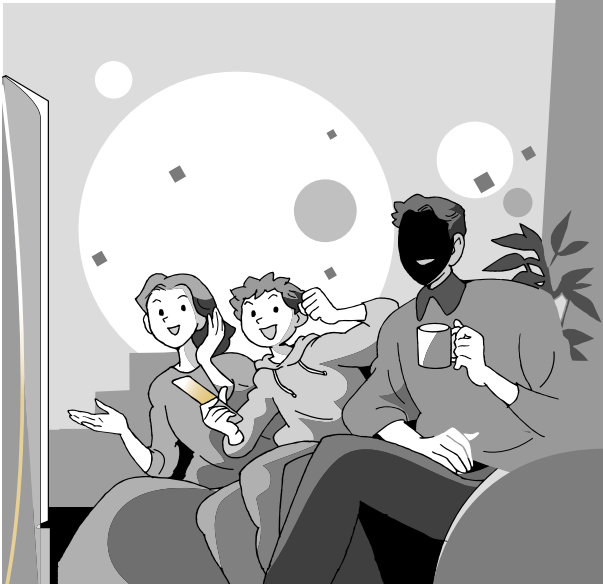


**Dear customer**

Thank you for purchasing this product.  
 Before connecting, operating or adjusting this product, please read the instructions completely.  
 Please keep this manual for future reference.



**Before use**

**Step 1**

**Home Theater connections.... 4**

- DVD player/TV or monitor..... (4)
- Speakers/AC power supply cord ..... (5)

**Step 2**

**Other connections ..... 6**

- Bi-wiring connection/  
Using speaker terminal B ..... (6)
- Having fun with DVDs using HDMI  
connections/Antennas ..... (7)
- DVD recorder/VCR/TV or monitor/  
Cable box or satellite receiver etc. .... (8)
- Video camera etc. .... (9)
- CD player/CD recorder/Tape deck/  
Using the SECOND AUDIO OUT ..... (10)

**Step 3**

**Settings..... 11**

- Customizing your receiver
  - A. Using the On Screen Display ..... (12)
  - B. Using the Multi control..... (14)
- Adjusting speaker output level..... (15)

**Step 4**

**Basic operations..... 16**

- Sound modes ..... (16)

**Operations**

Audio settings..... 25  
 Other functions..... 25  
 Making a recording..... 25


**Reference**

Specifications ..... 26  
 Product Service ..... 26  
 Maintenance..... 26  
 Warranty (U.S.A.) ..... 27  
 Troubleshooting guide ..... 28

# IMPORTANT SAFETY INSTRUCTIONS

Read these operating instructions carefully before using the unit. Follow the safety instructions on the unit and the applicable safety instructions listed below. Keep these operating instructions handy for future reference.

Before use

- 1) Read these instructions.
- 2) Keep these instructions.
- 3) Heed all warnings.
- 4) Follow all instructions.
- 5) Do not use this apparatus near water.
- 6) Clean only with dry cloth.
- 7) Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
- 8) Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
- 9) Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding-type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
- 10) Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
- 11) Only use attachments/accessories specified by the manufacturer.
- 12) Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/apparatus combination to avoid injury from tip-over. 
- 13) Unplug this apparatus during lightning storms or when unused for long periods of time.
- 14) Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

## THE FOLLOWING APPLIES ONLY IN THE U.S.A.

### CAUTION:

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:

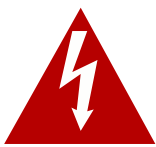
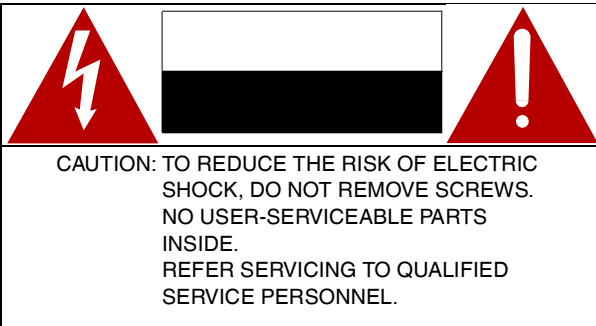
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Any unauthorized changes or modifications to this equipment would void the user's authority to operate this device.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

The socket outlet shall be installed near the equipment and easily accessible or the mains plug or an appliance coupler shall remain readily operable.

HDMI, the HDMI logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC.



The lightning flash with arrowhead symbol, within an equilateral triangle, 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.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

### WARNING:

**TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK OR PRODUCT DAMAGE, DO NOT EXPOSE THIS APPARATUS TO RAIN, MOISTURE, DRIPPING OR SPLASHING AND THAT NO OBJECTS FILLED WITH LIQUIDS, SUCH AS VASES, SHALL BE PLACED ON THE APPARATUS.**

# Listening caution



Selecting fine audio equipment such as the unit you've just purchased is only the start of your musical enjoyment. Now it's time to consider how you can maximize the fun and excitement your equipment offers. This manufacturer and the Electronic Industries Association's Consumer Electronics Group want you to get the most out of your equipment by playing it at a safe level. One that lets the sound come through loud and clear without annoying blaring or distortion-and, most importantly, without affecting your sensitive hearing.

We recommend that you avoid prolonged exposure to excessive noise.

Sound can be deceiving. Over time your hearing "comfort level" adapts to higher volumes of sound. So what sounds "normal" can actually be loud and harmful to your hearing.

Guard against this by setting your equipment at a safe level BEFORE your hearing adapts.

To establish a safe level:

- Start your volume control at a low setting.
- Slowly increase the sound until you can hear it comfortably and clearly, and without distortion.

Once you have established a comfortable sound level:

- Set the dial and leave it there.

Taking a minute to do this now will help to prevent hearing damage or loss in the future. After all, we want you listening for a lifetime.

## CAUTION!

**DO NOT INSTALL OR PLACE THIS UNIT IN A BOOKCASE, BUILT-IN CABINET OR IN ANOTHER CONFINED SPACE. ENSURE THE UNIT IS WELL VENTILATED. TO PREVENT RISK OF ELECTRIC SHOCK OR FIRE HAZARD DUE TO OVERHEATING, ENSURE THAT CURTAINS AND ANY OTHER MATERIALS DO NOT OBSTRUCT THE VENTILATION VENTS.**

## CAUTION!

Do not place anything on top of this unit or block the heat radiation vents in any way. In particular, do not place tape decks or CD/DVD players on this unit as heat radiated from it can damage your software.

User memo:

DATE OF PURCHASE \_\_\_\_\_  
 DEALER NAME \_\_\_\_\_  
 DEALER ADDRESS \_\_\_\_\_  
 TELEPHONE NUMBER \_\_\_\_\_

The model number and serial number of this product can be found on either the back or the bottom of the unit. Please note them in the space provided below and keep for future reference.

MODEL NUMBER \_\_\_\_\_ SA-XR70 \_\_\_\_\_

SERIAL NUMBER \_\_\_\_\_

# Supplied accessories



Please check and identify the supplied accessories.

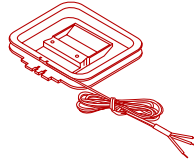
1 AC power supply cord (K2CB2CB00006)



1 FM indoor antenna (RSA0006-L)



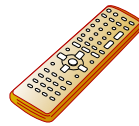
1 AM loop antenna (RSA0037)



2 Batteries



1 Remote control (EUR7722X80)



Refer to the separate booklet, "Remote Control Operation Guide", for remote control operation details.

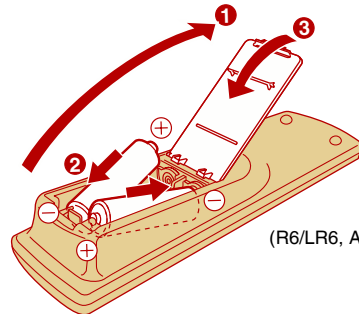
Use the numbers indicated in parentheses when asking for replacement parts. (As of August 2004)

**In the U.S.A. to order accessories, refer to "Accessory Purchases" on page 27.**

**In Canada to order accessories, call the dealer from whom you have made your purchase.**

## The remote control

### Batteries



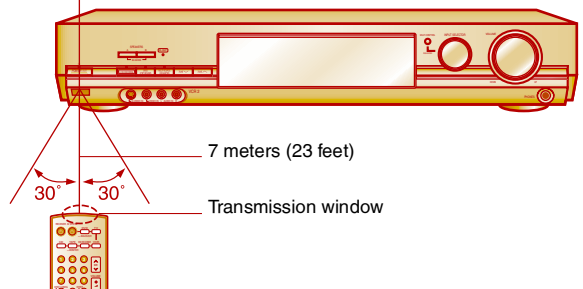
(R6/LR6, AA, UM-3)

- Insert so the poles (+ and -) match those in the remote control.
- Do not use rechargeable type batteries.

### Use

Aim at the sensor, avoiding obstacles, at a maximum range of 7 m (23 feet) directly in front of the unit.

Remote control signal sensor



7 meters (23 feet)

Transmission window

- Keep the transmission window and the unit's sensor free from dust.
- Operation can be affected by strong light sources, such as direct sunlight, and the glass doors on cabinets.

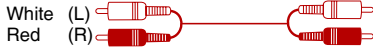
# Step 1

## Home Theater connections

DVD player/  
TV or monitor

### Before connecting

#### Stereo connection cable



#### Video connection cable



#### Coaxial cable



#### Speaker cable

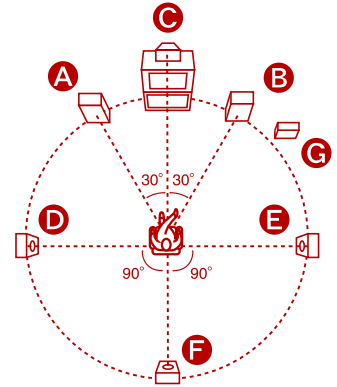


Turn off all components before making any connections.

#### Note

- Use a digital connection to enjoy Dolby Digital or DTS and record digital sources (⇒ pages 16 and 25).
- Use an analog connection to enjoy sources that cannot be decoded on this unit, to record analog sources and to output through SECOND AUDIO OUT (⇒ pages 10, 16, 24 and 25).
- When setting the On Screen Display (⇒ page 12) connect the television's VIDEO IN terminal to this unit's VIDEO TV MONITOR OUT terminal (⇒ below).
- Enjoy higher picture quality using the S VIDEO or COMPONENT terminal (⇒ page 9).
- Refer to pages 6 through 10 regarding connections to other equipment.

### Placement of speakers



The front, center, and surround speakers should be placed at approximately the same distance from the seating area. The angles in the diagram are approximate.

