor or expander to control the dynamics:
 - the compressor compresses the dynamic range of the program source, so you can enjoy dynamic sound at small output levels.
 - the expander eliminates undesirable noise between tunes. etc.

Factory preset/user memories

- 10 recommended soundfield programs (combinations of surround, parametric equalizer, and dynamics controller settings) are preset in the factory for easy use. You can also store up to 10 settings you created in the memory.

TV/VCR control center

- You can control up to 5 VCRs, a video disc player, and a TV tuner with this unit.
- You can add sounds from various audio program sources to video programs using the "MIX" function.
- You can label to the input functions as you desire.

Built-in D/A converter

- The built-in D/A converter allows you to directly connect CD players or DAT decks with optical/coaxial digital outputs.

Programmable system commander RM-P1000

- The supplied remote commander can "learn" the various functions of other infrared type remote commanders.

Precautions

On safety

- Operate the unit only on 120 V AC, 60 Hz,
- Should any solid object or liquid fall into the cabinet, unplug the unit and have it checked by qualified personnel before operating it any further.
- Unplug the unit from the wall outlet if it is not to be used for an extended period of time. To disconnect the cord, pull it out by grasping the plug. Never pull the cord itself.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the power outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.

On operation

Before making program source connections, be sure to unplug the unit.

On cleaning the cabinet

Clean the cabinet, panel and controls with a soft cloth slightly moistened with mild detergent solution. Do not use any type of abrasive pad, scouring powder, or solvent such as alcohol or benzene.

On side panels

To detach the side panels, first disconnect the power cord from the wall outlet. Remove the screws on both sides to remove the panels and fasten the supplied screws into the holes on the main unit.

For the customers in U.S.A.

For detailed safety precautions, see the "IMPORTANT SAFEGUARDS" leaflet.

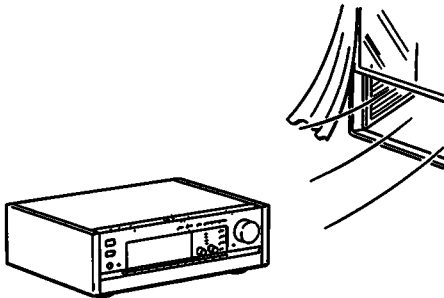
If you have any question or problem concerning your unit, please consult your nearest Sony dealer.

Installation

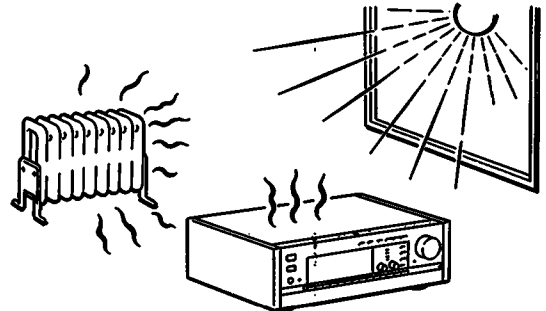
Installing the Unit

Place the unit in a location with adequate air circulation to prevent internal heat built-up in the unit.

This way



Not this way



Do not install this unit:

- near heat sources such as a radiator or air ducts.
- in a place subject to direct sunlight, excessive dust, mechanical vibration or shock.
- in an inclined position.

Do not place anything on the top of the cabinet. The top ventilation holes must be unobstructed for the proper operation of the unit and to prolong the life of its components.

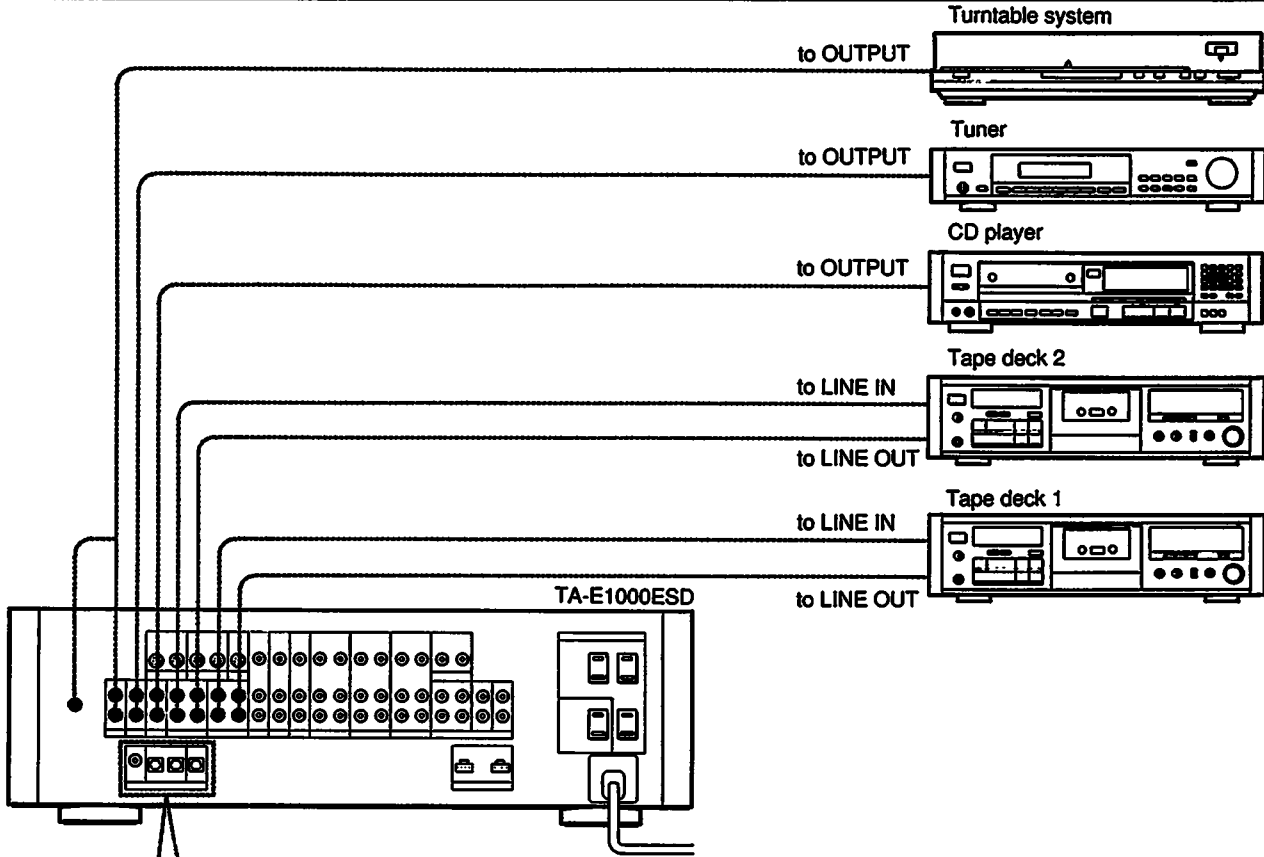
Do not throw away the carton and packing material. They will be an ideal container when the unit is transported.

Connections

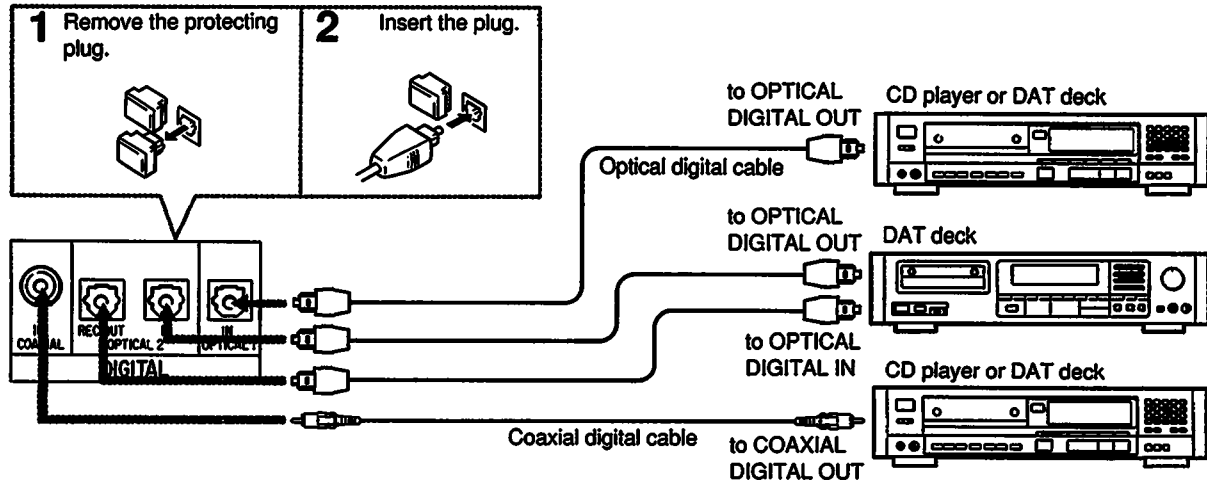
Notes on Connections

- Do not connect the power cord to an AC outlet nor press the POWER switch before making all connections.
- The cable connectors should be fully inserted into the jacks. Loose connections may cause hum and noise.
- Jacks and plugs of the connection cord are color-coded as follows:
Red jacks and plugs: for the right channel of audio signals
White jacks and plugs: for the left channel of audio signals
Yellow jacks and plugs: for video signals

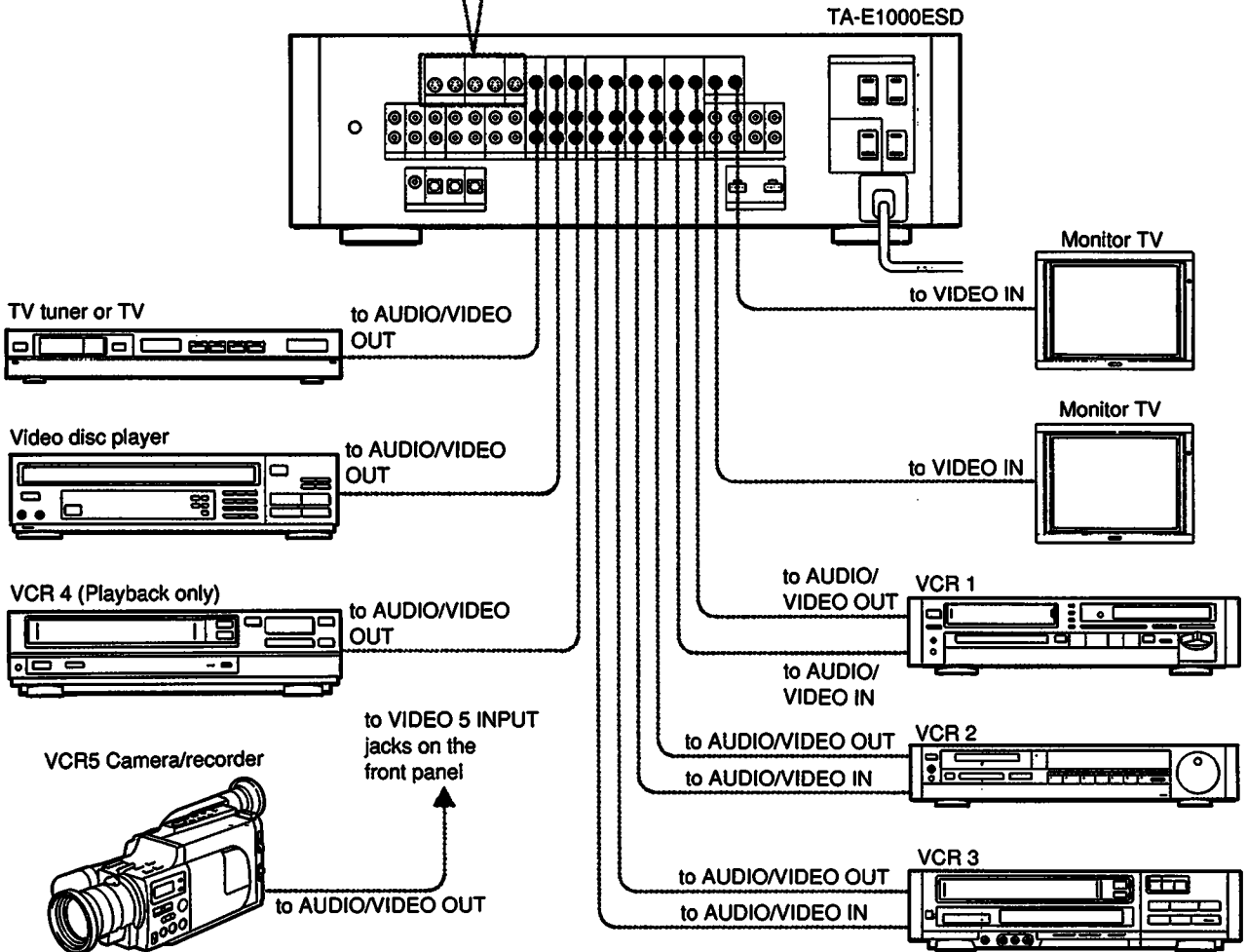
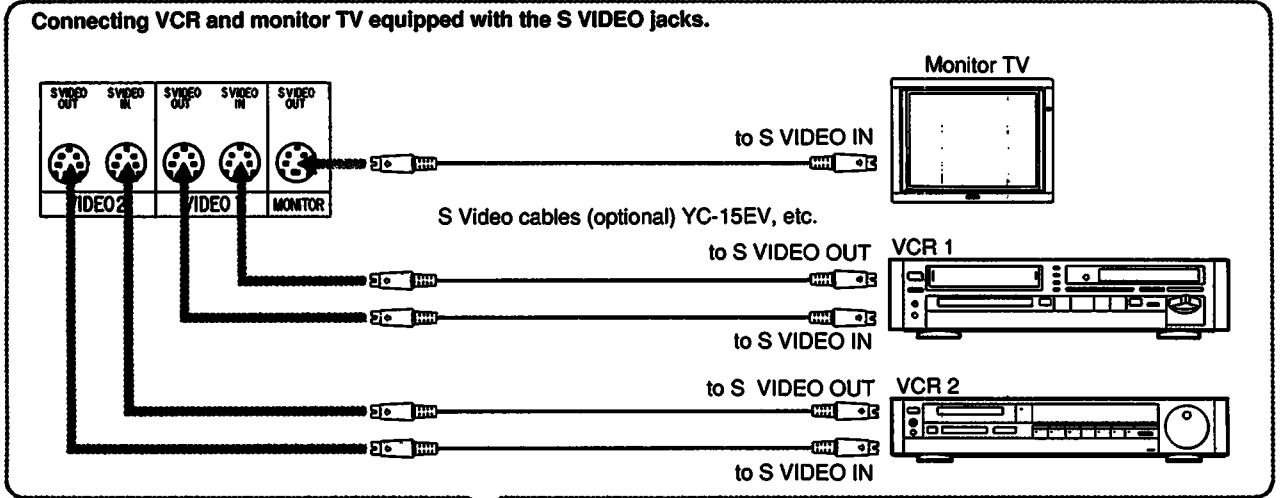
Connecting Audio Equipment



Connecting CD players or DAT decks equipped with digital input/output jacks



Connecting Video Equipment



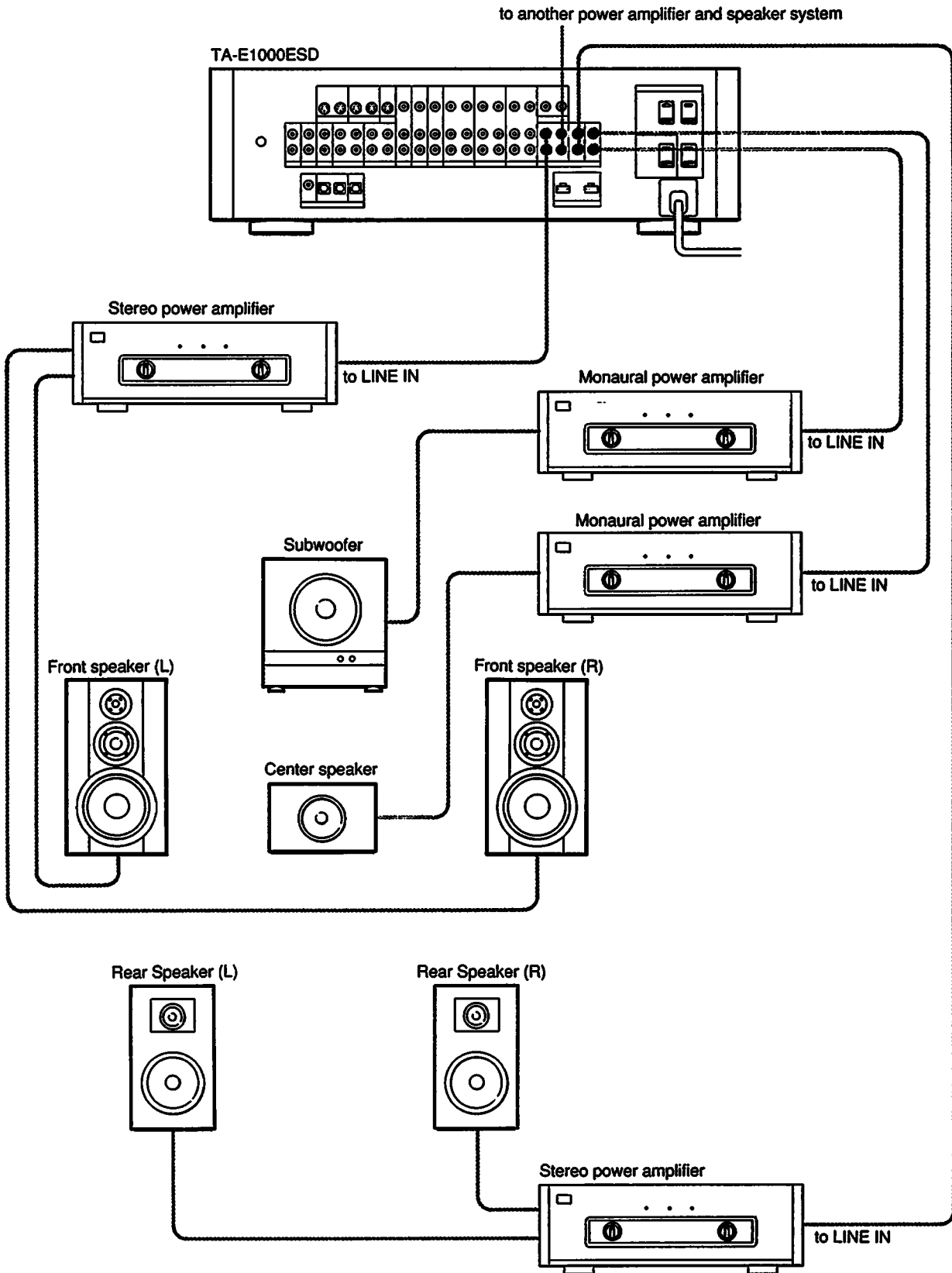
Note

The unit has independent input/output circuitries for S-VIDEO and VIDEO IN jacks. Therefore, the video signal input from VIDEO IN does not output for S-VIDEO OUT jacks, and vice versa.

