

FM Stereo FM-AM Receiver

Operating Instructions

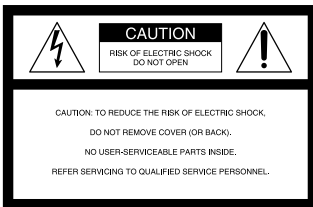
STR-DA777ES

WARNING

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

Do not install the appliance in a confined space, such as a bookcase or built-in cabinet.

For the customers in United States



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 has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules.

These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful 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 or relocate the receiving antenna.
- Increase the separation between the equipment and control amplifier.
- Connect the equipment into an outlet on a circuit different from that to which the control amplifier is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION

You are cautioned that any changes or modification not expressly approved in this manual could void your authority to operate this equipment.

Note to CATV system installer:

This reminder is provided to call CATV system installer’s attention to Article 820-40 of the NEC that provides guidelines for proper grounding and, in particular, specifies that the cable ground shall be connected to the grounding system of the building, as close to the point of cable entry as practical.

Owner’s Record

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

Model No. STR-DA777ES

Serial No. _____

For the customers in Canada

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.

Precautions

On safety

Should any solid object or liquid fall into the cabinet, unplug the receiver and have it checked by qualified personnel before operating it any further.

On power sources

- Before operating the receiver, check that the operating voltage is identical with your local power supply. The operating voltage is indicated on the nameplate at the rear of the receiver.
- The unit is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the unit itself has been turned off.
- If you are not going to use the receiver for a long time, be sure to disconnect the receiver from the wall outlet. To disconnect the AC power cord, grasp the plug itself; never pull the cord.
- One blade of the plug is wider than the other for the purpose of safety and will fit into the wall outlet only one way. If you are unable to insert the plug fully into the outlet, contact your dealer.
- AC power cord must be changed only at the qualified service shop.

On placement

- Place the receiver in a location with adequate ventilation to prevent heat buildup and prolong the life of the receiver.
- Do not place the receiver near heat sources, or in a place subject to direct sunlight, excessive dust or mechanical shock.
- Do not place anything on top of the cabinet that might block the ventilation holes and cause malfunctions.

On operation

Before connecting other components, be sure to turn off and unplug the receiver.

On cleaning


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

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


About This Manual

The instructions in this manual are for model STR-DA777ES. Check your model number by looking at the lower right corner of the front panel. In this manual, the U.S.A./Canada model is used for illustration purposes unless stated otherwise. Any difference in operation is clearly indicated in the text, for example, "U.S.A./Canada models only."

Conventions

- The instructions in this manual describe the controls on the receiver. You can also use the controls on the supplied remote if they have the same or similar names as those on the receiver. For details on the use of your remote, refer to the separate operating instructions supplied with the remote.
- The following icon is used in this manual:
 Indicates hints and tips for making the task easier.

This receiver incorporates Dolby* Digital (AC-3) and Pro Logic Surround and the DTS** Digital Surround System.

* *Manufactured under license from Dolby Laboratories. "Dolby", "AC-3", "Pro Logic" and the double-D symbol  are trademarks of Dolby Laboratories. Confidential unpublished works. © 1992-1997 Dolby Laboratories. All rights reserved.*

***Manufactured under license from Digital Theater Systems, Inc. US Pat. No. 5,451,942 and other worldwide patents issues and pending. "DTS" and "DTS Digital Surround" are trademarks of Digital Theater Systems, Inc. © 1996 Digital Theater Systems, Inc. All rights reserved.*

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Hooking Up the Components

This chapter describes how to connect various audio and video components to the receiver. Be sure to read the sections for the components you have before you actually connect them to the receiver.

Unpacking


Check that you received the following items with the unit:

- FM wire antenna (1)
- AM loop antenna (1)
- Remote commander RM-TP503 (remote) (1)
- LR6 (size-AA) alkaline batteries (4)
- Coin shaped lithium battery (CR-2032) (1)

U.S.A./Canada models only:

- Audio/video/control S connecting cord (1)
- CONTROL S connecting cord (1)

Inserting batteries into the remote

Insert four LR6 (size-AA) alkaline batteries and one coin shaped lithium battery with the + and - properly oriented in the battery compartment. When using the remote, point it at the remote sensor  on the receiver.

For details, refer to the operating instructions supplied with your remote.

When to replace batteries

Under normal conditions, the batteries should last for about 3 months. When the remote no longer operates the receiver, replace all batteries with new ones.

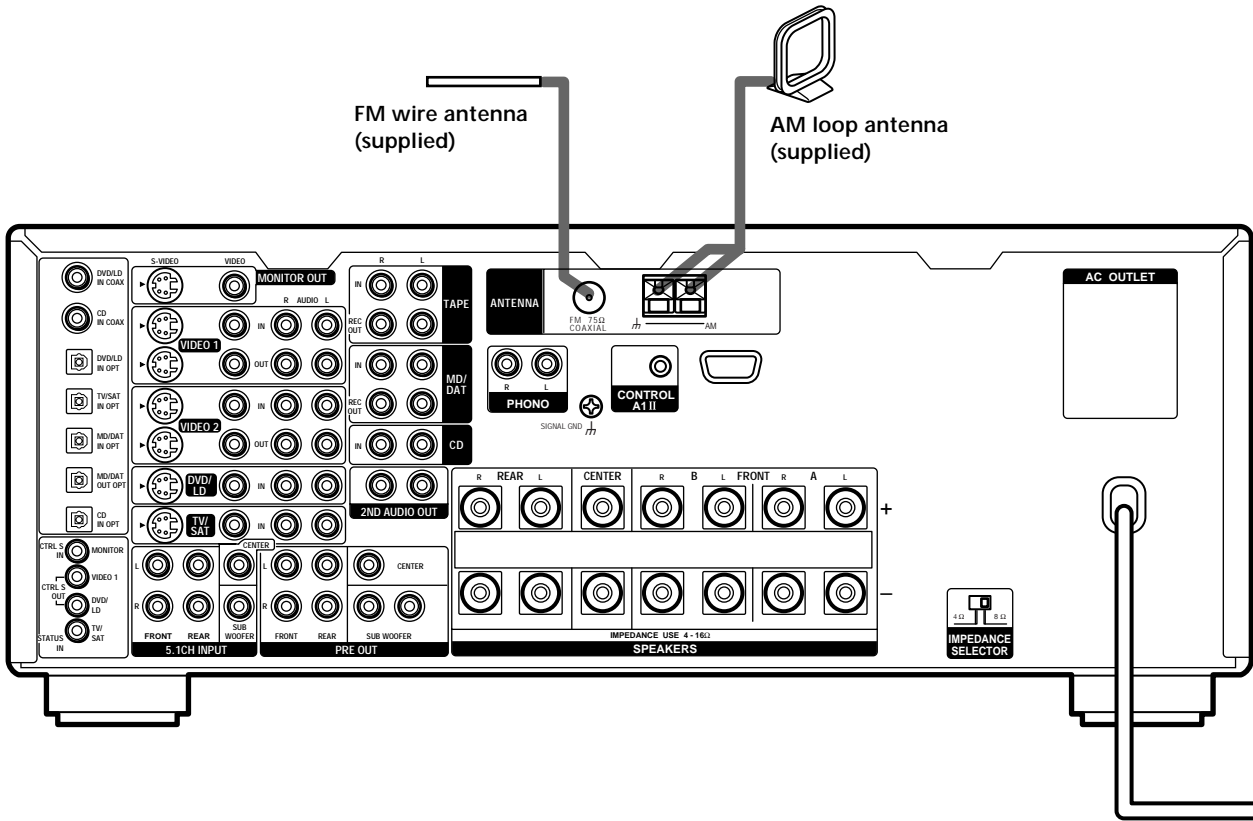
Notes

- Do not leave the remote in an extremely hot or humid place.
- Do not use a new battery with an old one.
- Do not expose the remote sensor to direct sunlight or lighting apparatuses. Doing so may cause a malfunction.
- If you don't use the remote for an extended period of time, remove the batteries to avoid possible damage from battery leakage and corrosion.
- This remote is designed for use with alkaline batteries only. Do not use a combination of different battery types.

Before you get started

- Turn off the power to all components before making any connections.
- Do not connect the AC power cords until all of the connections are completed.
- Be sure to make connections firmly to avoid hum and noise.
- When connecting an audio/video cord, be sure to match the color-coded pins to the appropriate jacks on the components: yellow (video) to yellow; white (left, audio) to white; and red (right, audio) to red.

Antenna Hookups




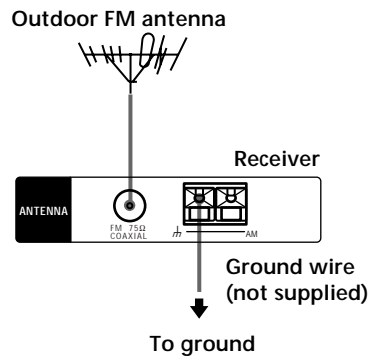
Terminals for connecting the antennas

Connect the	To the
AM loop antenna	AM terminals
FM wire antenna	FM 75Ω COAXIAL terminal

Notes on antenna hookups

- To prevent noise pickup, keep the AM loop antenna away from the receiver and other components.
- Be sure to fully extend the FM wire antenna.
- After connecting the FM wire antenna, keep it as horizontal as possible.

 **If you have poor FM reception**
Use a 75-ohm coaxial cable (not supplied) to connect the receiver to an outdoor FM antenna as shown below.



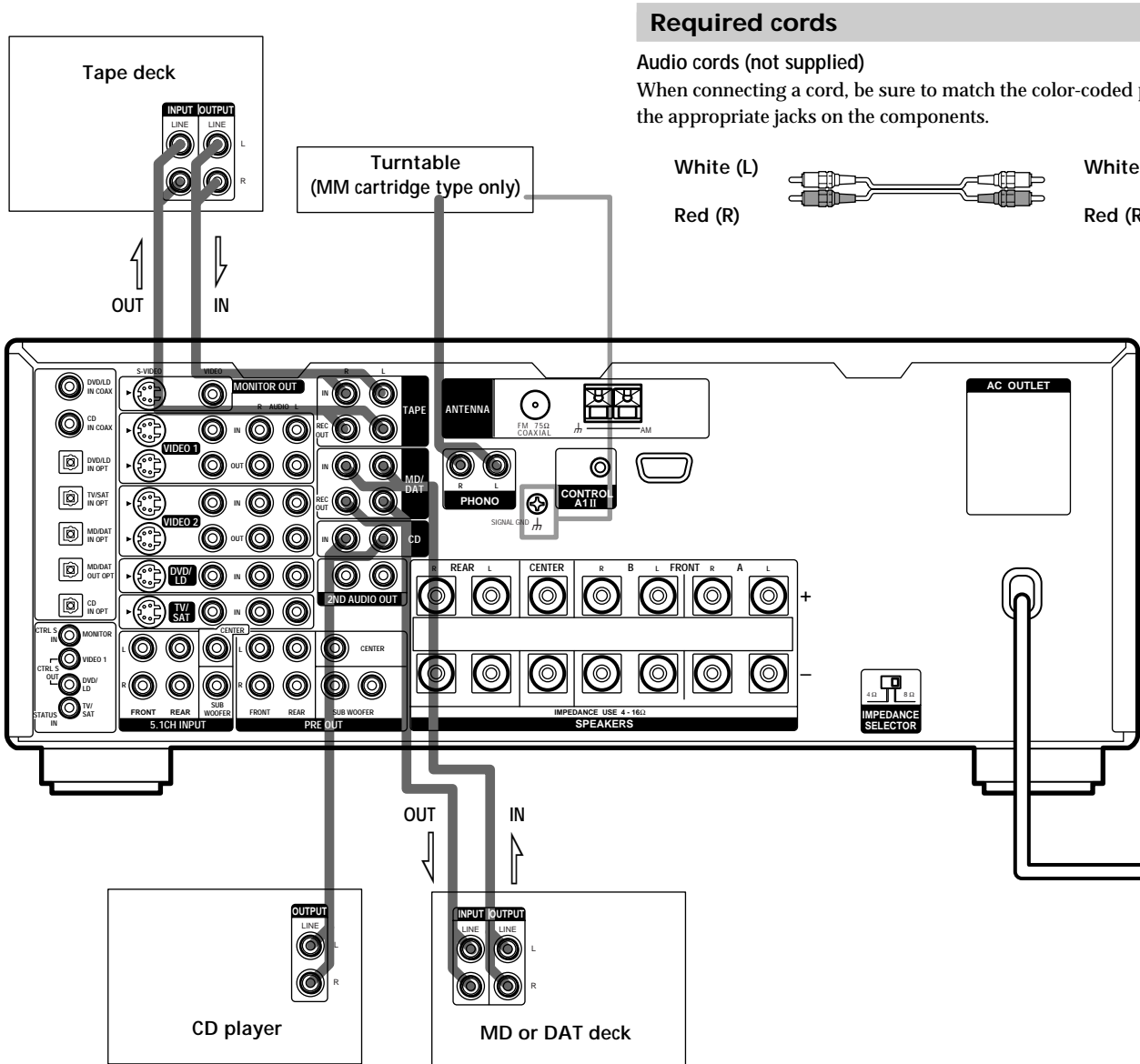
Important

If you connect the receiver to an outdoor antenna, ground it against lightning. To prevent a gas explosion, do not connect the ground wire to a gas pipe.

Note

Do not use the SIGNAL GND terminal for grounding the receiver.

Audio Component Hookups



Jacks for connecting audio components

Connect a	To the
Turntable	PHONO jacks
CD player	CD jacks
Tape deck	TAPE jacks
MD deck or DAT deck	MD/DAT jacks

Note on audio component hookups

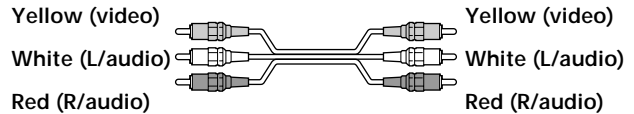
If your turntable has a ground wire, connect it to the SIGNAL GND terminal on the receiver.

Video Component Hookups

Required cords

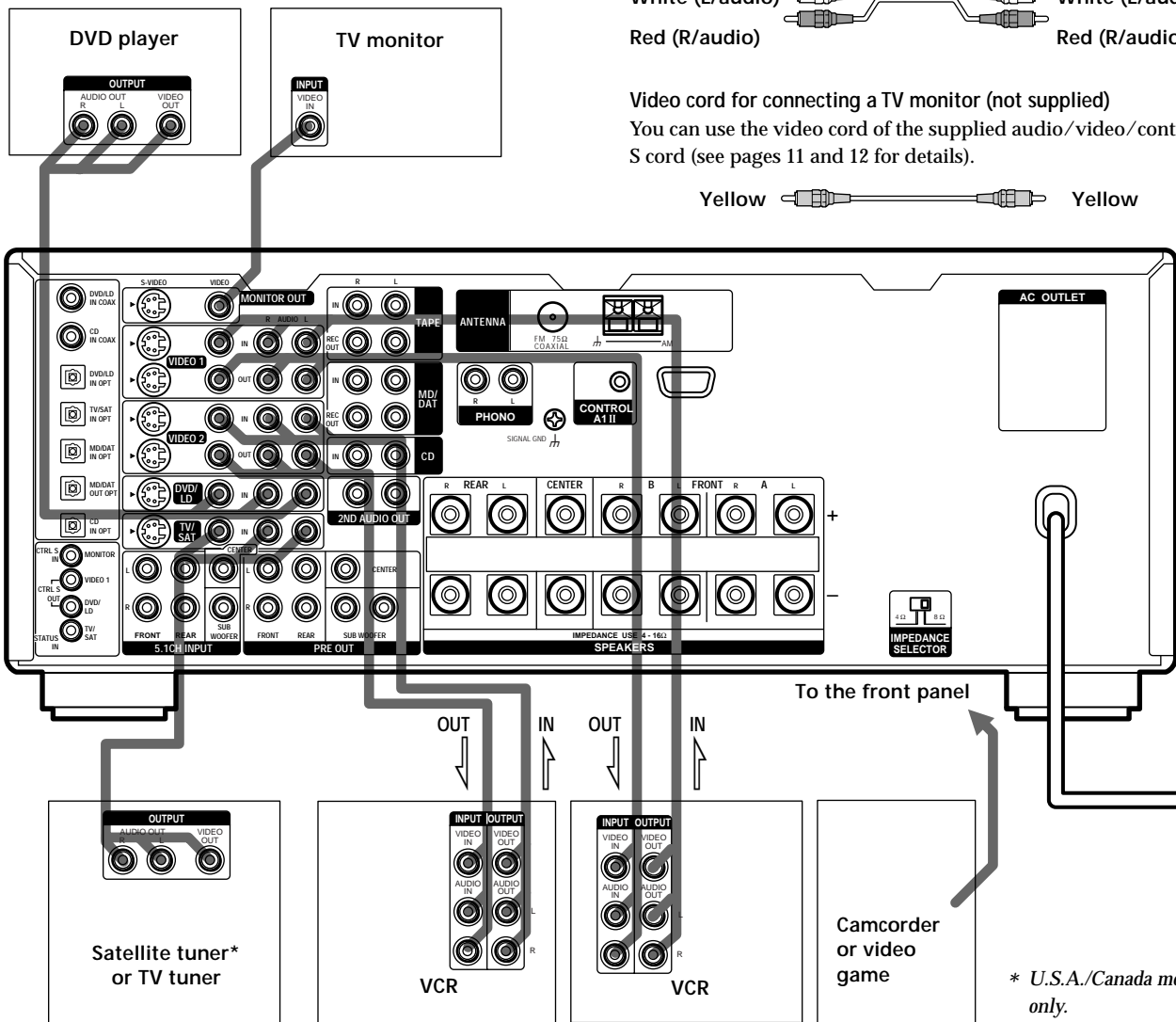
Audio/video cords (not supplied)

When connecting a cord, be sure to match the color-coded pins to the appropriate jacks on the components.



Video cord for connecting a TV monitor (not supplied)

You can use the video cord of the supplied audio/video/control S cord (see pages 11 and 12 for details).



* U.S.A./Canada models only.

Jacks for connecting video components

Connect a	To the
Satellite tuner* or TV tuner	TV/SAT* or TV/LD jacks
VCR	VIDEO 1 jacks
Additional VCR	VIDEO 2 jacks
DVD player	DVD/LD* or DVD jacks
LD player	DVD/LD* or TV/LD jacks
TV monitor	MONITOR VIDEO OUT jack
Camcorder or video game	VIDEO 3 INPUT jacks on the front panel

* U.S.A./Canada models only.

Note on video component hookups

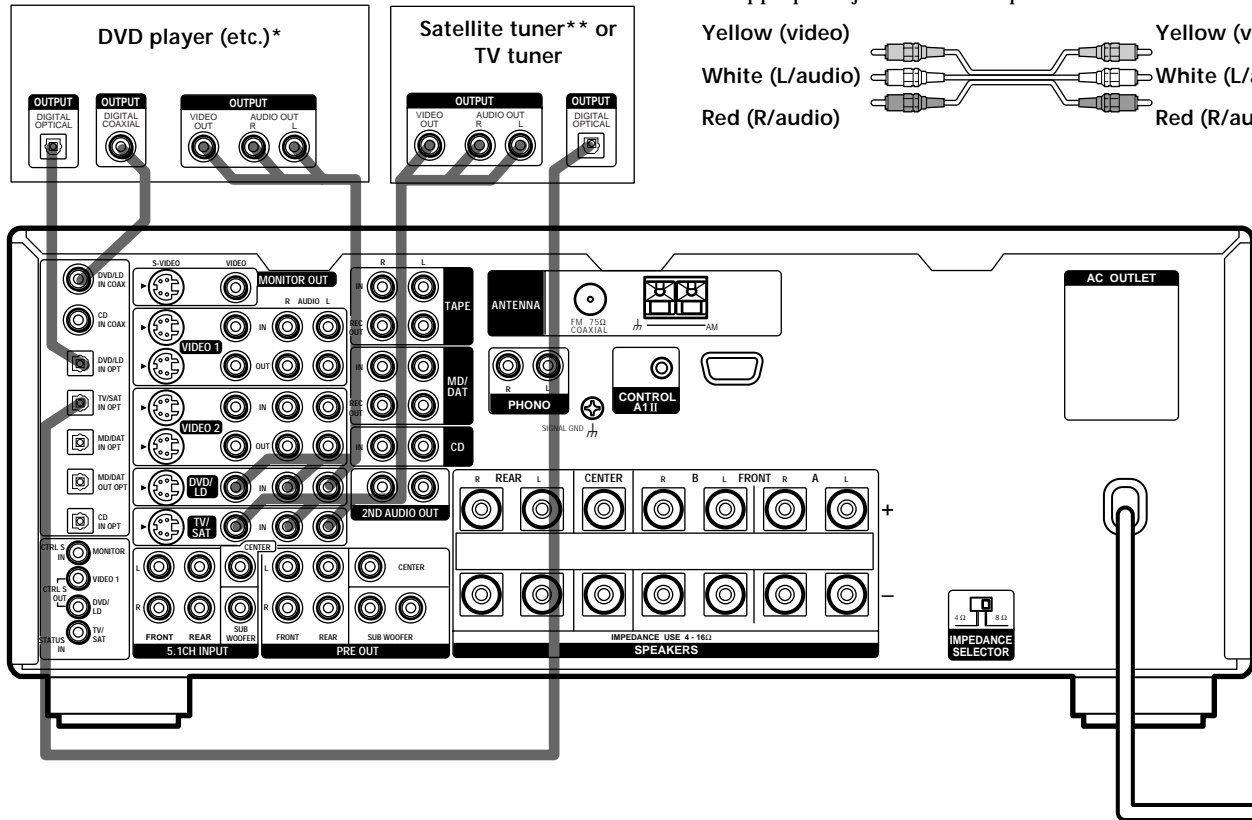
You can connect your TV's audio output jacks to the TV/SAT* (or TV/LD) AUDIO IN jacks on the receiver and apply sound effects to the audio from the TV. In this case, do not connect the TV's video output jack to the TV/SAT* (or TV/LD) VIDEO IN jacks on the receiver. If you are connecting a separate TV tuner (or satellite tuner), connect both the audio and video output jacks to the receiver as shown above.