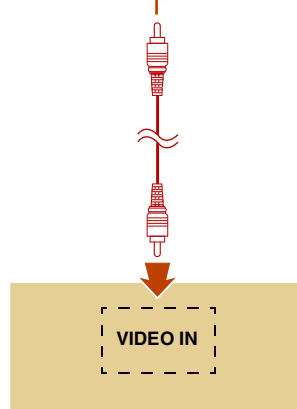
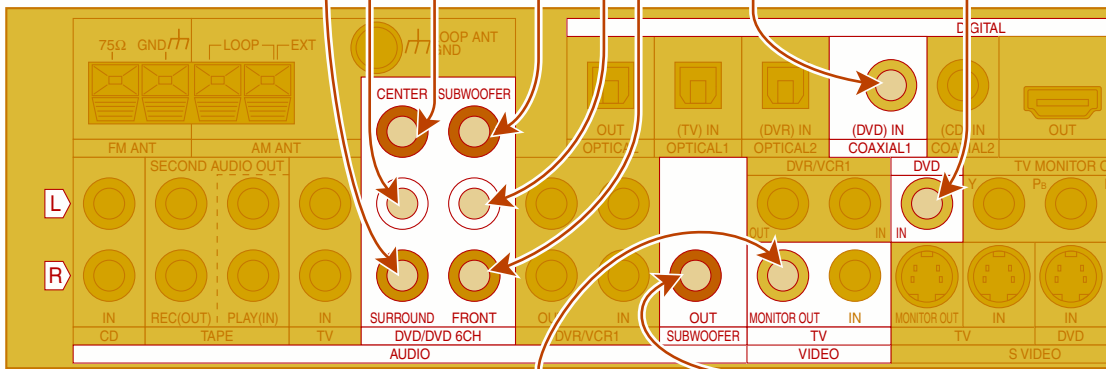
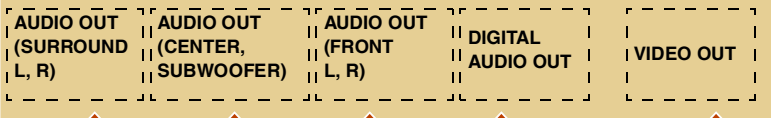
### DVD player

#### Changing the digital input settings

You can change the input settings for the digital terminals if necessary. Note the equipment you have connected to the terminals, then change the settings (⇒ pages 12 or 14).

#### Note on analog input

Connect to FRONT L, R if your DVD player does not have 6 channel output.



### TV or monitor

**Front speakers (A left B right)**

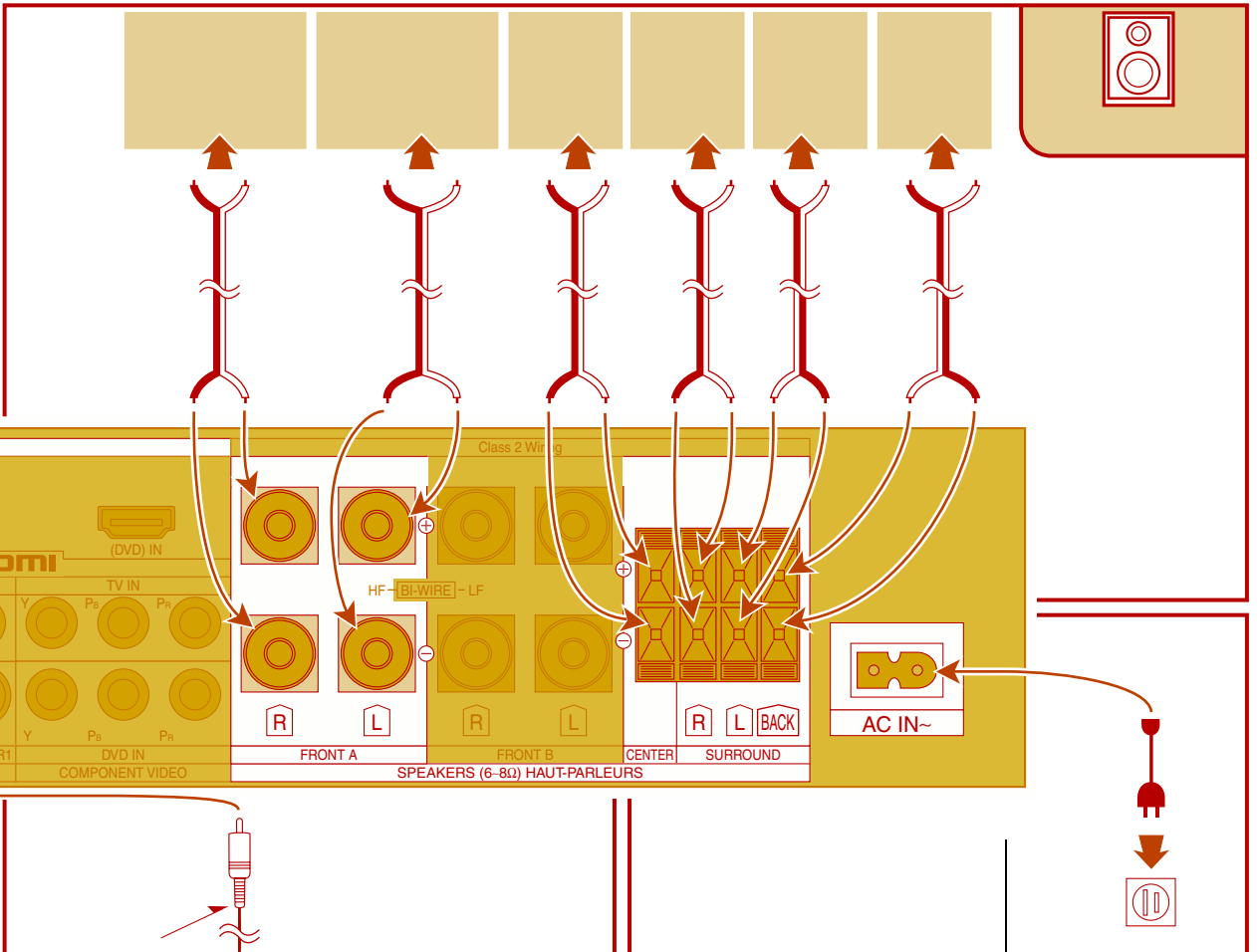
Place on the left and right of the TV at seated ear height so that there is good coherency between the picture and sound.

**Center speaker (C)**

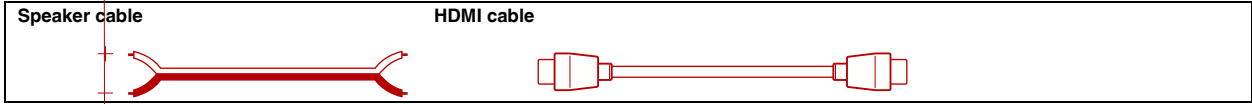
Place underneath or above the center of the TV. Aim the speaker at the seating area.

**Surround speakers (D left E right)**

Place on the side of or slightly behind the seating area, about one meter (3 feet) higher than ear level.



# Step 2 Other connections



Turn off all components before making any connections.



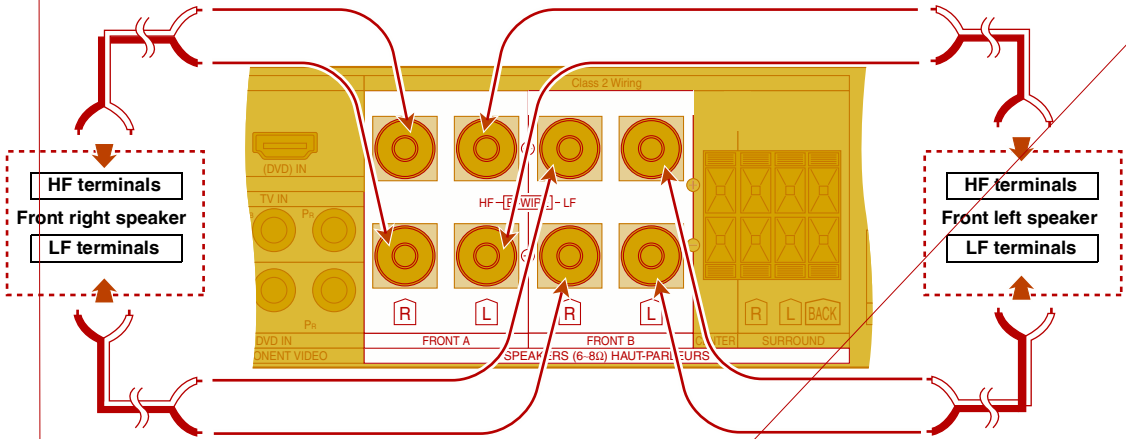
## Bi-wiring connection

You can enjoy high quality sound by connecting to speakers designed for bi-wiring.

- Use speakers designed for bi-wiring that have a combined impedance of 6–8 Ω.
- Be sure to press [A] and [B] at the same time to turn on the “BI-WIRE” indicator (→ page 18).

Cable	Speaker terminals	Note
<p><b>Twist the wire.</b></p>		<p><b>Do not short-circuit.</b></p>

Step 2



## Using speaker terminal B

For connection to a second pair of speakers. Use the A terminals to enjoy multi-channel sound. If SPEAKERS B is selected, play will be 2-channel only. For a multi-channel source, 2CH MIX mode will be automatically selected.

Cable	Speaker terminals	Note
<p><b>Twist the wire.</b></p>		<p><b>Do not short-circuit.</b></p>

Peripheral equipment and cables sold separately unless otherwise indicated.  
To connect equipment, refer to the appropriate operating instructions.

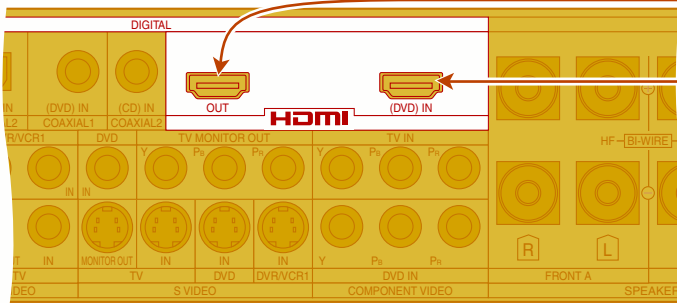
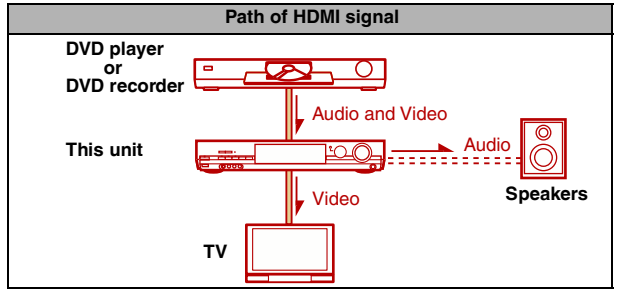
## Having fun with DVDs using HDMI connections



"HDMI" (High Definition Multimedia Interface) is a standard that enables high-quality video and audio signals to be transmitted using a single cable.

You can have lots of fun with this unit by means of simple connections for high-quality video, PCM, Dolby Digital, DTS and DVD-Audio signals.

When signal transmission is commenced, the "HDMI" indicator on the unit lights.



### Changing the HDMI input settings

You can change the input setting for the HDMI terminal (→ pages 12 or 14).

#### Note

- To digitally record audio from a HDMI input source, connect the recording equipment to this unit's DIGITAL OPTICAL OUT terminal as shown on page 10. (For details on how to record, refer to page 25.)
- If the connected DVD player or DVD recorder cannot digitally output audio from DVD-Audio discs (it may be a HDMI Ver. 1.0 unit), connect it through the DVD/DVD 6CH analog terminals. (→ page 4).
- The DVD unit's video and audio signals are not transmitted directly to the TV when you turn the unit to standby. To play a DVD on a TV only, directly connect the DVD player or DVD recorder to the TV. (Refer to the operating instructions of the connected equipment for further details.)