Connections

Connecting Power Amplifiers

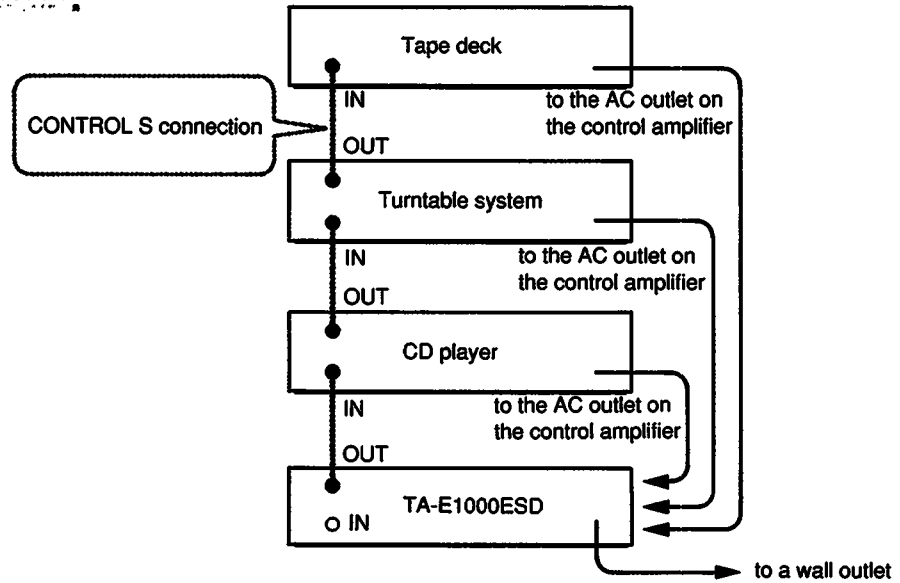
Integrated amplifiers can be used instead of the power amplifiers illustrated below.



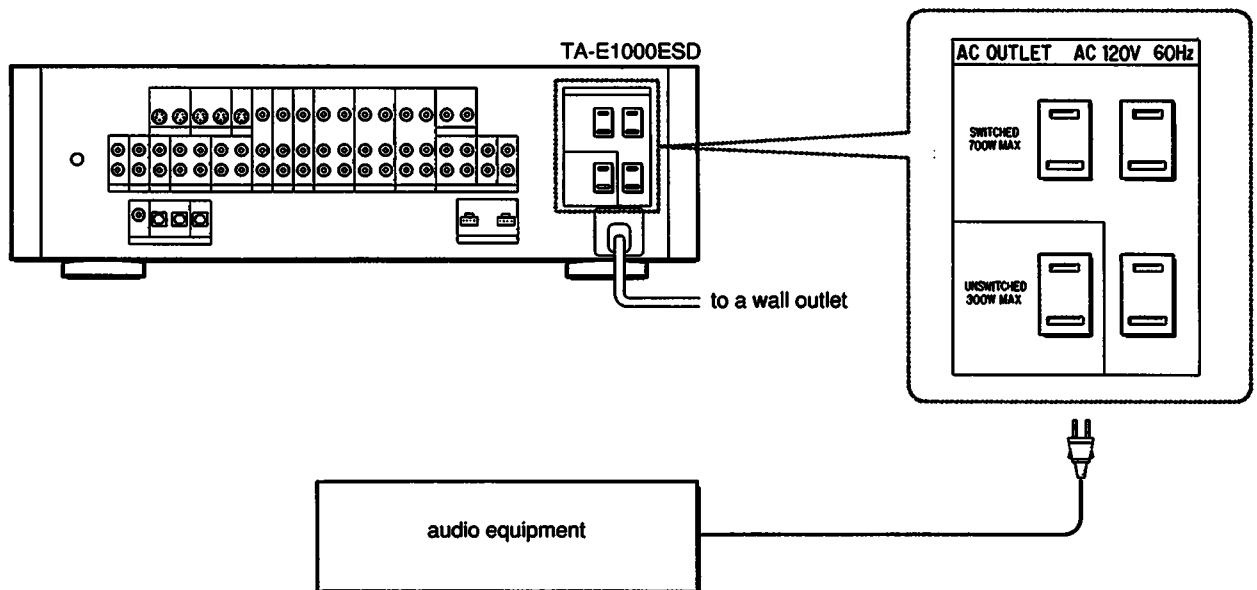
Connecting the Remote Control System

To control the equipment connected to the TA-E1000ESD with the remote commander, connect the CONTROL S OUT connector and the CONTROL S IN connector of each piece of equipment as illustrated below.

Example of audio connection



Connecting the AC Power



Notes on AC OUTLETS

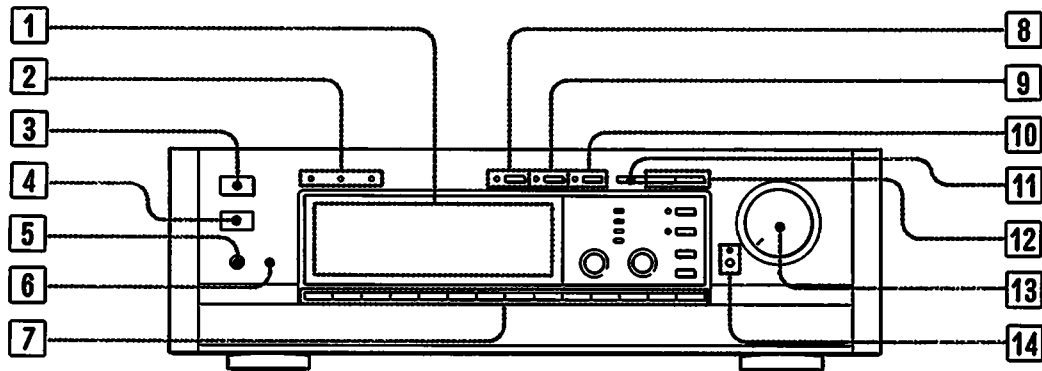
AC outlets are used to power other audio components whose total power consumption is less than the wattage indicated below.

Switched	3	700 watts max.
Total power consumption		
Unswitched	1	300 watts max.
Total power consumption		

Functions of Controls

—Refer to the pages indicated in ● for details.

Front Panel



1 Display window

2 Sampling frequency indicators

When a digital signal is being input correctly, an indicator of the sampling frequency glows (44kHz for compact disc, etc.).

3 POWER switch

Press to turn on the unit. Press again to turn off.

4 Remote control sensor

5 HEADPHONES jack

Accepts the stereo phone plug of headphones. The jack outputs the sound of front speakers only. To listen to the program source only with the headphones, turn off the power amplifiers as the unit does not turn off the line output when the headphone plug is inserted.

6 DIMMER button

Dims the brightness of the display window. Two levels of brightness can be selected.

7 Input function buttons

Selects the desired program source.

8 PARAMETRIC EQ button and indicator ●

Turns on and off the parametric equalizer. When the parametric equalizer is on, the indicator glows.

9 DYNAMICS button and indicator ●

Turns on and off the dynamics function. When the dynamics function is on, the indicator glows.

10 SURROUND button and indicator ●

Turns on and off the surround function. When the surround function is on, the indicator glows.

11 PRESET/USER select button

Selects the factory-preset program and the user program.

12 SOUNDFIELD PROGRAM buttons

Selects the desired program number.

13 MASTER VOLUME knob

Controls the audio level from LINE OUT and HEADPHONES jacks.

14 MUTING button and indicator

Press the button to mute the sound. Press again to resume the sound.

15 MAIN PARAMETER button and indicators ●, ●

Selects the pair of main parameters to be set. The indicator glows when the main parameters can be set.

16 SUB PARAMETER button and indicator ●, ●

Selects the sub parameter to be set. The indicator glows when the displayed sub parameter can be set.

17 EQ BAND select button ●

Selects the desired band of the parametric equalizer.

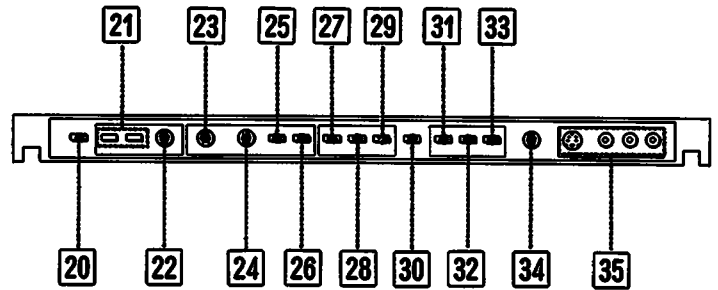
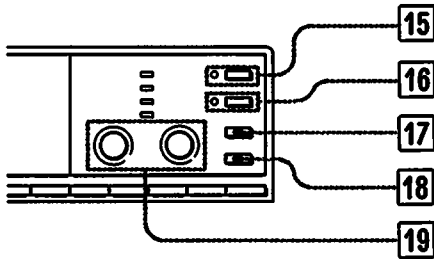
18 EQ SLOPE select button ●

Selects the desired slope (bandwidth) of the parametric equalizer.

19 DIGITAL PROCESSING CONTROL knobs and indicators

Set the parameters.

Behind the panel



20 DISPLAY MODE button

Selects the component of the display window as follows:

- Displays all information.
- Displays only the input function.
- Turns off the display and all indicators except the volume indicator.

21 DIGITAL input level buttons ⁴⁰

Adjust the input level of digital inputs. Press + until OVER appears in the display, then press - until OVER goes off.

22 ANALOG input level knob ⁴⁰

Adjusts the input level of analog inputs. Turn the knob clockwise until OVER appears in the display, then turn the knob counterclockwise until OVER goes off.

23 INPUT LEVEL control knob ¹⁸

Adjusts the input level of Dolby surround program sources.

24 INPUT BALANCE control knob ¹⁸

Adjusts the input balance of Dolby surround program sources.

25 PRO LOGIC MODE button ¹⁵

Selects the operation mode of Dolby Pro Logic surround function.

26 TEST TONE button ^{16, 17}

Turns on and off the test tone to adjust the balance among front, rear, and center speakers.

27 MEMORY button

Press when storing the parameter settings, etc.

28 ENTER button ⁴²

Stores parameter settings in the unit.

29 CLEAR button ^{25, 42}

Clears the assigned digital input to a input function button.

30 CHARACTER button ²⁴

Labels to a input function button.

31 EFFECT REC button ²⁶

Outputs analog REC OUT signals with digital sound effects. This function does not operate for digital REC OUT signals.

32 SET button ²⁷

Sets the desired program source for recording while you listen to/watch another program source.

33 CHECK button ²⁷

Displays the program source to be recorded set by the SET button.

34 BALANCE control knob

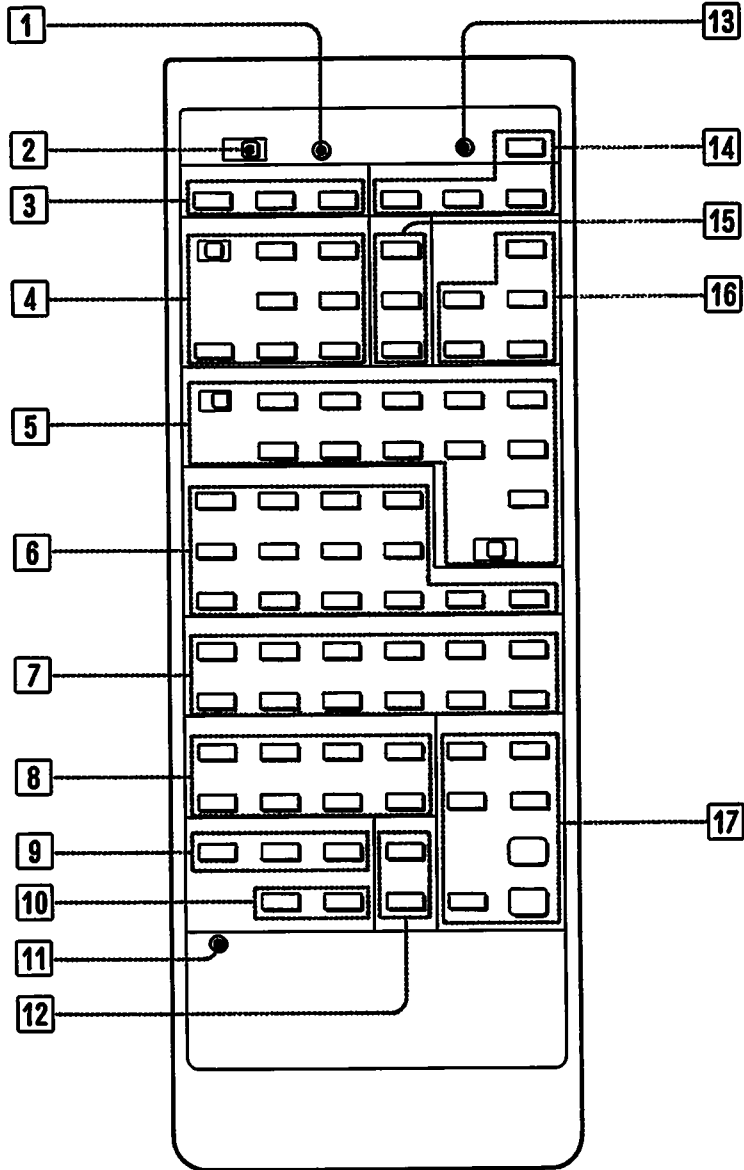
Adjusts the balance between left and right front speakers. Generally, set the knob at the center position.

35 VIDEO 5 INPUT jacks

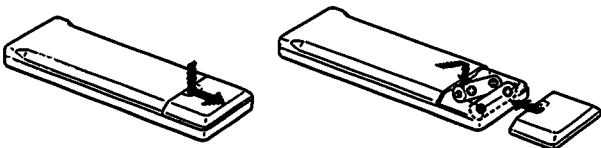
Accepts S-video/video and audio input signals.

Functions of controls

Programmable System Commander RM-P1000



Installing the batteries



To avoid damage caused by battery leakage and corrosion
When the commander will not be used for a long time, remove the batteries.

The RM-P1000 can "learn" various functions of other remote commanders which use infrared rays. When the mode selector is set to SONY STD(Sony standard), buttons on the RM-P1000 can be used to perform the functions below:

1 LEARN indicator

2 Mode selector

SONY STD: To operate the commander on Sony standard.
USER STD: To use the learned functions.
LEARN: To learn other functions.

3 AC OUTLET CONTROLLER buttons

These buttons does not operate with this unit.

4 CD player/video disc player operation buttons

CD/VDP : Selects the unit to be operated.
▶ : Play
|| : Pause
■ : Stop
◀▶, ▶▶ : AMS(Automatic Music Sensor)
◀▶, ▶▶ : Search

5 TAPE/VTR operation buttons

TAPE/VTR : Selects the unit to be operated.
▶ : Play
|| : Pause
■ : Stop
◀◀ : Rewind
▶▶ : Fast forward
● : Recording(Press both buttons for recording.)

Following buttons can be used when the TAPE/VTR selector is set to VTR.

DUAL : Selects bilingual programs.
ANT TV/VTR : Selects output signal from the antenna terminal on the VCR.
CH+/- : Selects a higher or lower preset channel.
VTR selector : Selects VTR 1,2,or 3.