* U.S.A./Canada models only.

When using the S-video jacks instead of the video jacks Your monitor must also be connected via an S-video jack. S-video signals are on a separate bus from the video signals and will not be output through the video jacks.

Digital Component Hookups

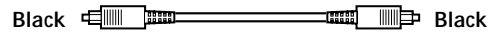
Connect the digital output jacks of your DVD player and satellite tuner (etc.) to the receiver's digital input jacks to bring the multi channel surround sound of a movie theater into your home. To enjoy the full effect of multi channel surround sound, five speakers (two front speakers, two rear speakers, and a center speaker) and a sub woofer are required. You can also connect an LD player with an RF OUT jack via an RF demodulator, like the Sony MOD-RF1 (not supplied).



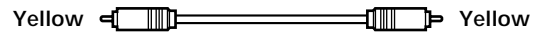
* Make either coaxial or optical connections. We recommended making coaxial connections instead of optical connections.
 **U.S.A./Canada models only.

Required cords

Optical digital cords (not supplied)

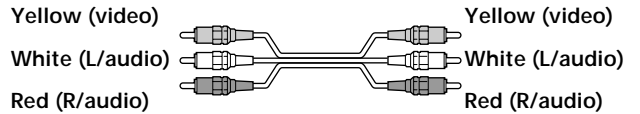


Coaxial digital cord (not supplied)



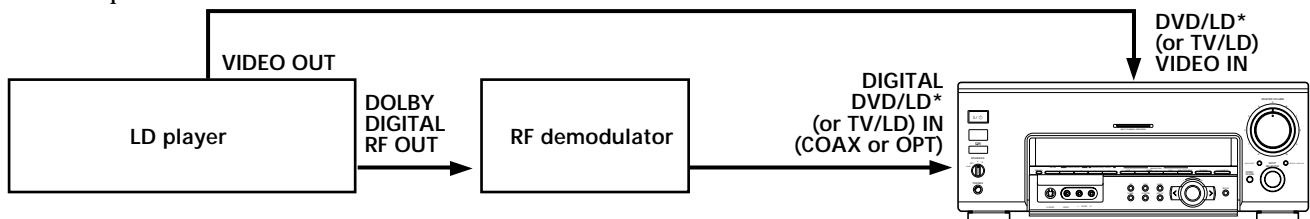
Audio/video cords (not supplied)

When connecting a cord, be sure to match the color-coded pins to the appropriate jacks on the components.



Example of LD player connected via an RF demodulator

Please note that you cannot connect an LD player's DOLBY DIGITAL RF OUT jack directly to this unit's digital input jacks. You must first convert the RF signal to either an optical or coaxial digital signal. Connect the LD player to the RF demodulator, then connect the RF demodulator's optical or coaxial digital output to this unit's OPT or COAX DVD/LD* (or TV/LD) IN jack. Refer to the instruction manual supplied with your RF Demodulator for details on DOLBY DIGITAL RF hookups.



Note

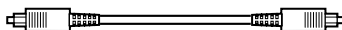
When making connections as shown above, be sure to set DIGITAL/ANALOG (4) on page 25) manually. This unit may not operate correctly if DIGITAL/ANALOG is set to "AUTO."

* U.S.A./Canada models only.

Connect the digital output jack of your MD or DAT deck to the receiver's digital input jack and connect the digital input jack of your MD or DAT deck to the receiver's digital output jack. These connections allow you to make digital recordings of CDs and TV broadcasts.

Required cords

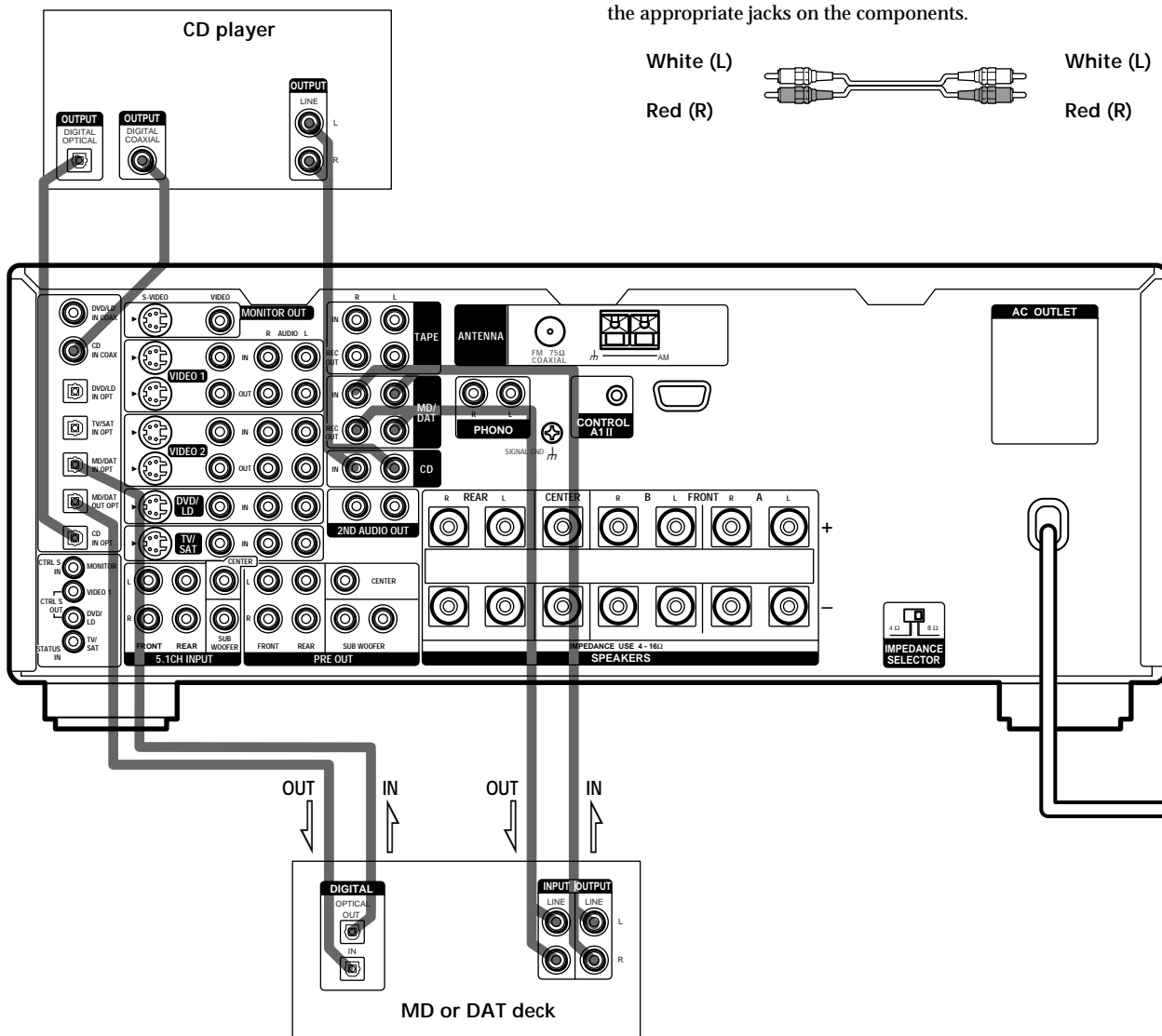
Optical digital cords (not supplied)

Black  Black

Audio cords (not supplied)

When connecting a cord, be sure to match the color-coded pins to the appropriate jacks on the components.

White (L)  White (L)
 Red (R)  Red (R)



* Make either coaxial or optical connections. We recommended making coaxial connections instead of optical connections.

Notes

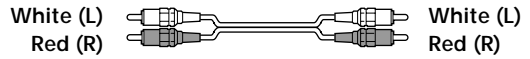
- Please note that you cannot make a digital recording of a digital multi channel surround signal.
- All OPT and COAX jacks are compatible with 32 kHz, 44.1 kHz, 48 kHz and 96 kHz sampling frequencies and 24 bit word length.
- It is not possible to record analog signals to MD/DAT, TAPE and VIDEO with only digital connections. Be sure to make both digital and analog connections to your digital components.

5.1CH Input Hookups

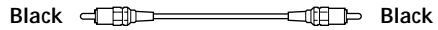
Although this receiver incorporates a multi channel decoder, it is also equipped with 5.1CH INPUT jacks. These connections allow you to enjoy multichannel software encoded in formats other than Dolby Digital (AC-3) and DTS. If your DVD player is equipped with 5.1CH OUTPUT jacks, you can connect them directly to this unit to enjoy the sound of the DVD player's multi channel decoder. Alternatively, the 5.1CH INPUT jacks can be used to connect an external multi channel decoder. To fully enjoy multi channel surround sound, you will need five speakers (two front speakers, two rear speakers, and a center speaker) and a sub woofer. Refer to the instruction manual supplied with your DVD player, multi channel decoder, etc., for details on the 5.1 channel input hookups.

Required cords

Audio cords (not supplied)
Two for the 5.1CH INPUT FRONT and REAR jacks



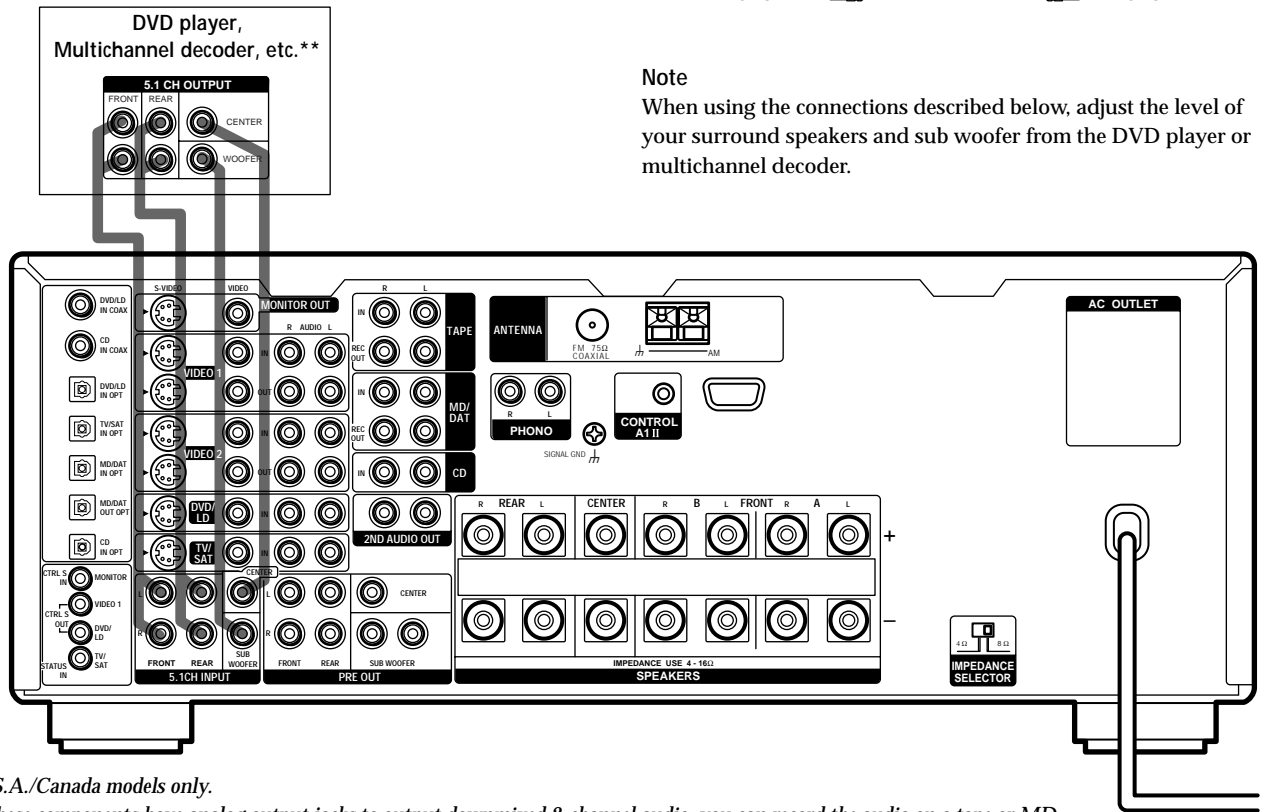
Monaural audio cords (not supplied)
Two for the 5.1CH INPUT CENTER and SUB WOOFER jacks



Video cord (not supplied)
One for the DVD/LD* (or DVD) VIDEO IN jacks (etc.)

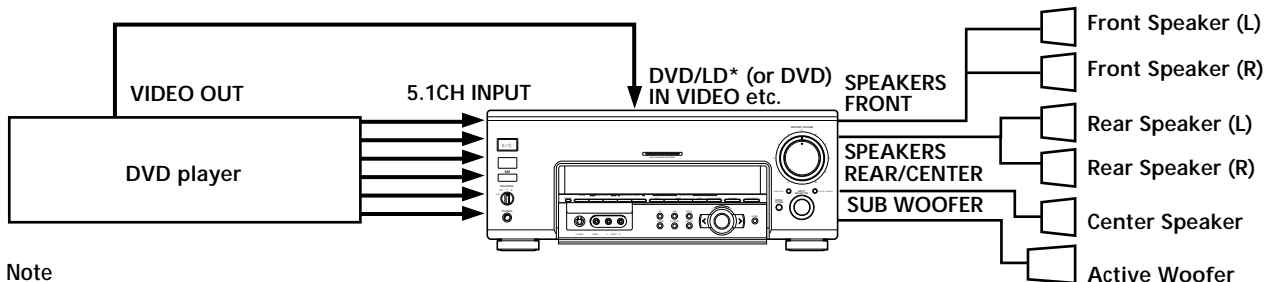


Note
When using the connections described below, adjust the level of your surround speakers and sub woofer from the DVD player or multichannel decoder.



* U.S.A./Canada models only.
** If these components have analog output jacks to output downmixed 2-channel audio, you can record the audio on a tape or MD. To do this, connect the output jacks for the downmixed audio to the input jacks you want to assign for the component. You cannot assign the component to the PHONO and TUNER functions.

Example of a DVD player hookup using the 5.1 INPUT jacks



Note
See page 15 for details on speaker system hookup.
* U.S.A./Canada models only.

Other Hookups

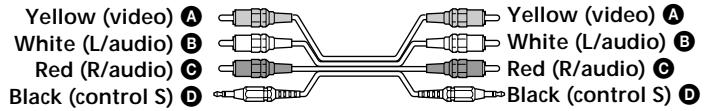
Required cords

Audio cords (not supplied)

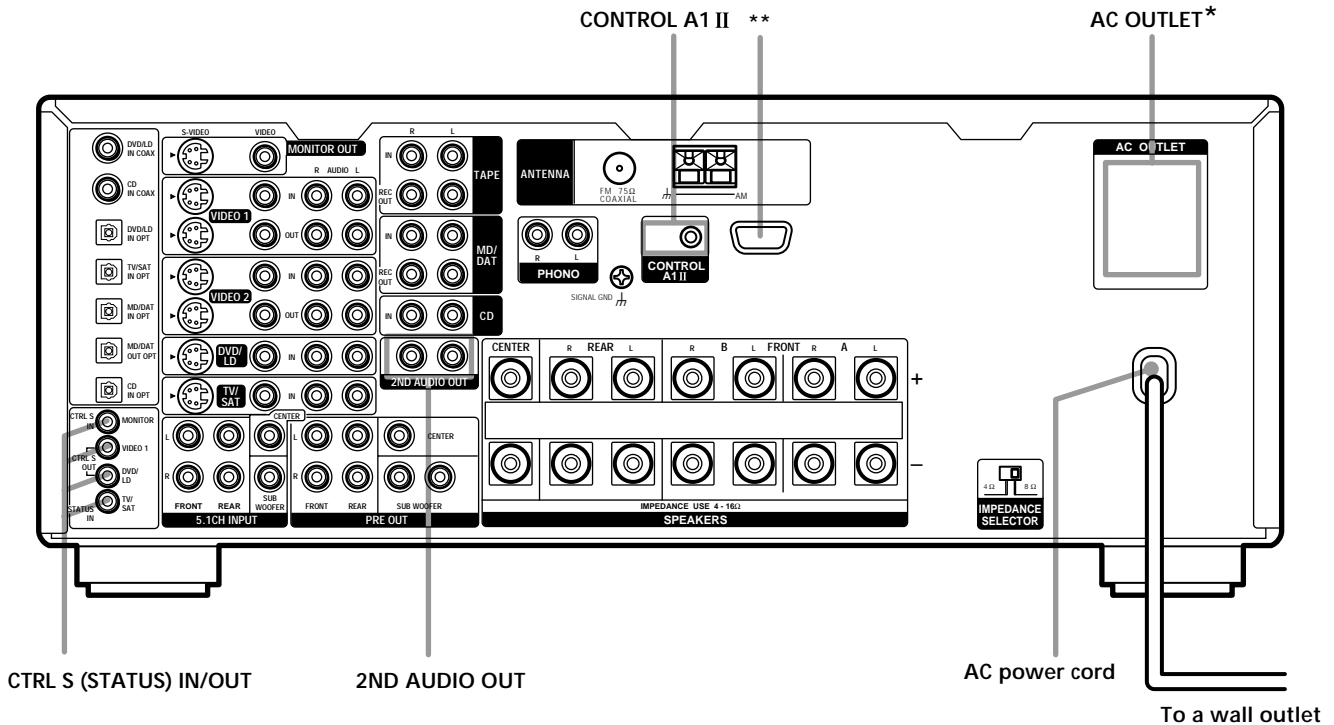
When connecting a cord, be sure to match the color-coded pins to the appropriate jacks on the components.



Audio/video/control S connecting cord (1***)



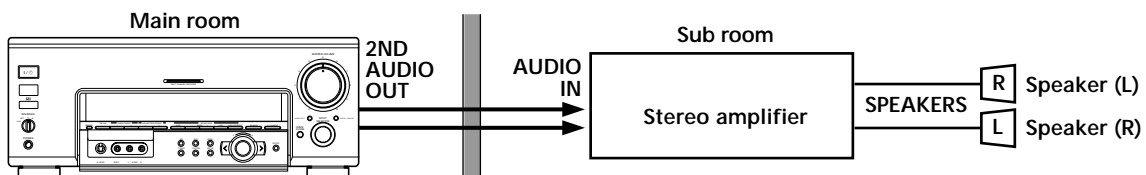
CONTROL S connecting cord (1***)



* The configuration, shape, and number of AC outlets on the rear panel varies according to the model and country to which the receiver is shipped.
 **This jack is intended only for use in the manufacturing and servicing of the unit.
 ***U.S.A./Canada models only

Example of a sub room hookup using the 2ND AUDIO OUT jacks

You can use the 2ND AUDIO OUT jacks to output audio signals to a stereo amplifier located in another room. Select the source in the CUSTOMIZE menu (page 46) to switch the audio signals output to the sub room.



Note
 This function is not available when 5.1CH INPUT is selected.

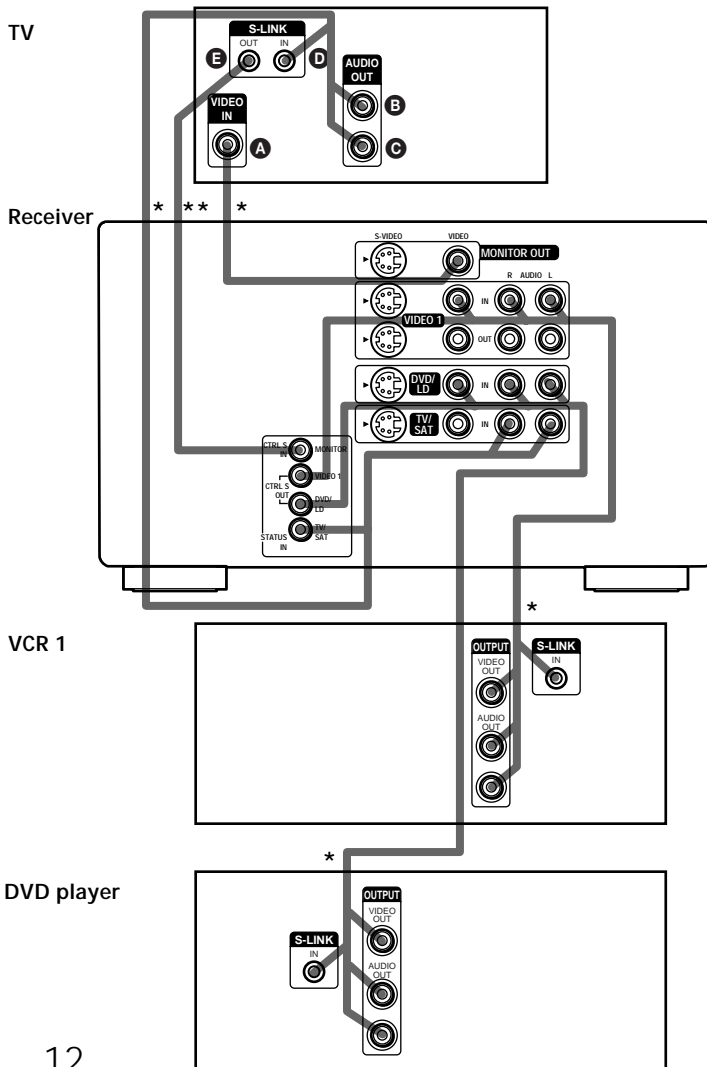
Other Hookups

S-LINK CONTROL S hookup (U.S.A./Canada models only)

If you have a S-LINK CONTROL S-compatible Sony TV, satellite tuner, monitor, DVD player or VCR, use an audio/video/control S connecting cord or a control S connecting cord to connect the CTRL S (STATUS) IN (for TV, satellite tuner, or monitor) or OUT (for VCR, etc.) jack on the receiver to the appropriate S-LINK jack on the respective component. Refer to the operating instructions supplied with your TV, satellite tuner, monitor, VCR, etc., for details.