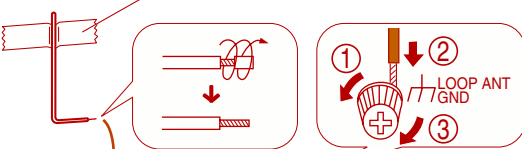


## Antennas

### FM indoor antenna (included)

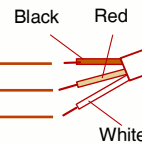
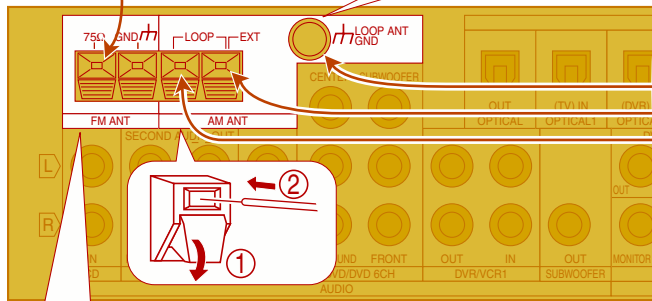
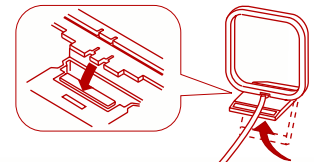
Fix the other end of the antenna where reception is best.

Adhesive tape



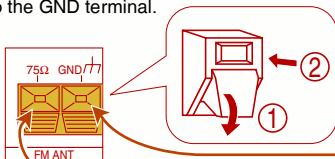
### AM loop antenna (included)

Keep the antenna cord away from tape decks, DVD players, and other cords.



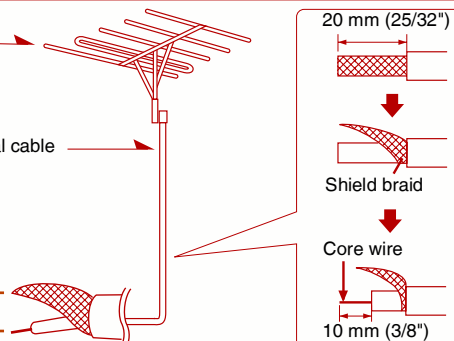
### FM outdoor antenna

- Disconnect the FM indoor antenna.
- The antenna should be installed by a competent technician.
- Twist the coaxial cable's shield braid firmly and connect it to the GND terminal.

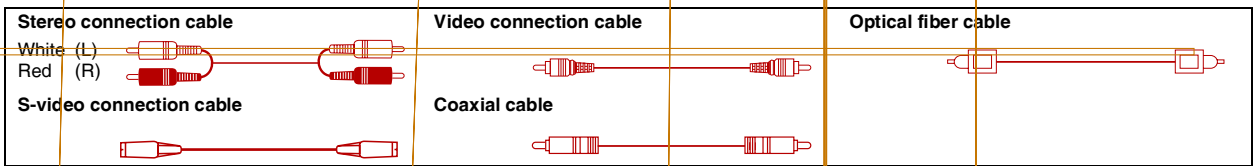


FM outdoor antenna

75Ω coaxial cable



# Step 2 Other connections



Turn off all components before making any connections.

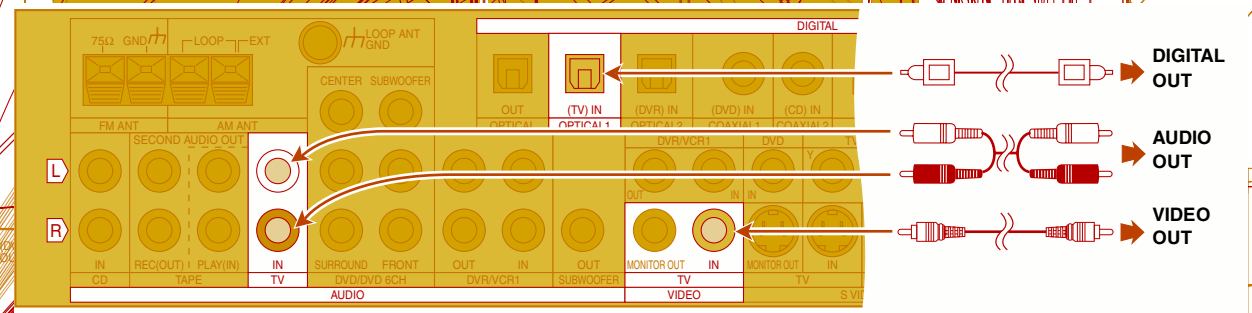
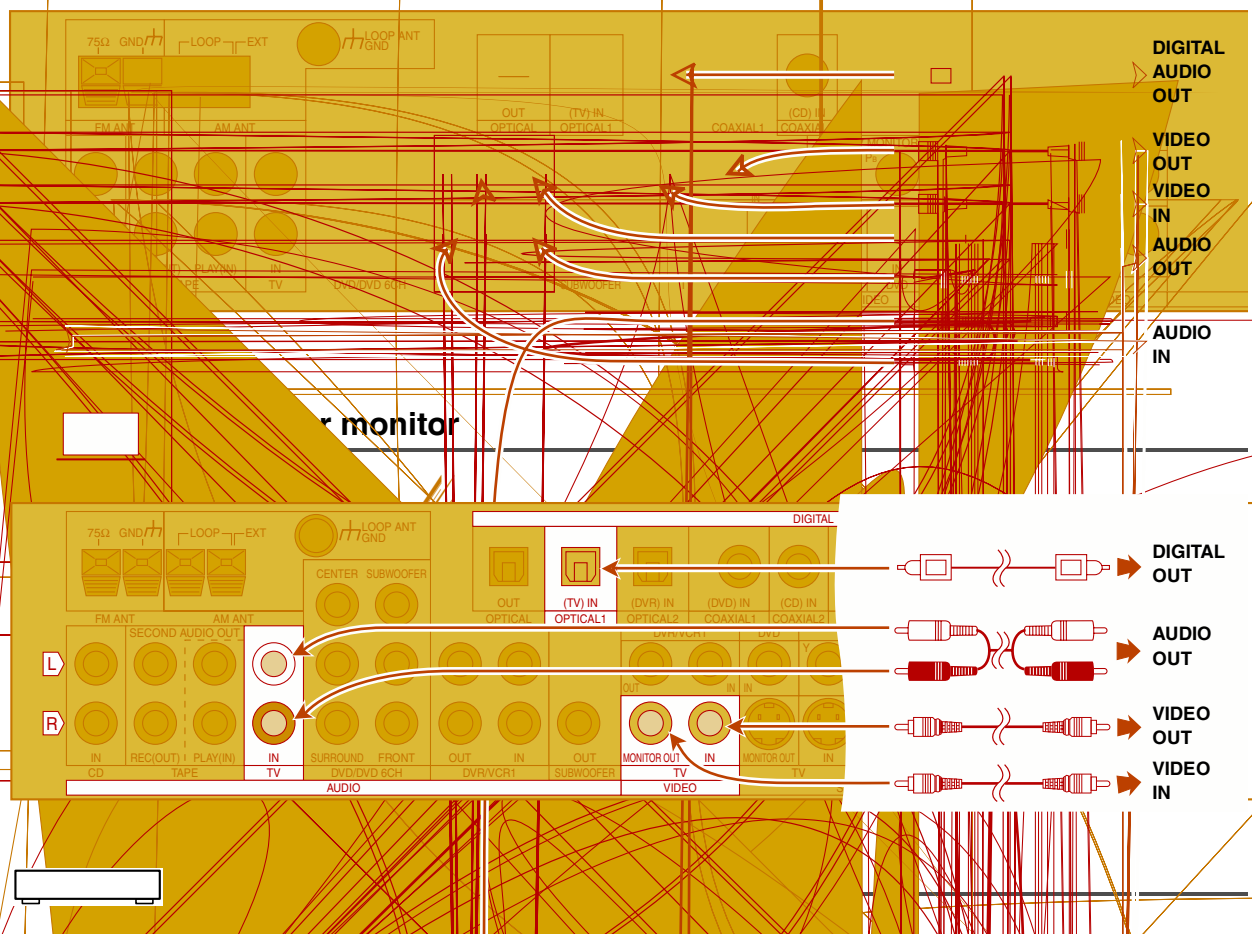
**Note**

- Do not sharply bend the optical fiber cable.
- Use a digital connection to enjoy Dolby Digital or DTS and record digital sources (⇒ pages 16 and 25).
- Use an analog connection to enjoy sources that cannot be decoded on this unit, to record analog sources and to output through SECOND AUDIO OUT (⇒ pages 10, 16, 24 and 25).

- When setting the On Screen Display mode (⇒ page 12) connect the television's VIDEO IN terminal to this unit's VIDEO TV MONITOR OUT terminal (⇒ below).

**Changing the digital input settings**  
 You can change the input settings for the digital terminals if necessary. Note the equipment you have connected to the terminals, then change the settings (⇒ pages 12 or 14).

## DVD recorder/VCR



Step 2

PROFESSIONAL SERVICE

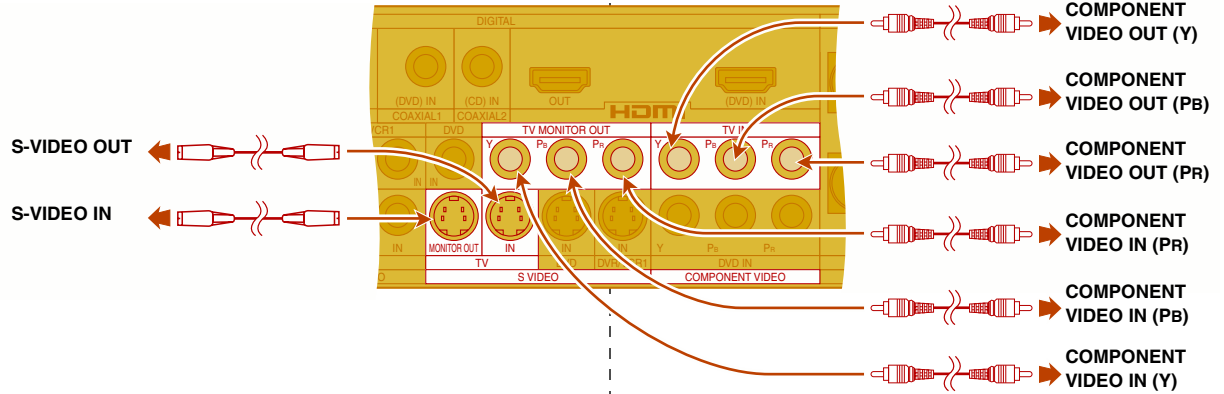


## Enjoy even higher picture quality

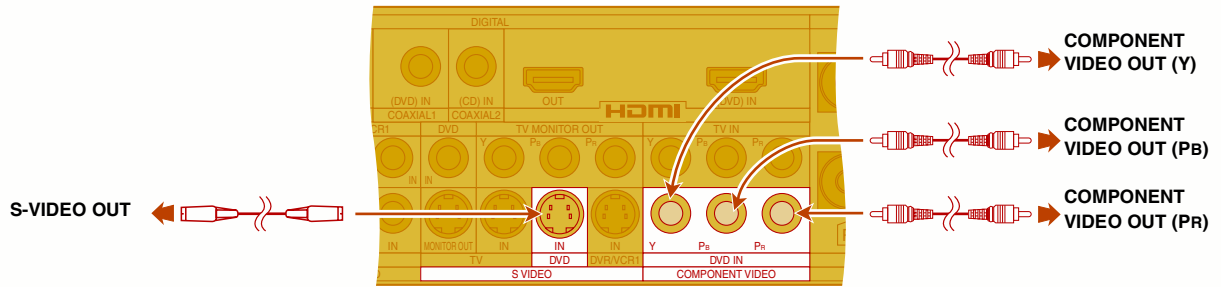
### S VIDEO

Use this connection for better picture quality than with the VIDEO terminals.