6 Input function buttons

7 Soundfield program buttons

8 Parameter control buttons

MAIN PARAMETER select button
SUB PARAMETER select button
EQUALIZER BAND select button
EQUALIZER SLOPE select button
DIGITAL PROCESSING CONTROL buttons
Work as DIGITAL PROCESSING CONTROL knobs on the unit.

9 Digital sound processing buttons

PARAMETRIC EQ on/off button
DYNAMICS on/off button
SURROUND on/off button

10 DISPLAY buttons

DISPLAY MODE button
DIMMER button

11 RESET button

12 Dolby surround buttons

PRO LOGIC MODE button
TEST TONE button

13 PROGRAM CLEAR button

Clears all programmed signals.

14 POWER buttons

POWER : Turns on and off the TA-E1000ESD.
TV POWER : Turns on and off the TV.
VTR POWER : Turns on and off the VCR selected by the VTR selector switch. (usable only when the TAPE/VTR selector is set to VTR).
VDP POWER : Turns on and off the video disc player.

15 Tuner operation buttons

BAND : Selects the frequency band.
PRESET +/- : Selects a higher or lower preset number.

16 TV operation button

TV/VIDEO : Selects the input to the TV
VOL +/- buttons: Adjusts the volume.
CH +/- buttons : Selects a higher or lower preset channel.

17 Volume control buttons

MASTER VOL +/- : Adjusts the level from LINE OUT and HEADPHONES jacks.
REAR VOL +/- : Adjusts the level of the rear speakers.
CENTER VOL +/- : Adjusts the level of the center speaker.
MUTING : Mutes the output signal.

Getting Ready to Enjoy Surround Sound

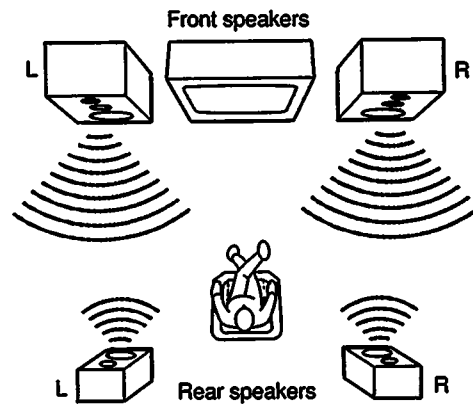
Positioning the Speakers

Where you place the speakers depends on the size and acoustics of the room where the system to be installed. The figures below are just examples.

We recommend that you experiment to find the speaker direction or location in which the most effective acoustics can be obtained.

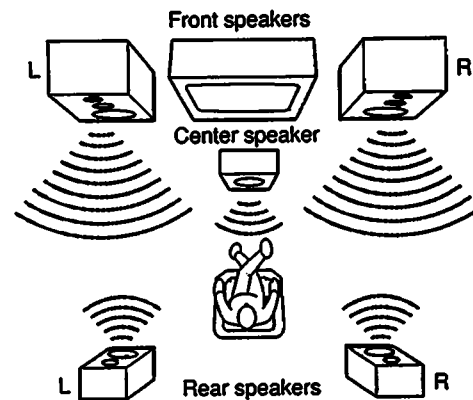
For a basic surround system

Two front and two rear speakers are necessary to enjoy the surround function.



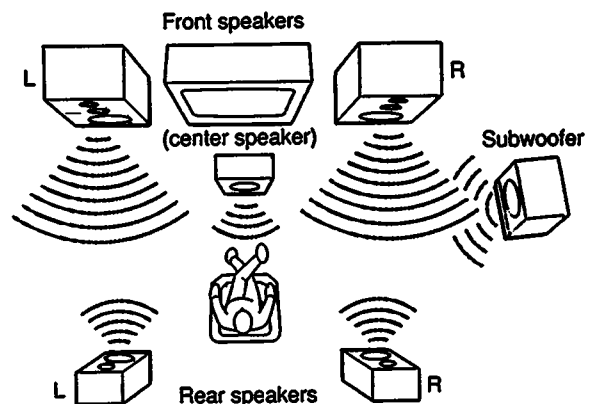
For the Dolby Pro Logic surround system

A center speaker is required in addition to the basic four speakers.



To obtain rich bass sound

Add a subwoofer to a 4- or 5-speaker system.



On speaker affinity

To enjoy the surround sound at its best, you should use the same type of speakers for the front, center and rear. If this is not possible, use speakers with the similar efficiency, impedance and sound.

Positioning a subwoofer

Position the subwoofer anywhere forward of your primary listening position. A deep bass sound is not as directional as the higher frequencies and therefore will not affect the stereo image.

Selecting the Pro Logic Mode (for Dolby Surround Mode)

In the Dolby surround mode, a speaker operation mode can be selected to match your speaker system.

Press PRO LOGIC MODE to select the appropriate mode:

NORMAL	Select this mode if you use a small center speaker. The bass sound of the center channel is output from the front speakers, as a small speaker cannot produce enough bass.
WIDE	Select this mode if you use a medium to big center speaker.
PHANTOM	Select this mode when you play back a Dolby surround program source without using a center speaker.
3ch LOGIC	Select this mode when you playback a Dolby surround program source only with the front and center speakers.
CENTER OFF	This mode is only used for adjusting the input balance in Dolby surround mode (refer to page 18).

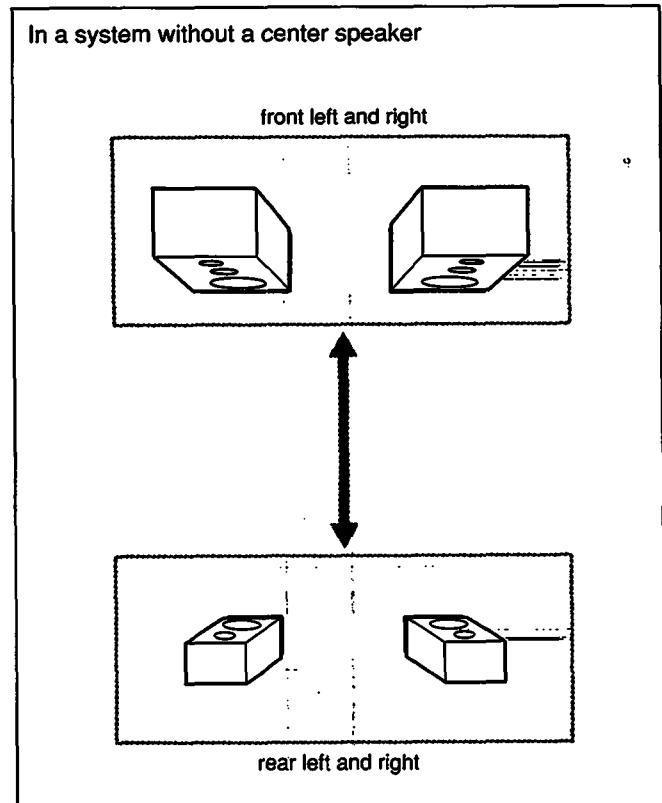
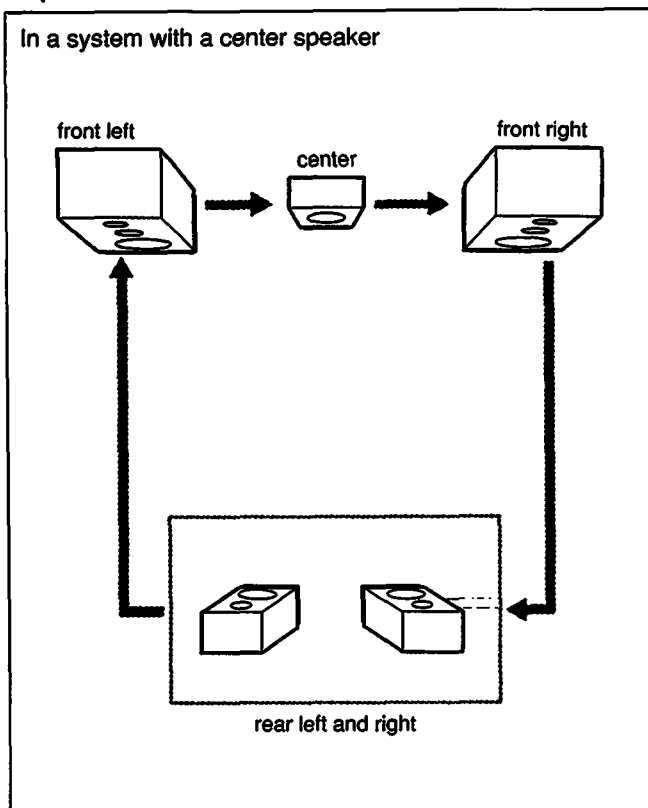
Adjusting the Speaker Volume

To enjoy the surround sound to the maximum on playing any program sources, adjust the front, rear, and center (if connected) speakers to the same volume level. The adjustment must be done with a test tone in the Dolby

surround mode, but the level once adjusted can be used for all surround modes.

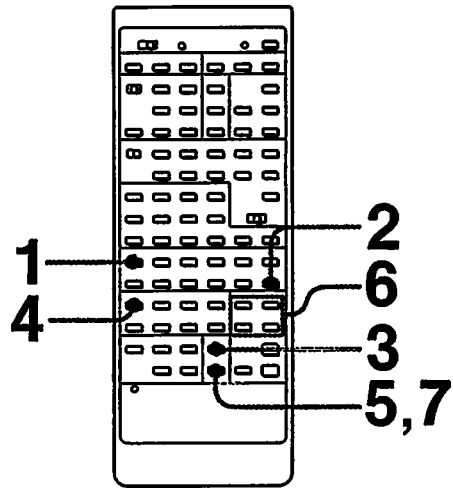
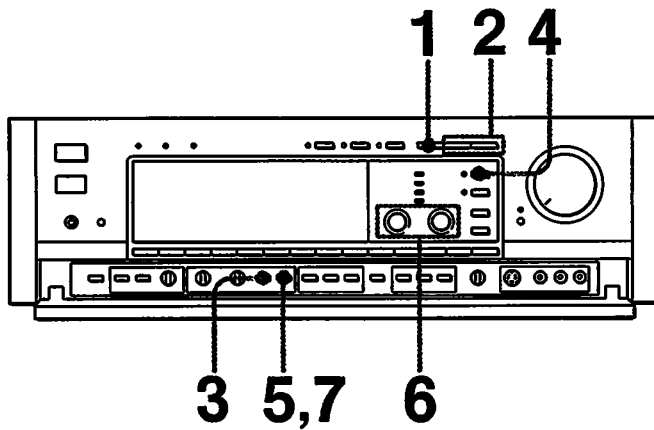
You can adjust the volume level from your listening position if you use the remote commander.

Sequence of the test tone



Getting Ready to Enjoy Surround Sound

In a system with a center speaker

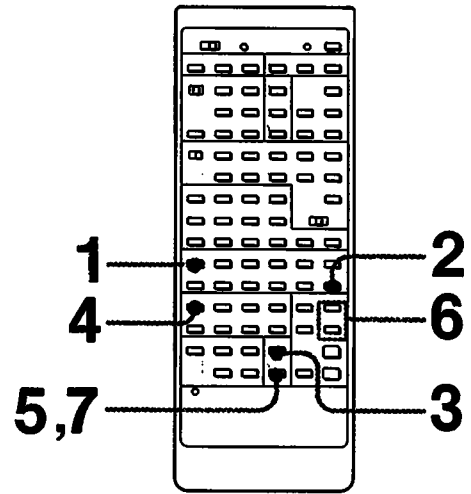
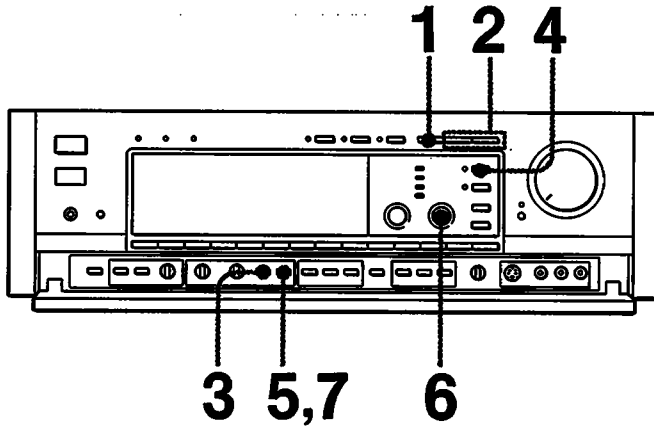


Main unit

Remote commander

	1	Press PRESET/USER until PRESET appears in the display.	
	2	Select the preset number 10 (Dolby surround mode). In other surround modes, a test tone is not output from the center speaker.	
	3	Press PRO LOGIC MODE to select NORMAL or WIDE, depending on the size of your center speaker (refer to page 15).	
	4	Press MAIN PARAMETER to select CENTER LEVEL - REAR LEVEL.	
	5	Press TEST TONE. The test tone will be output automatically from the front L, center, front R, and rear speakers (L and R) in succession.	
6 Adjust the volume level of center and rear speakers so that it will be the same as the front speakers.			
		To adjust the volume level of rear speakers	
		To adjust the volume level of a center speaker	
	7	Press TEST TONE again to turn the test tone off.	

In a system without a center speaker



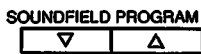
Main unit

Remote Commander



◀ **1**

Press PRESET/USER until PRESET appears in the display.



◀ **2**

Select the preset number 10 (Dolby surround mode).



◀ **3**

Press PRO LOGIC MODE until PHANTOM appears in the display.



◀ **4**

Press MAIN PARAMETER to select CENTER LEVEL - REAR LEVEL.



◀ **5**

Press TEST TONE. The test tone will be output automatically from the front speakers and rear speakers alternatively.



◀ **6**

Adjust the volume level of the rear speakers so that it is the same from both the front and rear speakers.



◀ **7**

Press TEST TONE again to turn the test tone off.

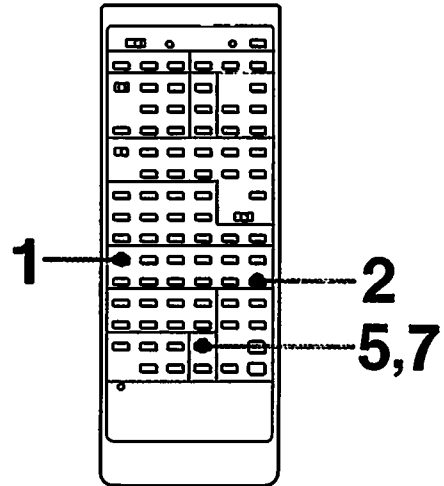
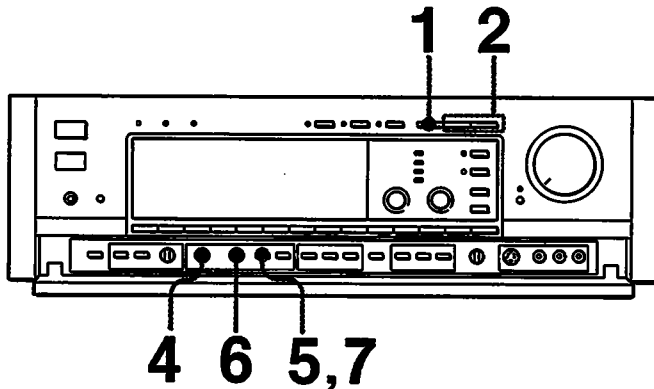


Getting Ready to Enjoy Surround Sound

Adjusting the Input Level and Input Balance (for Dolby Surround Mode)

When playing back a Dolby surround processed video tape or video disc, adjust the input level and input balance to

obtain the best surround effect.



Main unit

Remote commander



◀ 1

Press PRESET/USER until the PRESET appears in the display.



◀ 2

Select the preset number 10 (Dolby surround mode).



3

Play back the program source (refer to page 21).



◀ 4

Adjust the input level by turning INPUT LEVEL clockwise as far as possible but not so far that the OVER indicator is displayed at the highest level.



◀ 5

Press PRO LOGIC MODE until CENTER OFF appears in the display.



◀ 6

Adjust the input balance so that the audio level is minimized during the scene of conversation (where the sound is monaural).



◀ 7

Press PRO LOGIC MODE to resume the Pro Logic Mode selected on page 15.



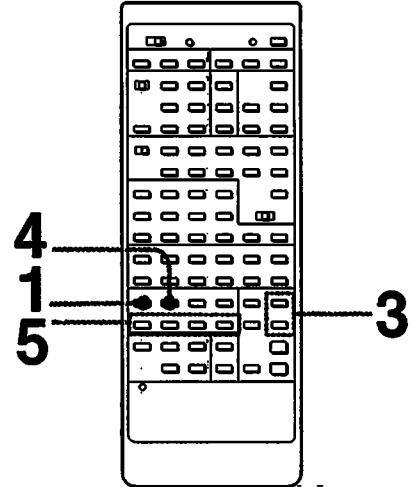
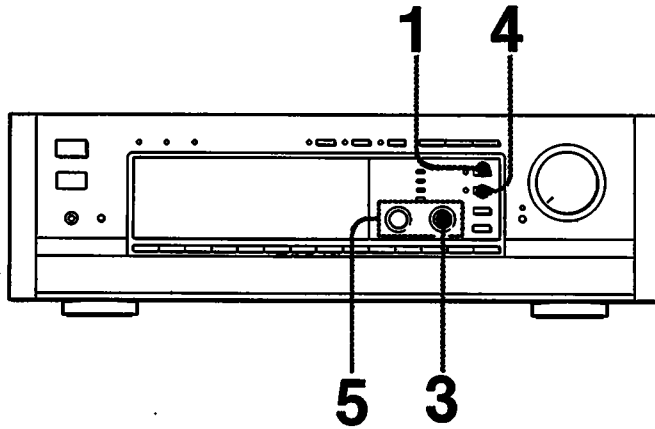
Even for video software which does not carry the or mark We recommend to adjust the input level and input balance

because some commercially available software may have Dolby surround processed sound tracks even though it is not so indicated on the package.