The following illustration is an example of S-LINK CONTROL S hookups between the receiver, a TV, a VCR, and a DVD player. When your TV is connected to the receiver as shown below, the TV input mode will change to video input whenever you turn on the receiver. When you connect the receiver as shown below, the input mode of the receiver changes to VIDEO 1 or DVD/LD whenever you play your VCR or DVD.

The following connections also change the input mode of the receiver to TV whenever you operate your TV.



- * Audio/video/control S connecting cord (Pull the video cord away from the supplied audio/video/control S cable for connection **A**.)
- ** Control S connecting cord

Note

Refer to the instructions supplied with your TV for details regarding the operations you can control from your TV.

CONTROL A1II hookup

• If you have a CONTROL A1II compatible Sony CD player, tape deck, or MD deck

Use a CONTROL A1 cord (not supplied) to connect the CONTROL A1II jack on the CD player, tape deck, or MD deck to the CONTROL A1II jack on the receiver. Refer to "CONTROL A1II Control System" on page 55 and the operating instructions supplied with your CD player, tape deck, or MD deck for details.

Note

If you make CONTROL A1II connections from the receiver to an MD deck that is also connected to a computer, do not operate the receiver while using the "Sony MD Editor" software. This may cause a malfunction.

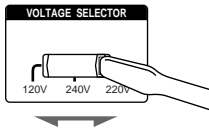
• If you have a Sony CD changer with a COMMAND MODE selector

If your CD changer's COMMAND MODE selector can be set to CD 1, CD 2, or CD 3, be sure to set the command mode to "CD 1" and connect the changer to the CD jacks on the receiver.

If, however, you have a Sony CD changer with VIDEO OUT jacks, set the command mode to "CD 2" and connect the changer to the VIDEO 2 jacks on the receiver.

Setting a voltage selector

If your receiver has a voltage selector on the rear panel, check that the voltage selector on the rear panel of the receiver is set to the local power supply voltage. If not, use a screwdriver to set the selector to the correct position before connecting the AC power cord to a wall outlet.



Connecting the AC power cord

Before connecting the AC power cord of this receiver to a wall outlet:

- Connect the speaker system to the receiver (see page 15).
- Turn the MASTER VOLUME control to the leftmost position (0).

Connect the AC power cord(s) of your audio/video components to a wall outlet.

If you connect other audio/video components to the AC OUTLET(s) on the receiver, the receiver will supply power to the connected component(s), allowing you to turn the whole system on or off when you turn the receiver on/off.

Caution

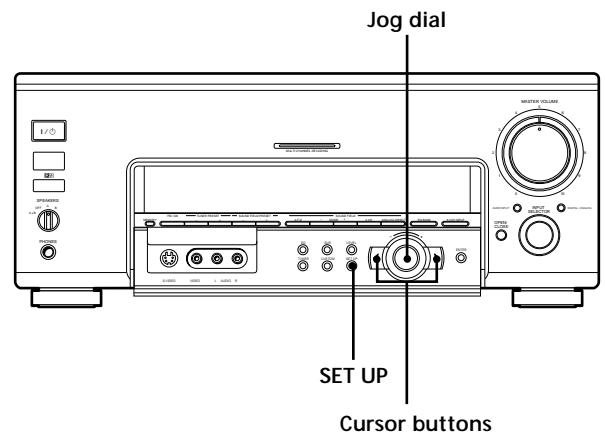
Make sure that the total power consumption of the component(s) connected to the receiver's AC OUTLET(s) does not exceed the wattage stated on the rear panel. Do not connect high-wattage electrical home appliances such as electric irons, fans, or TVs to this outlet.

Note

If the AC power cord is disconnected for about two weeks, the receiver's entire memory will be cleaned and the demonstration will start.

Hooking Up and Setting Up the Speaker System

This chapter describes how to hook up your speaker system to the receiver, how to position each speaker, and how to set up your speakers to enjoy multi channel surround sound.



Brief descriptions of buttons and controls used to set up the speaker system

SET UP button: Press to enter the setup mode when specifying speaker types and distances.

Cursor buttons (</>): Use to select parameters after pressing the SET UP button.

Jog dial: Use to adjust the setting of each parameter.

Speaker System Hookup

Required cords

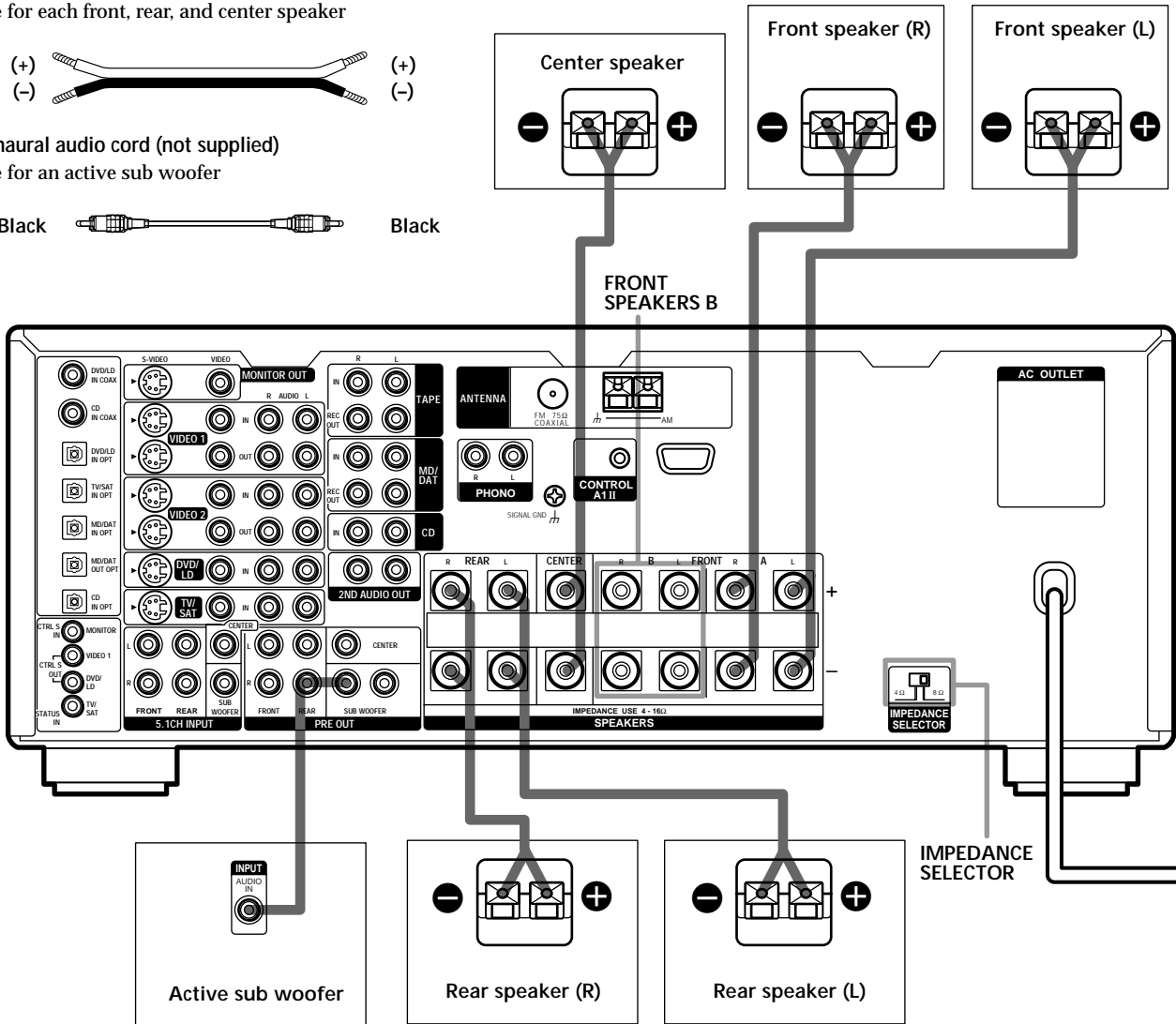
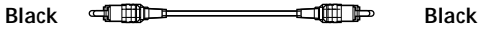
Speaker cords (not supplied)

One for each front, rear, and center speaker



Monaural audio cord (not supplied)

One for an active sub woofer



Hooking Up and Setting Up the Speaker System

Terminals for connecting the speakers

Connect the	To the
Front speakers (8 or 4* ohm)	SPEAKERS FRONT A terminals
Additional pair of front speakers (8 or 4* ohm)	SPEAKERS FRONT B terminals
Rear speakers (8 or 4* ohm)	SPEAKERS REAR terminals
Center speaker (8 or 4* ohm)	SPEAKERS CENTER terminals
Active sub woofer	SUB WOOFER AUDIO OUT jack**

* See "Speaker impedance" on the next page.

** You can connect an active sub woofer to either of the two jacks. The remaining jack can be used to connect a second active sub woofer.



To connect certain speakers to another amplifier Use the PRE OUT jacks. The same signal is output from both the SPEAKERS jacks and the PRE OUT jacks. For example, if you want to connect just the front speakers to another amplifier, connect that amplifier to the PRE OUT FRONT L and R jacks.

Notes on speaker system hookup

- Twist the stripped ends of the speaker cords about 2/3 inch (10 mm). Be sure to match the speaker cord to the appropriate terminal on the components: + to + and - to -. If the cords are reversed, the sound will be distorted and will lack bass.
- If you use front speakers with low maximum input rating, adjust the volume carefully to avoid excessive output on the speakers.

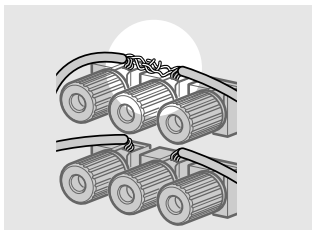
Speaker System Hookup

To avoid short-circuiting the speakers

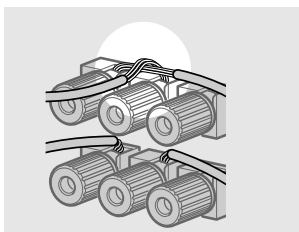
Short-circuiting of the speakers may damage the receiver. To prevent this, make sure to take the following precautions when connecting the speakers.

Make sure the stripped ends of each speaker cord does not touch another speaker terminal or the stripped end of another speaker cord.

Examples of poor conditions of the speaker cord



Stripped speaker cord is touching another speaker terminal.



Stripped cords are touching each other due to excessive removal of insulation.

After connecting all the components, speakers, and AC power cord, output a test tone to check that all the speakers are connected correctly. For details on outputting a test tone, see page 21.

If no sound is heard from a speaker while outputting a test tone or a test tone is output from a speaker other than the one whose name is currently displayed on the receiver, the speaker may be short-circuited. If this happens, check the speaker connection again.

Speaker impedance

To enjoy multi channel surround, connect front, center, and rear speakers with a nominal impedance of 8 ohms or higher, and set the speaker IMPEDANCE SELECTOR to "8Ω." Check the instruction manual supplied with your speakers if you're not sure of their impedance. (This information is usually printed on a label on the back of the speaker.)

If you connect any speaker to the FRONT, CENTER or REAR SPEAKERS terminals with a nominal impedance between 4 ohms and 8 ohms, you must set the IMPEDANCE SELECTOR to "4Ω."

Notes

- Be sure to connect front speakers with a nominal impedance of 8 ohms or higher if you want to select both sets (A+B) of front speakers (see page 27).
- Speakers with an impedance of less than 4 ohms cannot be used.

Performing Initial Setup Operations

Once you have hooked up the speakers and turned on the power, clear the receiver's memory. Then specify the speaker parameters (size, position, etc.) and perform any other initial setup operations necessary for your system.

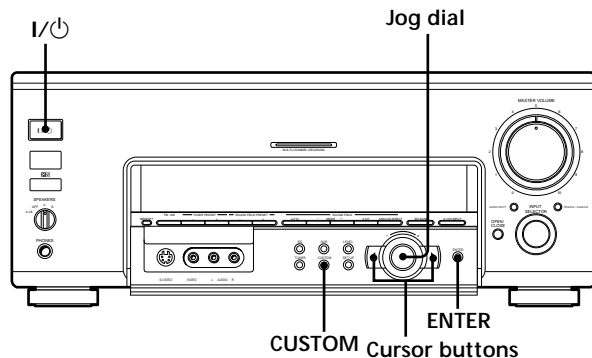
Before turning on the receiver

Make sure that you have:

- Turned MASTER VOLUME to the leftmost position (0).
- Selected the appropriate front speakers (see “[25](#) SPEAKERS selector” on page 27).

Clearing the receiver's memory

Before using your receiver for the first time, or when you want to clear the receiver's memory, do the following.



- 1 Press **CUSTOM**.
CUSTOMIZE menu appears in the display.
- 2 Press the cursor buttons (< or >) repeatedly to display “MEMORY CLEAR [NO]”.
- 3 Turn the jog dial to display “MEMORY CLEAR [YES]” and press **ENTER**.
“Are you sure? [NO]” is displayed.
- 4 Turn the jog dial to display “Are you sure? [YES]” and press **ENTER**.
The unit automatically turns off, and then turns on again. All of the followings are reset to the factory settings or cleared.
 - All menu adjustments (speaker settings, equalizer settings, sound field parameters, etc.).
 - The equalizer settings in the equalizer bank.

Performing initial setup operations

Before using your receiver for the first time, use the SET UP button to adjust the setup parameters so that they correspond to your system. You can adjust the following items. For details on how to make adjustments, see the page in parenthesis.

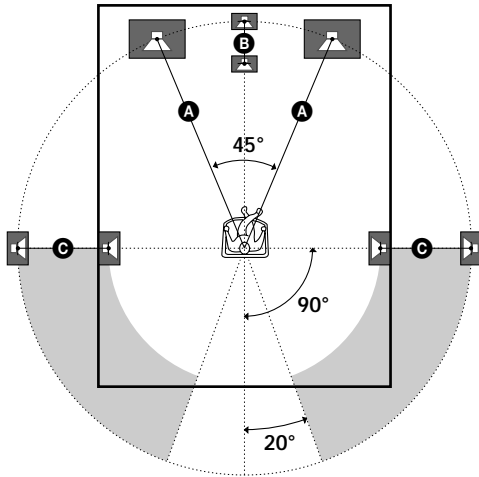
- Speaker size and placement (pages 18~19).
- Speaker distance (page 20).

Multi Channel Surround Setup

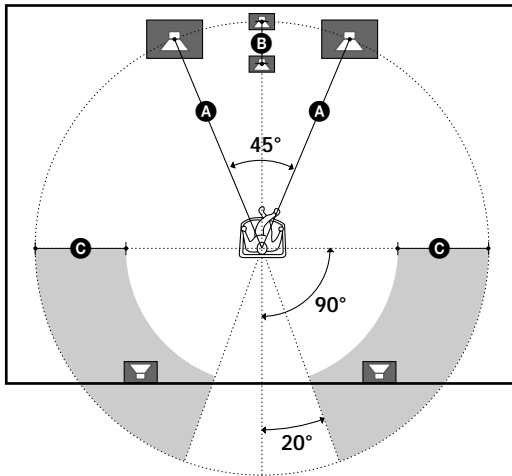
For the best possible surround sound all speakers should be the same distance from the listening position (A). However, this unit lets you to place the center speaker up to 5 feet (1.5 meters) closer (B) and the rear speakers up to 15 feet (4.5 meters) closer (C) to the listening position. The front speakers can be placed from 3 to 40 feet (1.0 to 12.0 meters) from the listening position (A).

You can place the rear speakers either behind you or to the side, depending on the shape of your room (etc.).

When placing rear speakers to your side



When placing rear speakers behind you



Note

Do not place the center speaker farther away from the listening position than the front speakers.

Specifying the speaker parameters

- 1 Press I/⏻ to turn on the receiver.
- 2 Press SET UP.
- 3 Press the cursor buttons (< or >) repeatedly to select the parameter you want to adjust.
- 4 Turn the jog dial to select setting you desire. The setting is entered automatically.
- 5 Repeat steps 3 and 4 until you have set all of the parameters that follow.

Note

When the adjustable range is exceeded, the display blinks. Please keep settings within areas A, B and C as described on the left.

■ Front speaker size

FRONT SP [LARGE]

Initial setting : LARGE

- If you connect large speakers that will effectively reproduce bass frequencies, select "LARGE". Normally, select "LARGE".
- If the sound is distorted, or you feel a lack of surround effects when using multi-channel surround sound, select "SMALL" to activate the bass redirection circuitry and output the front channel bass frequencies from the sub woofer.

■ Center speaker size

CENTER SP [LARGE]

Initial setting : LARGE


- If you connect a large speaker that will effectively reproduce bass frequencies, select "LARGE". Normally, select "LARGE". However, if the front speakers are set to "SMALL", you cannot set the center speaker to "LARGE".
- If the sound is distorted, or you feel a lack of surround effects when using multi-channel surround sound, select "SMALL" to activate the bass redirection circuitry and output the center channel bass frequencies from the front speakers (if set to "LARGE") or sub woofer.^{*1}
- If you do not connect the center speaker, select "NO". The sound of the center channel will be output from the front speakers.^{*2}

■ Rear speaker size

REAR SP [LARGE]

Initial setting : LARGE

- If you connect large speakers that will effectively reproduce bass frequencies, select “LARGE”. Normally, select “LARGE”. However, if the front speakers are set to “SMALL”, you cannot set the rear speakers to “LARGE”.
- If the sound is distorted, or you feel a lack of surround effects when using multi-channel surround sound, select “SMALL” to activate the bass redirection circuitry and output the rear channel bass frequencies from the sub woofer or other “LARGE” speakers.
- If you do not connect rear speakers, select “NO”. The sound of the rear channel will be output from the front speakers.*³


 *1~*3 correspond to the following Dolby Pro Logic modes

*¹ NORMAL

*² PHANTOM

*³ 3 STEREO

(*² + *³ = 2ch mode).

 About speaker sizes (LARGE and SMALL)

Internally, the LARGE and SMALL settings for each speaker determine whether or not the internal sound processor will cut the bass signal from that channel. When the bass is cut from a channel, the bass redirection circuitry sends the corresponding bass frequencies to the sub woofer or other “LARGE” speaker. However, since bass sounds have a certain amount of directionality it best not to cut them, if possible. Therefore, even when using small speakers, you can set them to “LARGE” if you want to output the bass frequencies from that speaker. On the other hand, if you are using a large speaker, but prefer not to have bass frequencies output from that speaker, set it to “SMALL”.

If the overall sound level is lower than you prefer, set all speakers to “LARGE”. If there is not enough bass, you can use the equalizer to boost the bass levels. To adjust the equalizer, see page 39.

■ Sub woofer selection

SUB WOOFER [YES]

Initial setting : YES

- If you connect a sub woofer, select “YES”.
- If you do not connect a sub woofer, select “NO”. This activates the bass redirection circuitry and outputs the LFE signals from other speakers.
- In order to take full advantage of the bass redirection circuitry, we recommend setting the sub woofer’s cut off frequency as high as possible.

■ Front speaker distance

FRONT XX feet* (meter)

Initial setting : 16 feet* (5.0 meter)

Set the distance from your listening position to the front (left or right) speaker (A on page 18).

- Front speaker distance can be set in 1 foot* (0.1 meter) steps from 3 to 40 feet* (1.0 to 12.0 meters).
- If both speakers are not placed an equal distance from your listening position, set the distance to the closest speaker.

* U.S.A./Canada models only.

■ Center speaker distance

CENTER XX feet* (meter)

Initial setting : 16 feet* (5.0 meter)

Set the distance from your listening position to the center speaker.

- Center speaker distance can be set in 1 foot* (0.1 meter) steps from 3 to 40 feet* (1.0 to 12.0 meters).

* U.S.A./Canada models only.

■ Rear speaker distance

REAR XX feet* (meter)

Initial setting : 11 feet* (3.5 meter)

Set the distance from your listening position to the rear (left or right) speaker.

- Rear speaker distance can be set in 1 foot* (0.1 meter) steps from 3 to 40 feet* (1.0 to 12.0 meters).
- If both speakers are not placed an equal distance from your listening position, set the distance to the closest speaker.

* U.S.A./Canada models only.

 About speaker distances

Please note that, setting the speaker distance closer than the actual location of the speakers will cause a delay in the output of the sound from that speaker. In other words, the speaker will sound like it is farther away.

For example, setting the center speaker distance 3~6 feet (1~2 meters) closer than the actual speaker position will create a fairly realistic sensation of being “inside” the screen. If you cannot obtain a satisfactory surround effect because the rear speakers are too close, setting the rear speaker distance closer (shorter) than the actual distance will create a larger soundstage. Adjusting these parameter while listening to the sound often results in much better surround sound. Give it a try!

■ Sub woofer distance

S.W XX feet* (meter)

Initial setting : 16 feet* (5.0 meter)

Set the distance from your listening position to the sub woofer.

- Sub woofer distance can be set in 1 foot* (0.1 meter) steps from 3 to 40 feet* (1.0 to 12.0 meters).

* U.S.A./Canada models only.

Multi Channel Surround Setup

■ Sub woofer phase polarity

S.W PHASE [NORMAL]

Initial setting : NORMAL

Set the sub woofer phase polarity.

There is usually no problem when the sub woofer phase polarity is set to "NORMAL". However, depending on the type of front speakers, the position of the sub woofer, and the cut-off frequency of the sub woofer, setting the phase polarity to "REVERSE" may produce better bass.

Besides bass reproduction, the richness and tightness of the overall sound may also be affected. While listening from the main listening position, select the setting that best suits your environment.

■ Rear speaker position*

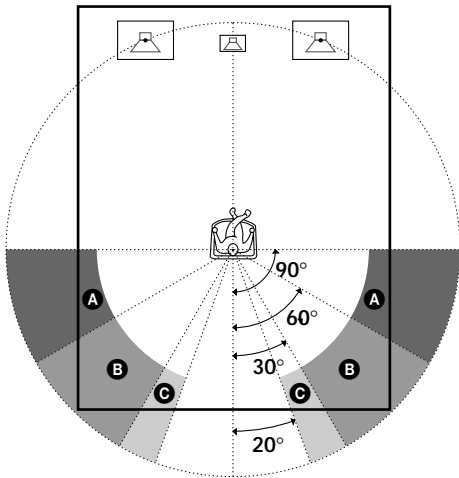
REAR POSI [BEHIND]

Initial setting : BEHIND

This parameter lets you specify the location of your rear speakers for proper implementation of the Digital Cinema Sound "VIRTUAL" sound fields. Refer to the illustration below.