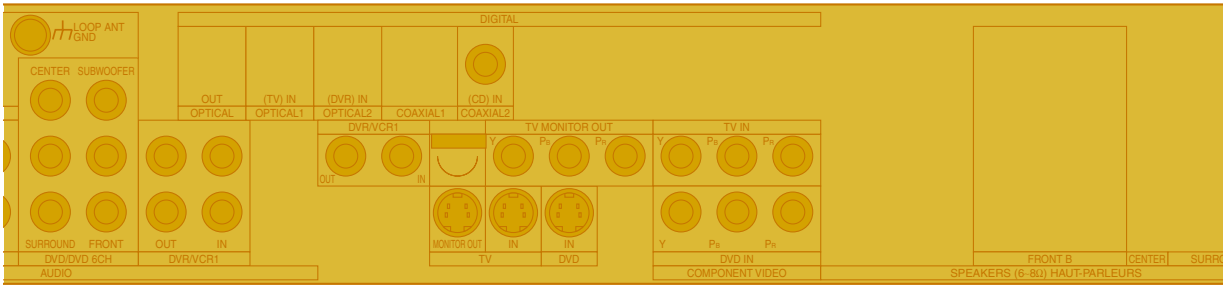
#### ■ TV, monitor, cable box or satellite receiver etc.



#### ■ DVD player



#### ■ DVD recorder/VCR



## Video camera etc.

These terminals are convenient for equipment you want to connect only temporarily. Select "VCR 2" for input. Use the S VIDEO connection for better picture quality than with the VIDEO terminal.

- Video input can only be output again through the same type of terminal.



Change the settings to tailor your equipment to the environment in which you are using it. Before making any changes, read the following descriptions of the settings and refer to the instructions for the speakers and equipment.

The settings remain intact until they are changed, even after the power is turned off.

## 1 Customizing your receiver (⇒ pages 12-15)

There are two ways to customize the receiver, and details of both are provided below.

### A. Using the On Screen Display (⇒ page 12)

Use this method to perform the unit's settings on the TV screen.

### B. Using the Multi control (⇒ page 14)

Use this method to perform the unit's settings using the Multi control of the main unit.

## ■ Items which can be set

### Basic set-up (for establishing the basic settings to match the speakers and connected equipment)

Setting item		Description
On Screen Display	Multi control	
Speakers	SPEAKERS	Set the speaker combination connected to this unit.
Subwoofer		The speaker combination has to be set in order for the sound to be output properly.
Digital Input	D-INPUT	Change these settings to suit the connections you have made to the optical (OPT), coaxial (COAX) and HDMI (DVD or DVR only) digital input terminals, so that the correct source is selected when you turn [INPUT SELECTOR].
	HDMI SEL	
Input Mode	IN MODE	This unit automatically detects whether input is digital or analog, but you can fix the input mode. AUTO: Automatically detects the input signal and plays. • <b>When the signal is connected to the HDMI terminal, the input signal from the HDMI terminal takes priority (DVD or DVR only).</b> ANALOG: Fixes the input signal to analog and plays. DIGITAL: Fixes the input signal to HDMI (DVD or DVR only), OPT and COAX digital and play. PCM FIX: Fixes the input signal to PCM and plays.

### Advanced set-up (set the items as required)

Setting item		Description
On Screen Display	Multi control	
Speaker Size	SPEAKERS	Set the size to suit your speakers. LARGE: For speakers that can reproduce a full sound range, particularly the bass range below 100 Hz. SMALL: For speakers that cannot adequately reproduce the bass range. This setting is sufficient for most speakers if you are using a subwoofer. NONE: For speakers you haven't connected (center or surround). For the surround back (Surr Back/SUR BACK) and subwoofer (Subwoofer/SUB-WFR), select YES if you have connected one, or NO if you have not.
Speaker Distance	DISTANCE	Enter the distance of the front, center and surround speakers from the seating position. By setting the distance between the speaker's position (except the subwoofer) and the listener's seating position, the sound delay time is automatically adjusted so that sound reaches the listener at the same time. You can select distances between 3 and 30 feet at one-foot intervals.
Filter Frequency	FILTER	Change the cut-off for bass output from the front speakers. If you set the front speakers to "SMALL", the filter is set to 100 Hz. Raise the cut-off if the bass from the front speakers is unsatisfactory so that this bass is output through the subwoofer. You can raise the cut-off from 100 Hz to either 150 Hz or 200 Hz.
HQ Sound Mode	HQ MODE	Select ON or OFF for the video output and display when the HQ sound mode is used. The HQ sound mode ensures that sound with a greater purity is played by closing down the unit's circuits such as display and video output. Select the ON setting for outputting the video signals or indicating information on the display.

#### Notes on Speaker Size/SPEAKERS

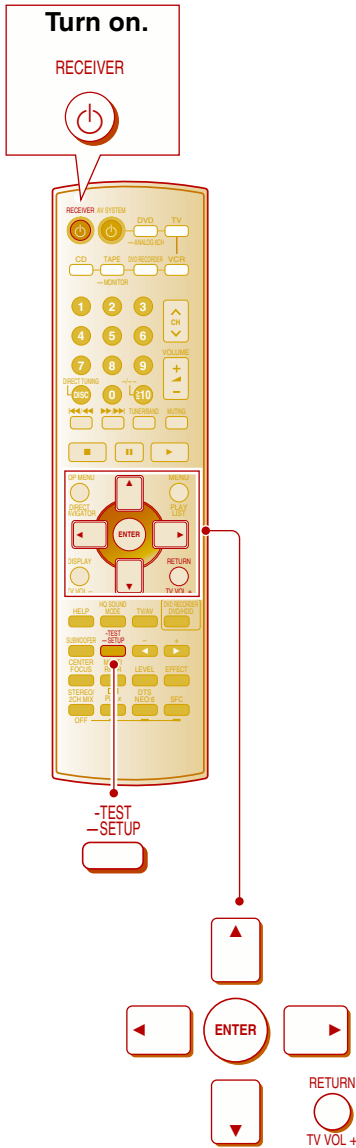
- If you select "SMALL" for "Front/FRONT", subwoofer setting is set to "YES".
- If you select "NO" for Subwoofer setting, "Front/FRONT" is set to "LARGE".

## 2 Adjusting speaker output level (⇒ page 15)

Adjust the level of the other speakers based on the output of the front speakers. (Output is only from the speakers selected in the speaker settings. Adjust the volume of the front speakers with [VOLUME].)

### 1 A. Using the On Screen Display (Customizing your receiver)

- Make sure the television's VIDEO IN terminal and this unit's VIDEO TV MONITOR OUT terminal are connected (⇒ pages 4 and 8).
- Turn on the television and select the video input for this unit.
- Note the factory settings and ranges.



**1 Enter On Screen Display.**  
 Press and hold

**2 Change the settings.**  
 [▲, ▼, ◀, ▶]: Switching  
 [ENTER]: Entering

**For the basic set-up**  
 Select the item to set, and perform the setting.

SETUP ▲▼ [ENTER]  
 Speakers [ 6 ]  
 Subwoofer [ YES ]  
 Digital Input  
 Input Mode

**For the advanced set-up**  
 Select "Other Setups".

Digital Input  
 Input Mode  
 Other Setups  
 Exit from SETUP

Then select the item to set, and perform the setting.

SETUP ▲▼ [ENTER]  
 Speaker Size  
 Speaker Distance  
 Filter Frequency  
 HQ Sound Mode

• **To cancel settings**  
 Press [RETURN, TV VOL +].

**To exit On Screen Display**  
 Press [▲, ▼] to select "Exit from SETUP".  
 or  
 Press [RETURN, TV VOL +] several times until the setup menu disappears.

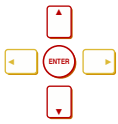
<b>Speakers</b>	L: Front left C: Center R: Front right LS: Surround left RS: Surround right SB: Surround back  The factory setting is 6 [L-C-R-LS-RS-SB].
<b>Subwoofer</b>	The factory setting is YES.
<b>Digital Input</b>	The factory settings are: TV: OPT 1   DVR: OPT 2 DVD: COAX1   CD: COAX2 HDMI: DVD
<b>Input Mode</b>	The factory settings are AUTO.
<b>Speaker Size</b>	The factory settings are: Front, Center and Surround: SMALL Surr Back and Subwoofer: YES
<b>Speaker Distance</b>	The factory settings are: Front and Center: 10 feet Surround and Surr Back: 5 feet
<b>Filter Frequency</b>	100: 100 Hz 150: 150 Hz 200: 200 Hz
<b>HQ Sound Mode</b>	The factory settings are: DISPLAY: OFF VIDEO: OFF

**Note regarding PCM FIX mode**

In rare cases, the unit may have trouble recognizing the digital signals on discs. With the PCM signals on CDs, this may cause the beginning of a track to be cut off. Engage the PCM FIX mode if this occurs. When PCM FIX mode is on, the unit cannot process other signals. This may cause noise to be output. Select another mode in this case. The PCM FIX mode remains as set even if the power is turned off.

- With the PCM FIX mode is on, you cannot play multi-channel sound. Play is fixed as 2-channel.

### 1. Select the speakers.

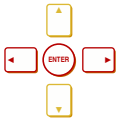


SPEAKERS ▲▼ ENTER

6	[ L-C-R-LS-RS-SB ]
5	[ L---R-LS-RS-SB ]
5	[ L-C-R-LS-RS ]
4	[ L---R-LS-RS ]
3	[ L-C-R ]
2	[ L---R ]

- 6 [L-C-R-LS-RS-SB]: All speakers connected
- 5 [L---R-LS-RS-SB ]: No center speaker
- 5 [L-C-R-LS-RS ]: No surround back speaker
- 4 [L---R-LS-RS ]: No center and surround back speaker
- 3 [L-C-R ]: No surround speaker
- 2 [L---R ]: Only front speaker

### 1. Change the setting.

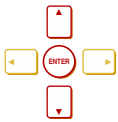


Speakers [ 6 ]

Subwoofer [ YES ]

Digital Input  
Input Mode

### 1. Select the input position.



TV [ OPT 1 ]

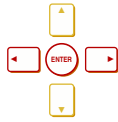
DVR [ OPT 2 ]

DVD [ COAX1 ]

CD [ COAX2 ]

HDMI [ DVD ]

### 2. Change the setting.



TV [ OPT 1 ]

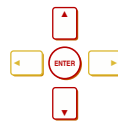
DVR [ OPT 2 ]

DVD [ COAX1 ]

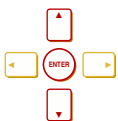
CD [ COAX2 ]

HDMI [ DVD ]

### 3. Select "Return".



### 1. Select the input position.



INPUT MODE ▲▼ ENTER

TV [ AUTO ]

DVR [ AUTO ]

DVD [ AUTO ]

CD [ AUTO ]

### 2. Change the setting.



INPUT MODE ◀▶ ENTER

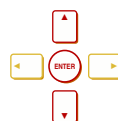
TV [ AUTO ]

DVR [ AUTO ]

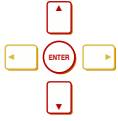
DVD [ AUTO ]

CD [ AUTO ]

### 3. Select "Return".



### 1. Select the speaker.



Front [ SMALL ]

Center [ SMALL ]

Surround [ SMALL ]

Surr Back [ YES ]

Subwoofer [ YES ]

### 2. Change the setting.



Front [ SMALL ]

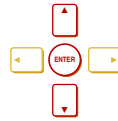
Center [ SMALL ]

Surround [ SMALL ]

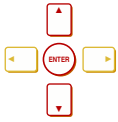
Surr Back [ YES ]

Subwoofer [ YES ]

### 3. Select "Return".



### 1. Select the speaker.



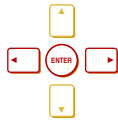
Front [ 10 ] feet

Center [ 10 ] feet

Surround [ 5 ] feet

Surr Back [ 5 ] feet

### 2. Change the setting.



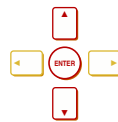
Front [ 10 ] feet

Center [ 10 ] feet

Surround [ 5 ] feet

Surr Back [ 5 ] feet

### 3. Select "Return".

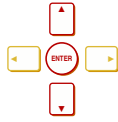


### 1. Change the setting.



[100] [150] [200]

### 1. Select "DISPLAY" or "VIDEO".

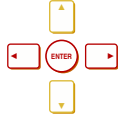


HQ SOUND MODE ▲▼ ENTER

DISPLAY [ OFF ]

VIDEO [ OFF ]

### 2. Change the setting.

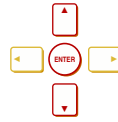


HQ SOUND MODE ◀▶ ENTER

DISPLAY [ OFF ]

VIDEO [ OFF ]

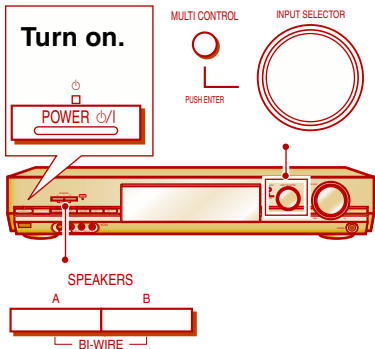
### 3. Select "Return".