Adjusting the Volume Level of Rear Speakers (for Dolby Surround Mode)

When playing back a Dolby surround processed video tape or video disc, adjust the volume level of the rear

speakers to obtain the natural surround sound.



Main unit

Remote commander

MAIN PARAMETER
○ []

◀ **1**

Press MAIN PARAMETER to select CENTER LEVEL - REAR LEVEL.

▶

PARAMETER MAIN
[]

2

Play back the program source (refer to page 21).



◀ **3**

Adjust the volume level of the both rear speakers.

▶



SUB PARAMETER
○ []

◀ **4**

Press SUB PARAMETER until "Each Rear" appears in the display window.

▶

PARAMETER SUB
[]

5

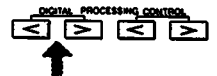
Finely adjust the volume level of each rear speaker to obtain accurate balance.



◀

To adjust the volume level of the left rear speaker

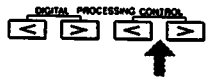
▶



◀

To adjust the volume level of the right rear speaker

▶

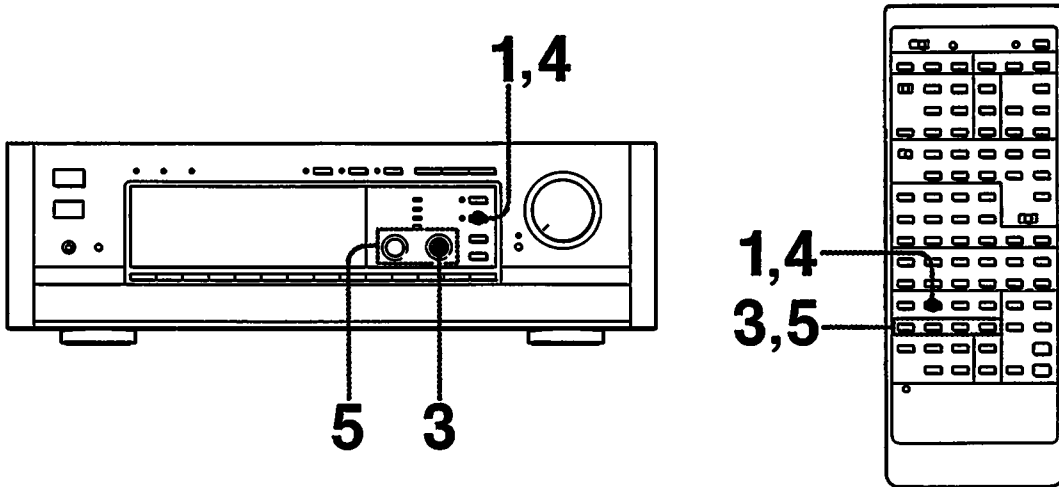


Getting Ready to Enjoy Surround Sound

Adjusting the Delay Time of the Rear Speakers (for Dolby Surround Mode)

The delay time is a time between the surround sound from the front and that from rear speakers. The delay time is

adjustable from 15 ms to 30 ms.



Main unit

Remote commander

SUB PARAMETER
○

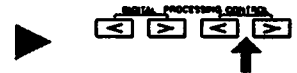
1 Press SUB PARAMETER until "Both Del." appears in the display window.

PARAMETER SUB

2 Play back the program source (refer to page 21).



3 Adjust the delay time for the both rear speakers.



SUB PARAMETER
○

4 Press SUB PARAMETER until "Each Del." appears in the display window.

PARAMETER SUB

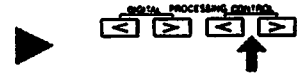
5 Finely adjust the delay time for each rear speaker.



To adjust the delay time of the left rear speaker



To adjust the delay time of the right rear speaker



Note

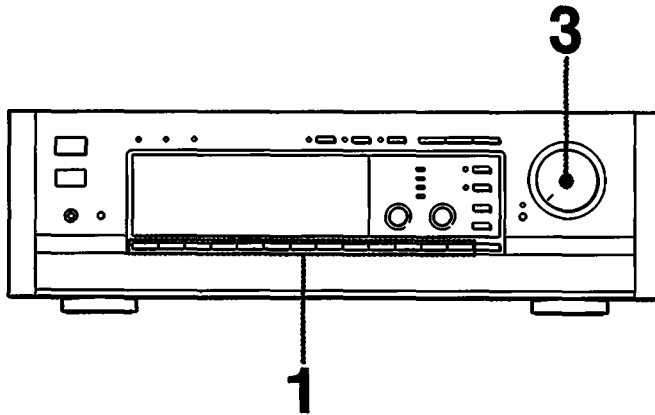
The volume level and delay time of rear speakers can be adjusted even in the 3ch LOGIC mode.

Listening to / Watching Program Sources

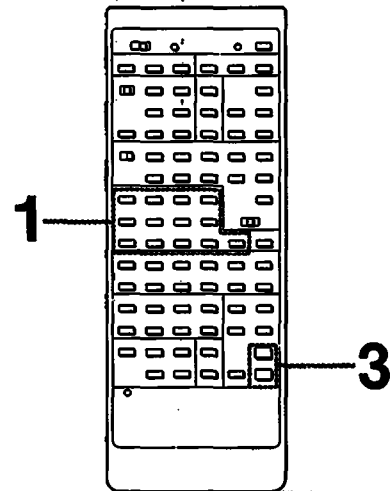
Basic Operation

Preparation

- Turn on the connected audio/video equipment.
- Make sure the indicators of PARAMETRIC EQ, DYNAMICS, and SURROUND are off. If they are on, press the appropriate button(s) to turn them off.
- Make sure the MUTING indicator is off. If it glows, press MUTING to turn it off.
- If two input functions (VISUAL and AUDIO) appear in the display window, press MIX until they go off. If you want to mix visual and sound from different program sources, refer to the next page.



Main unit



Remote commander



1 Select the program source.
For the digital audio input, press DIGITAL to select the desired digital input, COAXIAL, OPTICAL 1, or OPTICAL 2.



2 Play back the selected program source.



3 Adjust the MASTER VOLUME.

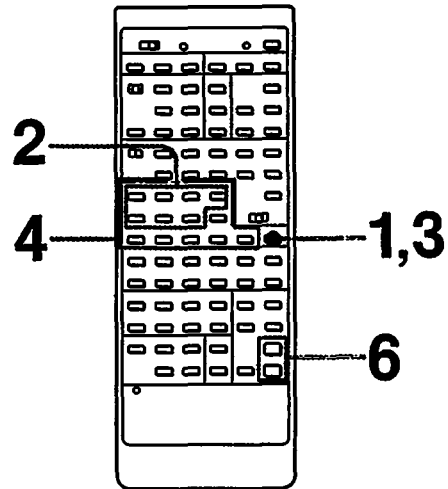
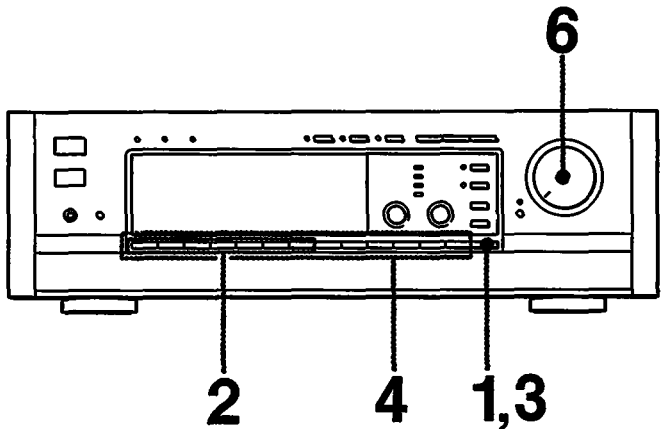


Listening to / Watching Program Sources

Combining the Video Image with the Sound from Another Program Source

The MIX function allows you to combine a video image with sound from another program source as back ground music.

This function also allows you to listen to simulcast TV/FM programs.



Main unit

Remote commander



◀ 1

Press MIX. Two input functions (**VISUAL** and **AUDIO**) appear, and a triangular mark points to **VISUAL**.



◀ 2

Select the video program source.



◀ 3

Press MIX. The triangular mark points to **AUDIO**.



◀ 4

Select the audio program source. The audio signal of a video program can also be selected.



5

Play back the both audio and video program sources.



◀ 6

Adjust the MASTER VOLUME.



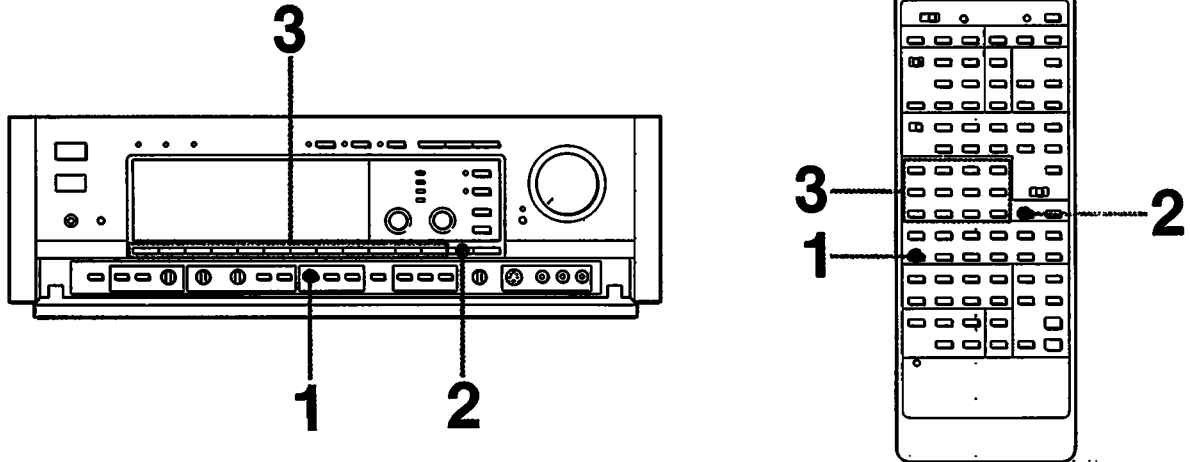
If MIX is pressed after both video and audio program sources have been set

The mix function is cancelled and the audio and video signal of the selected video program source is output.

Assigning Digital Audio Input to Another Input Function Button

You can assign digital input to another input function button. For example, if you connect the CD player to the OPTICAL 1 jack and assign the OPTICAL 1 to the CD function button,

the CD player will be selected when you press the CD function button.



Main unit

Remote commander


MEMORY

◀ 1

Press MEMORY. **MEMORY** appears in the display window.

▶


MEMORY


DIGITAL

◀ 2

Press DIGITAL to select the desired digital input - COAXIAL, OPTICAL 1, or OPTICAL 2.

▶


DIGITAL

 ~ 

◀ 3

Press the input function button you want to assign the digital input to.

▶

 ~ 

To cancel the assignment

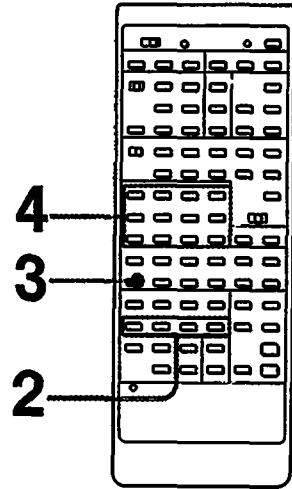
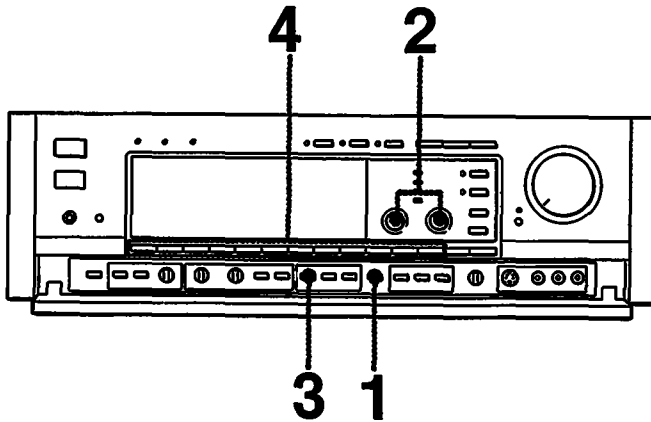
- 1 Press the input function button you want to cancel.
- 2 Press CLEAR. The assignment is cancelled and analog input will be reassigned.

Listening to / Watching Program Sources

Putting Your Own Label on an Input Function Button

You can put a label of up to 9 characters on an input function button.

The label will appear in the display window when that function is selected.



Main unit

Remote commander

CHARACTER



1

Press CHARACTER. The name of input function set appears in the display window.

2

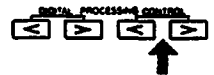
Create a name. You might want to label three of video function buttons as VHS, Beta, and 8mm, for example.



◀

To select a letter or number

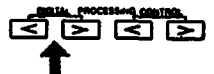
▶



◀

To move the cursor

▶



MEMORY

3

Press MEMORY. MEMORY appears in the display window.

▶



4

Select the input function to be labeled. The created name is labeled to the input function button. Repeat the procedure to label other input function buttons.

▶



Usable letters and symbols

A B C D E F G H I J K L M N O P Q R S T U V W X Y
 Z [\] ^ _ ` a b c d e f g h i j k l m n o p q r
 s t u v w x y z ! ~ # \$ % & ' () * + , - . / 0
 1 2 3 4 5 6 7 8 9 : ; < = > ? ↑

Note

It is not possible to label the DIGITAL function button.

To resume the original name of the input function
 Repeat steps 1 to 4 to input the original name.

Enjoying the Factory-preset Digital Sound Effects

What are the Digital Sound Effects?

The TA-E1000ESD incorporates digital signal processing circuitry which consists of a digital surround processor, a digital parametric equalizer, and a digital dynamics controller. The digital surround processor electronically reproduces the acoustics of various listening situations. The digital parametric equalizer controls the output level of specific frequencies to finely adjust the frequency response,

digital dynamics controller compresses or expands the dynamic range of the program source.

Using these three digital sound effects, you can give your room the optimum acoustics for the kind of music you want to listen to.

Selecting the Factory-preset Soundfield Program

Ten recommended soundfield programs (combinations of settings for the surround, parametric equalizer, and dynamics controller) have been preset in the factory. Since these programs are appropriate for the most types of music and listening situations, you can enjoy the digital sound

effects by just selecting the soundfield programs according to the program source, etc. You can also set individual functions and parameters to maximize the effect and/or to shape the sound to your taste. For instruction on how to set each parameter, refer to "Making most of the digital sound effects" on page 30.

Main unit

Remote commander

PRESET/USER



1

Press PRESET/USER until PRESET appears in the display window.



PRESET/
USER



SOUNDFIELD PROGRAM



2

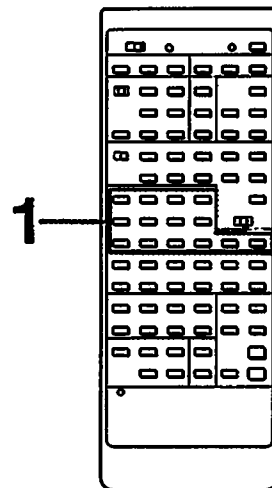
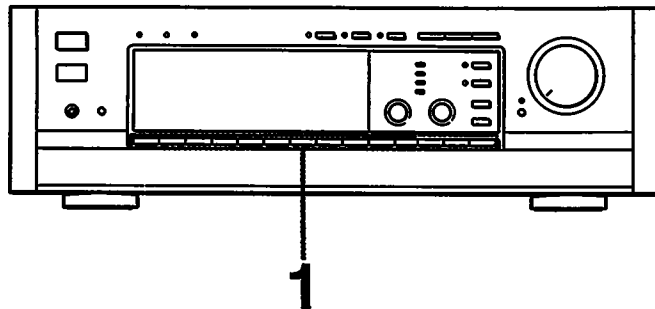
Select the soundfield program by referring to the table below:



Preset number	Applications	Preset number	Applications
1	For orchestral music	6	For disco music
2	For chamber music or an instrumental solo	7	For a live concert in an open-air stadium.
3	For operas or musicals	8	For music programs on video tapes or video discs.
4	For church music or the pipe organ	9	For movie programs on video tapes or video discs.
5	For jazz	10	For Dolby surround encoded video programs.