- Select "SIDE" if the location of your rear speakers corresponds to section **A**.
- Select "MIDDLE" if the location of your rear speakers corresponds to section **B**.
- Select "BEHIND" if the location of your rear speakers corresponds to section **C**.

This setting only effects the "VIRTUAL" sound fields.



* This parameter is not available when "Rear speaker size" is set to "NO".

■ Rear speaker height*

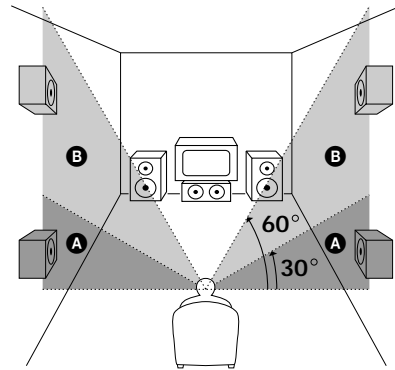
REAR HEIGHT [LOW]

Initial setting : LOW

This parameter lets you specify the height of your rear speakers for proper implementation of the Digital Cinema Sound "VIRTUAL" sound fields. Refer to the illustration below.

- Select "LOW" if the location of your rear speakers corresponds to section **A**.
- Select "HIGH" if the location of your rear speakers corresponds to section **B**.

This setting only effects the "VIRTUAL" sound fields.



* This parameter is not available when "Rear speaker size" is set to "NO".

💡 About the rear speaker position and rear speaker height
These settings are designed specifically for implementation of the Digital Cinema Sound "VIRTUAL" sound fields. The rear speaker position parameter allows you to specify one of three possible horizontal positions. The rear speaker height parameter allows you to specify one of two possible height positions. Select the position and height combination that comes closest to the actual position of your rear speakers.

■ Front speaker roll off frequency

FRONT SP > XXXHz

Initial setting : > 80 Hz

This setting lets you select the roll off frequency for the low cut filter of the front (left and right) speakers when the front speakers are set to “SMALL”.

- The bass frequencies lower than the cut off frequency are divided by the bass redirection circuitry and output from the sub woofer or other “LARGE” speakers. In order to prevent clipping, frequencies below the cut off frequency are not output from the front speakers.

■ Center speaker roll off frequency

CENTER SP > XXXHz

Initial setting : > 80 Hz

This setting lets you select the roll off frequency for the low cut filter of the center speaker when the center speaker is set to “SMALL”.

- The bass frequencies lower than the cut off frequency are divided by the bass redirection circuitry and output from the sub woofer or other “LARGE” speakers. In order to prevent clipping, frequencies below the cut off frequency are not output from the center speaker.

■ Rear speaker roll off frequency

REAR SP > XXXHz

Initial setting : > 80 Hz

This setting lets you select the roll off frequency for the low cut filter of the rear (left and right) speakers when the rear speakers are set to “SMALL”.

- The bass frequencies lower than the cut off frequency are divided by the bass redirection circuitry and output from the sub woofer or other “LARGE” speakers. In order to prevent clipping, frequencies below the cut off frequency are not output from the rear speakers.

💡 About the roll off frequency parameters

These parameters are designed to allow you to prevent clipping by eliminating output of low-bass frequencies from “SMALL” speakers. Be sure to set the roll off frequency so that clipping does not occur from the respective speaker.

■ LFE high cut filter

LFE HIGH CUT [STD]

Initial setting: STD (=120 Hz)

This setting lets you select the cutoff frequency of the LFE channel High Cut Filter. Normally, this should set to STD.

When using a passive subwoofer powered by a separate power amplifier, it may be better to change the cutoff frequency. When this is the case, use a setting other than STD.

■ Distance unit

DIST.UNIT [feet]* [meter]

Initial setting : feet* (meter)

Lets you select either feet or meters as the unit of measure for setting distances. 1 foot corresponds to a 1 ms difference.

* U.S.A./Canada models only.

Adjusting the speaker volume

Use the remote while seated in your listening position to adjust the volume of each speaker.

For more information regarding remote control operations, refer to the separate manual “Remote Commander” supplied with this unit.

- 1 Press I/⏻ to turn on the receiver.
- 2 Touch SOUND FIELD on the supplied remote to display the SOUND FIELD screen.
- 3 Touch LEVEL on the supplied remote to display the LEVEL screen.
- 4 Touch TEST TONE on the supplied remote.
- 5 Touch + on the remote.
You will hear the test tone from each speaker in sequence.
- 6 Adjust the volume level so that the volume of the test tone from each speaker sounds the same when you are in your main listening position.
 - To adjust the balance of the front right and front left speakers, use the front balance controls on the remote (or FRONT (L/R) in the LEVEL menu (page 42)).
 - To adjust the balance of the rear right and rear left speakers, use the rear balance control in the remote (or REAR (L/R) in the LEVEL menu (page 42)).
 - To adjust the volume level of the center speaker, use the center level control on the remote (or CENTER LEVEL in the LEVEL menu (page 42)).
 - To adjust the volume level of the rear speakers, use the rear level control on the remote (or REAR LEVEL in the LEVEL menu (page 42)).
- 7 Touch EXIT on the remote again to turn off the test tone.

💡 You can adjust the volume level of all speakers at the same time

Turn MASTER VOLUME on the main unit or touch MASTER VOLUME +/- on the remote.

💡 You can output the test tone from the speaker of your choice
Normally, the test tone is output from each speaker in sequence. However, you can use the LEVEL menu to output the test tone from one specific speaker (see page 42). After you have touched TEST TONE, touch +/- repeatedly to select “fix [XXX]” or “[XXX] fix”. The test tone is output from the selected speaker.

Multi Channel Surround Setup

Notes

- The rear balance, center level, and rear level are shown in the display during adjustment.
- Although these adjustments can also be made via the front panel using the parameters in the LEVEL menu (when the test tone is output, the unit switches to the LEVEL menu automatically), we recommend you follow the procedure described above and adjust the speaker levels from your listening position using the remote control.

When setting the volume levels for each speaker

Let's assume that you have matched the sound levels of all the speakers using the test tone. Although this lays the foundation for high quality surround sound, it may be necessary to make further adjustments while listening to playback of actual software. This is because most software contains center and rear channels recorded at slightly lower levels than the two front channels.

When you actually playback software recorded in multi channel surround you will notice that increasing the center and rear speaker levels produces a better blend between the front and center speakers and greater cohesion between the front and rear speakers. Increasing the level of the center speaker about 1 dB, and the rear speakers about 1~2 dB is likely to produce better results.

In other words, in order to create a more cohesive soundstage with balanced dialog, we recommend that you make some adjustments while playing your software. Changes of only 1 dB can make a huge difference in the character of the soundstage.

Before You Use Your Receiver

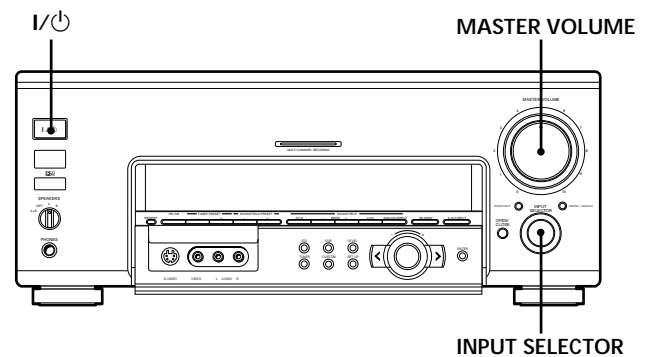
Before turning on the receiver

Make sure that you have:

- Turned MASTER VOLUME to the leftmost position (0).
- Selected the appropriate front speakers (see “[25](#) SPEAKERS selector” on page 27).

Checking the connections

After connecting all of your components to the receiver, do the following to verify that the connections were made correctly.



- 1 Press I/⏻ to turn on the receiver.
- 2 Rotate INPUT SELECTOR to select a component (program source) that you connected (e.g., CD player or tape deck).
- 3 Turn on the component and start playing it.
- 4 Rotate MASTER VOLUME to turn up the volume.

If you do not obtain normal sound output after performing this procedure, look for the reason in the checklist on the following page and take the appropriate measures to correct the problem.

There is no sound no matter which component is selected.

- ➔ Check that both the receiver and all components are turned on.
- ➔ Check that the MASTER VOLUME control is not set at 0.
- ➔ Check that the SPEAKERS selector is not set to OFF or to a position for front speakers that are not connected to the receiver (see “[25](#) SPEAKERS selector” on page 27).
- ➔ Check that all speaker cords are connected correctly.
- ➔ If “MUTING [ON]” appears in the display, press MUTING on the remote to turn off the muting function.

There's no sound from a specific component.

- ➔ Check that the component is connected correctly to the audio input jacks for that component.
- ➔ Check that the cord(s) used for the connection is (are) fully inserted into the jacks on both the receiver and the component.

No sound is heard from one of the front speakers.

- ➔ Connect a pair of headphones to the PHONES jack and set the SPEAKERS selector to OFF to verify that sound is output from the headphones (see “[25](#) SPEAKERS selector” and “PHONES jack” on page 27).
If only one channel is output from the headphones, the component may not be connected to the receiver correctly. Check that all the cords are fully inserted into the jacks on both the receiver and the component.
If both channels are output from the headphones, the front speaker may not be connected to the receiver correctly. Check the connection of the front speaker which is not outputting any sound.

If you encounter a problem that is not included above, see “Troubleshooting” on page 57.

Location of Parts and Basic Operations

This chapter provides information about the locations and functions of the buttons and controls on the front panel. It also explains basic operations.

Front Panel Parts Description

1 I/⏻ switch

Press to turn the receiver on and off.

- Before you turn on the receiver, make sure that you have turned the MASTER VOLUME control to the leftmost position to avoid damaging your speakers.

2 INPUT SELECTOR control

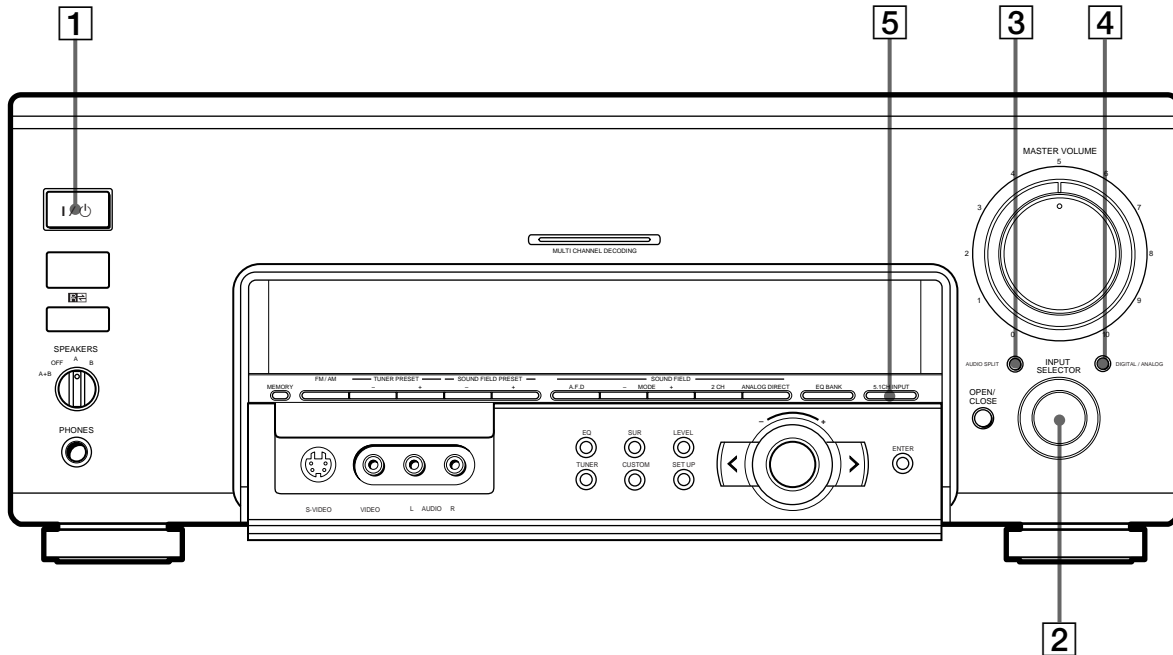
Turn to select the component you want to use.

To select	Turn to light
VCR	VIDEO 1, VIDEO 2, or VIDEO 3
DVD player	DVD/LD* or DVD
LD player	DVD/LD* or TV/LD
Satellite tuner* or TV tuner	TV/SAT* or TV/LD
Tape deck	TAPE
MD or DAT deck	MD/DAT
CD player	CD
Tuner	TUNER
Turntable	PHONO

* U.S.A./Canada models only.

After selecting the component, turn on the component you selected and play the program source.

- After selecting VCR, DVD player, or LD player, turn on the TV and set the TV's video input to match the component you selected.



3 AUDIO SPLIT button

Press to select and play another audio source in combination with the selected component.

- 1 Rotate INPUT SELECTOR to select a video component.
- 2 Press AUDIO SPLIT repeatedly to select a different audio source or press AUDIO SPLIT once to display the current settings and turn the jog dial to select the different audio source. The display switches to "V:XXX A:XXX" to show both the video (V:XXX) and audio (A:XXX) sources.

To cancel AUDIO SPLIT

Press and hold AUDIO SPLIT for at least two seconds.

Note

When using AUDIO SPLIT, the input (digital/analog) of the selected audio source is automatically set to "AUTO" (see "[4] DIGITAL/ANALOG button" for details).

4 DIGITAL/ANALOG button

Press to select either digital or analog audio signals for your digital components (DVD/LD*, DVD, TV/SAT*, TV/LD, CD and MD/DAT).

Each press switches the input of the currently selected component as follows :

Select	To
AUTO	Give priority to digital signals when there are both digital and analog connections. If there are no digital signals, analog is selected.
ANALOG	Specify the analog audio signals input to the AUDIO IN (L and R) jacks.
DIGITAL (OPTICAL)	Specify the digital audio signals input to the DIGITAL OPTICAL IN jacks.
DIGITAL (COAXIAL)	Specify the digital audio signals input to the DIGITAL COAXIAL IN jack. (CD, DVD/LD* or DVD only)

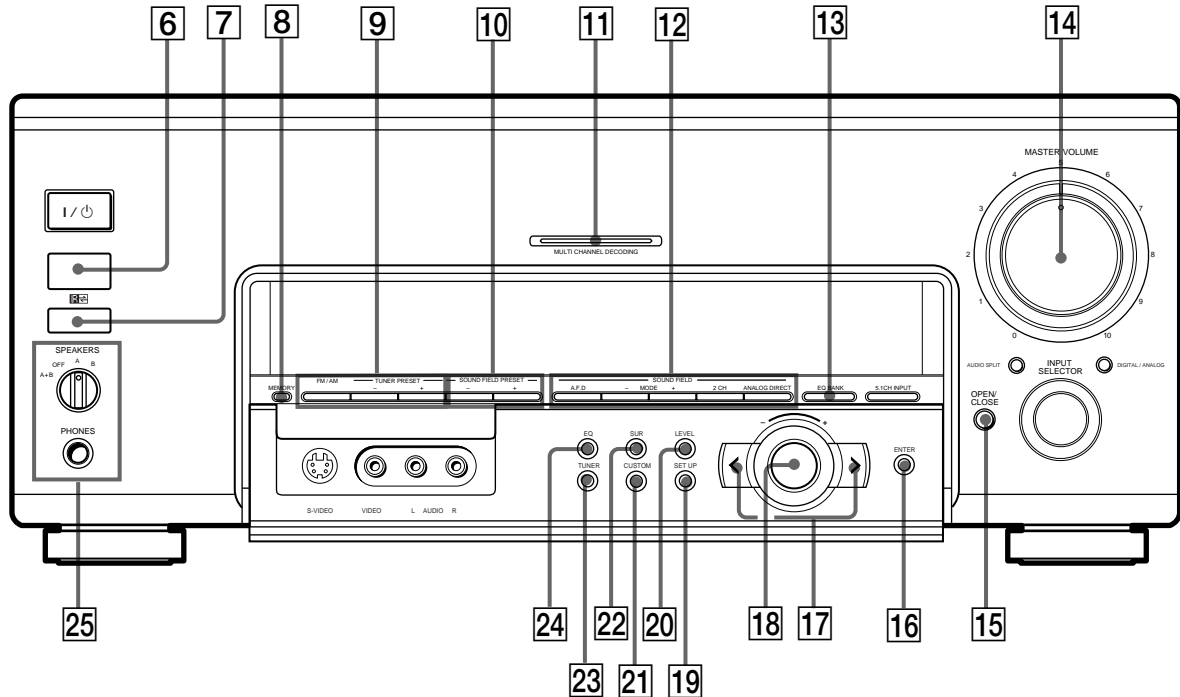
* U.S.A./Canada models only.

5 5.1CH INPUT button

Press to enjoy the audio source connected to the 5.1CH INPUT jacks. Press again to return to the previous function. When you want to listen to 5.1 channel audio with another function, select the function first, and then press 5.1CH INPUT.

- When 5.1CH INPUT is selected, the equalizer, bass booster, and sound field effects do not function.
- When 5.1CH INPUT is selected, sound is output from all of the speakers even if the center and rear speakers are set to "NO" in the SP SETUP menu.

Front Panel Parts Description



- 6** IR emitter
Emits IR signals to the remote.
- 7** IR receptor
Receives IR signals emitted by the remote.
- 8** MEMORY button
Press to memorize a preset station or preset sound field.
- 9** The following buttons operate the built-in tuner. For details, see “Receiving Broadcasts” starting from page 48.
- TUNER PRESET +/- buttons**
Scans all preset stations.
- FM/AM button**
Selects the FM or AM band.
- 10** SOUND FIELD PRESET +/- buttons
Press to select a preset sound field.
- 11** MULTI CHANNEL DECODING indicator
This indicator lights when the unit is decoding signals recorded in a multi channel format.

- 12** Use the following buttons to enjoy surround sound. For details, see “Enjoying Surround Sound” starting from page 28.

A.F.D. button

Press to set the unit to automatically detect the type of signals being input and perform the proper decoding. This mode presents the sound as it was recorded/encoded without adding any effects. For details, see “AUTO FORMAT DECODING” on page 32.

MODE +/- buttons

Press repeatedly to select the desired sound field. For details, see “Selecting a Sound Field” on page 29.

- Sound fields are not compatible with 96 kHz digital audio signals.

2 CH button

Press to cancel the sound fields and output the sound of the selected source from only the front left and right speakers.

For details, see “2 CHANNEL” on page 32.

ANALOG DIRECT button

Press to listen to an analog source without digital processing by the equalizer, sound field, etc. For details, see “ANALOG DIRECT” on page 32.

13 EQ BANK button

Press repeatedly to select an equalizer (EQ PRESET 1~5) or turn the equalizer off (EQ PRESET OFF).



To maintain the highest fidelity to the original source Do the following to bypass the sound field and equalizer circuits.

- 1 Press EQ BANK to turn off the equalizer.
- 2 • When listening to multi-channel sources, press A.F.D. to turn off the sound field processing.
 - When listening to two channel (stereo) sources, press 2 CH to bypass the sound field processing.

The result will be a sound that is highly faithful to the program source.

14 MASTER VOLUME control

After turning on the component you selected, turn to adjust the volume.

15 OPEN/CLOSE buttons

Press to open/close the door on the front panel.

Note

The door may suddenly stop if an external force is applied while it is being opened or closed. When this occurs, do not attempt to open or close the door by hand. Remove the cause of the force, then press OPEN/CLOSE again.

If the door stopped while being closed, the door automatically opens again a few seconds after closing. If the door stopped while being opened, the door remains where it stopped.

16 ENTER button

Press to enter the index name (page 47) and clear settings.

17 Cursor buttons (</>)

Press to select various speaker level, surround, and equalizer parameters (etc.).

18 Jog dial

Turn to adjust the selected speaker level, surround, and equalizer parameters (etc.).

19 SET UP button

Press to activate the setup mode, then use the cursor buttons (17) to select the parameters. You can then make various settings using the jog dial (18).

20 LEVEL button

Press to activate the speaker level parameters (page 35). You can adjust the various speaker level parameters (front balance, rear balance, etc.).

21 CUSTOM button

Press to activate custom parameters (page 35).

22 SUR button

Press to activate the surround parameters (page 35). You can adjust the various surround parameters (effect level, wall type, etc.).

23 TUNER button

Press to activate the tuner menu.

24 EQ button

Press to activate the equalizer parameters (page 35). You can adjust the various equalizer parameters.

25 SPEAKERS selector

Set according to the front speakers you want to drive.

Set to	To select
A	The speakers connected to the FRONT SPEAKERS A terminals
B	The speakers connected to the FRONT SPEAKERS B terminals
A+B*	The speakers connected to both the FRONT SPEAKERS A and B terminals (parallel connection)
OFF	No speaker output

* Be sure to connect front speakers with a nominal impedance of 8 ohms or higher if you want to select both sets (A+B) of front speakers

PHONES jack

Use to connect stereo headphones.

Connecting headphones cuts the output from the PRE OUT jacks and speaker terminals.

When the headphones are connected, if 2 CH or AUTO FORMAT DECODING is selected, 2 channel stereo is output. If any other sound field is selected, it is automatically changed to "HEADPHONE THEATER".

Enjoying Surround Sound

This chapter describes how to set up the receiver to enjoy surround sound. You can enjoy multi channel surround when playing back software encoded with Dolby Digital or DTS.

You can take advantage of surround sound simply by selecting one of the receiver's pre-programmed sound modes. They bring the exciting and powerful sound of movie theaters and concert halls into your home. You can also customize the sound modes to obtain the sound you desire by changing the various surround parameters. The receiver contains a variety of different sound modes. The cinema sound modes are designed for use when playing back movie software (DVD, LD, etc.) encoded with multi channel surround sound or Dolby Pro Logic. In addition to decoding the surround sound, some of these modes also provide sound effects commonly found in movie theaters.