# Step 3 Settings

## 1 B. Using the Multi control (Customizing your receiver)

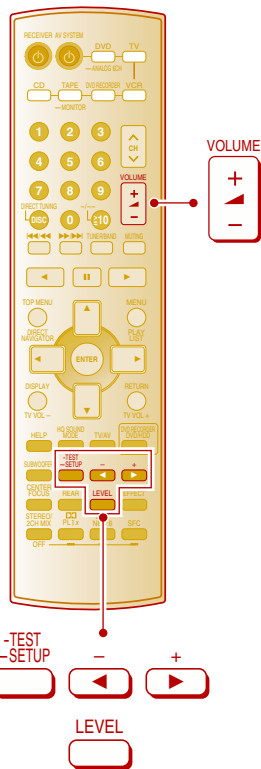
- For details on the Multi control menus and factory settings, refer to page 28.
- Note the factory settings and ranges.



Enter Multi control.

Main menu is displayed.  
Change the settings.

Turn to change.



### Note regarding PCM FIX mode

In rare cases, the unit may have trouble recognizing the digital signals on discs.

With the PCM signals on CDs, this may cause the beginning of a track to be cut off. Engage the PCM FIX mode if this occurs.

When PCM FIX mode is on, the unit cannot process other signals. This may cause noise to be output. Select another mode in this case.

The PCM FIX mode remains as set even if the power is turned off

- With the PCM FIX mode is on, you cannot play multi-channel sound. Play is fixed as 2-channel.

<b>SPEAKERS</b>	<p>SUBW: Subwoofer L: Front left C: Center R: Front right S: Surround SB: Surround back</p> <p>The factory settings are: SUBW YES LCR S SB</p>
<b>D-INPUT (Digital input)</b>	<p>The factory settings are: TV: OPT 1 DVR: OPT 2 DVD: COAX 1 CD: COAX 2</p>
<b>HDMI SEL (HDMI select)</b>	<p>The factory setting is DVD.</p>
<b>IN MODE (Input mode)</b>	<p>The factory settings are AUTO.</p>
<b>SPEAKERS</b>	<p>The factory settings are: FRONT, CENTER and SURROUND: SMALL SUR BACK and SUB-WFR: YES</p>
<b>DISTANCE</b>	<p>The factory settings are: FRONT and CENTER: 10 FEET SURROUND and SUR BACK: 5 FEET</p>
<b>FILTER</b>	<p>100: 100 Hz 150: 150 Hz 200: 200 Hz</p>
<b>HQ MODE</b>	<p>The factory settings are: DISPLAY: OFF VIDEO: OFF</p>

**1. Select.**

**2. Change the setting.**

**1. Select the input position.**

**2. Change the setting.**

**1. Select “DVD” or “DVR”.**

**1. Select the input position.**

**2. Change the setting.**

**1. Select the speaker.**

**2. Change the setting.**

**1. Select the speaker.**

**2. Change the setting.**

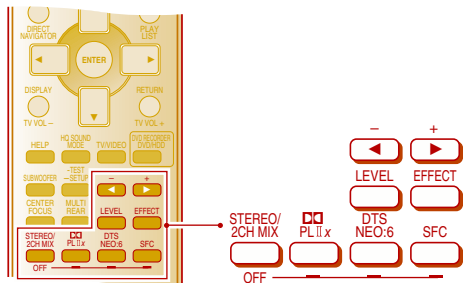
**1. Change the setting.**

**1. Select “DISPLAY” or “VIDEO”.**

**2. Change the setting.**







You can adjust the effect of MUSIC with the dimension, center width controls and PANORAMA. (Only when the input signal is 2-channel.)

### Dimension Control – DIMEN

You can make up for differences in the output level of the front and surround speakers. You can choose a level between -3 and +3 - Increase the level to move sound to the front speakers, decrease to move it to the surround speakers. The default is level 0.

### Center Width Control – C-WDTH

This adjustment helps you realize a more natural sound image when listening to music. Move sound out into the front speakers to improve the overall front image, or add sound to the center speaker to fix the center image. You can choose a level between 0 (the center speaker is dominant) and 7 (center sound is spread out). The default level is 3.

### PANORAMA

Sound is spread out more so you feel like you are surrounded by music.



You can adjust the effect of MUSIC with the center image control.

### Center Image Control – C-IMG

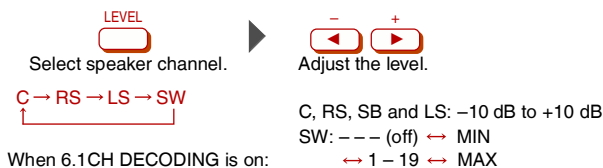
This adjustment helps you realize a more natural sound image when listening to music. Move sound out into the front speakers to improve the overall front image, or add sound to the center speaker to fix the center image.

You can choose a level between 0 (the center speaker is dominant) and 5 (center sound is spread out). The default level is 3.

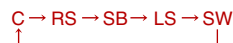


You can adjust the sound field by adjusting the level of the speakers and effect. These adjustments can be made for each SFC mode.

### To adjust the speaker level

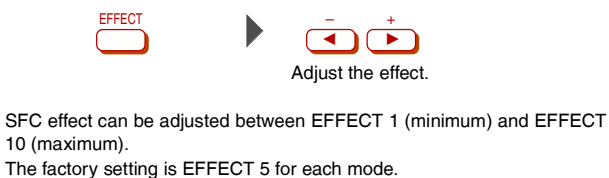


When 6.1CH DECODING is on:



Output is only from the speakers selected in the speaker settings.

### To adjust SFC effect



### Listening to multi-channel source in stereo (2CH MIX mode)

When multi-channel sources are played in this mode, the sounds intended for the other speaker channels are played through the front speakers.



- To cancel: Press [STEREO/2CH MIX, OFF].

### Notes on sound modes

Dolby Pro Logic x, Dolby Pro Logic , DTS NEO:6 and SFC modes remain in effect until you change them.

- To cancel : Press [STEREO/2CH MIX, OFF].

The 2CH MIX mode remains in effect until you change input mode or turn off the unit.

- To return to surround sound: Press [STEREO/2CH MIX, OFF].

When input is PCM with sampling frequencies of 192, 176.4 (COAXIAL1, HDMI), 96, or 88.2 kHz:

- You cannot add surround effects with Dolby Pro Logic x, Dolby Pro Logic , DTS NEO:6 or SFC.

When neither the center nor surround speakers are selected in the speaker settings:

- You cannot use Dolby Pro Logic x, Dolby Pro Logic , DTS NEO:6 or SFC.

When the surround back speaker is not selected in the speaker settings:

- You cannot use 6.1CH DECODING mode.

If the unit does not automatically recognize Dolby Digital Surround EX or DTS-ES and output is 5.1 channels:

Press [6.1CH DECODING] to switch the mode on manually. Sound will now come from the surround back speaker.

The 6.1CH DECODING mode cannot be used when the following input signals are supplied:

- When only the center channel signals are input.

### Notes on HDMI

When the input signal is multi-channel DVD-Audio:

- Speaker settings are ineffective. The speaker settings selected on this unit need to be set on the DVD player or DVD recorder.

- You cannot use Dolby Pro Logic x, Dolby Pro Logic , DTS NEO:6 or SFC.
- You cannot use 6.1CH DECODING mode.

With a source for which down-mixing is prohibited:

- The 2CH MIX mode cannot be used.
- Play may not be normal if SPEAKERS B has been selected or all the speakers have been set to off and you are listening through headphones.

# Control guide

## Main unit

### Standby indicator [⊙]

When the unit is connected to the AC mains supply, this indicator lights up in standby mode and goes out when the unit is turned on.

### [POWER ⊕/⊖]

Press to switch the unit from on to standby mode or vice versa. In standby mode, the unit is still consuming a small amount of power.

### [SPEAKERS, A, B, BI-WIRE]

For selecting speakers A or B. To use BI-WIRE, press [A] and [B] at the same time. Turning the speakers off automatically engages the STEREO/2CH MIX mode (when listening through headphones, for example).

### [BI-AMP]

Lights when the BI-AMP function is activated.

[DIGITAL], [EX/PL IIx], [PL II], [DTS 96/24], [DTS-ES], [DTS], [DTS NEO:6]  
Lights to indicate the source's input signal and decoding format used.

[DIGITAL]: Dolby Digital sources

[EX/PL IIx]: Dolby Digital Surround EX sources or Dolby Pro Logic x decoder is being used.

[PL II]: Dolby Pro Logic decoder is being used.

[DTS 96/24]: DTS 96/24 sources

[DTS-ES]: DTS-ES discrete or matrix sources

[DTS]: DTS sources

[DTS NEO:6]: DTS NEO:6 matrix decoder is being used.

### [MULTI CONTROL]

Press to enter Multi control and use [INPUT SELECTOR] to select/enter.

### [INPUT SELECTOR]

For selecting input. Selects/Enters each setting in Multi control.

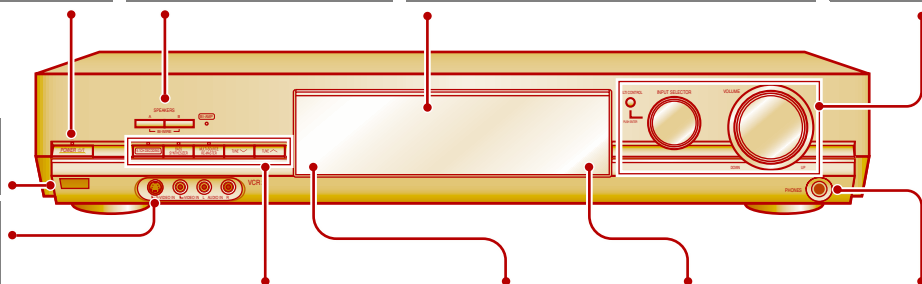
### [VOLUME]

Volume control.

### Remote control signal sensor

### [VCR 2]

For a video camera, etc.



### [6.1CH DECODING]

For turning on the 6.1 channel decoding mode. When using this mode the indicator lights.

### [BASS SYNTHESIZER]

For turning on the bass synthesizer mode. When using this mode the indicator lights.

### [MULTI-SOURCE RE-MASTER]

For selecting a re-master mode. When using this mode the indicator lights.