Recording Audio / Video Program Sources

Basic operation



Main unit

Remote commander



◀ 1

Select the program source.
If you want to combine video image and the sound from another audio source, press MIX to select them independently (refer to page 22).



2

Play back the selected program source.

3

Set the video or tape deck in the recording mode.

Notes on output

You can operate two or more video or tape decks for recording at the same time as the audio (and video) signals of the program source is output simultaneously through all recording output jacks except the digital recording out jack. The digital recording out jack outputs signal only when COAXIAL, OPTICAL 1, or OPTICAL 2 is selected.

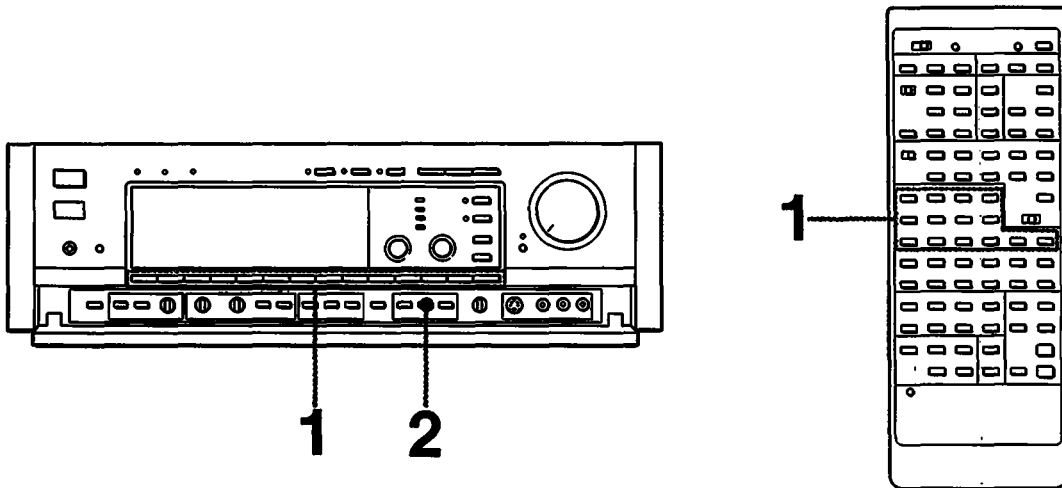
Recording program sources with the digital sound effects

Press EFFECT REC. **EFFECT REC** appears in the display window and the signal of program source with the digital sound effects are output from all analog recording out jacks.

This function does not activate when you record the program source while listening to/watching another (refer to page 27).

Recording program sources while listening to/watching another

This unit has separate circuits for line output and for recording, so you can record a program source while listening to/watching another.

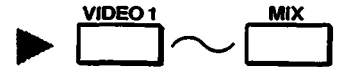


Main unit

Remote commander



Select the program source to be recorded. If you want to combine a video image and the sound from another audio source, press MIX to select these sources independently (refer to page 22).



Press SET. **REC OUT SET** appears in the display window and the displayed combination of audio/video recording outputs is preset for recording.

3

Play back the selected program source(s) to be recorded.

4

Set the video or tape deck into the recording mode. Press the desired input function button to select the program source to be listened to/watched.

To check the preset recording outputs

Press CHECK to display them in the display window. The input function display will resume after a few seconds.

You cannot preset the recording output in the following cases

- When you are listening to digital input sources(COAXIAL, OPTICAL 1, or OPTICAL 2).
- When you turn on the effect recording function (refer to page 26).

To record a listening program source

Press SET to turn off the **REC OUT SET** in the display window. The program source being listened to/watched is output from the REC OUT jacks.

Monitoring while recording

When a 3-head tape recorder is used, the recorded result can be monitored. When the recording is done on a tape recorder connected to the TAPE 1 or TAPE 2 jacks, the recorded sound can be monitored by selecting TAPE 1 or TAPE 2, respectively.

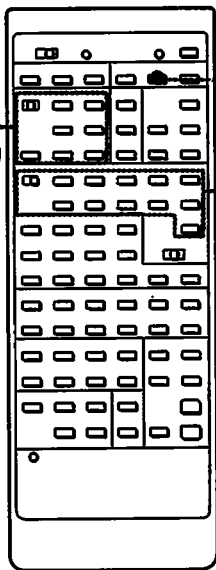
Using the Remote Commander

- When you manipulate a switch or button on the commander, be sure to point the head of the commander toward the remote control sensor on the front of the receiver.
- If there is an obstacle between the amplifier and the head of the commander, the amplifier may not be controlled remotely.

Programming Signals of Other Audio/Video Equipment with RM-P1000

Insert batteries before operation

You can program signals for each function by switching the CD/VDP selector.



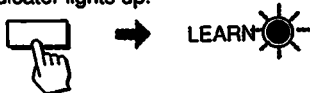
You can program signals for each function by switching the TAPE/VTR and VTR (1, 2, 3) selectors (DUAL, ANT TV/VTR, and CH+/- buttons cannot be programmed when the TAPE/VTR selector is set to TAPE).

1 Set the mode selector to LEARN.



2

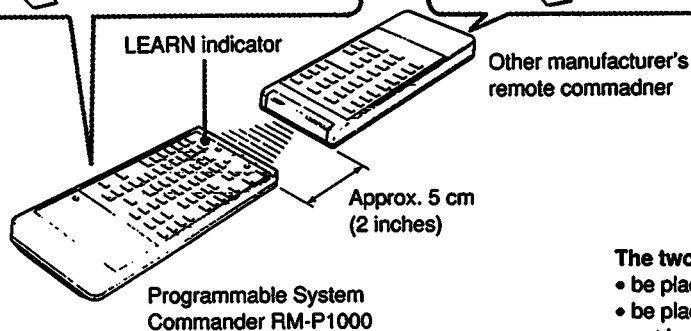
① Press and hold the button on which a new remote-control signal is to be programmed until the LEARN indicator lights up.



② Press and hold the button whose signal is to be programmed.



③ Release the button(s) after the LEARN indicator goes off.



The two remote commanders must:

- be placed straight and head to head.
- be placed at a distance of approx. 5 cm (2 inches).
- not be moved during the programming operation.

3 Repeat above steps for each button to be programmed.

4 Set the mode selector to USER STD or SONY STD.



After programming

Be sure to test if the equipment really works with the programmed signals.

If the LEARN indicator flashes or does not go off in step 2-②, ③

The memory capacity is full. This occurs when other signals stronger than the remote-control signals have been stored because the signals were programmed in a noisy environment or the remote commanders were placed too far apart from each other.

→ Clear all the signals following the procedure on the right and program again from the beginning under the proper conditions.

Notes on programming

- Remote-control signals of equipment of manufacturers other than Sony can be programmed only when they are compatible with the infrared wireless remote control system. Since the programmable commander can "learn" only the signals output from another remote commander, it cannot control equipment that do not use a remote commander. Also, note that there are some special remote-control signals that cannot be programmed.
- Do not attempt to use the programmable system commander with an air conditioner or other household appliances.

To program a new signal onto a previously programmed button

Follow the programming procedure.

The previously programmed signal is cleared and replaced by the new signal.

To clear all programmed signals

- 1 Set the mode selector to LEARN.
- 2 Press and hold any button of the programmable area until the LEARN indicator lights up.
- 3 Press PROGRAM CLEAR until the LEARN indicator flashes and goes off.

Note

It is not possible to clear the programmed content of just one button.

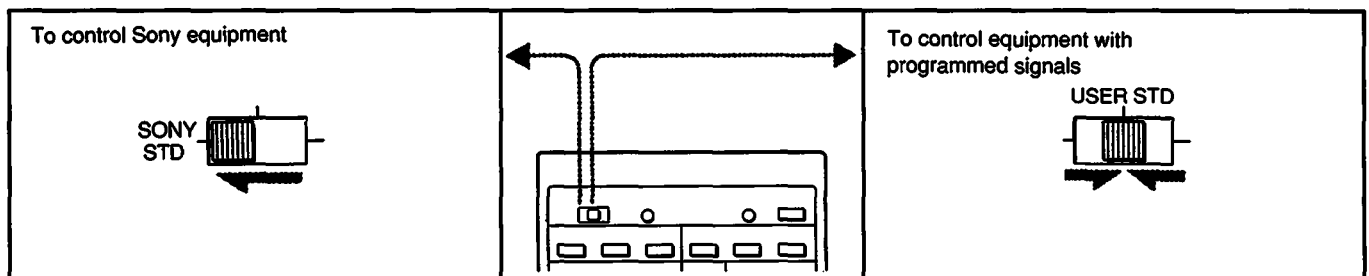
To program a signal onto the ● REC button in the TAPE or VTR section

It is not possible to operate any equipment with only the ● REC button. To program a signal on the ● REC button, press and hold the following buttons at the same time in step 2-①.



Controlling Equipment

By switching the mode selector as shown below, a single button alternately controls Sony equipment and equipment of another manufacturer.



When Sony equipment cannot be remote-controlled

Program the signal in the same way as for equipment from other manufacturers. In this case, even with Sony equipment, set the mode selector to USER STD.

Battery life

Normal operation can be expected for about a half year using Sony SUM-3 (NS), and a year using Sony AM-3 (NW) alkaline batteries. If the LEARN indicator does not light when a button is pressed, the batteries are almost exhausted. When the batteries are exhausted, the remote commander can no longer operate the unit or programming becomes impossible.

If this happens, replace both batteries with new ones. We strongly recommend the use of alkaline batteries.

If not signal has been programmed

The programmable commander can control Sony equipment even when the mode selector is set to USER STD.

If the equipment works incorrectly

Press RESET and operate again. The programmed contents of the buttons are not cleared by pressing RESET.

Making Most of the Digital Sound Effects

Function of the Digital Sound Effects

The TA-E1000ESD incorporates digital signal processing circuitry which consists of a digital surround processor, a digital parametric equalizer, and a digital dynamics controller. Although 10 soundfield programs (recommended combinations of each settings) are already preset for easy use (refer to page 25), you can also manipulate various parameters to finely tune the factory-preset settings to your room, or create original sound effects as you like.

The main parameters are the fundamental variable in the acoustical setting such as the room size and seat position, while the sub parameters are used for fine adjustments such as reverberation time and level of reflection. To understand the digital sound effects, use the demonstration mode incorporated in the unit.

Table of Adjustable Parameters

	HALL1	HALL2	OPERA	CHURCH	JAZZ CLUB	DISCO	STADIUM	LIVE CONCERT	THEATER	DOLBY SUR
ROOM SIZE	●	●	●	●	●	●	●	●	●	△
WALL	●	●	●	●	●	●	●	●	●	△
SEAT POSITION	●	●	●	●	●	●	●	●	●	△
CENTER LEVEL* REAR LEVEL	●	●	●	●	●	●	●	●	●	●
PARAMETRIC EQ	●	●	●	●	●	●	●	●	●	△
Effect Level	●	●	●	●	●	●	●	●	●	△
Early Reflection Time	●	●	●	●	●	●	●	●	●	△
Early Reflection Level	●	●	●	●	△	△	●	●	△	△
Reverb Time	●	●	●	●	△	△	●	●	△	△
Spread	●	●	●	●	△	△	●	●	△	△
Reverb-Density	●	●	●	●	△	△	●	●	△	△
Dynamics	●	●	●	●	●	●	●	●	●	△
Both Delay Time	△	△	△	△	△	△	△	△	△	●
Each Delay Time	△	△	△	△	△	△	△	△	△	●
Each Rear Level	●	●	●	●	●	●	●	●	●	●

* Although the CENTER LEVEL is adjustable in all modes, sound will be output from the center speaker only in the LIVE CONCERT, THEATER, and DOLBY SUR modes.

To start the demonstration mode
While pressing DIMMER, press VIDEO 1. The function of each parameter is displayed in the display window.

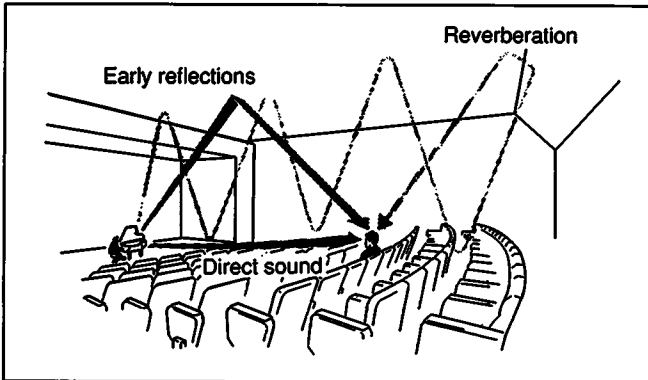
Using the Digital Surround System

Understanding the Digital Surround System

The sound heard in a place such as a concert hall or a movie theater consists of direct sound, an early reflected sound (early reflections) and a reverberative sound (reverberation). The acoustics of the room affect the way these three sounds are heard. We can estimate the size or the type of a hall by listening to and differentiating these three kinds of sound.

The TA-E1000ESD reproduces the early reflections and the reverberation using its digital signal processor and allows you to design a variety of soundfields in your own room. The unit incorporates 10 types of surround modes, and within each mode, you can adjust several parameters to maximize the effect in your listening room.

Types of the sound

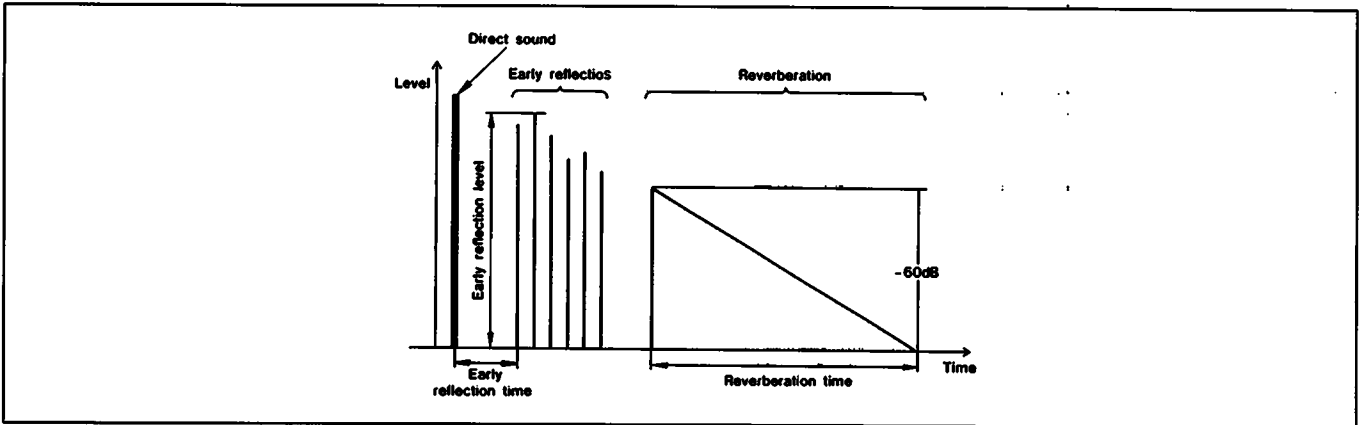


Note

Each surround mode has several internal (fixed) parameters in addition to the adjustable parameters explained in this section.

Therefore, surround modes will not become the same even if you set all adjustable parameters the same.

Transition of the sound



Characteristics of the Surround Modes

Surround mode	Characteristics
HALL 1	Acoustics of a rectangular (shoebbox type) concert hall with a capacity of about 2,000.
HALL 2	Acoustics of a fan shaped (vineyard type) concert hall with a capacity of about 2,000.
OPERA	Acoustics of an opera house.
CHURCH	Acoustics of a church with a high vault.
JAZZ CLUB	Acoustics of a jazz club with clearly reflected sounds.
DISCO	Acoustics of a disco with powerful reverberation and dynamic bass sound.
STADIUM	Acoustics of an outdoor stadium with a capacity of 30,000.
LIVE CONCERT	Acoustics of a large concert hall
THEATER	Acoustics of a movie theater.
DOLBY SUR	Decodes movie programs processed with the Dolby surround.