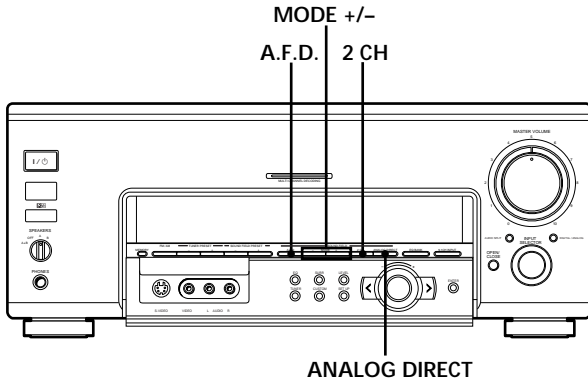
The virtual sound modes contain compelling applications of the Sony Digital Cinema Sound digital signal processing technology. They shift the sound away from the actual speaker locations to simulate the presence of several "virtual" speakers.

The music (etc.) sound modes are designed for use with standard audio sources and TV broadcasts. They add reverberation to the source signal to make you feel as if you were in a concert hall or stadium (etc.). Use these sound modes with two-channel sources like CD and stereo broadcasts of sports programs or musical concerts. For more information about the sound modes, see pages 30~32.

A.F.D.

The "Auto Format Decoding" sound mode presents the sound exactly as it was encoded, without adding any reverberation (etc.).

To fully enjoy surround sound, you must register the number and location of you speakers. See "Multi-Channel Surround setup" starting on page 18 to set the speaker parameters before enjoying surround sound.



Brief descriptions of buttons used to enjoy surround sound

A.F.D. button: Press to set the receiver to automatically detect the type of audio signal being input and perform proper decoding (if necessary).

MODE +/- buttons: Press to select the sound field.

2 CH button: Press to output sound from only the front (left and right) speakers. Multichannel audio signals are downmixed to 2 channels.

ANALOG DIRECT button: Press to input the analog signal without digital processing. When this function is on, the equalizer and sound field (etc.) are turned off.

Selecting a Sound Field

You can enjoy surround sound simply by selecting one of the pre-programmed sound fields according to the program you want to listen to.


Press MODE +/- repeatedly to select the sound field you desire.

The current sound field is indicated in the display. See the table starting on the following page for information on each sound field.

To turn the sound field off

Press the A.F.D. or 2 CH button on the front panel. For details, see page 26.

💡 You can identify Dolby Surround-encoded software by looking at the packaging

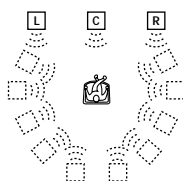
Use discs with the  logo. In order to enjoy Dolby Digital (AC-3) playback you must use discs bearing this logo.

💡 When sound signals with a sampling frequency of 96 kHz are input

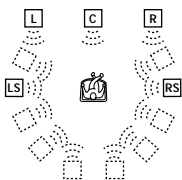
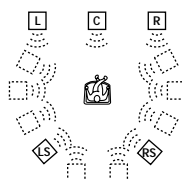
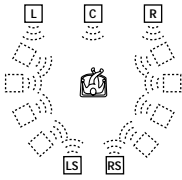
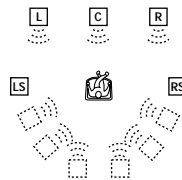
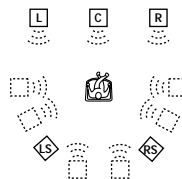
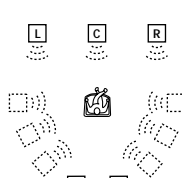
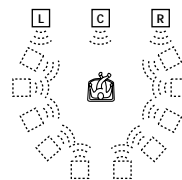
The sound signals are output in stereo automatically, and the sound field is turned off.

💡 You can enjoy surround sound while listening to headphones
The PHONES jack on this receiver can present audio in Virtual Surround. For details, see page 27.

Selecting a Sound Field

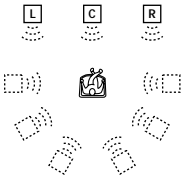
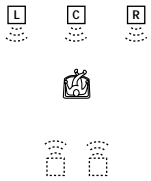
Sound field	Effect	Notes
NORMAL SURROUND	Software with multi channel surround audio signals is played according to the way it was recorded. Software with 2 channel audio signals, is decoded with Dolby Pro Logic to create surround effects.	
CINEMA STUDIO EX. A*	Reproduces the sound characteristics of the Sony Pictures Entertainment "Cary Grant Theater" cinema production studio using the 3D sound imaging of V. MULTI DIMENSION (page 31) to create 5 sets of virtual speakers surrounding the listener from a single pair of actual rear speakers.	This is a standard mode, great for watching most any type of movie.
CINEMA STUDIO EX. B*	Reproduces the sound characteristics of the Sony Pictures Entertainment "Kim Novak Theater" cinema production studio using the 3D sound imaging of V. MULTI DIMENSION (page 31) to create 5 sets of virtual speakers surrounding the listener from a single pair of actual rear speakers.	This mode is ideal for watching science-fiction or action movies with lots of sound effects.
CINEMA STUDIO EX. C*	Reproduces the sound characteristics of the Sony Pictures Entertainment scoring stage using the 3D sound imaging of V. MULTI DIMENSION (page 31) to create 5 sets of virtual speakers surrounding the listener from a single pair of actual rear speakers.	This mode is ideal for watching musicals or classic films where music is featured in the soundtrack.
SEMI-CINEMA STUDIO EX. A*	Reproduces the sound characteristics of the Sony Pictures Entertainment "Cary Grant Theater" cinema production studio using the 3D sound imaging of V. SEMI-M. DIMENSION (page 31) to create 5 sets of virtual speakers surrounding the listener from the sound of the front speakers (without using actual rear speakers).	
SEMI-CINEMA STUDIO EX. B*	Reproduces the sound characteristics of the Sony Pictures Entertainment "Kim Novak Theater" cinema production studio using the 3D sound imaging of V. SEMI-M. DIMENSION (page 31) to create 5 sets of virtual speakers surrounding the listener from the sound of the front speakers (without using actual rear speakers).	
SEMI-CINEMA STUDIO EX. C*	Reproduces the sound characteristics of the Sony Pictures Entertainment scoring stage using the 3D sound imaging of V. SEMI-M. DIMENSION (page 31) to create 5 sets of virtual speakers surrounding the listener from the sound of the front speakers (without using actual rear speakers).	
NIGHT THEATER	Allows you to retain a theater like environment while listening at low volume levels, such as late at night.	
MONO MOVIE	Creates a theater like environment from movies with monaural soundtracks.	
STEREO MOVIE	Creates a theater like environment from movies recorded with stereo soundtracks	
HEADPHONE THEATER	Allows you to experience a theater like environment while listening through a pair of headphones.	Very effective with 5.1ch discreet signal sources like Dolby Digital and DTS.

* "VIRTUAL" sound field: Sound field with virtual speakers. However, turning the SUR menu "VIRTUAL SP" parameter off when using "CINEMA STUDIO EX.A~C" or "SEMI-CINEMA STUDIO EX. A~C" reproduces the sound characteristics of each cinema production studio without virtual speakers.

Sound field	Effect	Notes
V. MULTI DIMENSION* (Virtual Multi Dimension)	Uses 3D sound imaging to create an array of virtual rear speakers positioned higher than the listener from a single pair of actual rear speakers. This mode creates 5 sets of virtual speakers surrounding the listener at approximately a 30° angle of elevation.	<p>SIDE*</p>  <p>MIDDLE*</p>  <p>BEHIND*</p>  <p style="text-align: right;">* See page 19</p>
V. MULTI REAR* (Virtual Multi Rear)	Uses 3D sound imaging to create 3 sets of virtual rear speakers from 1 set of actual rear speakers.	<p>SIDE*</p>  <p>MIDDLE*</p>  <p>BEHIND*</p>  <p style="text-align: right;">* See page 19</p>
V. SEMI-M. DIMENSION* (Virtual Semi Multi Dimension)	Uses 3D sound imaging to create virtual rear speakers from the sound of the front speakers without using actual rear speakers. This mode creates 5 sets of virtual speakers surrounding the listener at a 30° angle of elevation.	

* "VIRTUAL" sound field: Sound field with virtual speakers.

Selecting a Sound Field

Sound field	Effect	Notes
VIRTUAL ENHANCED A* (Virtual Enhanced Surround A)	Uses 3D sound imaging to create 3 sets of virtual rear speakers from the sound of the front speakers without using actual rear speakers.	
VIRTUAL ENHANCED B* (Virtual Enhanced Surround B)	Uses 3D sound imaging to create 1 set of virtual rear speakers from the sound of the front speakers without using actual rear speakers.	
SMALL HALL	Reproduces the acoustics of a small rectangular concert hall.	Ideal for soft acoustic sounds.
LARGE HALL	Reproduces the acoustics of a large rectangular concert hall.	
OPERA HOUSE	Reproduces the acoustics of an opera house.	Ideal for musicals and opera.
JAZZ CLUB	Reproduces the acoustics of a jazz club.	
DISCO/CLUB	Reproduces the acoustics of a discotheque/dance club.	
CHURCH	Reproduces the acoustics of a stone church.	
LIVE HOUSE	Reproduces the acoustics of a 300-seat live house.	Great for rock or pop music.
ARENA	Reproduces the acoustics of a 1000-seat concert hall.	
STADIUM	Reproduces the feeling of a large open-air stadium.	Great for sporting events or electric (amplified) music.
GAME	Obtains maximum audio impact from video game software.	Be sure to set the game machine to stereo mode when using game software with stereo sound capabilities.

* "VIRTUAL" sound field: Sound field with virtual speakers.

Notes

- The effects provided by the virtual speakers may cause increased noise in the playback signal.
- When listening to sound fields that employ the virtual speakers, you will not be able to hear any sound coming directly from the rear speakers.

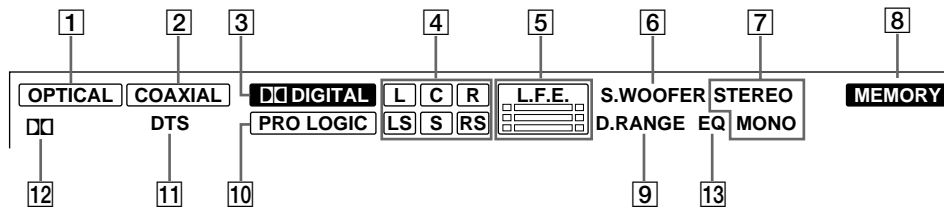
Use the buttons on the front panel to operate the following modes

AUTO FORMAT DECODING (Press the A.F.D. button)	Automatically detects the type of audio signal being input (Dolby Digital, DTS, Dolby Pro Logic, or standard 2 channel stereo) and performs the proper decoding if necessary. This mode presents the sound as it was recorded/encoded, without adding any effects.	You can use this mode as a reference. Set the equalizer to OFF while using this mode to hear the source sound exactly as it was recorded.
2 CHANNEL (Press the 2CH button)	Outputs the sound from the front left and right speakers only. Standard two channel (stereo) sources completely bypass the sound field processing. Multi channel surround formats are downmixed to two channels.	This allows you to play any source using only the front left and right speakers.
ANALOG DIRECT (Press the ANALOG DIRECT button)	The analog input signal is not digitally processed. Only volume control functions can be used.	This mode is suitable for the enjoyment of high quality analog audio sources.

Note

No sound is output from the sub woofer when the 2 CHANNEL mode is selected. To listen to two channel (stereo) sources using the front left and right speakers and a sub woofer, use the AUTO FORMAT DECODING mode.

Understanding the Multi-Channel Surround Displays



- 1** **OPTICAL**
Lights up when the source signal is a digital signal being input through the OPTICAL terminal.
- 2** **COAXIAL**
Lights up when the source signal is a digital signal being input through the COAXIAL terminal.
- 3** **DIGITAL**
This indicator lights when the sound field is on and the unit is decoding signals recorded in the Dolby Digital (AC-3) format.
- 4** **Playback channel indicators**
The letters light to indicate the channels being played back.
L: Front Left R: Front Right
C: Center LS: Left Surround
RS: Right Surround
S: Surround (monaural or the rear components obtained by Pro Logic processing)
The boxes around the letters light to indicate the speakers used to playback the channels.
See the next page for details regarding the playback channel indicators.
- 5** **L.F.E.**
The letters "L.F.E." light up when the disc being played contains the LFE (Low Frequency Effect) channel. When the sound of the LFE channel signal is actually being reproduced, the bars underneath the letters lights up to indicate the level. Since the LFE signal is not recorded in all parts of the input signal the bar indication will fluctuate (and may turn off) during playback.

- 6** **S.WOOFER**
Lights when the sub woofer selection is set to "YES" and sound is being output from the sub woofer.
- 7** **Tuner indicators**
These indicators light when using the receiver to tune in radio stations, etc. See pages 48-51 for tuner operations.
- 8** **MEMORY**
Lights when a tuner preset or sound field preset is saved in memory.
- 9** **D. RANGE**
Lights when dynamic range compression is active. See page 43 to adjust the dynamic range compression.
- 10** **PRO LOGIC**
Lights when this unit applies Pro Logic processing to two channel signals in order to output the center and surround channel signals.
- 11** **DTS**
Lights up when DTS signals are input.

Note
When playing a DTS format disc, be sure that you have made digital connections and that DIGITAL/ANALOG is NOT set to ANALOG (see **4** on page 25).
- 12** **DIGITAL**
Lights when Dolby Digital (AC-3) signals are input.
- 13** **EQ**
Lights when using an equalizer from EQ PRESET 1~5.

Understanding the Multi-Channel Surround Displays

Source sound displays

The letters (L, C, R, etc.) indicate the source sound. The boxes around the letters vary to show how the receiver downmixes the source sound (based on the speakers settings). When using music sound modes like LARGE HALL or SMALL HALL the receiver adds reverberation based on the source sound.

The following table shows how the indicators light when using AUTO FORMAT DECODING mode.

Although the table below shows almost all of the configurations available from multi channel surround signals, the ones marked “☆” are the most common.

Recording Format (Front/Rear)	Input Channel Display	Source Sound and Output Channel Display			
		All speakers present	Rear speakers absent	Center speaker absent	Rear/center speakers absent
1/0	DOLBY DIGITAL [1/0]	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> C	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> C	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> c <input type="checkbox"/>	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> c <input type="checkbox"/>
	DTS [1/0]	DTS <input type="checkbox"/> C	DTS <input type="checkbox"/> C	DTS <input type="checkbox"/> c <input type="checkbox"/>	DTS <input type="checkbox"/> c <input type="checkbox"/>
2/0*	DOLBY DIGITAL [2/0]	<input type="checkbox"/> L <input type="checkbox"/> R	<input type="checkbox"/> L <input type="checkbox"/> R	<input type="checkbox"/> L <input type="checkbox"/> R	<input type="checkbox"/> L <input type="checkbox"/> R
	DTS [2/0]	DTS <input type="checkbox"/> L <input type="checkbox"/> R	DTS <input type="checkbox"/> L <input type="checkbox"/> R	DTS <input type="checkbox"/> L <input type="checkbox"/> R	DTS <input type="checkbox"/> L <input type="checkbox"/> R
3/0	DOLBY DIGITAL [3/0]	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R
	DTS [3/0]	DTS <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R	DTS <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R	DTS <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R	DTS <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R
2/1	DOLBY DIGITAL [2/1]	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> S	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> S	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> S	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> S
	DTS [2/1]	DTS <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> S	DTS <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> S	DTS <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> S	DTS <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> S
3/1	DOLBY DIGITAL [3/1]	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> S	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> S	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> S	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> S
	DTS [3/1]	DTS <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> S	DTS <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> S	DTS <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> S	DTS <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> S
2/2	DOLBY DIGITAL [2/2]	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS
	DTS [2/2]	DTS <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	DTS <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	DTS <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	DTS <input type="checkbox"/> L <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS
3/2	☆ DOLBY DIGITAL [3/2]	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	<input checked="" type="checkbox"/> DIGITAL <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS
	☆ DTS [3/2]	DTS <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	DTS <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	DTS <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS	DTS <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> LS <input type="checkbox"/> RS
2/0**	☆ DOLBY DIGITAL [2/0]	<input type="checkbox"/> PRO LOGIC <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> S	<input type="checkbox"/> PRO LOGIC <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> S	<input type="checkbox"/> PRO LOGIC <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> S	<input type="checkbox"/> L <input type="checkbox"/> R
	☆ DOLBY PROLOGIC	<input type="checkbox"/> PRO LOGIC <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> S	<input type="checkbox"/> PRO LOGIC <input type="checkbox"/> L <input type="checkbox"/> C <input type="checkbox"/> R <input type="checkbox"/> S	<input type="checkbox"/> PRO LOGIC <input type="checkbox"/> L <input type="checkbox"/> c <input type="checkbox"/> R <input type="checkbox"/> S	<input type="checkbox"/> L <input type="checkbox"/> R
	☆ PCM XX kHz***	<input type="checkbox"/> L <input type="checkbox"/> R	<input type="checkbox"/> L <input type="checkbox"/> R	<input type="checkbox"/> L <input type="checkbox"/> R	<input type="checkbox"/> L <input type="checkbox"/> R

* Signals with Dolby surround encoded flag OFF

** Signals with Dolby surround encoded flag ON

*** Sampling frequency is displayed

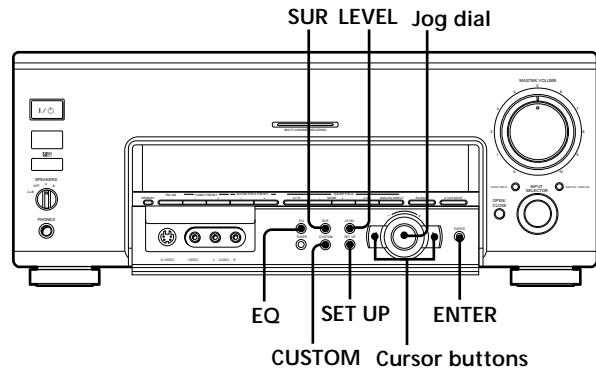
Notes

- The receiver performs Pro Logic decoding and the display conforms to 2/0** when using the following movie sound modes with 2/0* or STEREO PCM format signals. (CINEMA STUDIO EX. A, B, C, SEMI-CINEMA STUDIO EX. A, B, C, NIGHT THEATER, V. MULTI DIMENSION, V. MULTI REAR, V. SEMI-M. DIMENSION, VIRTUAL ENHANCED A, or VIRTUAL ENHANCED B)
- When using music sound modes like LARGE HALL or SMALL HALL with standard audio formats, like PCM, the receiver creates rear signals from the front L and R signals. However, a center speaker signal is not created. In this case, sound is output from the rear speakers, but output channel indicators for the rear speakers do not light.

Settings and Adjustments

This chapter describes how to use the menu operations to change various settings, adjust the sound fields, and customize various aspects of the receiver's functionality.

Using the Menus



Use the menu operations to adjust various parameters and customize the receiver to suit your listening environment, your speaker, your components, and your personal preferences.

- 1** Press SET UP, EQ, SUR, LEVEL, or CUSTOM to display the menu you desire.
See “Menu Function Table” starting on the next page for a chart showing the menus and their respective parameters.
- 2** Press the cursor buttons (< or >) to select the desired parameter from the selected menu.
- 3** Turn the jog dial to select the setting you desire.
The new setting becomes effective and is stored automatically.
- 4** Repeat steps 1 through 3 to adjust all necessary parameters.

Notes

- Certain parameters may not be available for adjustment due to the setting of other parameters (etc.). Unavailable parameters appear dimmed when shown in the display.
- An EQ BANK (1~5) must be chosen before the EQUALIZER menu can be adjusted.

Menu Function Table

Menus (Press)	Parameters (Press < or > to select)	Range (Turn the jog dial to select)	Description
<SP SETUP> (SET UP)	FRONT SP [LARGE]	LARGE, SMALL	Pages 16~19
	CENTER SP [LARGE]	LARGE, SMALL, NO	
	REAR SP [LARGE]	LARGE, SMALL, NO	
	SUB WOOFER [YES]	YES, NO	
	FRONT 16 feet* (5.0 meter)	From 3 to 40 feet* (1.0 to 12.0 m) (in 1 foot* (0.1 m) steps)	
	CENTER 16 feet* (5.0 meter)	From 3 to 40 feet* (1.0 to 12.0 m) (in 1 foot* (0.1 m) steps)	
	REAR 11 feet* (3.5 meter)	From 3 to 40 feet* (1.0 to 12.0 m) (in 1 foot* (0.1 m) steps)	
	S.W 16 feet* (5.0 meter)	From 3 to 40 feet* (1.0 to 12.0 m) (in 1 foot* (0.1 m) steps)	
	S.W PHASE [NORMAL]	NORMAL, REVERSE	
	REAR POSI [BEHIND]	SIDE, MIDDLE, BEHIND	
	REAR HEIGHT [LOW]	HIGH, LOW	
	FRONT SP > 80 Hz	From 40 Hz to 200 Hz (10 Hz steps)	
	CENTER SP > 80 Hz	From 40 Hz to 200 Hz (10 Hz steps)	
	REAR SP > 80 Hz	From 40 Hz to 200 Hz (10 Hz steps)	
	LFE HIGH CUT STD	From 40 Hz to 200 Hz (10 Hz steps, STD = 120 Hz)	
	DIST. UNIT	feet, meter	
	<EQUALIZER> (EQ)	FRONT BASS 0 dB	
FRONT BASS 250 Hz		From 99 Hz to 1 kHz	
FRONT MID 0 dB		From -10.0 to +10.0 dB (in 0.5 dB steps)	
FRONT MID 1.0 kHz		From 198 Hz to 10 kHz	
FRONT MID [WIDE]		WIDE, MIDDLE, NARROW	
FRONT TREBL 0 dB		From -10.0 to +10.0 dB (in 0.5 dB steps)	
FRONT TREBL 2.5 kHz		From 1.0 to 10 kHz	
CENTER BASS 0 dB		From -10.0 to +10.0 dB (in 0.5 dB steps)	
CENTER BASS 250 Hz		From 99 Hz to 1 kHz	
CENTER MID 0 dB		From -10.0 to +10.0 dB (in 0.5 dB steps)	
CENTER MID 1.0 kHz		From 198 Hz to 10 kHz	
CENTER MID [WIDE]		WIDE, MIDDLE, NARROW	
CENTER TRE. 0 dB		From -10.0 to +10.0 dB (in 0.5 dB steps)	
CENTER TRE. 2.5 kHz		From 1.0 to 10 kHz	
REAR BASS 0 dB		From -10.0 to +10.0 dB (in 0.5 dB steps)	
REAR BASS 250 Hz		From 99 Hz to 1 kHz	
REAR MID 0 dB		From -10.0 to +10.0 dB (in 0.5 dB steps)	
REAR MID 1.0 kHz		From 198 Hz to 10 kHz	
REAR MID [WIDE]		WIDE, MIDDLE, NARROW	
REAR TREBLE 0 dB		From -10.0 to +10.0 dB (in 0.5 dB steps)	
REAR TREBLE 2.5 kHz		From 1.0 to 10 kHz	
PRESET (1~5) clear [NO]		NO, YES	

* U.S.A./Canada models only.