### [TUNE ∇, ▲]

For tuning the radio and selecting preset stations.

Press and hold until the frequency starts scrolling to start automatic tuning. Tuning stops when a station is found.

### [HQ SOUND MODE]

Lights when using HQ sound mode.

### [HDMI]

Lights when the signals have been established with a HDMI connection.

### [PHONES]

Headphone jack  
Plug type: 6.3 mm (1/4") stereo

- Avoid listening for prolonged periods of time to prevent hearing damage.
- Turn the speakers off when using the headphones.

## Display

- When you turn the dimmer to "ON" or turn HQ sound mode on, the following indicators will dim.

### [–SPEAKERS– A, B, BI-WIRE]

Speaker indicators

[A]: Sound is output from speakers connected to the front A, surround, and center terminals.

[B]: Sound is output only from speakers connected to the front B terminals.

[A B]: Sound is output from speakers connected to the front A and B terminals.

[BI-WIRE]: Sound is output from speakers connected by Bi-wiring.

### [TUNED, ST, M, MONO]

Radio indicators

[TUNED]: A station is tuned.

[ST]: A stereo FM broadcast is tuned.

[M]: Flashes during automatic presetting.

[MONO]: Lights when using the monaural mode.

### [SLEEP]

Sleep timer indicator.

### [SFC, CENTER FOCUS, 2CH MIX, MULTI REAR]

[SFC]: Lights when using an SFC mode.

[CENTER FOCUS]: Lights when using the center focus mode.

[2CH MIX]: Lights when playing a multi-channel source in 2CH MIX mode.

[MULTI REAR]: Lights when using the multi rear surround mode.

### [<<<MULTI CONTROL>>>]

When you press the [MULTI CONTROL] button and enter the settings the indicator lights.

### [–DIGITAL INPUT–, L, C, R, S, LS, SB, RS, LFE]

Program format indicators

Show the channels contained in the digital input signal. They do not light when input is analog.

L: Front left channel

C: Center channel

R: Front right channel

S: If the surround channel is monaural.

LS: Surround left channel

SB: Surround back channel

RS: Surround right channel

LFE (Low Frequency Effects): Deep-bass effect.

### [TAPE MONITOR]

Lights when the tape monitor is on.

### General display

Shows the input mode, radio frequency, and other general information.



### [DIGITAL PROCESSING fs]

Displays the frequency the unit is processing.

### [kHz, MHz]

Frequency unit indicators  
kHz: AM, or PCM sampling frequency  
MHz: FM

- When the input signal is multi-channel DVD-Audio using a HDMI connection, DIGITAL INPUT may not display correctly.

## Remote control

Buttons not explained on this page are used only to operate other equipment.

Refer to the separate booklet, "Remote Control Operation Guide", for remote control operation details.

### [ RECEIVER]

Standby/on button.

### [1, 2, 3, 4, 5, 6, 7, 8, 9, 0]

To enter radio frequencies and channels.

### [DISC, DIRECT TUNING]

To enable selection of radio stations by frequency.

### [ $\geq 10$ , ENTER]

To enter two digit channels.

### [TUNER/BAND]

To change the input mode and remote control mode to TUNER.  
For switching between FM and AM.

### [ $\blacktriangle$ , $\blacktriangledown$ , $\blacktriangleleft$ , $\blacktriangleright$ , ENTER, RETURN TV VOL +]

To operate the on screen menus.

### [HELP]

Displays help messages.

Press if an error message appears.

A message offering a possible solution scrolls across the display.

- The remote control mode button currently selected lights when you press this.

### [SUBWOOFER]

For selecting subwoofer level.

### [CENTER FOCUS]

For turning on the center focus mode.

### [MULTI REAR]

For turning on the multi rear surround mode.

### [STEREO/2CH MIX, OFF]

For selecting STEREO or 2CH MIX mode.

To cancel surround effect.

### [DOLBY IIx]

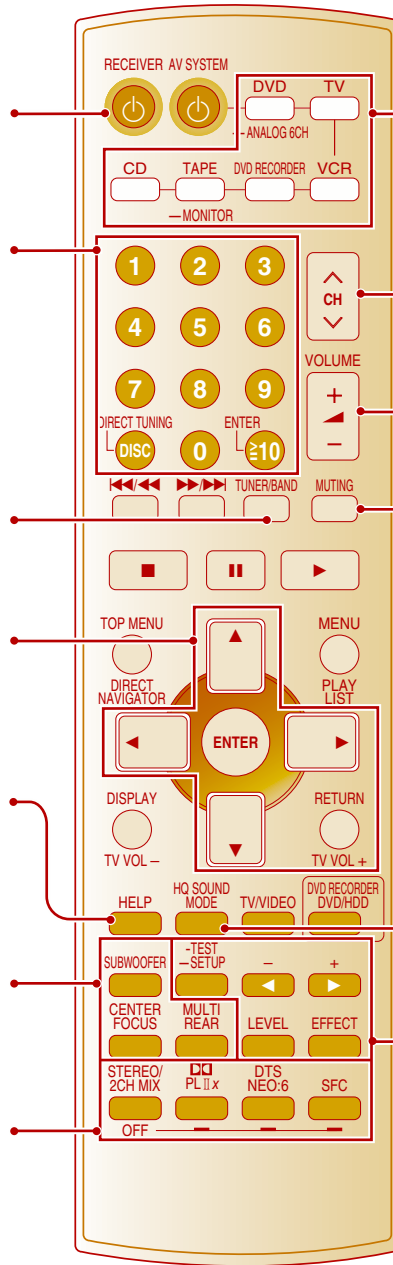
Select MOVIE (DOLBY EX), MUSIC or GAME when Dolby Pro Logic IIx mode or Dolby Pro Logic II mode is on.

### [DTS NEO:6]

For selecting a DTS NEO:6 mode: CINEMA or MUSIC.

### [SFC]

For selecting a SFC mode: MUSIC or AV/MOVIE.



### [DVD –ANALOG 6CH, TV, CD, TAPE –MONITOR, DVD RECORDER, VCR]

Input mode and remote control mode buttons.

These buttons light when you press other buttons to indicate the current remote control mode.

### DVD –ANALOG 6CH

When DVD mode is selected

- Press and hold:

For switching between analog 6-channel and 2-channel DVD input.

DVD ANALOG 6CH only works when either SPEAKERS A or BI-WIRE is on and SPEAKERS B is off.

### TAPE –MONITOR

- Press and hold:

For monitoring sound when recording to a 3 head cassette deck. Also used when you have connected a graphic equalizer to the TAPE terminals.

### [ $\wedge$ , CH, $\vee$ ]

For selecting preset radio channels.

### [+, -, VOLUME]

To adjust the volume.

### [MUTING]

To mute the volume.

### [HQ SOUND MODE]

For turning on the HQ sound mode.

### [-TEST –SETUP]

To start the speaker test signal or enter the on screen menu.

### [LEVEL]

To adjust speaker level.

### [EFFECT]

To adjust Dolby Pro Logic IIx, Dolby Pro Logic II, DTS NEO:6 or SFC effects.

[ $\blacktriangleleft$ , -, +]

First select EFFECT, LEVEL or SFC, and then press [ $\blacktriangleleft$ , -] or [ $\blacktriangleright$ , +] to complete the setting.

## For your reference

### • When playing video sources connected to DVR/VCR1

The picture remains on the screen even if you select TAPE, CD or TUNER.

### • When SPEAKERS B is on

If SPEAKERS B is selected, play will be 2-channel only. For multi-channel play, press [B] to turn off "B". Then press [A] so that "A" only comes on.

### • When input is DIGITAL

The tape monitor cannot be used.

### • When muting is on

Muting is canceled when the unit is turned off.

### • When DVD ANALOG 6CH input is on

Speaker settings are ineffective. Change the settings on the DVD player if necessary.

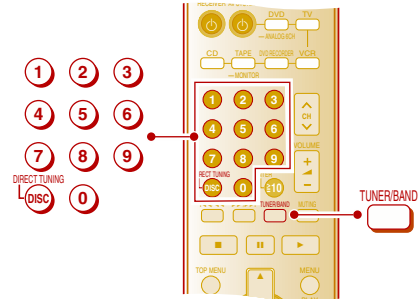
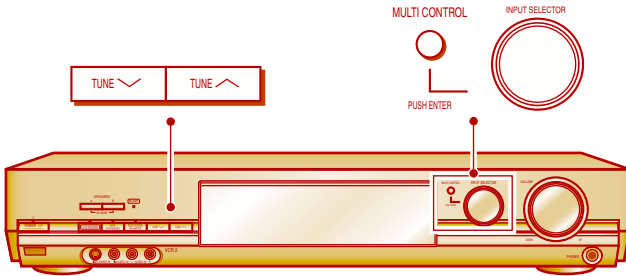
No picture will be output when a TV and this unit are connected using a HDMI cable. Connect the TV, equipment to be used for playback and this unit with a video cable as shown on page 4 or page 9.

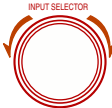

### • When using a graphic equalizer

Some distortion may occur, depending on the equalizer's settings.




# The radio

## Manual tuning



- 1 Select "TUNER FM" or "TUNER AM".**  

- 2 Select MANUAL tuning mode.**  
 (⇒ below, "Select MANUAL or PRESET tuning mode")
- 3 Tune to the station.**  
  
**Tuning intervals:** FM - 0.2 MHz, AM - 10 kHz  
  
**Automatic tuning**  
 Hold down [TUNE ∨ or ∧] until the frequency begins to scroll. Tuning stops when a station is found. (Tuning may stop if there is interference.)

### Direct tuning

 →  → 

FM ↔ AM

e.g. 107.9 MHz, Press [1] → [0] → [7] → [9]  
**Tuning intervals:** FM - 0.1 MHz, AM - 10 kHz

- If you do not press a button while the cursor is flashing, the display returns to the frequency being received.
- If the frequency has not been input correctly, "ERROR" will be displayed.




## Multi control tuner settings **MULTI CONTROL**

- 1 Enter Multi control.**  
  
**Main menu is displayed.**  
 (Multi control menus and factory settings ⇒ page 28)

### Select MANUAL or PRESET tuning mode

Select tuning mode, then press [TUNE ∨ or ∧] to tune.

MANUAL: To tune the station frequency.  
 PRESET: To select the preset channel.

1. Select.	2. Select.	3. Select.
		
<b>TUNER</b>	<b>TUNING</b>	

### Change the settings.

### FM mode

You can improve FM reception by switching reception to monaural.

1. Select "TUNER".
2. Select "FM MODE".
3. Select "MONO".

### Beat proof mode

When there is a lot of noise interference with an AM broadcast, try switching to this mode. This may change the volume, but noise will also be reduced.

1. Select "OPTION".
2. Select "B PROOF".
3. Select "MODE A" or "MODE B".

### To finish settings

1. Press [MULTI CONTROL] several times to select "EXIT".
2. Press [INPUT SELECTOR].

### For your reference

- Improving reception**  
DVD players can interfere with radio reception. Turn the DVD player off or move it further away from the antennas if this occurs.
- Beat proof mode**  
Changing these settings also changes the A/D attenuator settings, which are linked (⇒ page 24).

## Preset

TUNE



Se

Pr

(→)

Se

(→)

Se

Hold

## Multi

En

co

MULTI CONTROL

Main menu i  
(Multi control  
factory settings)

Pre

sta

MULTI CONTROL

Set the station signal you want  
to set as a preset.  
Reset the stations one at a time.  
FM stations can also be preset  
in the MONO mode.

TUNER

CH 1 CH 30

• "STORED" is displayed.