Using the Digital Surround System

Adjusting the Main Parameters

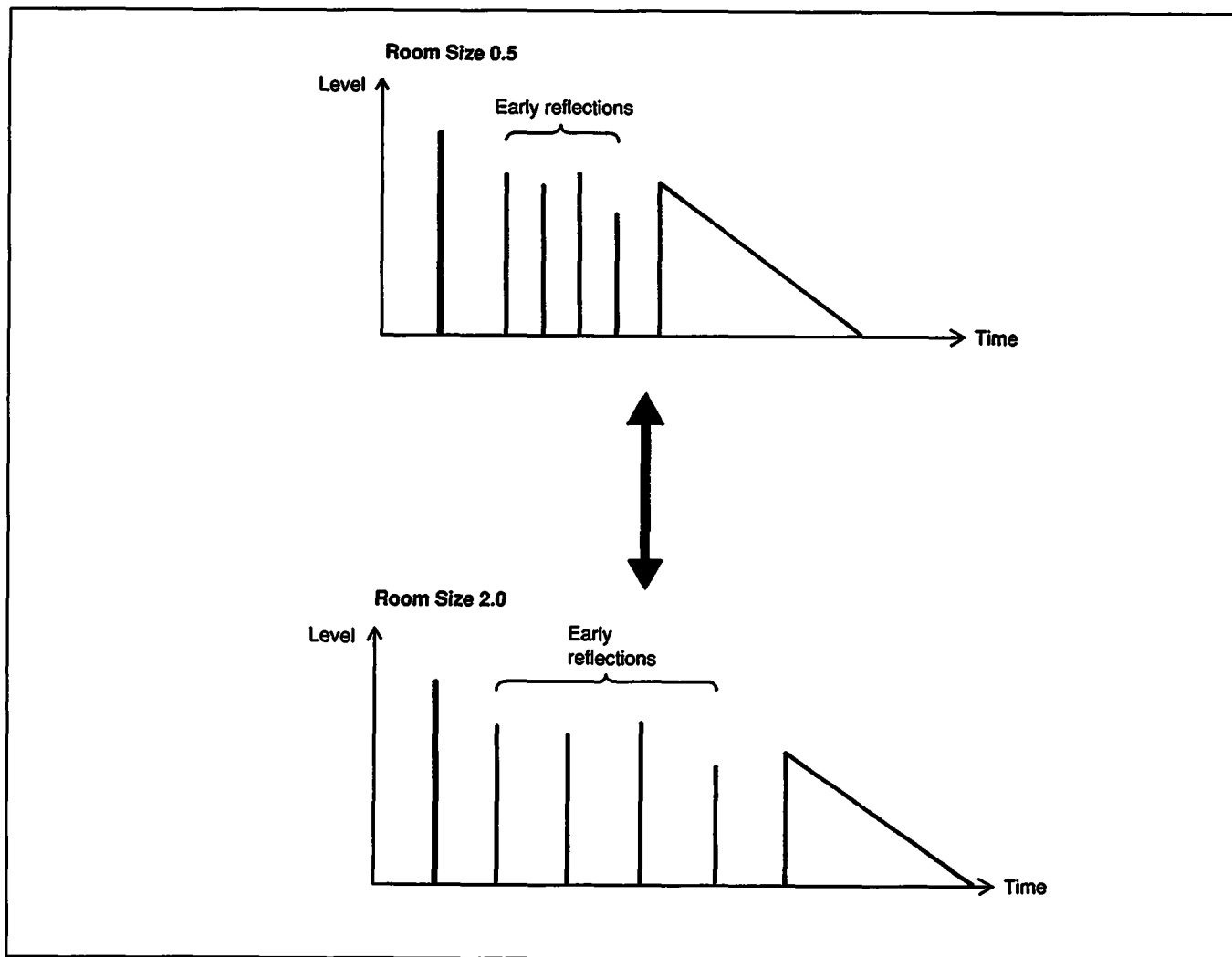
Before adjusting parameters, play back the program source, and press SURROUND to turn on the surround function.

You can adjust parameters while listening to the actual sound. To turn off the surround function, press SURROUND again to turn off the indicator.

Simulating the Room Size

The sound emitted from a sound source is reflected many times between the left and right walls, ceiling, and floor until it reaches our ears. In a large room, the sound takes more time to bounce from one surface to another than in a smaller room.

The ROOM SIZE parameter controls the spacing of early reflections to simulate the room size. The standard room size for each surround mode is designated as 1, and you can adjust this parameter from 0.5 to 2.0. The higher the number set, the larger the size of the room simulated.



Main unit

Remote commander



◀ **1** Press MAIN PARAMETER to select ROOM SIZE - WALL. ▶



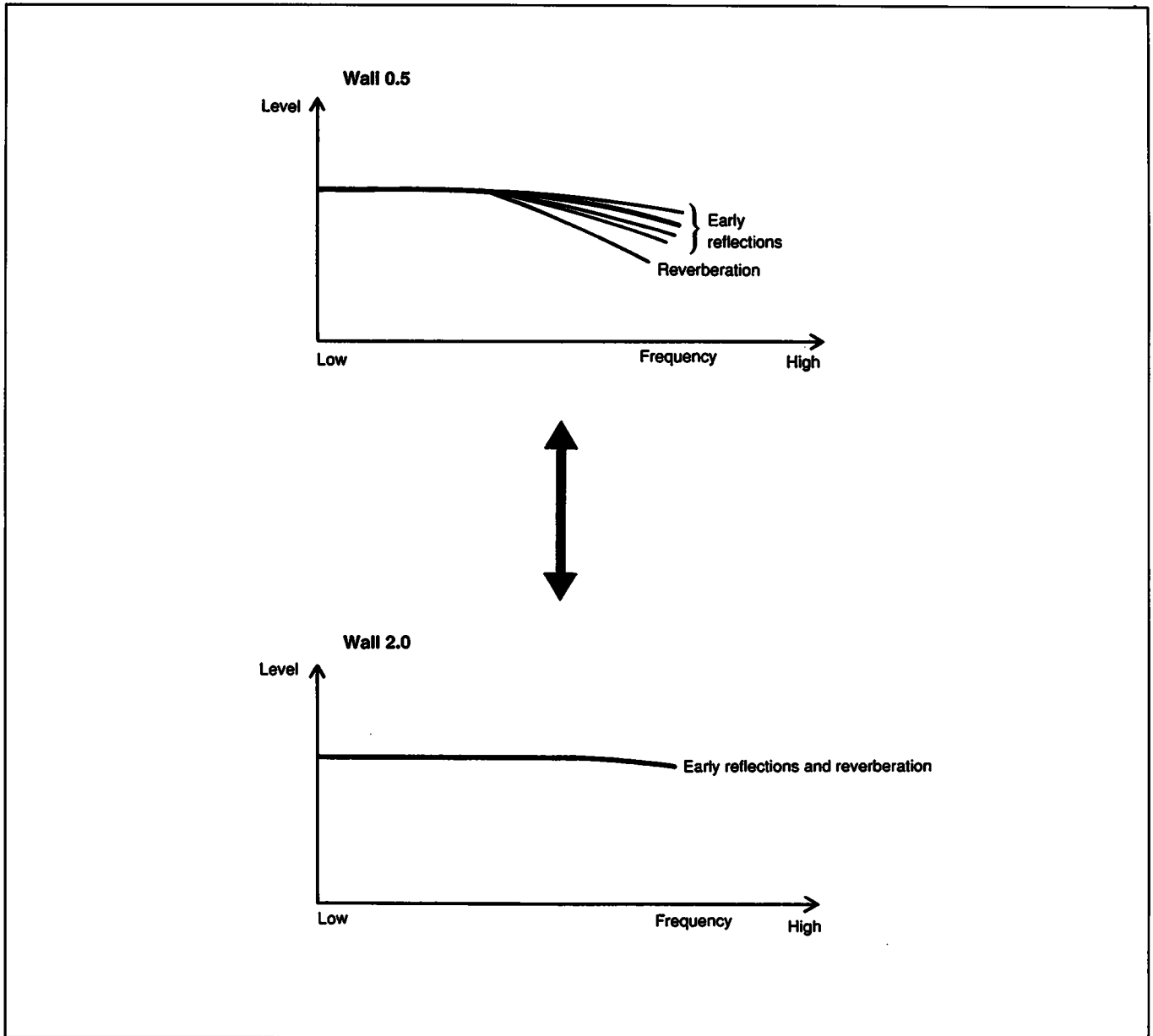
◀ **2** Adjust the ROOM SIZE parameter. ▶



Simulating the Wall Material

When sound is reflected by a wall made of soft material such as wood or a wall covered with a curtain, the high-frequency components are reduced. A hard wall is highly reflective and does not significantly effect the frequency response of the reflected sound.

The WALL parameter controls the level of high frequencies to simulate the wall material. The standard wall made of wood is designated as 1, and you can adjust this parameter from 0.5 to 2.0. The higher the number set, the harder the wall simulated.



Main unit

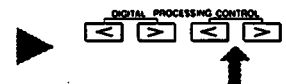
Remote commander



1 Press MAIN PARAMETER to select ROOM SIZE - WALL.



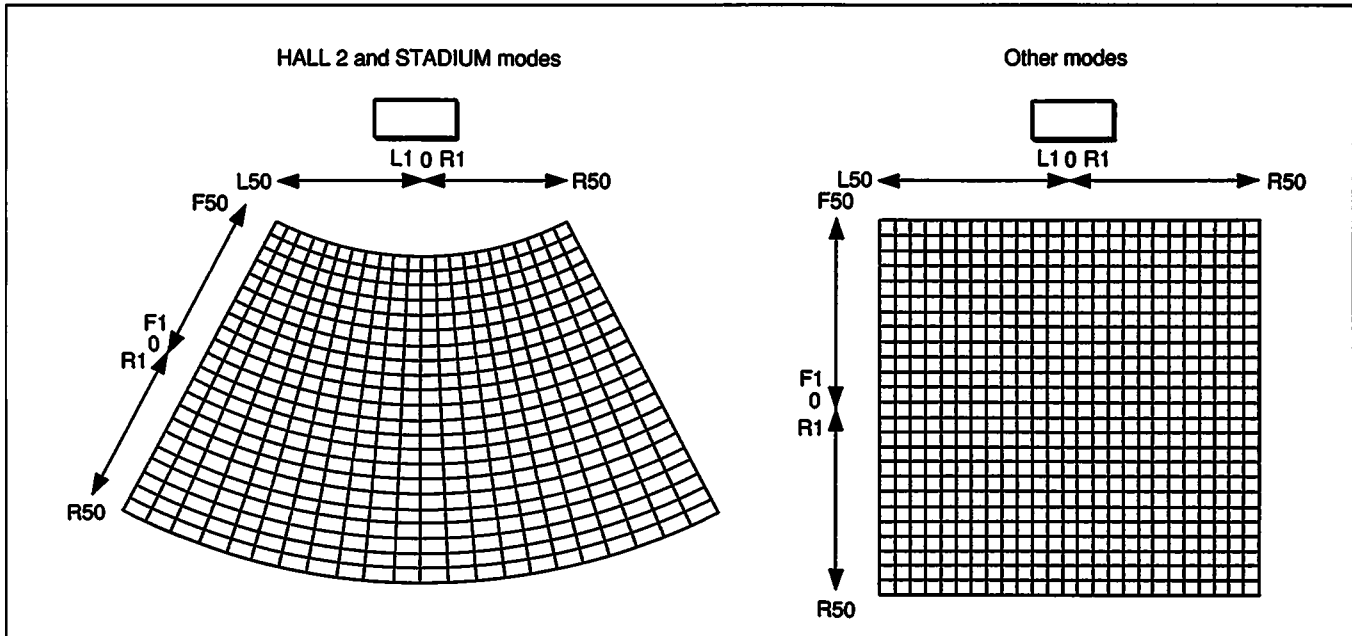
2 Adjust the WALL parameter.



Simulating the Seat Position

When you sit in the front of a room, you will hear more direct sound from the front speakers, and the component of reflected sounds from the front speakers grows as you move forward to rear. Similarly, the component of reflected sound changes when you move from left to right, and vice versa. The SEAT POSITION parameter controls the balance of the direct and reflected sound and other components of sound to simulate your listening position.

The center position is designated as 0, both in the rear-front, and left-right parameters, and you can adjust the position in 50 increments in each direction. The higher the number set, the more your position will be offset from the center of the room.



Main unit

Remote commander

MAIN PARAMETER

1 Press MAIN PARAMETER to select SEAT POSITION.

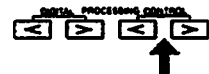
PARAMETER MAIN



2 Adjust the REAR-FRONT parameter.

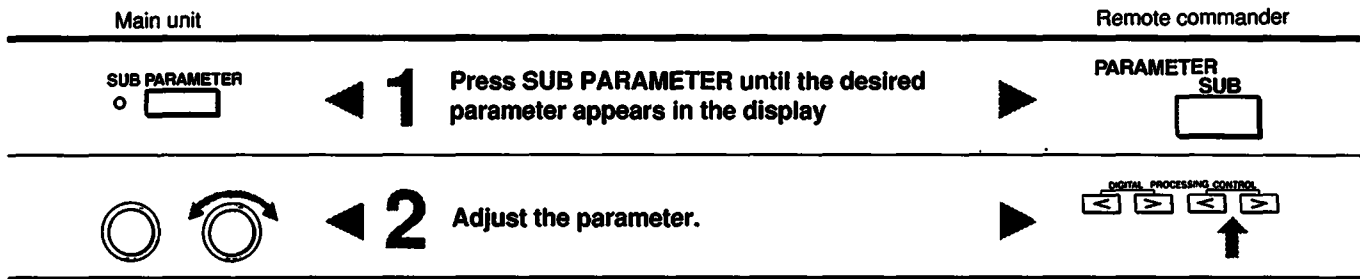


3 Adjust the LEFT-RIGHT parameter.



Adjusting the Sub Parameters

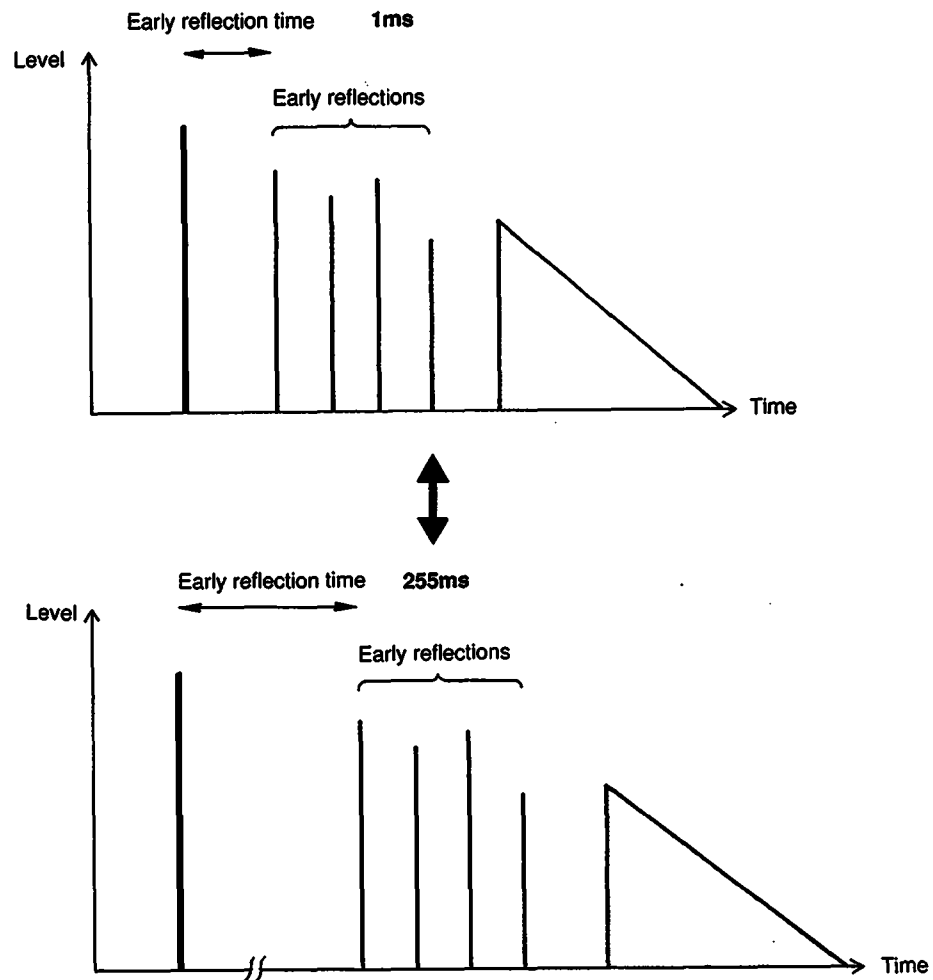
Basic Operation



Early Reflection Time

The early reflection time is the key parameter which determines the room size and listening position. Adjustment of this parameter will vary the time required for the sound to reach to the listening position.

The adjustable range is from 1 ms to 255 ms, and the longer the time, the longer you will feel the distance to the origin of the sound.