Menus (Press)	Parameters (Press < or > to select)	Range (Turn the jog dial to select)	Description
<SURROUND> (SUR)	SURR. EFFECT 100%	From 0 to 150% (in 5% steps)	Page 41
	WALL S ___ ___ H	From Soft to Hard	
	REVERB S ___ ___ L	From Short to Long	
	SCREEN DEPTH [MID]	OFF, MID, DEEP	
	VIRTUAL SP [ON]	ON, OFF	
	REAR ENHANCER [ON]	ON, OFF	
	BASS 0 dB -----	From -10 to +10 dB (in 1 dB steps)	
	BASS 250 Hz -----	From 99 to 1 kHz	
	MID 0 dB -----	From -10 to +10 dB (in 1 dB steps)	
	MID 1.0 kHz -----	From 198 Hz to 10 kHz	
	MID [WIDE] -----	WIDE, MIDDLE, NARROW	
	TRE 0 dB -----	From -10 to +10 dB (in 1 dB steps)	
	TRE 2.5 kHz -----	From 1.0 to 10 kHz	
<LEVEL> (LEVEL)	TEST TONE [OFF]	OFF, AUTO, L, C, R, RS, LS, SW	Pages 42~43
	FRONT L ___ ___ R	L/R 17 step (in 1 dB steps)	
	REAR L ___ ___ R	L/R 17 step (in 1 dB steps)	
	CENT. LEVEL 0 dB	From +10.0 to -20.0 dB, OFF (in 0.5 dB steps)	
	REAR LEVEL 0 dB	From +10.0 to -20.0 dB, OFF (in 0.5 dB steps)	
	SUB WOOFER 0 dB	From +10.0 to -20.0 dB, OFF (in 0.5 dB steps)	
	LFE MIX 0 dB	From +0.0 to -20.0 dB, OFF (in 0.5 dB steps)	
	dto LFE MIX 0 dB	From +10.0 to -20.0 dB, OFF (in 0.5 dB steps)	
	D. RANGE COMP [OFF]	OFF, 0.1 - - 0.9, STD, MAX	
	MUTING [OFF]	OFF, ON	

Menu Function Table

Menus (Press)	Parameters (Press < or > to select)	Range (Turn the jog dial to select)	Description
<CUSTOMIZE> (CUSTOM)	V: (video source) A: (audio source)		Page 46~47
	__ : AUDIO [AUTO]	AUTO, ANALOG, OPTICAL, COAXIAL	
	__ : DECODE [AUTO]	AUTO, PCM	
	DISP. DIMMER [100%]	100 - - - 50% (in 10% steps)	
	ABS PHASE [NORMAL]	NORMAL, REVERSE	
	DF ROLL OFF [STD]	STD, SLOW	
	NOISE BAND [STD]	STD, WIDE	
	2ND AUDIO [SOURCE]	SOURCE, TUNER, CD, MD/DAT, TAPE	
	S.FIELD LINK [OFF]	OFF, ON	
	AUTO FUNCTION [ON]	OFF, ON	
	2-way REMOTE [ON]	OFF, ON	
	XXXXXXXX []	select a character to input a name	
	MEMORY CLEAR [NO]	NO, YES	
	SLEEP [OFF]*	OFF, 0:30:00~9:00:00 (in 30 minute steps)	
<TUNER> (TUNER)	TUNER MODE [AUTO]	AUTO, MANUAL	Page 49~51
	FM MODE [STEREO]	STEREO, MONO	
	FM [-----] A1	input a station name	
	AM 10 kHz -> 9 kHz [NO]**	NO, YES	
	PRESET CLEAR [NO]	NO, YES	

* When using the remote, the timer can be adjusted up to 2 hours in 30 minute steps.

** Except for Singapore/Malaysia models.

Adjusting the Speaker Settings <SP SETUP>

See “Multi-Channel Surround Setup” on page 18 for details on the parameters available in the SET UP menu.

■ Front speaker size (FRONT SP)

Initial setting : LARGE

■ Center speaker size (CENTER SP)

Initial setting : LARGE

■ Rear speaker size (REAR SP)

Initial setting : LARGE

■ Sub woofer selection (SUB WOOFER)

Initial setting : YES

■ Front speaker distance (FRONT)

Initial setting : 16 feet* (5.0 meter)

■ Center speaker distance (CENTER)

Initial setting : 16 feet* (5.0 meter)

■ Rear speaker distance (REAR)

Initial setting : 11 feet* (3.5 meter)

■ Sub woofer distance (S.W)

Initial setting : 16 feet* (5.0 meter)

■ Sub woofer phase polarity (S.W PHASE)

Initial setting : NORMAL

■ Rear speaker position (REAR POSI)

Initial setting : BEHIND

■ Rear speaker height (REAR HEIGHT)

Initial setting : LOW

■ Front speaker roll off frequency (FRONT SP >)

Initial setting : 80 Hz

■ Center speaker roll off frequency (CENTER SP >)

Initial setting : 80 Hz

■ Rear speaker roll off frequency (REAR SP >)

Initial setting : 80 Hz

■ LFE high cut filter (LFE HIGH CUT)

Initial setting : STD

■ Distance unit (DIST. UNIT)

Initial setting : feet* (meter)

* U.S.A./Canada models only

Adjusting the Equalization <EQUALIZER>

The EQUALIZER menu lets you adjust the equalization (low, mid, and high frequencies) of the front, center, and rear speakers individually. The equalizer bank lets you store up to 5 different equalizer settings.

The following menu is only available after pressing EQ BANK and selecting one of the equalizers (EQ PRESET 1~5).

■ Front speaker bass adjustment (Level/ Frequency)

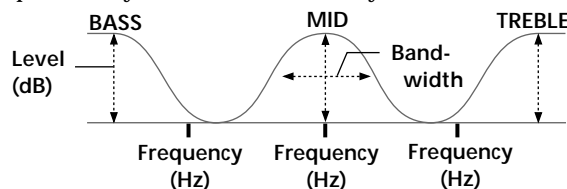
FRONT BASS +XX.XdB

FRONT BASS XXXHz

① Press the cursor buttons (< or >) repeatedly to select the level (dB) or frequency (Hz).

② Turn the jog dial to adjust.

Repeat until you achieve the sound you desire.



- The level can be adjusted ± 10 dB in 0.5 dB steps.
- The frequency can be adjusted from 99 Hz to 1 kHz in 21 steps.

■ Front speaker midrange adjustment (Level/ Frequency)

FRONT MID +XX.XdB

FRONT MID XXXHz

Adjust as described in “Front speaker bass adjustment”.

- The level can be adjusted ± 10 dB in 0.5 dB steps.
- The frequency can be adjusted from 198 Hz to 10 kHz in 37 steps.

■ Front speaker midrange bandwidth

FRONT MID [WIDE]

This parameter lets you adjust the width of the midrange band.

- “WIDE” provides a wide band centered on the selected frequency, for general adjustments.
- “MIDDLE” provides a normal band.
- “NARROW” provides a narrow band centered on the selected frequency, for specific adjustments.

Adjusting the Equalization <EQUALIZER>

■ Front speaker treble adjustment (Level/Frequency)

FRONT TREBL +XX.XdB

FRONT TREBL XXXHz

Adjust as described in “Front speaker bass adjustment”.

- The level can be adjusted ± 10 dB in 0.5 dB steps.
- The frequency can be adjusted from 1.0 kHz to 10 kHz in 23 steps.

■ Center speaker bass adjustment (Level/Frequency)

CENTER BASS +XX.XdB

CENTER BASS XXXHz

Adjust as described in “Front speaker bass adjustment”.

- The level can be adjusted ± 10 dB in 0.5 dB steps.
- The frequency can be adjusted from 99 Hz to 1 kHz in 21 steps.

■ Center speaker midrange adjustment (Level/Frequency)

CENTER MID +XX.XdB

CENTER MID XXXHz

Adjust as described in “Front speaker bass adjustment”.

- The level can be adjusted ± 10 dB in 0.5 dB steps.
- The frequency can be adjusted from 198 Hz to 10 kHz in 37 steps.

■ Center speaker midrange bandwidth

CENTER MID [WIDE]

This parameter lets you adjust the width of the midrange band.

- “WIDE” provides a wide band centered on the selected frequency, for general adjustments.
- “MIDDLE” provides a normal band.
- “NARROW” provides a narrow band centered on the selected frequency, for specific adjustments.

■ Center speaker treble adjustment (Level/Frequency)

CENTER TRE. +XX.XdB

CENTER TRE. XXXHz

Adjust as described in “Front speaker bass adjustment”.

- The level can be adjusted ± 10 dB in 0.5 dB steps.
- The frequency can be adjusted from 1.0 kHz to 10 kHz in 23 steps.

■ Rear speaker bass adjustment (Level/Frequency)

REAR BASS +XX.XdB

REAR BASS XXXHz

Adjust as described in “Front speaker bass adjustment”.

- The level can be adjusted ± 10 dB in 0.5 dB steps.
- The frequency can be adjusted from 99 Hz to 1 kHz in 21 steps.

■ Rear speaker midrange adjustment (Level/Frequency)

REAR MID +XX.XdB

REAR MID XXXHz

Adjust as described in “Front speaker bass adjustment”.

- The level can be adjusted ± 10 dB in 0.5 dB steps.
- The frequency can be adjusted from 198 Hz to 10 kHz in 37 steps.

■ Rear speaker midrange bandwidth

REAR MID [WIDE]

This parameter lets you adjust the width of the midrange band.

- “WIDE” provides a wide band centered on the selected frequency, for general adjustments.
- “MIDDLE” provides a normal band.
- “NARROW” provides a narrow band centered on the selected frequency, for specific adjustments.

■ Rear speaker treble adjustment (Level/Frequency)

REAR TREBLE +XX.XdB

REAR TREBLE XXXHz

Adjust as described in “Front speaker bass adjustment”.

- The level can be adjusted ± 10 dB in 0.5 dB steps.
- The frequency can be adjusted from 1.0 kHz to 10 kHz in 23 steps.

■ Preset clear (PRESET x clear)

PRESET 1 clear [YES]

Initial setting : NO

To clear the currently selected equalizer preset, select [YES] and press ENTER. “Are you sure?” is displayed. If you select [YES] and press ENTER again and wait a few seconds, the unit clears the current equalizer and resets it to the factory preset. “PRESET x CLEARED !” is displayed as confirmation. (“x” is the number of the current equalizer preset.)

Customizing Sound Fields <SURROUND>

The SURROUND menu contains parameters that let you customize various aspects of the current sound field. The settings available in this menu are stored individually for each sound field.

■ Effect Level

SURR.EFFECT XXX%

Initial setting : (depends on sound mode)

This parameter lets you adjust the “presence” of the current digital cinema sound surround effect.

■ Wall type

WALL S | H

Initial setting : midpoint

When sound is reflected off soft material, such as a curtain, the high frequency elements are reduced. A hard wall is highly reflective and does not significantly effect the frequency response of the reflected sound. This parameter lets you control the level of the high frequencies to alter the sonic character of your listening environment by simulating a softer (S) or harder (H) wall. The midpoint designates a neutral wall (made of wood).

■ Reverberation

REVERB S | L

Initial setting : midpoint

Before sound reaches our ears, it is reflected (reverberated) many times between the left and right walls, ceiling, and floor. In a large room, sound takes more time to bounce from one surface to another than in a smaller room. This parameter lets you control the spacing of the early reflections to simulate a sonically longer (L) or shorter (S) time. The midpoint (0) designates a standard room with no adjustment.

■ Screen depth

SCREEN DEPTH [MID]

Initial setting : MID

In a movie theater, sound seems to come from inside the image reflected on the movie screen. This parameter allows you to create the same sensation in your listening room by shifting the sound of the front speakers “into” the screen.

- The screen depth can be set to OFF, MID, or DEEP.
- DEEP provides the greatest amount of screen depth.

■ Virtual speakers

VIRTUAL SP [ON]

Initial setting : ON

Allows you to turn the virtual speakers created by the CINEMA STUDIO EX. A, B, C and SEMI-CINEMA STUDIO EX. A, B, C sound fields off or on.

■ Rear reflection enhancer

REAR ENHANCER [ON]

Initial setting : ON

This is a setup that adds the effect of a broader sound obtained from the sound of the surround channel even when the surround channel sound is monaural. This setting operates in CINEMA STUDIO EX. A, B, C and SEMI-CINEMA STUDIO EX. A, B, C.

- When ON is set, the effect is automatically applied to sources recorded in Dolby Pro Logic or Dolby Digital [2/1], [3/1] surround channel
- When OFF is set, there is no effect added.

■ Bass adjustment (Level/Frequency)

BASS +XXdB

BASS XXXHz

Unlike the equalizer in the equalizer menu (which allows you to individually adjust the overall sound quality of each set of speakers) these parameters allow you to individually adjust the tonal quality of each sound field.

- ① Press the cursor buttons (< or >) repeatedly to select the level (dB) or frequency (Hz).
- ② Turn the jog dial to adjust.

Repeat until you achieve the sound you desire.

- The level can be adjusted ± 10 dB in 1 dB steps.
- The frequency can be adjusted from 99 Hz to 1 kHz in 21 steps.

■ Midrange adjustment (Level/Frequency)

MID +XXdB

MID XXXHz

Adjust as described in “Bass adjustment”.

- The level can be adjusted ± 10 dB in 1 dB steps.
- The frequency can be adjusted from 198 Hz to 10 kHz in 37 steps.

■ Midrange bandwidth

MID [WIDE]

This parameter lets you adjust the width of the midrange band.

- “WIDE” provides a wide band centered on the selected frequency, for general adjustments.
- “MIDDLE” provides a normal band.
- “NARROW” provides a narrow band centered on the selected frequency, for specific adjustments.

■ Treble adjustment (Level/Frequency)

TREBLE +XXdB


TREBLE XXXHz

Adjust as described in “Bass adjustment”.

- The level can be adjusted ± 10 dB in 1 dB steps.
- The frequency can be adjusted from 1.0 kHz to 10 kHz in 23 steps.

Adjusting the Speaker Levels <LEVEL>

The LEVEL menu contains parameters that let you modify the output level of each speaker and perform a variety of other adjustments to control the sound mix. The settings available in this menu effect all the sound fields.

 Most of these settings can also be adjusted directly using the remote. See “Adjusting the speaker volume” (page 21).

■ Test Tone

TEST TONE [OFF]

Initial setting : OFF

Lets you turn the test tone on or off.

- When OFF is set, the test tone is not output.
- [AUTO] outputs the test tone from each speaker in order automatically.
- L (left front), C (center), R (right front), RS (right surround), LS (left surround), or SW (sub woofer) outputs the test tone only from the corresponding speaker.
- The test tone can also be output using the supplied remote. See “Adjusting the speaker volume” (page 21).

■ Front balance

FRONT L ___ | ___ R

Initial setting : center

Lets you adjust the balance between the front left and right speakers.

- This setting can also be adjusted directly using the supplied remote. See “Adjusting the speaker volume” (page 21).

■ Rear Balance

REAR L ___ | ___ R

Initial setting : center

Lets you adjust the balance between the rear left and right speakers.

- This setting can also be adjusted directly using the supplied remote. See “Adjusting the speaker volume” (page 21).

■ Center level

CENT.LEVEL -XX.XdB

Initial setting : 0 dB

Lets you adjust level of the center speaker.

- The level can be adjusted in 1 dB steps from -20 dB to +10 dB.
- This setting can also be adjusted directly using the supplied remote. See “Adjusting the speaker volume” (page 21).

■ Rear level

REAR LEVEL -XX.XdB

Initial setting : 0 dB

Lets you adjust level of the rear (left and right) speakers.

- The level can be adjusted in 1 dB steps from -20 dB to +10 dB.
- This setting can also be adjusted directly using the supplied remote. See “Adjusting the speaker volume” (page 21).

■ Sub woofer level

SUB WOOFER -XX.XdB

Initial setting : 0 dB

Lets you adjust the level of the sub woofer.

- The level can be adjusted in 1 dB steps from -20 dB to +10 dB.

■ LFE (Low Frequency Effect) mix level

LFE MIX -XX.XdB

Initial setting : 0 dB

This parameter lets you attenuate the level of the LFE (Low Frequency Effect) channel output from the sub woofer without effecting the level of the bass frequencies sent to the sub woofer from the front, center or rear channels via the Dolby Digital (AC-3) bass redirection circuitry.

- The level can be adjusted in 0.5 dB steps from -20 dB to 0 dB (line level). 0 dB outputs the full LFE signal at the mix level determined by the recording engineer.
- Selecting OFF mutes the sound of the LFE channel from the sub woofer. However, the low frequency sounds of the front, center, or rear speakers are output from the sub woofer according to the settings made for each speaker in the speaker setup (page 18~21).

■ dts LFE (Low Frequency Effect) mix level

dts LFE MIX XX.XdB

Initial setting : 0 dB

This parameter lets you attenuate the level of the LFE (Low Frequency Effect) channel output from the sub woofer without effecting the level of the bass frequencies sent to the sub woofer from the front, center or rear channels via the “dts” bass redirection circuitry.

- The level can be adjusted in 0.5 dB steps from +10.0 dB to -20.0 dB (line level).
- Selecting OFF mutes the sound of the LFE channel from the sub woofer. However, the low frequency sounds of the front, center, or rear speakers are output from the sub woofer according to the settings made for each speaker in the speaker setup (page 18~21).

About the level differences in the LFE MIX settings

The “dts LFE MIX” level is set to +10.0 dB and “LFE MIX” (Dolby Digital) is set to 0 dB. This is because there is an initial difference of 10 dB in the overall mix between the Dolby Digital and dts LFE channel levels. Essentially, with the “dts LFE MIX” level set to +10 dB and the “LFE MIX (Dolby Digital)” level set to 0 dB, approximately the same amounts of LFE channel signal are distributed to the other audio channels in the overall mix.

■ Dynamic range compressor

D. RANGE COMP [OFF]

Initial setting : OFF

Lets you compress the dynamic range of the sound track. This may be useful when you want to watch movies at low volumes late at night.

- OFF reproduces the sound track with no compression.
- 0.1 ~ 0.9 allow you to compress the dynamic range in small steps to achieve the sound you desire.
- STD reproduces the sound track with the dynamic range intended by the recording engineer.
- MAX provides a dramatic compression of the dynamic range.

Note

Dynamic range compression is only possible with Dolby Digital sources.

About the Dynamic Range Compressor

This parameter allows you to compress the dynamic range of the soundtrack based on the dynamic range information included in the Dolby Digital signal. “STD” is standard compression, but because many sources have only light compression, you may not notice much difference when using 0.1~0.9.

Therefore, we recommend using the “MAX” setting. This greatly compresses the dynamic range and allows you to view movies late at night at low volumes. Unlike analog limiters, the levels are predetermined and provide a very natural compression.

■ Muting

MUTING [OFF]

Initial setting : OFF

Lets you mute the sound (same as MUTING on the remote).

- ON to mutes the sound from all speakers.
- OFF restores the sound to the original volume.

Adjusting the Speaker Levels <LEVEL>

Adjustable parameters for each sound field

	<SURROUND> ¹⁾					
	EFFECT LEVEL	WALL TYPE	REVERB TIME	SCREEN DEPTH	VIRTUAL SPEAKER	SUR EQ
2CH						
A.F.D.						
NORMAL SURROUND						●
CINEMA STUDIO EX. A	●			●	●	●
CINEMA STUDIO EX. B	●			●	●	●
CINEMA STUDIO EX. C	●			●	●	●
SEMI-CINEMA STUDIO EX. A	●			●	●	●
SEMI-CINEMA STUDIO EX. B	●			●	●	●
SEMI-CINEMA STUDIO EX. C	●			●	●	●
NIGHT THEATER	●	●	●			●
MONO MOVIE	●	●	●			●
STEREO MOVIE	●	●	●			●
V. MULTI DIMENSION						●
V. MULTI REAR						●
V. SEMI-M. DIMENSION						●
VIRTUAL ENHANCED A						●
VIRTUAL ENHANCED B						●
SMALL HALL	●	●	●			●
LARGE HALL	●	●	●			●
OPERA HOUSE	●	●	●			●
JAZZ CLUB	●	●	●			●
DISCO/CLUB	●	●	●			●
CHURCH	●	●	●			●
LIVE HOUSE	●	●	●			●
ARENA	●	●	●			●
STADIUM	●	●	●			●
GAME	●	●	●			●
HEADPHONE THEATER	●					
5.1CH INPUT						
ANALOG DIRECT						

1) Settings are memorized for each sound field.