• To continue presetting, press [TUNE ∨ or ∧] to tune another station from step ①.

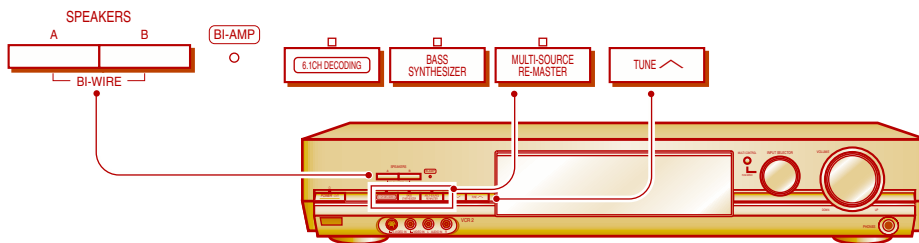
### To finish settings

1. Press [MULTI CONTROL] several times to select "EXIT".
2. Press [INPUT SELECTOR].

### For your reference

Even if the AC power supply cord is disconnected from the household AC outlet, the stations remain in the memory for approximately two weeks.

# Audio settings



## To enjoy bi-amp sound

You are able to take advantage of two separate amplifiers for the high frequency and low frequency ranges. This enables more highly defined sound reproduction of the two ranges thus producing high quality bi-amp stereo sound.

You can enjoy bi-amp sound when the sound is delivered as analog stereo or PCM stereo sound.

### Note

- Before selecting [BI-WIRE], connect speakers designed for bi-wiring using the bi-wiring connection (➡ page 6).
- Do not select [BI-WIRE] if you have connected two sets of speakers to the A and B speaker terminals.

**BI-AMP will be turned off and the indicator will go out in the following cases:**

- If any of the sound modes (Dolby Pro Logic x, Dolby Pro Logic , DTS NEO:6, SFC, 6.1CH DECODING) are turned on.
- If DVD ANALOG 6CH is selected.
- When input signal is Dolby Digital or DTS.
- When the bass synthesizer is on.
- When multi-source re-master is on.
- When the input signal is multi-channel DVD-Audio from a HDMI connection.

**Ensure “BI-AMP” lights when [BI-WIRE] is selected.**



Press both at the same time.

**BI-WIRE**

## Bass synthesizer

Provides depth of bass for audio play with impact.

**The bass synthesizer cannot be used in the following cases:**

- When input signal is Dolby Digital stereo or DTS stereo.
- When input signal is monaural.
- When Dolby Pro Logic x with 2-channel sources, Dolby Pro Logic , DTS NEO:6, SFC or multi-source re-master is on.
- When MUSIC mode is selected while using Dolby Pro Logic x with Dolby Digital 5.1 channel or Dolby Digital Surround EX sources.
- When DVD ANALOG 6CH is selected.



**BASS ON**

- To cancel  
Press [BASS SYNTHESIZER].

## Multi-source re-master

This original feature boosts the frequencies of the higher harmonics that are lost during recording due to compression.

When multi-source re-master is on, the current level appears.

- EFFECT 1: For fast tracks (pop and rock)
- EFFECT 2: For tracks with a variety of tempos (jazz)
- EFFECT 3: For slow tracks (classical)
- EFFECT 4: For compressed audio signals
- OFF: The re-master processing is off.

**Multi-source re-master cannot be used in the following cases:**

- When Dolby Pro Logic x, DTS NEO:6, SFC or 6.1CH DECODING is on.



**EFFECT 1**

EFFECT 1, EFFECT 2, EFFECT 3,  
EFFECT 4, OFF



When multi-source re-master is set to on and the input signal is digital, the sampling frequency will be processed as double the original one. If the input signal is analog, the sampling frequency will be treated as 96kHz.

## For your reference

**The bass synthesizer or multi-source re-master cannot be used in the following cases.**

- When the input signal is multi-channel DVD-Audio from a HDMI connection.
- When input signal is DTS 96/24, PCM with sampling frequencies of 192, 176.4, 96 or 88.2 kHz.

## ■ DTS FIX mode

In rare cases, the unit may have trouble recognizing the digital signals on discs.

With DTS, the signals may not be recognized at all. Engage the DTS FIX mode if this occurs.

When DTS FIX mode is on, the unit cannot process other signals. This may cause noise to be output. Turn the setting off in this case.

- When you turn the unit power off, the DTS FIX mode is canceled.
- When using a HDMI connection, you cannot set the DTS FIX mode.

While the input source is selected



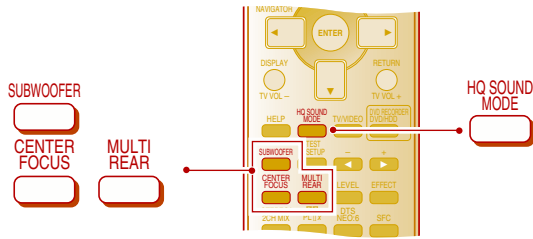
**DTS FIX**

**Press and hold both at the same time for 2 seconds.**

- To cancel, perform the same operation again. “AUTO” is displayed.

## When DTS FIX mode is on

- You cannot use 6.1CH DECODING mode.  
DTS-ES and DTS 96/24 are played as normal DTS (i.e., there is no output from the surround back speaker).



### Subwoofer level

You can adjust the volume of the subwoofer while listening to a source. Select SW --- to stop output.

The factory setting is SW 10.

- You cannot adjust the subwoofer level if DVD ANALOG 6CH is selected.
- Sound can be distorted if you raise the volume while the subwoofer level is high. Reduce the subwoofer level if this occurs.



### Center focus

You can make the sound of the center speaker seem like it is coming from within the television.

**Center focus cannot be used in the following cases:**

- When there is no center input signal.
- When the center speaker is not selected in the speakers settings.
- When 2CH MIX is on.
- When MUSIC mode is selected while using Dolby Pro Logic x.



### Multi rear surround

This mode makes it seem like sound is coming virtually from the multiple rear surround speakers when connected with the surround speaker.

**Multi rear surround cannot be used in the following cases:**

- When there is no surround input signal.
- When the surround channel is monaural.
- When the surround speaker is not selected in the speakers settings.
- When 2CH MIX is on.
- When MUSIC mode is selected while using Dolby Pro Logic x.



### HQ sound mode

This mode ensures that sound with a greater purity is played by closing down the unit's circuits such as display and video output.

(➡ refer to HQ Sound Mode/HQ MODE setting, page 11).

You can only raise the volume to -12 dB when HQ sound mode is on. It will be automatically lowered to this level if you turn HQ sound mode on when the level is higher.

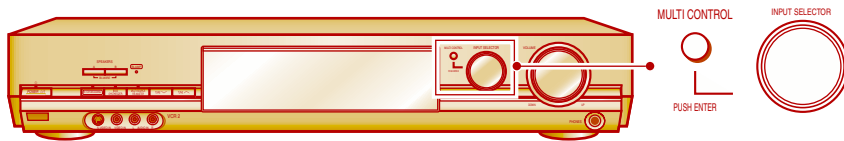
- You cannot use this mode when selecting TUNER.



### For your reference

**The center focus or multi rear surround cannot be used in the following cases.**

- When input signal is monaural, DTS 96/24, PCM or analog stereo.
- Dolby Pro Logic , DTS NEO:6 or SFC is on.
- When input signal is 2-channel while using Dolby Pro Logic x.
- When multi-source re-master is on.
- When DVD ANALOG 6CH is selected.
- When the input signal is multi-channel DVD-Audio from a HDMI connection.



## Multi control audio settings **MULTI CONTROL**

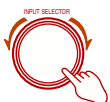
### 1 Enter Multi control.



Main menu is displayed.  
(Multi control menus and factory settings → page 28)

### 2 Change the settings.

#### • To select



Turn to change.  
Press to enter.

#### • To cancel



#### Tone

You can adjust the level of the bass and treble.  
• The STEREO mode must be on and input must be either analog or 2-channel PCM signals. You cannot adjust the tone if DVD ANALOG 6CH is selected.

#### 1. Select.



**TONE**

#### 2. Select.



**BASS**

BASS ↔ TREBLE

#### 3. Adjust the level.



**0dB**

-10 dB ↔ +10 dB

#### Balance

You can adjust the balance of the front speakers.

#### 1. Select.



**BALANCE**

#### 2. Adjust the balance.



**L** | **R**

#### Second audio output

Select the source to output from SECOND AUDIO OUT.

DISABLE: For use as the regular TAPE REC (OUT).

ENABLE: For use as the SECOND AUDIO OUT.

When "SOURCE" is selected, the source being played by this unit is output.

To listen to the radio, select SOURCE and tune to the station.

#### 1. Select.



**OPTION**

#### 2. Select.



**SECOND-A**

#### 3. Select.



**ENABLE**

DISABLE ↔ ENABLE

#### 4. Select.



**SOURCE**

SOURCE, CD, TV, DVD, DVR/VCR1, VCR 2, TAPE

#### Dual program

When the input signal is Dolby Digital and "DUAL" appears in the display, the audio to be output is set.

MAIN: Main audio output

SAP: Sub channel audio output

MAIN+SAP: Main and sub channel audio output

#### 1. Select.



**OPTION**

#### 2. Select.



**DUAL PRG**

#### 3. Select.



**MAIN**

MAIN, SAP, MAIN+SAP

#### Dynamic range compression

Change this setting to listen to software recorded with Dolby Digital at low volume (such as late at night) maintaining audio clarity. It reduces the peak level in loud scenes without affecting the sound field.

#### 1. Select.



**OPTION**

#### 2. Select.



**DR COMP**

#### 3. Select.



**OFF**

OFF, STANDARD, MAX

OFF: The software is played with the original dynamic range.

STANDARD: The level recommended by the producer of the software for household viewing.

MAX: The maximum allowable compression (recommended for night viewing).

#### A/D attenuator

Turn the A/D attenuator on if "OVERFLOW" lights frequently when using 2-channel analog input or DVD ANALOG 6CH input.