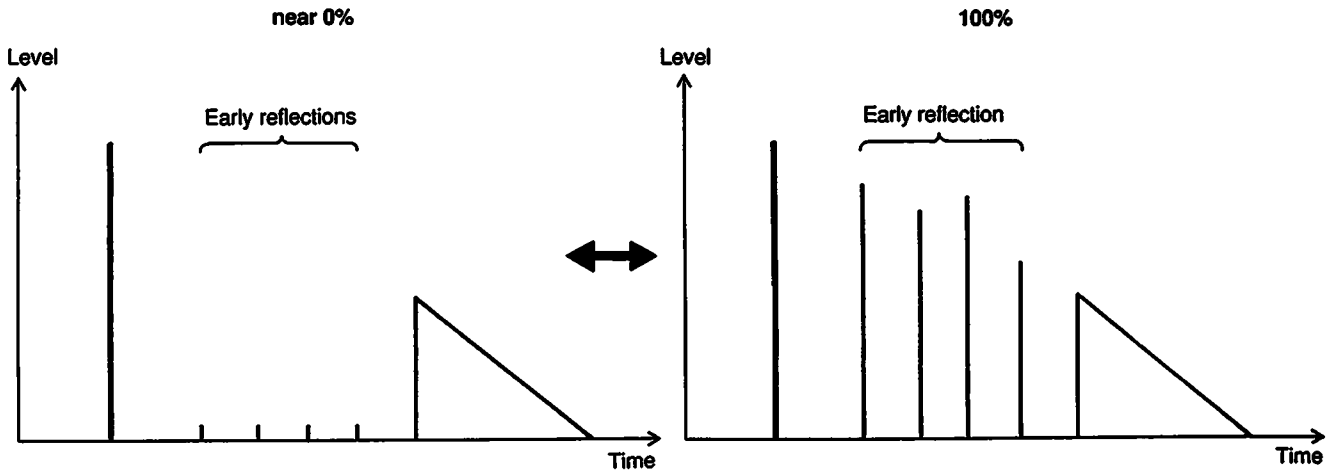


Using the Digital Surround System

Early Reflection Level

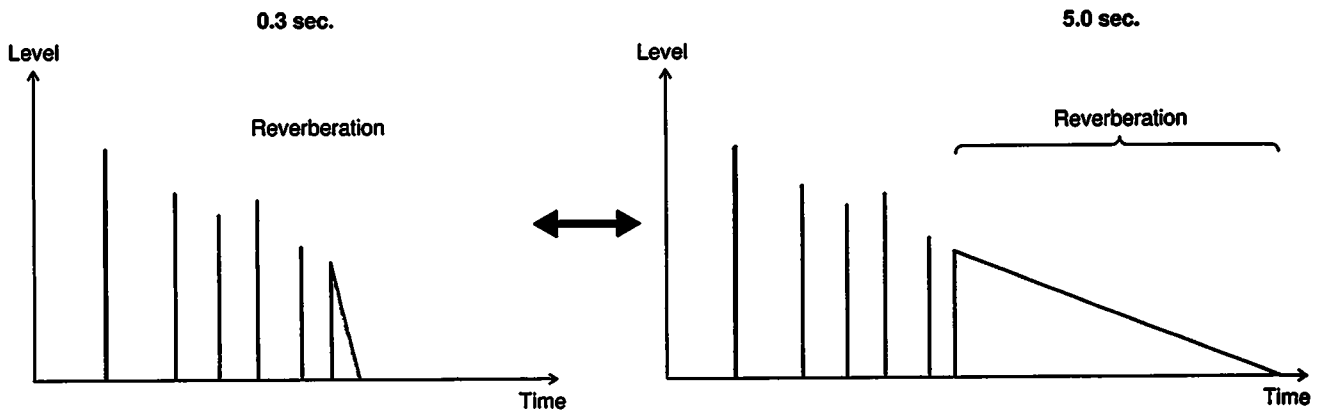
The early reflection level controls the acoustic liveness of the room. The adjustable range is from 0 to 100%, and the

percentage gets larger, the room becomes more "live", and as it gets smaller, the room becomes "dead".



Reverberation Time

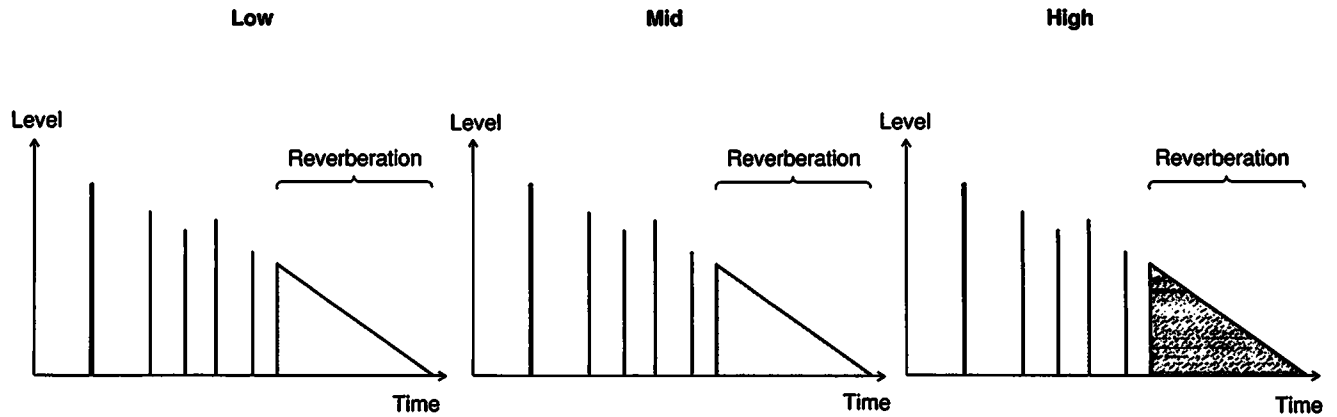
This parameter adjusts the length of the reverberation – the time required for reverberative sound to decrease to -60dB. The adjustable range is from 0.3 to 5.0 sec.



Reverberation Density

The reverberation density parameter adjusts the density (number of responses) of the reverberation to obtain natural reverberation for various program sources. Usually set this parameter to Mid.

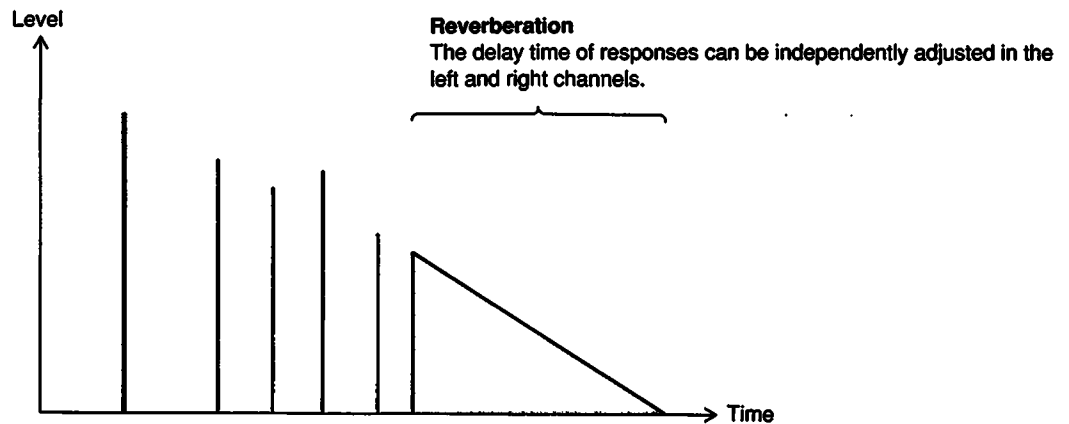
When the program source itself is very reverberative, like a live recording, set it to Low, Set it to High when the program source is not reverberative.



Spread

The spread parameter adjusts the delay time of the responses in reverberation from the left and right channels to simulate the width of the soundfield.

The standard is designated as 1, and the spread is adjustable from 0.5 to 2.0. The higher the number set, the wider the soundfield.

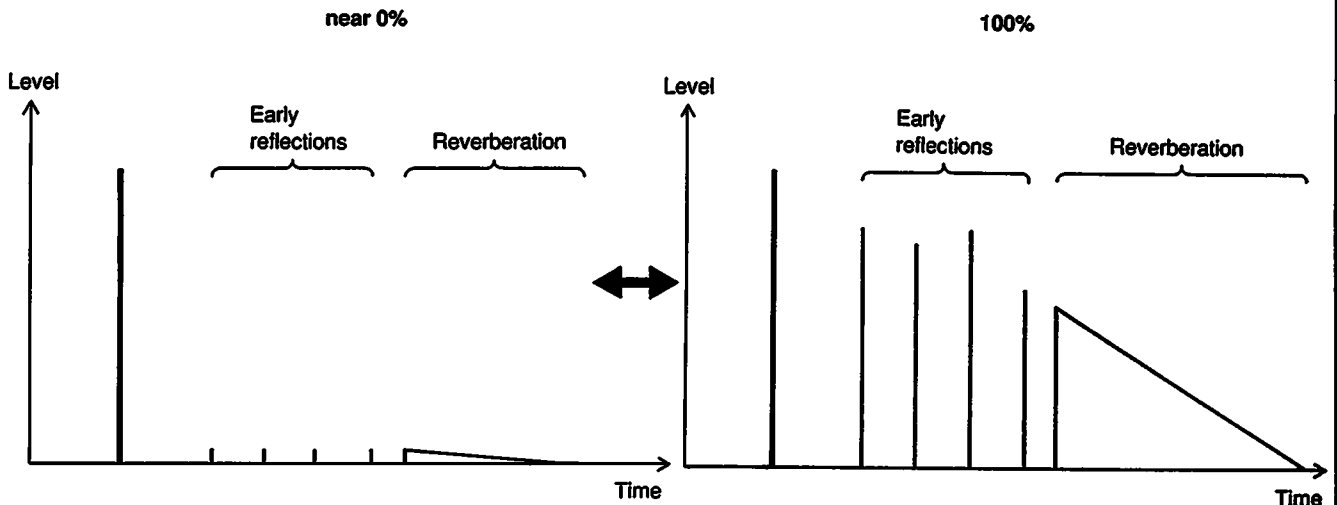


Using the Digital Surround System

Effect Level

This parameter adjusts the level of early reflections and reverberation. The adjustable range is from 0 to 100%, and as the percentage gets larger, the room becomes

more "live", and as it gets smaller, the room becomes "dead".



Using the Digital Parametric Equalizer

Understanding the Digital Parametric Equalizer

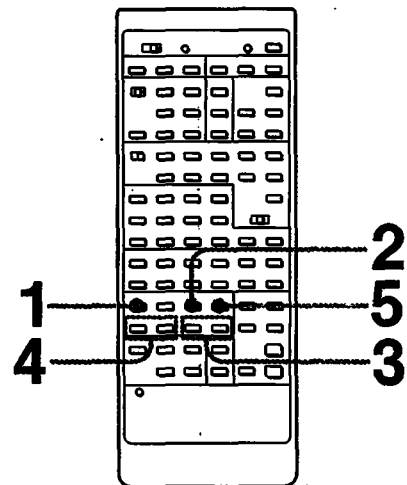
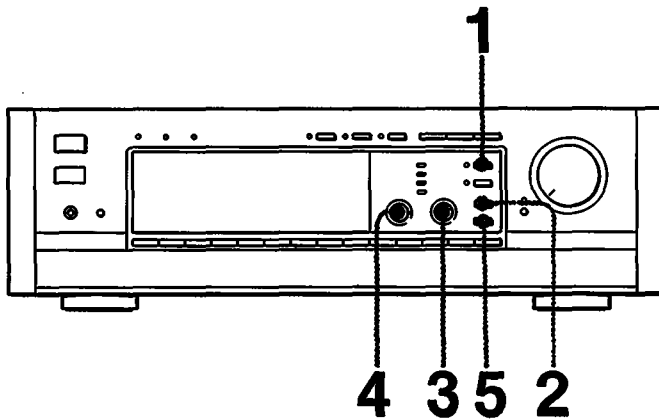
The parametric equalizer is a tone control system with adjustable center frequency and slope(Q). The TA-E1000ESD provides flexible equalization using a 3-band parametric equalizer with independent control of level, center frequency, and slope. Because those parameters

and equalization curve are displayed in the display window, you can accurately adjust the sound quality by referring them. The parametric equalizer effects all line output signals including REAR, CENTER, and SUBWOOFER outputs.

Adjusting the Digital Parametric Equalizer

Before adjusting the parameters, play back the program source, and press PARAMETRIC EQ to turn on the parametric equalizer. You can adjust parameters while

listening to the actual sound. To turn off the parametric equalizer, press PARAMETRIC EQ again to turn off the indicator.



Main unit

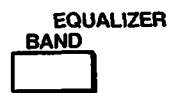
Remote commander



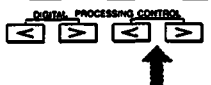
Press MAIN PARAMETER to select EQ LEVEL-EQ FREQUENCY.



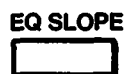
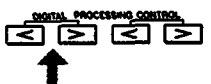
Press EQ BAND to select a frequency band. The selected number(1, 2 or 3) appears in the left of the display.



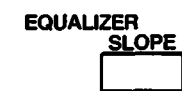
Adjust the center frequency.



Adjust the level.



Select the slope.



Repeat steps 2 to 5 for other frequency bands until you obtain the desired equalization curve.

Adjusting the Digital Parametric Equalizer

If the OVER indicator appears in the display window

- When listening to a program source connected to the digital input jacks:
Press DIGITAL input button (-) until the **OVER** does not glow at the highest level.
- When listening to a program source connected to the analog input jacks:
Turn ANALOG input knob counterclockwise until the **OVER** does not glow at the highest level.
- When listening to a Dolby surround program source:
Turn INPUT LEVEL counterclockwise until the **OVER** does not glow at the highest level.

To create a new equalization curve from flat condition

- 1 Press PARAMETRIC EQ to turn off the indicator. The displayed curve will be flattened.
- 2 Create a new equalization curve (refer to the steps 1 to 6 on page 39).

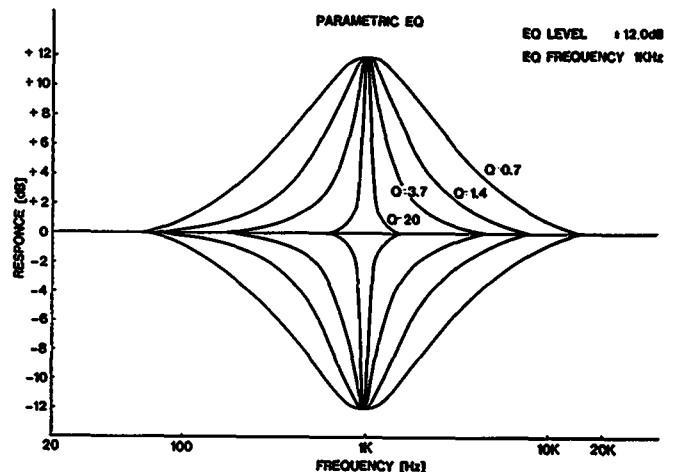
When the same center frequency is selected for more than two frequency bands

The setting level of each band will be accumulated. By using this character, when you select the sharpest slope (20.0) and set the all frequency band to the same desired center frequency, you can adjust the level from -36 dB to +36 dB to eliminate or pick-up the signal of the specified frequency (notch or peaking function). The equalization curve between +/-12dB is displayed even if the accumulated level becomes beyond the +/-12dB.

Note

The parametric equalizer has no effects in the Dolby surround mode.

Characteristics of slope



Using the Digital Dynamics Controller

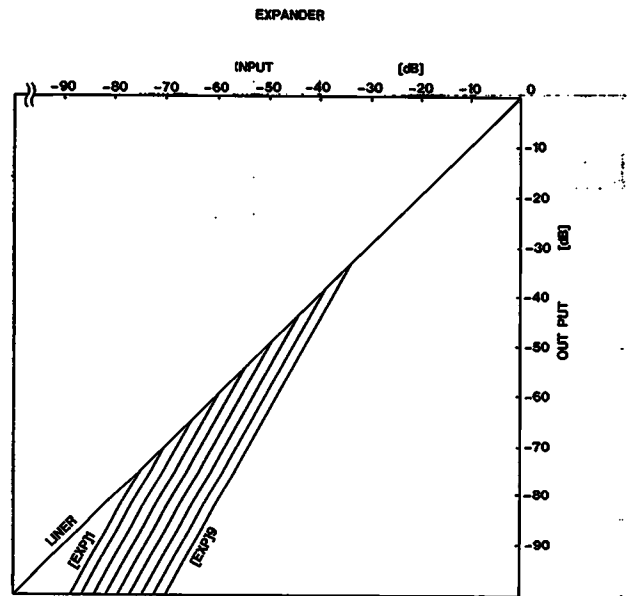
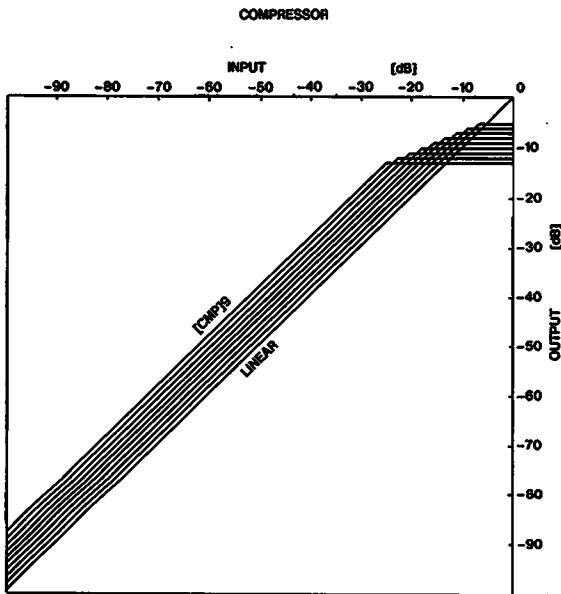
Understanding the Digital Dynamics Controller

The TA-E1000ESD allows you to select either of two dynamics controls, compressor or expander. The compressor compresses the dynamic range of the output signal to increase the average output level without distortion. This function is useful for obtaining dynamic sound at small output levels or when recording a program source with a wide dynamic range, such as a compact disc, on a cassette

tape. On the other hand, the expander limits the dynamic range of the input signal to eliminate undesired noise between tunes, etc.