Adjustable parameters for each sound field (continued)

	<LEVEL> ²⁾						
	FRONT BAL.	REAR BAL.	REAR LEVEL	CENTER LEVEL	WOOFER LEVEL	LFE MIX	D.RANGE COMP.
2CH	●					●	●
A.F.D.	●	●	●	●	●	●	●
NORMAL SURROUND	●	●	●	●	●	●	●
CINEMA STUDIO EX. A	●	●	●	●	●	●	●
CINEMA STUDIO EX. B	●	●	●	●	●	●	●
CINEMA STUDIO EX. C	●	●	●	●	●	●	●
SEMI-CINEMA STUDIO EX. A	●			●	●	●	●
SEMI-CINEMA STUDIO EX. B	●			●	●	●	●
SEMI-CINEMA STUDIO EX. C	●			●	●	●	●
NIGHT THEATER	●	●	●	●	●	●	●
MONO MOVIE	●	●	●	●	●	●	●
STEREO MOVIE	●	●	●	●	●	●	●
V. MULTI DIMENSION	●	●	●	●	●	●	●
V. MULTI REAR	●	●	●	●	●	●	●
V. SEMI-M. DIMENSION	●			●	●	●	●
VIRTUAL ENHANCED A	●			●	●	●	●
VIRTUAL ENHANCED B	●			●	●	●	●
SMALL HALL ³⁾	●	●	●	●	●	●	●
LARGE HALL ³⁾	●	●	●	●	●	●	●
OPERA HOUSE ³⁾	●	●	●	●	●	●	●
JAZZ CLUB ³⁾	●	●	●	●	●	●	●
DISCO/CLUB ³⁾	●	●	●	●	●	●	●
CHURCH ³⁾	●	●	●	●	●	●	●
LIVE HOUSE ³⁾	●	●	●	●	●	●	●
ARENA ³⁾	●	●	●	●	●	●	●
STADIUM ³⁾	●	●	●	●	●	●	●
GAME ³⁾	●	●	●	●	●	●	●
HEADPHONE THEATER	●						●
5.1CH INPUT							
ANALOG DIRECT							

2) Settings are memorized and apply to all sound fields.

3) Sound is not produced from the center speaker for sources with no center channel (Linear PCM, Dolby Digital 2/2, 2/1, 2/0, analog input).

Other Settings <CUSTOMIZE>

The CUSTOMIZE menu allows you to customize various aspects of the receiver's operation.

■ Audio split

V:VIDEO3 A:CD

Use to switch the audio source. (Same as the AUDIO SPLIT button on the front panel.) See "[3] AUDIO SPLIT button" on page 25 for details.

■ Audio input mode

DVD: AUDIO [AUTO]

Initial setting : AUTO

Use to switch the input for the current component. (Same as the DIGITAL/ANALOG button on the front panel.) See "[4] DIGITAL/ANALOG button" on page 25 for details.

■ Digital input decode mode

DVD: DECODE [AUTO]

Initial setting : AUTO

Lets you specify the type of signal being input to currently the selected digital audio jack. The settings are stored independently for each jack.

- AUTO : The unit automatically switches between DTS, Dolby Digital (AC-3), and PCM.
- PCM : All input signals are treated as PCM signals. If a Dolby Digital (AC-3), or DTS signal is input to a jack set to PCM, no sound will be heard. If a jack is set to "AUTO", and a CD player or similar component connected to that jack sounds interrupted when playback begins, select "PCM" for that jack.

■ Display dimmer control

DISP DIMMER XXX%

Initial setting : 100%

Lets you adjust the brightness of the display window. It can be adjusted in 10% steps from 50 to 100%.

■ Phase polarity of the input source

ABS PHASE [NORMAL]

Initial setting : NORMAL

Lets you set the absolute phase polarity of the input source. Normally, set to [NORMAL]. When outputting the sound of a source of reverse phase, set to [REVERSE]. When set to [REVERSE], the polarity of the signals output from all the speakers and PRE OUT jacks is reversed from the current polarity.

Note

This setting does not change the polarity of the sub woofer to the front speakers. To change the phase polarity of the sub woofer to the front speakers, set S.W PHASE to REVERSE in the SP SETUP menu.

■ Digital filter frequency response type

DF ROLL OFF [STD]

Initial setting : STD

Lets you change the digital filter frequency response of the D/A converter.

- STD: Standard frequency response.
- SLOW : The curve of the treble range is smoother than with STD. You can enjoy a different sound from STD.

■ Test tone noise type

NOISE BAND [STD]

Initial setting : STD

You can change the type of test tone noise.

- STD reproduces a standard test tone with the frequency response recommended by Dolby Digital.
- WIDE reproduces a "white noise" test tone. You can use to match the sound of the speakers.

■ Sub room hookup

2ND AUDIO [SOURCE]

Initial setting : SOURCE

Lets you output audio signals to a stereo amplifier located in another room. Select the source to output the audio signals to the sub room. When [SOURCE] is selected, the analog signals of the source selected as the function are output to the sub room.* Be sure to hook up the stereo amplifier in the sub room to this receiver using the 2ND AUDIO OUT jacks (see page 11).

* However, if 5.1 CH is selected as the function, the analog signals of the previously selected source are output to the sub room.

■ Sound Field Link

S.FIELD LINK [OFF]

Initial setting : OFF

When set to [ON], the sound field that was last applied to a program source is automatically applied whenever it is selected. For example, if you listen to CD with STADIUM as the sound field, change to a different program source, then return to CD, STADIUM will be applied again. If you do not want to use this function, set to [OFF].

■ CONTROL A1 II auto function

AUTO FUNCTION [ON]

Initial setting : ON


Lets you set whether the CONTROL A1 II auto function can turn Sony components connected via CONTROL A1 cord (see page 12) on or off and control their functions as if in a system or not. Select [OFF] when you do not want system control of the other components.

■ Setting up the 2 way remote

2-way REMOTE [ON]

Initial setting : ON

If you want to use this receiver together with another component that is also compatible with the 2 way remote control system, be sure to perform the following operation to limit response to signals sent from the remote controls.

- To use with the TA-E9000ES, turn OFF this unit's 2 way remote control system. Make sure the TA-E9000ES is turned on when using this unit.
- To use with other components that have the  logo, turn OFF the other component's 2 way remote control system. For details, refer to the operating instructions supplied with your other components.
- To use with Sony CD players CDP-CX260 or CDP-CX88ES, turn OFF the remote control adapter switch on the CDP-CX260 or CDP-CX88ES. For details, refer to the operating instructions supplied with the CDP-CX260 or CDP-CX88ES.
- When using several 2 way remote control system components together, be sure to place them close together in order to enable proper remote operation.

■ Naming Program sources

XXXXXXXX []

Lets you register a name of up to 8 characters for the currently selected function. Touch < or > to move the position and turn the jog dial to select a character. When you are finished entering the name, press ENTER.

When you want to clear a name that has been registered, touch < or > to make the 8 character boxes blink. Turn the jog dial one click to the right to make the name appear as 8 spaces and then press ENTER.



You can easily enter the names of components manufactured by Sony

When < or > is touched to make the 8 character boxes blink...

- First, turn the jog dial one click to the right to display the name as 8 spaces. If ENTER is pressed at this time, the name is cleared.
- If you continue turning the jog dial to the right, the model names of components manufactured by Sony appear. Press ENTER to confirm a new name. If you want to make changes to the name, touch > until the character you want to change blink and turn the jog dial to change the character.

■ Memory clear

MEMORY CLEAR [NO]

Initial setting : NO

To clear the memory, select [YES] and press ENTER. "Are you sure?" is displayed. Select [YES] and press ENTER again. The unit automatically turns off, and then turns on again. The memory is cleared.

■ Sleep timer

SLEEP X:XX:XX

Initial setting : OFF

Lets you set the receiver to turn off automatically after a certain time. Simply select how long you would like to wait before the unit turns itself off. Countdown begins automatically. The timer can be adjusted in 30 minute steps up to 9 hours using the receiver and up to 2 hours using the remote.

To cancel the sleep function, select [OFF] before the count down is complete.

Receiving Broadcasts

This chapter describes how to receive FM or AM broadcasts and how to preset selected stations.

You can tune in stations on this receiver in the following ways:

Automatic/Manual Tuning

If you don't know the frequency of the station you want, you can let the receiver scan all available stations in your area (see page 49). You can also use the jog dial to find the frequency manually (Manual Tuning).

Preset Tuning

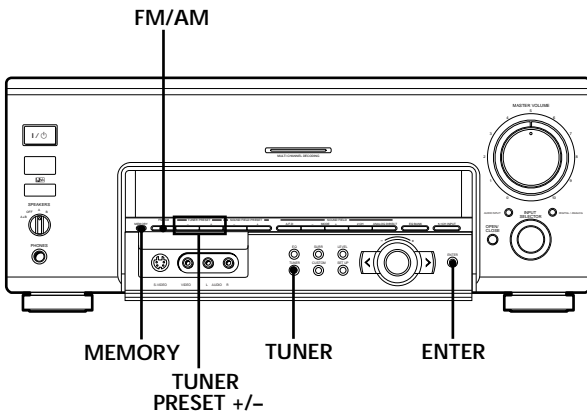
After you have tuned in stations using Direct Tuning or Automatic Tuning, you can preset them to the receiver (see page 50). Then you can tune in any of the stations directly by entering its 2-character code using the supplied remote (see page 50). Up to 30 FM or AM stations can be preset. The receiver will also scan all the stations that you have preset (see page 50).

Direct Tuning Using the Remote

You can enter a frequency of the station you want directly by using the numeric buttons on the supplied remote (see page 51).

Before you begin, make sure you have:

- Connected an FM and AM antenna to the receiver (see page 5).
- Selected the appropriate speaker system (see page 27).



Brief descriptions of buttons used to receive broadcasts

TUNER PRESET +/-: Press to scan all available radio stations and to scan all preset radio stations.

FM/AM: Press to select the FM or AM band.

MEMORY: Uses for memorizing preset stations.

TUNER: Press to activate the tuner menu.

Tuning scale is:

FM: 50 kHz

AM: U.S.A./Canada models – 10 kHz (to change to 9 kHz, see page 51.)

Singapore/Malaysia models – 9 kHz

Other models – 9 kHz (to change to 10 kHz, see page 51.)

Automatic/Manual Tuning

For details on the buttons used in this section, see “Brief descriptions of buttons used to receive broadcasts” on this page.

- 1** Press FM/AM to select the FM or AM band.
- 2** Press TUNER.
The last received station is tuned in.
- 3** Press the cursor buttons (< or >) to display “TUNE MODE [AUTO]”.
- 4** Press TUNER again.
The frequency appears in the display.
- 5** Turn the jog dial to + or –.
Turn to + to scan from low to high; turn to – to scan from high to low.
The receiver stops scanning whenever a station is received.

When the receiver reaches either end of the band

Scanning is repeated in the same direction.

- 6** To continue scanning, turn the jog dial to + or – again.

To perform manual tuning using the jog dial

Press the cursor buttons to display “TUNE MODE [MANUAL]” in step 3, then press TUNER. You can then use the jog dial to find the frequency you want.

Preset Tuning

For details on the buttons used in this section, see “Brief descriptions of buttons used to receive broadcasts” on page 49.

Before tuning to preset stations, be sure to preset them by performing steps on “Presetting radio stations” below.

Presetting radio stations

- 1 Turn **INPUT SELECTOR** to select **TUNER**.
The last received station is tuned in.
- 2 Tune in the station that you want to preset using **Automatic/Manual Tuning** (page 49) or **Direct Tuning** using the remote (page 51).
- 3 Press **MEMORY**.
“MEMORY” appears in the display for a few seconds.
Do Steps 4 and 5 before “MEMORY” goes out.
- 4 Press **TUNER PRESET +** or **-** to select a preset number.
- 5 Press **MEMORY** again to store the station.
If “MEMORY” goes out before you can store the station, start again from Step 3.
- 6 Repeat Steps 2 to 5 to preset another station.

To change a preset number to another station
Do Steps 1 to 5 to preset the new station to the number.

Clearing preset stations

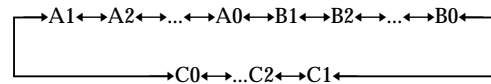
- 1 Press **TUNER** to activate the tuner menu.
- 2 Press the cursor buttons (**<** or **>**) to display “PRESET CLEAR [NO]”.
- 3 Turn the jog dial to display “PRESET CLEAR [YES]” and press **ENTER**.
“Are you sure? [No]” is displayed.
- 4 Once again, turn the jog dial to display “[YES]” and press **ENTER**.

Tuning to preset stations

You can tune the preset stations either of the following two ways.

Scanning the preset stations

- 1 Turn **INPUT SELECTOR** to select **TUNER**.
The last received station is tuned in.
- 2 Press **TUNER PRESET +** or **TUNER PRESET -** repeatedly to select the preset station you want.
Each time you press the button, the receiver tunes in one preset station at a time, in the corresponding order and direction as follows:



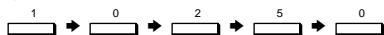
Direct Tuning Using the Remote

Use the supplied remote to perform the following operations.

For details on the buttons used in this section, see the operating instructions for the supplied remote.

- 1 Touch **FUNCTION** and **SUB** on the remote to select **TUNER**.
The last received station is tuned in.
- 2 Press **FM/AM** to select the FM or AM band.
- 3 Touch **DIRECT** on the remote.
- 4 Press the numeric buttons to enter the frequency.

Example 1: FM 102.50 MHz



Example 2: AM 1350 kHz

(You don't have to enter the last "0" when the tuning scale is set to 10 kHz.)




If you cannot tune in a station and the entered numbers flash

Make sure you've entered the right frequency. If not, repeat Steps 3 and 4.

If the entered numbers still flash, the frequency is not used in your area.

- 5 If you've tuned in an AM station, adjust the direction of the AM loop antenna for optimum reception.
- 6 Repeat Steps 2 to 5 to receive another station.

 If you try to enter a frequency that is too precise for the tuning scale

The entered value is automatically rounded up or down.

Using the Tuner Menus

See "Automatic/Manual tuning" (page 49), "Preset Tuning" (page 50) and "Direct Tuning Using the Remote" (this page) for details.

■ Tuning mode setting (TUNE MODE)

Initial setting : AUTO

To tune in receivable stations automatically, select "AUTO".

When you want to tune in a station that has a signal too weak to be tuned in AUTO mode, select "MANUAL" to change the frequency manually.

■ FM mode (FM MODE)

Initial setting : STEREO

Normally, select "STEREO". If FM stereo reception is poor, select "MONO". You will not be able to enjoy the stereo effect, but the overall sound will be clearer.

■ Naming preset stations (FM)

This setting lets you register a name of up to 8 characters for the currently selected preset station. Touch < or > to move the position and turn the jog dial to select a character. When you are finished entering the name, press ENTER. When you want to clear a name that has been registered, touch < or > to make the 8 character boxes blink. Turn the jog dial one click to the right to make the name appear as 8 spaces and then press ENTER.



You can display the frequency of the station being received. Press TUNER, and then press < repeatedly during reception of a station that has a name registered.

■ AM Tuning scale (AM X kHz → Y kHz)*

Initial setting : NO

You can change the AM tuning scale. Press TUNER to enter the tuner menu and press < or > repeatedly to display "AM X kHz → Y kHz". Turn the jog dial to display "YES" and press ENTER. When "Are you sure?" appears in the display, turn the jog dial to select "YES" and press ENTER again. When you change the AM tuning scale, AM preset stations are cleared.

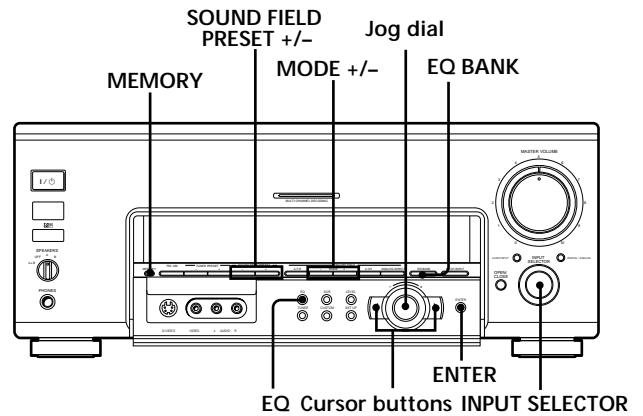
* Except for Singapore/Malaysia models.

■ Clearing preset stations (PRESET CLEAR)

Initial setting : NO

Other Operations

This chapter describes the operations necessary to store your custom equalization and surround settings for instant recall.



Brief descriptions of buttons used to create custom equalizer settings

EQ BANK button: Press repeatedly to select the equalizer you want to adjust.

EQ button: Press to select the parameter you want to adjust in the current EQ BANK equalizer.

MODE +/- buttons: Press to select the sound field.

MEMORY button: Press to memorize a preset sound field.

SOUND FIELD PRESET +/- buttons: Press to select a preset sound field.

INPUT SELECTOR control: Rotate to select the source.

Cursor buttons (</>): Use to select parameters after pressing the EQ button.

Jog dial: Use to adjust parameters and select sound fields (etc.).

Viewing detailed information about the audio source

You can view information about the audio source currently selected. When a digital audio source is selected, the sampling frequency and bit rate of the audio signal can also be viewed. (Items which can be displayed may differ depending on the source.)

Turn the jog dial counterclockwise to display the audio information (except during menu operations). Then turn the jog dial in either direction to scroll the information.


Turning the jog dial immediately after pressing MODE +/- adjusts surround modes. About two seconds after using MODE +/-, you can use the jog dial to display the audio information. Also, after using INPUT SELECTOR, etc., you can turn the jog dial to display the audio information when the surround display returns.

Presetting Equalizer and Sound Fields

Any changes you make to the preset equalizers (EQ PRESET 1~5) are stored automatically.

Presetting Equalizer Settings

- 1 Press EQ BANK repeatedly to select the equalizer you want to adjust (EQ PRESET 1~5).
- 2 Press EQ.
- 3 Press the cursor buttons (< or >) to select the desired parameter, then turn the jog dial to adjust. These parameters let you adjust the sound of each speaker individually (see page 39). The adjustments are stored automatically.

 You can turn off the equalization without erasing the equalizer
Press the EQ BANK repeatedly to select "EQ PRESET OFF".

Clearing Stored Equalizer Settings

- 1 Press EQ BANK repeatedly to select the equalizer you want to clear (EQ PRESET 1-5).
- 2 Press EQ.
- 3 Press the cursor buttons (< or >) to display "<PRESET x clear [NO]>" ("x" is the number of the current equalizer preset).
- 4 Turn the jog dial to display "<PRESET x clear [YES]>" and press ENTER. "Are you sure? [NO]" is displayed.
- 5 Once again, turn the jog dial to display "[YES]" and press ENTER. "PRESET x CLEARED !" is displayed and the contents of the selected equalizer bank are restored to the factory presets.

Presetting Sound Fields

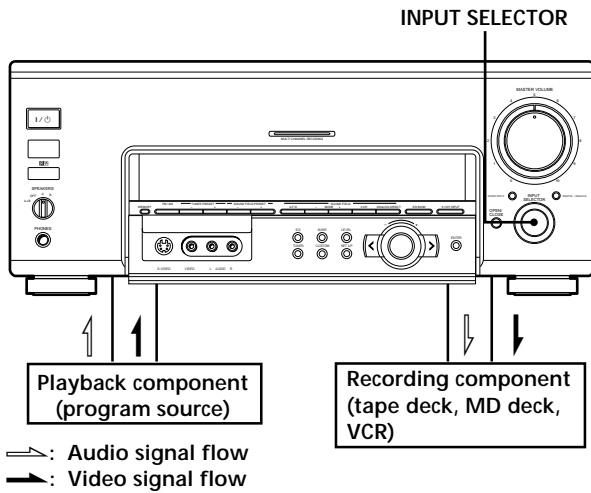
You can preset up to 5 of your favorite sound fields and easily call them up when you want.

- 1 Press MODE +/- repeatedly to select the sound field to preset.
- 2 Press MEMORY.
- 3 Press SOUND FIELD PRESET +/- to select the preset number.
- 4 Press MEMORY.
The sound field is stored in memory.

Recording

Your receiver makes it easy to record to and from the components connected to it. You don't have to connect the playback and recording components directly to each other: once you select a program source on the receiver, you can record and edit as you normally would using the controls on each component.

Before you begin, make sure you've connected all components properly.



Recording on an audio tape or MiniDisc

You can record on a cassette tape or MiniDisc using the receiver. See the instruction manual of your tape deck or MD deck if you need help.

- 1 Turn **INPUT SELECTOR** to select the component to be recorded.
- 2 Prepare the component for playing.
For example, insert a CD into the CD player.
- 3 Insert a blank tape or MD into the recording deck and adjust the recording level, if necessary.
- 4 Start recording on the recording deck, then start playback on the playback component.

Notes

- You cannot record a digital audio signal using a component connected to the analog **TAPE REC OUT** or **MD/DAT REC OUT** jacks. To record a digital audio signal, connect a digital component to the **MD/DAT OPT OUT** jack.
- Sound adjustments do not affect the signal output from the **TAPE REC OUT** or **MD/DAT REC OUT** jacks.
- You cannot, however, record multi channel surround digital signals from a DVD, etc.

Recording on a video tape

You can record from a VCR, a TV, or an LD player using the receiver. You can also add audio from a variety of audio sources when editing a video tape. See your VCR or LD player's instruction manual if you need help.

- 1 Turn **INPUT SELECTOR** to select the program source to be recorded.
- 2 Prepare the component for playing.
For example, insert the laser disc you want to record into the LD player.
- 3 Insert a blank video tape into the VCR (**VIDEO 1** or **VIDEO 2**) for recording.
- 4 Start recording on the recording VCR, then start playing the video tape or laser disc you want to record.

You can record the sound from any audio source onto a video tape while copying from a video tape or laser disc. After locating the point where you want to start recording from another audio source, select the program source, then start playback. The audio from that source will be recorded onto the audio track of the video tape instead of the audio from the original medium.

For example, if you want to record video from the component connected to the **VIDEO 1** jacks and audio from the component connected to the **CD** jacks:

- 1 Turn **INPUT SELECTOR** to select **VIDEO 1**.
- 2 Press **AUDIO SPLIT** to display "V:VIDEO1 A:(audio component)"
- 3 Press **AUDIO SPLIT** repeatedly to select the CD player as the audio component ("V:VIDEO1 A:CD").

See " **AUDIO SPLIT** button" on page 25 for details on use of the **AUDIO SPLIT** button.