#### 1. Select.



**OPTION**

#### 2. Select.



**A/D ATT**

#### 3. Select.



**OFF**

OFF ↔ ON

#### To finish settings

1. Press [MULTI CONTROL] several times to select "EXIT".
2. Press [INPUT SELECTOR].





# Specifications (IHF'78)

## ■ AMPLIFIER SECTION

<b>Rated minimum sine wave RMS power output</b>	
20 Hz-20 kHz both channels driven	
0.09 % total harmonic distortion	100 W per channel (6 Ω)
<b>1 kHz continuous power output both channels driven</b>	
0.09 % total harmonic distortion	105 W per channel (6 Ω)
<b>Total harmonic distortion</b>	
rated power at 20 Hz-20 kHz	0.09 % (6 Ω)
<b>Power bandwidth</b>	
both channels driven, -3 dB	4 Hz-88 kHz (6 Ω, 0.9 %)
<b>Power output each channel driven</b>	
0.9 % total harmonic distortion at 1kHz	
Front (L/R)	100 W (6 Ω)
Center	100 W (6 Ω)
Surround (L/R/BACK)	100 W (6 Ω)
<b>Load impedance</b>	
Front (L/R)	
A or B	6-8 Ω
A and B	6-8 Ω
BI-WIRE	6-8 Ω
Center	6-8 Ω
Surround (L/R/BACK)	6-8 Ω
<b>Frequency response</b>	
CD, TV, DVD, DVR/VCR1, VCR2, TAPE	4 Hz-88 kHz, ±3 dB
DVD 6CH	4 Hz-44 kHz, ±3 dB
<b>Input sensitivity</b>	
CD, TV, DVD/DVD 6CH, DVR/VCR1, VCR2, TAPE	27 mV (200 mV, IHF '66)
<b>Input impedance</b>	
CD, TV, DVD/DVD 6CH, DVR/VCR1, VCR2, TAPE	22 kΩ
<b>S/N (IHF A)</b>	
CD, TV, DVD, DVR/VCR1 (Digital Input)	85 dB (103 dB, IHF '66)
<b>Tone controls</b>	
BASS	50 Hz, +10 to -10 dB
TREBLE	20 kHz, +10 to -10 dB
<b>Subwoofer frequency response (-6 dB)</b>	7 Hz-200 Hz

<b>Digital input (OPTICAL)</b>	2
<b>Digital input (COAXIAL)</b>	2
<b>Digital output (OPTICAL)</b>	1
<b>HDMI input (VER. 1.1)</b>	1
<b>HDMI output (VER. 1.0)</b>	1

## ■ FM TUNER SECTION

<b>Frequency range</b>	87.9-107.9 MHz
<b>Sensitivity</b>	11.2 dBf (2 μV, IHF '58)
<b>50 dB quieting sensitivity</b>	
MONO	18.3 dBf (4.5 μV, IHF '58)
STEREO	38.3 dBf (45 μV, IHF '58)

## Total harmonic distortion

MONO	0.2%
STEREO	0.3%
<b>S/N</b>	
MONO	73 dB
STEREO	67 dB
<b>Frequency response</b>	20 Hz-15 kHz, +1 dB, -2 dB
<b>Alternate channel selectivity</b>	65 dB
<b>Capture ratio</b>	1.5 dB
<b>Image rejection at 98 MHz</b>	40 dB
<b>Spurious response rejection at 98 MHz</b>	75 dB
<b>AM suppression</b>	50 dB
<b>Stereo separation</b>	
1 kHz	40 dB
10 kHz	30 dB
<b>Antenna terminal</b>	75 Ω (unbalanced)

## ■ AM TUNER SECTION

<b>Frequency range</b>	530-1710 kHz
<b>Sensitivity</b>	20 μV, 330 μV/m
<b>Selectivity</b>	55 dB
<b>IF rejection at 1000 kHz</b>	50 dB

## ■ VIDEO SECTION

<b>Output voltage at 1 V input (unbalanced)</b>	1±0.1 Vp-p
<b>Maximum input voltage</b>	1.5 Vp-p
<b>Input/output impedance</b>	75 Ω
<b>S-Video</b>	
Input	TV, DVD, DVR/VCR1, VCR2
Output	TV MONITOR
<b>Component Video</b>	
Input	TV, DVD
Output	TV MONITOR
<b>OSD Video Format</b>	NTSC

## ■ GENERAL

<b>Power supply</b>	AC 120 V, 60 Hz
<b>Power consumption</b>	135 W
<b>Dimensions (W x H x D)</b>	430 mm x 83 mm x 376 mm (16-15/16" x 3-9/32" x 14-13/16")
<b>Mass</b>	4.5 kg (9.9 lb.)

## ■ DIN POWER

1 kHz, T. H. D 1 %	2 x 100 W (6 Ω)
--------------------	-----------------

<b>Power consumption in standby mode:</b>	<b>1.2 W</b>
---	--------------

### Notes:

- Specifications are subject to change without notice. Mass and dimensions are approximate.
- Total harmonic distortion is measured by the digital spectrum analyzer.

Marking sign is located on bottom of the unit.

## Product Service

- Damage requiring service** — The unit should be serviced by qualified service personnel if:
  - The AC power supply cord or the plug has been damaged; or
  - Objects or liquids have gotten into the unit; or
  - The unit has been exposed to rain; or
  - The unit does not operate normally or exhibits a marked change in performance; or
  - The unit has been dropped or the cabinet damaged.
- Servicing** — Do not attempt to service the unit beyond that described in these operating instructions. Refer all other servicing to authorized servicing personnel.
- Replacement parts** — When parts need replacing ensure the servicer uses parts specified by the manufacturer or parts that have the same characteristics as the original parts. Unauthorized substitutes may result in fire, electric shock, or other hazards.
- Safety check** — After repairs or service, ask the servicer to perform safety checks to confirm that the unit is in proper working condition.

### Product information

For product information or assistance with product operation:  
 In the U.S.A., refer to "Customer Services Directory" on page 27.  
 In Canada, contact the Panasonic Canada Inc. Customer Care Centre at 905-624-5505, or visit the website (www.panasonic.ca), or an authorized Servicentre closest to you.

## Maintenance

### To clean this unit, wipe with a soft, dry cloth.

- Never use alcohol, paint thinner or benzine to clean this unit.
- Before using chemically treated cloth, read the instructions that came with the cloth carefully.

Manufactured under license from Dolby Laboratories.  
 "Dolby", "Pro Logic" and the double-D symbol are trademarks of Dolby Laboratories.

"DTS", "DTS-ES", "Neo:6" and "DTS 96/24" are trademarks of Digital Theater Systems, Inc.



# Troubleshooting guide

Before requesting service, make the following checks. If you are in doubt about some of the check points, or if the remedies indicated in the chart do not solve the problem, refer to the "Customer Services Directory" on page 27 if you reside in the U.S.A., or refer to the "Product information" on page 26 if you reside in Canada.

## Common problems

		Pages
No power.	<ul style="list-style-type: none"> <li>Ensure the AC power supply cord is connected.</li> <li>Turn the volume up.</li> <li>Check connections to speakers and other equipment.</li> <li>Turn on the speakers.</li> <li>Turn off the tape monitor.</li> <li>Select the correct source.</li> <li>Change the Digital Input/D-INPUT or HDMI/HDMI SEL setting to suit the type of connection you have made.</li> </ul>	5 16 4-10 16 19 16
No sound. Sound is distorted.	<ul style="list-style-type: none"> <li>Change the Digital Input/D-INPUT or HDMI/HDMI SEL setting to suit the type of connection you have made.</li> <li>Check that the digital signals can be decoded by this unit.</li> <li>Turn PCM FIX or DTS FIX off.</li> <li>Down-mixing of some DVD-Audio discs may not be possible due to copyright protection. In this case, play may not be normal if:                             <ul style="list-style-type: none"> <li>SPEAKERS B has been selected.</li> <li>Not all the 5.1-channel setting speakers have been selected.</li> </ul> </li> </ul>	12, 14 16 12, 14, 22 18 -
When using a HDMI connection, the first few seconds of sound is cut off.	<ul style="list-style-type: none"> <li>Should you be playing a chapter on a DVD:                             <ul style="list-style-type: none"> <li>Change the audio output setting on the DVD player or DVD recorder from "Bitstream" to "PCM". (6.1-channel sources will however be played as 5.1-channel and the 6.1 CH DECODING mode cannot be used.)</li> </ul> </li> <li>If playing a 2-channel source, set the Input Mode/IN MODE to PCM FIX.</li> </ul>	- 12, 14
Sound stops. "F 76" or "OVERLOAD" appears on the display for about a second, and the unit turns off.	<ul style="list-style-type: none"> <li>Determine and correct the cause, then turn the unit on. Causes include:                             <ul style="list-style-type: none"> <li>Shorting (bare wires touching) of positive and negative speaker wires.</li> <li>Using speakers with an impedance lower than that rated for this unit.</li> <li>Straining of the speakers through excessive volume or power.</li> <li>Using the unit in a hot environment without proper ventilation.</li> </ul> </li> <li>Consult your dealer if the problem occurs again after switching the unit on.</li> </ul>	5, 6 5, 6 - -
"F 70" appears on the display.	<ul style="list-style-type: none"> <li>Turn the unit off, disconnect the AC power supply cord, and consult your dealer.</li> </ul>	-
"U 70-1-1" appears on the display.	<ul style="list-style-type: none"> <li>The equipment connected by the HDMI cable is not compatible with the unit's copyright protection technology.</li> </ul>	-
"U 70-1-2" appears on the display.	<ul style="list-style-type: none"> <li>The unit has received a signal for a picture format that is incompatible with the HDMI connection. Check the settings of the connected equipment.</li> </ul>	-
"U 70-3" appears on the display.	<ul style="list-style-type: none"> <li>Should anything unusual happen using a HDMI connection:                             <ul style="list-style-type: none"> <li>Turn the connected equipment on again.</li> <li>Pull out the HDMI cable then reinsert it.</li> <li>Reduce the amount of equipment connected in series to the HDMI terminal if exceeding 2 units.</li> </ul> </li> </ul>	-

## Sound modes

		Pages
Sound is not heard from the center, surround, or subwoofer speakers.	<ul style="list-style-type: none"> <li>Ensure the speaker settings for your speakers are correct.</li> <li>Turn 2CH MIX off.</li> <li>The source may be stereo. Change the sound mode.</li> </ul>	12, 14 17 16
Sound is not heard from the surround back speaker.	<ul style="list-style-type: none"> <li>Ensure the speaker settings for your speakers are correct.</li> <li>Turn 6.1CH DECODING mode on.</li> </ul>	12, 14 16
Cannot use Dolby Pro Logic IIx/ Dolby Pro Logic II, DTS NEO:6 or SFC.	<ul style="list-style-type: none"> <li>Turn DVD ANALOG 6CH off.</li> <li>You cannot use Dolby Pro Logic IIx, Dolby Pro Logic II, DTS NEO:6 or SFC when input is PCM with sampling frequencies of 192, 176.4 (COAXIAL1, HDMI), 96 or 88.2 kHz.</li> </ul>	19 17
There is no DTS audio output. There is audio output, but the DTS decoder indicator is not lit.	<ul style="list-style-type: none"> <li>Check the DVD player's digital output settings.</li> </ul>	-

## Radio

		Pages
The radio cannot be tuned in or there is a lot of noise and interference.	<ul style="list-style-type: none"> <li>Connect the appropriate antenna. (You may need an outdoor antenna or one with more elements.)</li> <li>Adjust the position of the FM or AM antenna.</li> <li>Reduce the treble.</li> <li>Turn off nearby televisions, video decks, DVD players, and satellite receivers.</li> <li>Separate the antenna from other cables, cords, and appliances.</li> </ul>	7 7 24 - -

## Multi control menus and factory settings (Reference pages are shown as black circled numbers ㉑)

Main menu	Sub menu (factory settings)			Main menu	Sub menu (factory settings)			Main menu	Sub menu (factory settings)				
TUNER (TUNER mode only)	TUNING	MANUAL	㉑	OPTION	B PROOF	MODE A	㉑	SETUP 2	SPEAKERS	FRONT			
	FM MODE	AUTO			RESET	YES	㉑				CENTER	SMALL	
	MEMORY	CH 1	㉑		SPEAKERS	SUBW YES					SURROUND		
	AUTO MEM	START				SUBW NO					SUR BACK	YES	
TONE	BASS	0dB	㉑	SETUP 1	D-INPUT	TV	OPT 1				FRONT	10 FEET	
	TREBLE						DVR		OPT 2			CENTER	
BALANCE	L	R					DVD		COAX 1			SURROUND	
						CD	COAX 2		㉑		SUR BACK	5 FEET	
DIMMER	OFF					HDMI SEL	DVD						
	ON	LEVEL 2	㉑								FILTER	100	
SLEEP	OFF				IN MODE	TV					HQ MODE	DISPLAY OFF	
							DVR		AUTO			VIDEO	OFF
							DVD					OFF	
OPTION	SECOND-A	DISABLE				CD			EXIT	⇒Exit the Multi control			
	ENABLE	SOURCE	㉑										
	DUAL PRG	MAIN											
	DR COMP	OFF											
	A/D ATT	OFF											

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