You can set the compressor or expander effect in 9 increments. When the dynamics controller is set to "Linear", no effect is obtained.

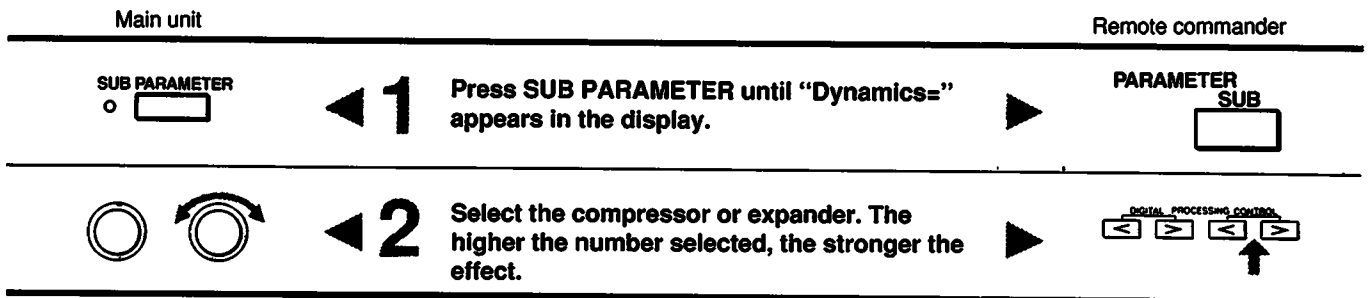
Input/output characteristics of compressor and expander



Adjusting the Digital Dynamics Controller

Before adjusting the dynamics, play back the program source, and press DYNAMICS to turn on the dynamics. You can adjust parameters while listening to the actual

sound. To turn off the dynamics, press DYNAMICS again to turn off the indicator.



Note

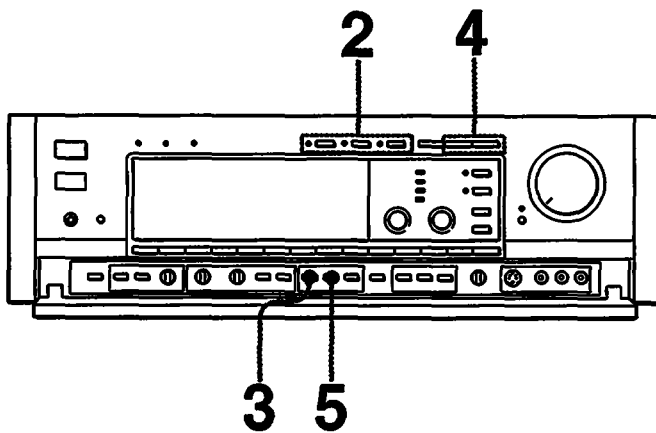
The dynamics controller has no effect in the Dolby surround mode.

Storing the Settings of Digital Sound Effects

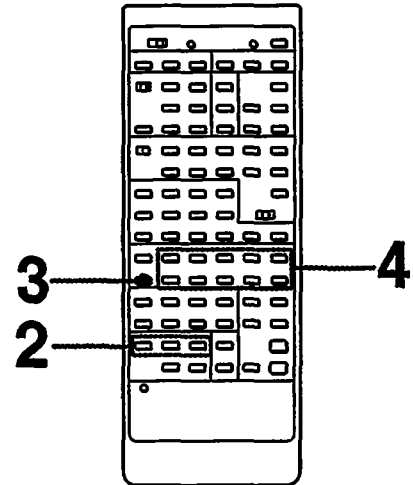
You can store up to 10 soundfield programs (combinations of the settings of surround, parametric equalizer, and

dynamics controller) you created into the memory and recall them with SOUNDFIELD PROGRAM buttons.

Storing the Settings of Digital Sound Effects



Main unit



Remote Commander

1 Set the parameters of surround mode, parametric equalizer, and dynamics controller.



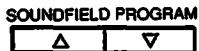
2

Press **PARAMETRIC EQ**, **DYNAMICS**, and **SURROUND** to turn on or off each function. The functions only turned on will be stored into the memory.



3

Press **MEMORY**. **MEMORY** appears in the display.



4

Select the number to store the settings.



5

Press **ENTER**. **MEMORY** goes off and the settings will be stored.

(When using the remote commander, it is not necessary to press ENTER.)

When you store a new soundfield program

The soundfield program for the same user preset number will be erased.

Recalling the settings of digital sound effects

- 1 Press **PRESET/USER** to until "USER" appears in the display.
- 2 Select the desired preset number.

Even if the AC power cord is disconnected

The stored data is maintained for approximately two weeks.

To reset the unit to initial condition

- 1 Press **POWER** to turn off the unit.
- 2 While pressing **CLEAR**, press **POWER** to turn on the unit. All setting data except the factory-preset soundfield programs are erased.

Table of factory-preset parameters

Preset No.	1	2	3	4	5	6	7	8	9	10	
SURROUND	HALL 1	HALL 2	OPERA	CHURCH	JAZZ CLUB	DISCO	STADIUM	LIVE CONCERT	THEATHER	DOLBY SUR	
ROOM SIZE	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		
WALL	1.0	1.2	1.1	1.8	1.7	1.0	0.7	1.1	0.7		
SEAT POSITION (REAR-FRONT, LEFT-RIGHT)	F20, 0	F20, 0	F20, 0	F20, 0	F20, 0	0, 0	F20, 0	F20, 0	R5, 0		
CENTER LEVEL REAR LEVEL	The last level set will be recalled.										
BAND 1	LEVEL	0 dB	+0.6 dB	+0.6 dB	+0.9 dB	+0.8 dB	-5.0 dB	+2.3 dB	+8.5 dB	+6.5 dB	
	FREQUENCY	99 Hz	78 Hz	115 Hz	99 Hz	85 Hz	21 Hz	85 Hz	78 Hz	62 Hz	
	EQ SLOPE (Q)	0.7	0.7	0.7	0.7	1.4	1.4	1.4	0.7	1.4	
BAND 2	LEVEL	0 dB	0 dB	+0.5 dB	0 dB	+0.3 dB	+10.5 dB	0 dB	0 dB	+1.3 dB	
	FREQUENCY	1.00 kHz	1.00 kHz	734 Hz	1.00 kHz	793 Hz	67 Hz	1.00 kHz	1.00 kHz	583 Hz	
	EQ SLOPE (Q)	0.7	0.7	0.7	0.7	0.7	1.4	0.7	0.7	1.4	
BAND 3	LEVEL	0 dB	0 dB	-0.3 dB	+0.3 dB	-0.3 dB	+7.5 dB	0 dB	+4.7 dB	-1.8 dB	
	FREQUENCY	8.00 kHz	8.00 kHz	16.0 kHz	14.8 kHz	20.0 kHz	4.32 kHz	8.00 kHz	8.64 kHz	20.0 kHz	
	EQ SLOPE (Q)	0.7	0.7	0.7	0.7	0.7	1.4	0.7	1.4	0.7	
Effect Level	90%	90%	90%	90%	90%	90%	90%	90%	90%	100%	
Early Reflection Time	27 ms	32 ms	38 ms	97 ms	21 ms	14 ms	255 ms	68 ms	43 ms		
Early Reflection Level	80%	80%	80%	65%			80%	80%			
Reverb Time	2.2 sec	2.5 sec	1.8 sec	2.6 sec			2.0 sec	2.4 sec			
Spread	1.3	1.6	0.8	2.0			1.6	1.6			
Reverb-Density	Mid	Mid	Mid	Mid			Mid	Mid			
Dynamics	OFF	OFF	OFF	OFF	OFF	CMP3	OFF	OFF	CMP3		
Dolby Delay Time (Rear Lch, Rch)										20.0 ms, 20.0 ms	

Specifications

Amplifier section

Frequency response (Parametric EQ, Dynamics, Surround all off)	Other than PHONO	FRONT 1.2, REAR, CENTER (at WIDE)		10 Hz - 20 kHz ± 0.1 dB
		SUBWOOFER		Cut off 80 Hz, -18 dB/oct
	PHONO	VIDEO 1-3 AUDIO OUT, TAPE 1.2 REC OUT		20 Hz - 20 kHz ± 0.2 dB
Input sensitivity and input impedance	PHONO		5 mV 50 k Ω	
	TUNER, CD, TAPE 1.2, VIDEO 1-5, VDP, TV		150 mV 50 k Ω	
	DIGITAL	OPTICAL 1.2		-
		COAXIAL		0.5 Vp-p $\pm 20\%$ 75 Ω
S/N	PHONO		Front 84 dB, rear 84 dB (A)	
	TUNER, CD, TAPE 1.2, VIDEO 1-5, VDP, TV		Front: 91 dB, rear: 91 dB (A)	
	DIGITAL (OPTICAL 1.2, COAXIAL)		Front: 110 dB, rear: 99 dB (A)	
Remaining noise		Below 10 μ V (A)		
Output voltage and output impedance	VIDEO 1-3 AUDIO OUT, TAPE 1.2 REC OUT		150 mV 1 k Ω	
	FRONT 1.2, REAR CENTER, SUBWOOFER		1.5 V	
	DIGITAL (OPTICAL 2)		-	
	Headphones		15 mV (at 8 ohms); accepts low and high impedance headphones	
Total harmonic distortion	ANALOG IN		Front: below 0.004% at 1 kHz	
	DIGITAL IN		Front: below 0.003% at 1 kHz	

Video section

Video input sensitivity and input impedance	VIDEO IN	VIDEO 1-5, VDP, TV	1 Vp-p 75 Ω
	S VIDEO IN	VIDEO 1, 2, 5	Luminance: 1 Vp-p 75 Ω ; chroma: 0.286 Vp-p 75 Ω
Video output voltage and output impedance	VIDEO OUT	VIDEO 1-3, MONITOR 1, 2	1 Vp-p 75 Ω
	S VIDEO OUT	VIDEO 1, 2 MONITOR	Luminance: 1 Vp-p 75 Ω ; chroma: 0.286 Vp-p 75 Ω

Digital signal processor section

Parametric EQ	Band		3-band
	Center frequency		18 Hz - 20 kHz
	Level		±12 dB, 0.1 dB step
	Slope (Q)		4-step selectable (0.7, 1.4, 3.7, 20)
Dynamics	Compressor		9-step adjustable
	Expander		9-step adjustable
Surround	Main parameter	Room size	0.5 - 2.0
		Wall	0.5 - 2.0
		Seat position	F50 - 0 - R50, L50 - 0 - R50
	Sub parameter	Early reflection time	1 - 255 ms
		Early reflection level	0 - 100%
		Reverberation time	0.3 - 5.0 sec.
		Reverberation density	Low, Mid, High
		Spread	0.5 - 2.0
		Effect level	0 - 100%
		Both delay time	15.0 - 30.0 ms
Each delay time	15.0 - 30.0 ms		

A/D, D/A converter section

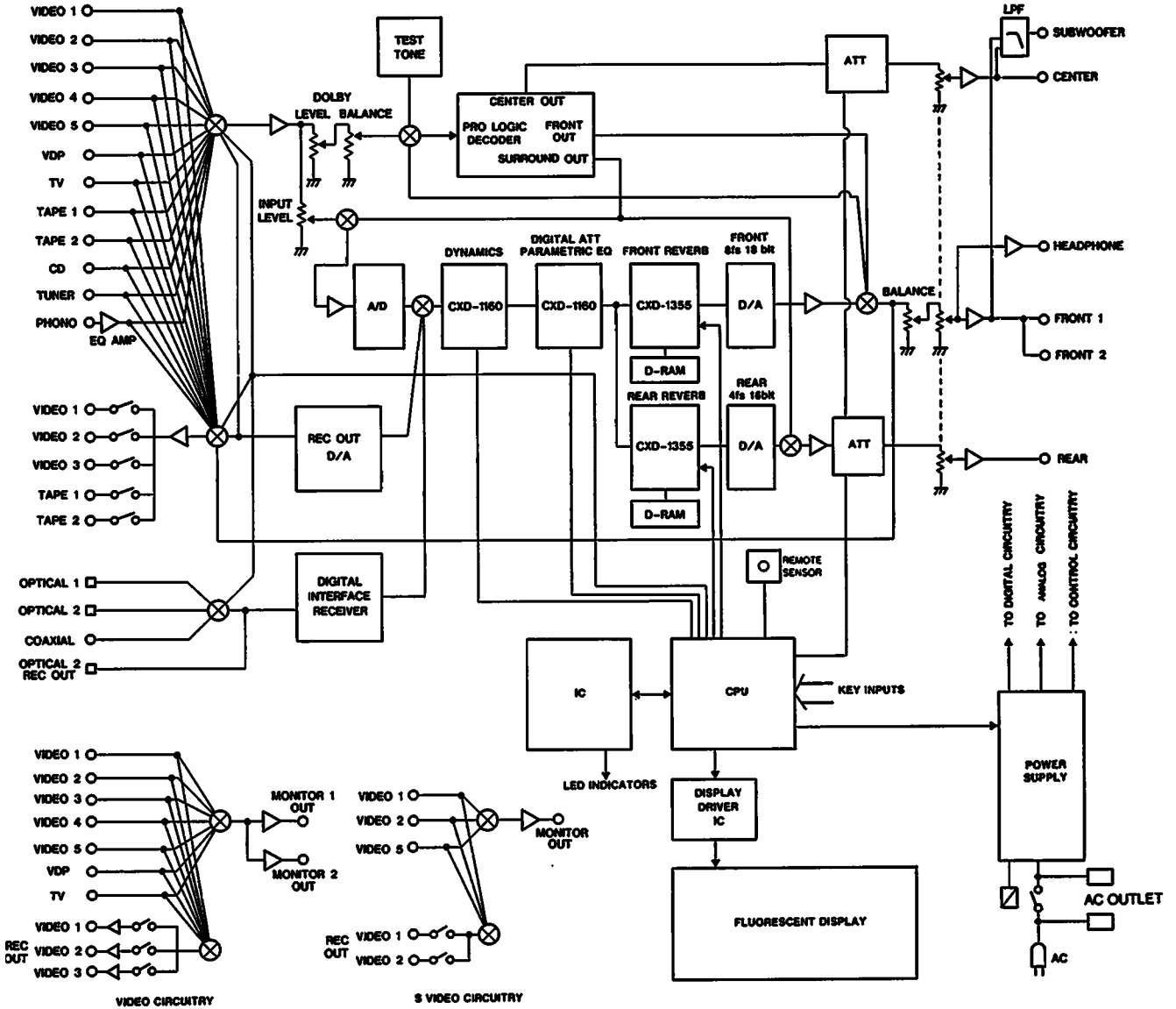
A/D converter	Type	High Density Linear Converter
	Sampling frequency	48 kHz
D/A converter	Front	18-bit linear 8 fs × 2
	Rear	16-bit linear 4 fs × 1
	Sampling frequency	32 kHz, 44.1 kHz, 48 kHz

General

Power requirements	120 V AC, 60 Hz
Power consumption	35 watts
AC outlets	Three switched, total 700 watts; one unswitched 300 watts
Dimensions (w/h/d)	470 × 150 × 360 mm (18½ × 6 × 14¼ in)
Weight	8.0 kg (17 lb 11 oz)
Supplied accessories	Programmable remote commander RM-P1000 (1) Sony batteries SUM-3 (NS) (2), Connection cord (2), Screws (4)

Design and specifications subject to change without notice.

Block Diagram



Troubleshooting

Before proceeding through the check list below, examine the connections and the procedures outlined in the manual. Should any problem persist after you have checked the following items, consult your nearest Sony dealer.

Symptom	Cause	Remedy
No sound is heard even if you adjust the volume.	The program source equipment is not connected correctly.	Connect the equipment correctly ⑥ - ⑧.
	A wrong input function button has been pressed.	Check the display window, and press the correct input function button ⑭.
	A digital input is assigned to the input function button.	Reset the assignment, or connect an appropriate digital program source to the digital input jack ⑳.
	The MUTING button has been pressed. (The MUTING indicator is lit).	Press the button to disengage ⑩.
	DIGITAL/ANALOG input level is set to minimum.	Adjust the input level correctly ⑩.
	"CENTER OFF" is selected in the PRO LOGIC MODE.	Select other modes ⑮.
No sound or sound at very low level is heard from rear speakers.	SURROUND function is turned off.	Press SURROUND to turn on the function ⑩, ⑳.
	Output level of the rear speakers is set to -∞.	Adjust the level to appropriate level ⑮.
	Monaural program source is played back in Dolby surround mode.	Select other surround modes ⑳.
The remote commander will not operate.	The batteries are exhausted	Replace the batteries with new ones.
	The commander head is not pointed toward the unit's front.	Point the commander head toward the receiver
	There is an object between the commander and the receiver.	Remove the object.
The remote-control signal cannot be programmed.	Programming is interfered by noise.	Place both remote commanders apart from the source of noise ㉓.
	The batteries are exhausted.	Replace the batteries with new ones.
The LEARN indicator goes off after flashing.	The internal memory capacity is full.	Clear the signals and program again ㉓.