To resume audio recording from the original medium, hold down **AUDIO SPLIT** for more than 2 seconds to cancel. (Please note that the selected audio component will switch once before cancelation.)

Notes

- You cannot record a digital audio signal using a component connected to the analog **TAPE REC OUT**, **MD/DAT REC OUT**, **VIDEO 1 REC OUT** or **VIDEO 2 REC OUT** jacks. To record a digital audio signal, connect a digital component to the **MD/DAT OPT OUT** jack.
- You cannot, however, record multi channel surround digital signals from a DVD, etc.

CONTROL A1II Control System

Getting Started

This section explains the basic functions of the CONTROL A1II Control System. Certain components have special functions, like "CD Synchro Dubbing" on cassette decks, that require CONTROL A1II connections. For detailed information regarding specific operations, be sure to also refer to the Operating Instructions supplied with your component(s).

The CONTROL A1II Control System was designed to simplify the operation of audio systems composed of separate Sony components. CONTROL A1II connections provide a path for the transmission of control signals which enable automatic operation and control features usually associated with integrated systems. Currently, CONTROL A1II connections between a Sony CD player, amplifier (receiver), MD deck and cassette deck provide automatic function selection and synchronized recording. In the future the CONTROL A1II connection will work as a multifunction bus allowing you to control various functions for each component.

Notes

- The CONTROL A1II Control System is designed to maintain upward compatibility as the Control System is upgraded to handle new functions. In this case, however, older components will not be compatible with the new functions.
- Do not operate a 2 way remote control unit when the CONTROL A1II jacks are connected via a PC interface kit to a personal computer running "MD Editor" or similar application. Also, do not operate the connected component in a manner contrary to the functions of the application, as this may cause the application to operate incorrectly.

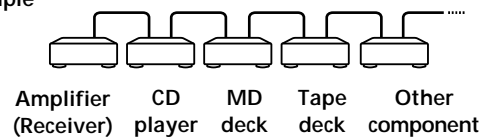
CONTROL A1II and CONTROL A1 compatibility

The CONTROL A1 control system has been updated to the CONTROL A1II which is the standard system in the SONY 300 disc CD changer and other recent Sony components. Components with CONTROL A1 jacks are compatible with components with CONTROL A1II, and can be connected to each other. Basically, the majority of the functions available with the CONTROL A1 control system will be available with the CONTROL A1II control system. However, when making connections between components with CONTROL A1 jacks and components with CONTROL A1II jacks, the number of functions that can be controlled may be limited depending on the component. For detailed information, refer to the Operating Instructions supplied with the component(s).

Connections

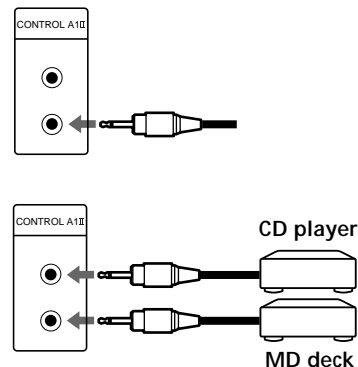
Connect monaural (2P) mini-plug cords in series to the CONTROL A1II jacks on the back of each component. You can connect up to ten CONTROL A1II compatible components in any order. However, you can connect only one of each type of component (i.e., 1 CD player, 1 MD deck, 1 tape deck and 1 receiver). (You may be able to connect more than one CD player or MD deck, depending on the model. Refer to the operating instructions supplied with the respective component for details.)

Example



In the CONTROL A1II control system, the control signals flow both ways, so there is no distinction of IN and OUT jacks. If a component has more than one CONTROL A1II jack, you can use either one, or connect different components to each jack.

Jacks and connection examples



On CONTROL A1 jacks and connections

It is possible to make connections between CONTROL A1 and CONTROL A1II jacks. For details regarding particular connections or setup options, refer to the Operating Instructions supplied with the component(s).

About the connecting cord

Some CONTROL A1 compatible components are supplied with a connecting cord as an accessory. In this case, use the connecting cord for your connection. When using a commercially available cord, use a monaural (2P) mini-plug cord less than 2 meters long, with no resistance (like the Sony RK-G69HG).

Basic Functions

The CONTROL A1 II functions will operate as long as the component you want to operate is turned on, even if all of the other connected components are not turned on.

Automatic function selection

When you connect a CONTROL A1 II compatible Sony amplifier (or receiver) to other Sony components using monaural mini-plug cords, the function selector on the amplifier (or receiver) automatically switches to the correct input when you press the play button on one of the connected components.

Notes

- You must connect a CONTROL A1 compatible amplifier (receiver) using a monaural mini-plug cord in order to take advantage of the automatic function selection feature.
- This function only works when the components are connected to the amplifier (or receiver) inputs according to the names on the function buttons. Certain receivers allow you to switch the names of the function buttons. In this case, refer to the Operating Instructions supplied with the receiver.
- When recording, do not play any components other than the recording source. It will cause the automatic function selection to operate.

Synchronized recording

This function lets you conduct synchronized recording between the selected source and recorder components.

- 1** Set the function selector on the amplifier (or receiver) to the source component.
- 2** Set the source component to pause mode (make sure both the ► and ■■ indicators light together).
- 3** Set the recorder component to the REC-PAUSE mode.
- 4** Press PAUSE on the recorder component.
The source component is released from the pause mode, and recording begins shortly thereafter.
When playback ends from the source component, recording stops.

Notes

- Do not set more than one component to the pause mode.
- Certain recorder components may be equipped with a special synchronized recording function that uses the CONTROL A1 II Control System, like “CD Synchro Dubbing”. In this case, refer to the Operating Instructions supplied with the recorder component.

Additional Information

Troubleshooting

If you experience any of the following difficulties while using the receiver, use this troubleshooting guide to help you remedy the problem. Also, see “Checking the connections” on page 22 to verify that the connections are correct. Should any problem persist, consult your nearest Sony dealer.

There’s no sound or only a very low-level sound is heard.

- ➔ Check that the speakers and components are connected securely.
- ➔ Make sure that you’ve selected the correct component on the receiver.
- ➔ Make sure that you’ve set the SPEAKERS selector correctly (see page 27).
- ➔ Press MUTING on the remote if “MUTING [ON]” appears in the display.
- ➔ The protective device on the receiver has been activated because of a short circuit. Turn off the receiver, eliminate the short-circuit problem and turn on the power again.

The left and right sounds are unbalanced or reversed.

- ➔ Check that the speakers and components are connected correctly and securely.
- ➔ Adjust front balance parameter in the LEVEL menu.

Severe hum or noise is heard.

- ➔ Check that the speakers and components are connected securely.
- ➔ Check that the connecting cords are away from a transformer or motor, and at least 10 feet (3 meters) away from a TV set or fluorescent light.
- ➔ Move your TV away from the audio components.
- ➔ Make sure you’ve grounded SIGNAL GND \hbar terminal.
- ➔ The plugs and jacks are dirty. Wipe them with a cloth slightly moistened with alcohol.

There is a long silence before sound can be heard.

- ➔ When ANALOG DIRECT is switched to one of the other sound fields, a silence lasting several seconds may be experienced before sound can be heard again. When this occurs, set D. POWER in the CUSTOMIZE menu to “ALWAYS ON”.

Troubleshooting

No sound is heard from the center speaker.

- ➔ Make sure the sound field function is on (press A.F.D.).
- ➔ Select a sound field containing the word “cinema” or “virtual” (see page 30–32).
- ➔ Adjust the speaker volume (see page 21).
- ➔ Make sure the center speaker size parameter is set to either SMALL or LARGE (see page 18).

No sound or only a very low-level sound is heard from the rear speakers.

- ➔ Make sure the sound field function is on (press A.F.D.).
- ➔ Select a sound field containing the word “cinema” or “virtual” (see page 30–32).
- ➔ Adjust the speaker volume (see page 21).
- ➔ Make sure the rear speaker size parameter is set to either SMALL or LARGE (see page 19).

Recording cannot be done.

- ➔ Check that the components are connected correctly.
- ➔ Select the source component by rotating the INPUT SELECTOR control.
- ➔ When recording from a digital component, be sure to press DIGITAL/ANALOG to select “ANALOG” (see page 25) before recording with a component connected to the analog MD/DAT, TAPE, VIDEO 1, VIDEO 2, or VIDEO 3 terminals.
- ➔ When recording from a digital component, be sure to press DIGITAL/ANALOG to select “DIGITAL” (see page 25) before recording with the component connected to the MD/DAT OPT OUT terminals.

The surround effect cannot be obtained.

- ➔ Make sure the sound field function is on (press A.F.D.).
- ➔ Make sure that the SPEAKERS selector is set to A or B (not A+B) if you connected two sets of front speakers.

The front panel door stops suddenly while opening or closing.

- ➔ If an external force is applied to the door while it is opening or closing, it stops automatically for safety reasons. Remove the cause of the external force, then press OPEN/CLOSE again (see page 27).

Radio stations cannot be tuned in.

- ➔ Check that the antennas are connected securely. Adjust the antennas and connect an external antenna if necessary.
- ➔ The signal strength of the stations is too weak (when tuning in with automatic tuning). Use direct tuning.
- ➔ Make sure you set the tuning interval correctly (when tuning in AM stations with direct tuning) (see pages 51).
- ➔ No stations have been preset or the preset stations have been cleared (when tuning by scanning preset stations). Preset the stations (see page 50).


No picture or an unclear picture appears on the TV screen or monitor.

- ➔ Select the appropriate function on the receiver.
- ➔ Set your TV to the appropriate input mode.
- ➔ Move your TV away from the audio components.

The audio output does not correspond to the video image on the TV screen or monitor.

- ➔ Check the source of the audio signal by pressing AUDIO SPLIT to display “V:(video component) A:(audio component)”. Hold down AUDIO SPLIT for more than 2 seconds to cancel the function and restore both audio and video to the selected video component.

The remote does not function.

- ➔ Point the remote at the remote sensor  on the receiver.
- ➔ Remove any obstacles in the path between the remote and the receiver.
- ➔ Replace all batteries in the remote with new ones, if they are weak.
- ➔ Make sure you select the correct function on the remote.
- ➔ If the remote is set to operate the TV only, use the remote to select a source or component other than TV before operating the receiver or other component.

Reference sections for clearing the receiver’s memory

To clear	See
All memorized settings	Page 17
Customized equalizers	Page 47, 53

Specifications

AUDIO POWER SPECIFICATIONS

POWER OUTPUT AND TOTAL HARMONIC DISTORTION:

With 8 ohm loads, both channels driven, from 20 - 20,000 Hz; rated 120 watts per channel minimum RMS power, with no more than 0.05% total harmonic distortion from 250 milliwatts to rated output.

(U.S.A. model only)

Audio section

POWER OUTPUT

Stereo mode 8 ohms

120 W + 120 W

4 ohms

100 W + 100 W

(THD 0.05%,

20 Hz - 20 kHz)*

(DIN 1 kHz)

Surround mode

8 ohms

Front: 120W + 120W

Center^{a)}: 120W

Rear^{a)}:

120W + 120W

4 ohms

Front: 100W + 100W

Center^{a)}: 100W

Rear^{a)}:

100W + 100W

(THD 0.05%,

20 Hz - 20 kHz)*

(DIN 1 kHz)

* U.S.A./Canada models only.

a) Depending on the sound field settings and the source, there may be no sound output.

Frequency response

PHONO:

20 Hz ~ 20 kHz

RIAA ±0.5 dB

LINE (TUNER, CD,

MD/DAT, TAPE,

TV/SAT or TV/LD,

DVD/LD or DVD,

VIDEO 1, 2, and

VIDEO 3):

10 Hz ~ 100 kHz

+0.5/-2.0 dB

(ANALOG DIRECT)

Signal-to-noise ratio

DIGITAL: 100 dB

(A, 20 kHz LPF)

PHONO: 86 dB**

(A, 5 mV)

LINE: 100 dB**

(A, 20 kHz LPF)

** ANALOG DIRECT

Inputs (Analog)

PHONO:

Sensitivity: 4 mV

Impedance:

50 kilohms

LINE (TUNER, CD,

MD/DAT, TAPE,

TV/SAT or TV/LD,

DVD/LD or DVD,

VIDEO 1, 2, and

VIDEO 3):

Sensitivity: 200 mV

Impedance:

50 kilohms

Inputs (Digital)

Coaxial (DVD/LD or

DVD, CD) :

Sensitivity: -

Impedance: 75 ohms

Optical (DVD/LD or

DVD, TV/SAT or

TV/LD, MD/DAT) :

Sensitivity: -

Impedance: -

Outputs (Analog)

REC OUT

(MD/DAT, TAPE,

VIDEO 1, 2, 3):

Voltage: 200 mV,

Impedance:

1 kilohm

PRE OUT

(FRONT L/R,

CENTER,

REAR L/R,

SUB WOOFER):

Voltage: 2 V

Impedance:

1 kohms

PHONES:

Accepts low- and

high-impedance

headphones

Outputs (Digital)

Optical (MD/DAT)

Sampling Frequency

48 kHz

EQ

BASS:

99 Hz ~ 1.0 kHz

(21 steps)

MID:

198 Hz ~ 10 kHz

(37 steps)

TREBLE:

1.0 kHz ~ 10 kHz

(23 steps)

Gain levels:

±10 dB, 0.5 dB step

Decodable Digital Formats

Dolby Digital (AC-3),

DTS

Specifications

FM tuner section

Tuning range	87.5 - 108.0 MHz
Antenna terminals	75 ohms, unbalanced
Sensitivity	Mono: 18.3 dBf, 2.2 μ V/75 ohms Stereo: 38.3 dBf, 22.5 μ V/75 ohms
Usable sensitivity	11.2 dBf, 1 μ V/75 ohms
S/N	Mono: 76 dB Stereo: 70 dB
Harmonic distortion at 1 kHz	Mono: 0.3% Stereo: 0.5%
Separation	45 dB at 1 kHz
Frequency response	30 Hz - 15 kHz +0.5/-2 dB
Selectivity	60 dB at 400 kHz

AM tuner section

Tuning range	U.S.A./Canada models: With 10-kHz tuning scale: 530 - 1710 kHz With 9-kHz tuning scale: 531 - 1710 kHz Singapore/Malaysia models: 531-1602 kHz (9 kHz interval) Other models: 531-1602 kHz (9 kHz interval) 530-1610 kHz (10 kHz interval)
Antenna	Loop antenna
Usable sensitivity	50 dB/m (at 1,000 kHz or 999 kHz)
S/N	54 dB (at 50 mV/m)
Harmonic distortion	0.5 % (50 mV/m, 400 kHz)
Selectivity	At 9 kHz: 35 dB At 10 kHz: 40 dB

Video section

Inputs	Video: 1 Vp-p 75 ohms S-video: Y: 1 Vp-p 75 ohms C: 0.286 Vp-p 75 ohms
Outputs	Video: 1 Vp-p 75 ohms S-video: Y: 1 Vp-p 75 ohms C: 0.286 Vp-p 75 ohms

General

Power requirements	U.S.A./Canada models: 120 V AC, 60Hz Singapore/Malaysia models: 220 - 230 V AC, 50/60 Hz Other models: 120/220/240 V AC, 50/60 Hz
Power consumption	U.S.A. model: 450 W Canadian model: 650 VA Singapore/Malaysia models: 420 W Other models: 450 W
AC outlets	U.S.A./Canada models: 2 switched, total 120 W/1 A Other models: 2 switched, total 100 W
Dimensions	430 × 174 × 462 mm (17 × 6 ⁷ / ₈ × 18 ¹ / ₄ inches) including projecting parts and controls
Mass (Approx.)	24.5 kg (54 lbs. 1 oz.)
Supplied accessories	See page 4.

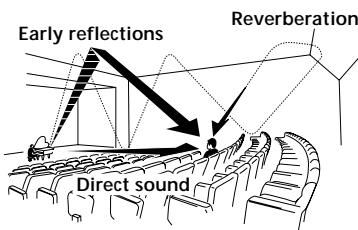
Design and specifications are subject to change without notice.

Glossary

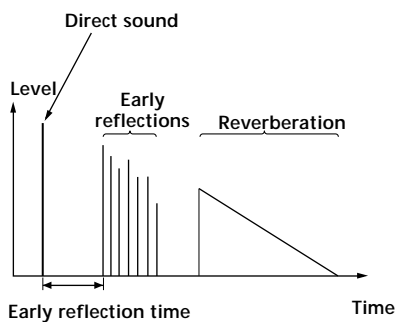
Surround sound

Sound that consists of three elements: direct sound, early reflected sound (early reflections) and reverberative sound (reverberation). The acoustics of the surrounding space affect the way these three sound elements are heard. Surround sound combines these sound elements in such a way that you actually can sense the size of the venue, as well as its type.

- Types of sound



- Transition of sound from rear speakers



Dolby Pro Logic Surround

As one method of decoding Dolby Surround, Dolby Pro Logic Surround produces four channels from two-channel sound. Compared with the former Dolby Surround system, Dolby Pro Logic Surround reproduces left-to-right panning more naturally and localizes sounds more precisely. To take full advantage of Dolby Pro Logic Surround, you should have one pair of rear speakers and a center speaker. The rear speakers output monaural sound.

Dolby Digital (AC-3)

This sound format for movie theaters is more advanced than Dolby Pro Logic Surround. In this format, the rear speakers output stereo sound with an expanded frequency range and a subwoofer channel for deep bass is independently provided. This format is also called “5.1” because the subwoofer channel is counted as 0.1 channel (since it functions only when a deep bass effect is needed). All six channels in this format are recorded separately to realize superior channel separation. Furthermore, since all the signals are processed digitally, less signal degradation occurs. The name “AC-3” comes from the fact that it is the third audio coding method to be developed by the Dolby Laboratories Licensing Corporation.

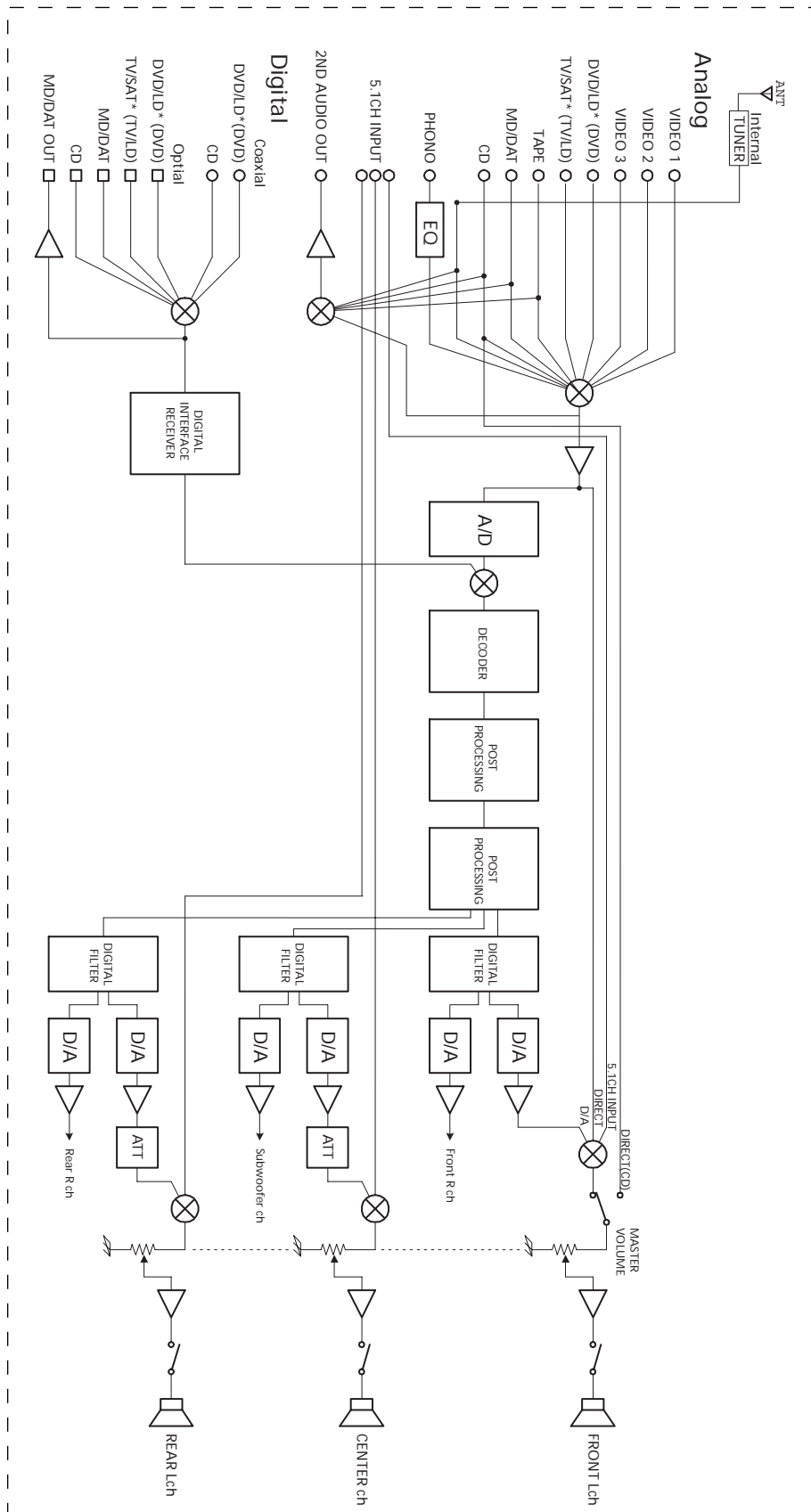
Digital Cinema Sound

This is the generic name of the surround sound produced by digital signal processing technology developed by Sony. Unlike previous surround sound fields mainly directed at the reproduction of music, Digital Cinema Sound is designed specifically for the enjoyment of movies.

DTS

Digital audio compression technology that the Digital Theater Systems, Inc. developed. This technology conforms to 5.1-channel surround. The rear channel is stereo and there is discrete subwoofer channel in this format. The good channel separation is realized because the all channel data is recorded discrete and processed in digital.

Audio Signal Block Diagram



* U.S.A./Canada models only.

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