aiwa

STEREO RECEIVER
RECEPTOR ESTEREO
AMPLI-TUNER STEREO

AV-D98

dts

OPERATING INSTRUCTIONS
MANUAL DE INSTRUCCIONES
MODE D'EMPLOI

En (English)
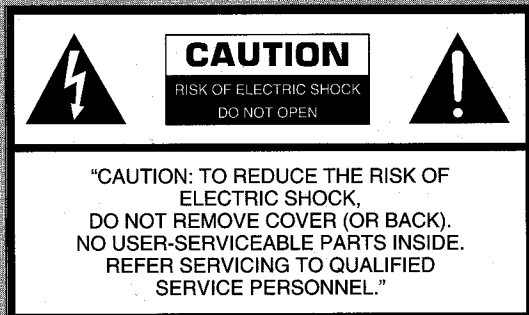
E (Español)

F (Français)

For assistance and information

call toll free 1-800-BUY-AIWA

(United States and Puerto Rico)

U

DIGITAL
dts®
SURROUND

Owner's record

For your convenience, record the model number and serial number (you will find them on the rear of your unit) in the space provided below. Please refer to them when you contact your Aiwa dealer in case of difficulty.

Model No.	Serial No. (Lot No.)
AV-D98	

PRECAUTIONS

Read the Operating Instructions carefully and completely before operating the unit. Be sure to keep the Operating Instructions for future reference. All warnings and cautions in the Operating Instructions and on the unit should be strictly followed, as well as the safety suggestions below.

Installation

1 **Water and moisture** — Do not use this unit near water, such as near a bathtub, washbowl, swimming pool, or the like.
2 **Heat** — Do not use this unit near heat sources, including heating vents, stoves, or other appliances that generate heat. It also should not be placed in temperatures less than 5°C (41°F) or higher than 35°C (95°F).
3 **Mounting surface** — Place the unit on a flat, even surface.
4 **Ventilation** — The unit should be situated with adequate space around it so that proper heat ventilation is assured. Allow 10 cm (4 in.) clearance from the rear and the top of the unit, and 5 cm (2 in.) from each side.
   - Do not place the unit on a bed, rug, or similar surface that may block the ventilation openings.
   - Do not install the unit in a bookcase, cabinet, or airtight rack where ventilation may be impeded.
5 **Objects and liquid entry** — Take care that objects or liquids do not get inside the unit through the ventilation openings.
6 **Carts and stands** — When placed or mounted on a stand or cart, the unit should be moved with care. Quick stops, excessive force, and uneven surfaces may cause the unit or cart to overturn or fall.
7 **Wall or ceiling mounting** — The unit should not be mounted on a wall or ceiling, unless specified in the Operating Instructions.
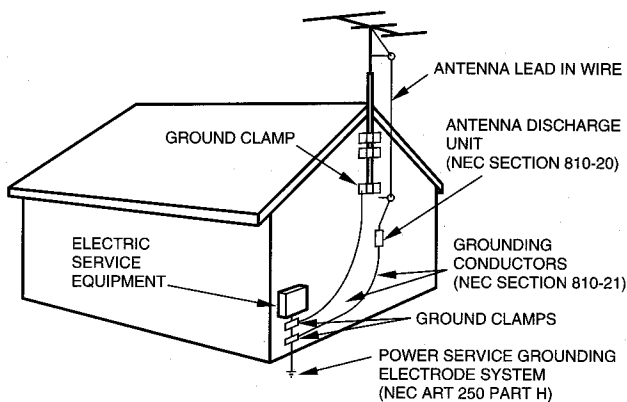
Electric Power

1 **Power sources** — Connect this unit only to power sources specified in the Operating Instructions, and as marked on the unit.
2 **Polarization** — As a safety feature, some units are equipped with polarized AC power plugs which can only be inserted one way into a power outlet. If it is difficult or impossible to insert the AC power plug into an outlet, turn the plug over and try again. If it is not still inserted easily into the outlet, please call a qualified service technician to service or replace the outlet. To avoid defeating the safety feature of the polarized plug, do not force it into a power outlet.
3 **AC power cord**
   - When disconnecting the AC power cord, pull it out by the AC power plug. Do not pull the cord itself.
   - Never handle the AC power plug with wet hands, as this could result in fire or shock.
   - Power cords should be firmly secured to avoid being severely bent, pinched, or walked upon. Pay particular attention to the cord from the unit to the power socket.
   - Avoid overloading AC outlets and extension cords beyond their capacity, as this could result in fire or shock.
4 **Extension cord** — To help prevent electric shock, do not use a polarized AC power plug with an extension cord, receptacle, or other outlet unless the polarized plug can be completely inserted to prevent exposure of the blades of the plug.
5 **When not in use** — Unplug the AC power cord from the AC power outlet if the unit will not be used for several months or more. When the cord is plugged in, a small amount of current continues to flow to the unit, even when the power is turned off.

Outdoor Antenna

1 **Power lines** — When connecting an outdoor antenna, make sure it is located away from power lines.
2 **Outdoor antenna grounding** — Be sure the antenna system is properly grounded to provide protection against unexpected voltage surges or static electricity build-up. Article 810 of the National Electrical Code, ANSI/NFPA70, provides information on proper grounding of the mast, supporting structure, and the lead-in wire to the antenna discharge unit, as well as the size of the grounding unit, connection to grounding terminals, and requirements for grounding terminals themselves.

Antenna Grounding According to the National Electrical Code

ANTENNA LEAD IN WIRE
GROUND CLAMP
ANTENNA DISCHARGE UNIT
(NEC SECTION 810-20)
ELECTRIC SERVICE EQUIPMENT
GROUNDING CONDUCTORS
(NEC SECTION 810-21)
GROUND CLAMPS
POWER SERVICE GROUNDING ELECTRODE SYSTEM
(NEC ART 250 PART H)

NEC-NATIONAL ELECTRICAL CODE

Maintenance

Clean the unit only as recommended in the Operating Instructions.

Damage Requiring Service

Have the unit serviced by a qualified service technician if:
- The AC power cord or plug has been damaged
- Foreign objects or liquid have gotten inside the unit
- The unit has been exposed to rain or water
- The unit does not seem to operate normally
- The unit exhibits a marked change in performance
- The unit has been dropped, or the cabinet has been damaged
DO NOT ATTEMPT TO SERVICE THE UNIT YOURSELF.

Check your accessories

Remote control
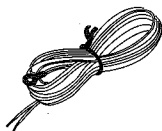
FM antenna   AM antenna
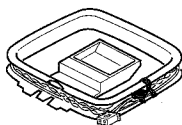
Operating Instructions, etc.

TABLE OF CONTENTS

En

Dynamic Integrated Neo Amplifier

is a brand-new amplifier system where clear mid-to-high range frequency sound, as well as rich low frequency sound, can be reproduced and listeners can enjoy the close-to-original sound with less distortion at either high or low volume levels.

ENGLISH 3

CONNECTIONS

Before connecting the AC cord
The rated voltage of your unit shown on the rear panel is 120 V AC. Check that the rated voltage matches your local voltage.

IMPORTANT
Connect the speakers, antennas, and all other external equipment first. Then connect the AC cord at the end.

CONNECTING EQUIPMENT

Jacks and plugs of the connecting cord are color-coded as follows:
Red jacks and plugs : For the right channel of audio signals
White jacks and plugs: For the left channel of audio signals
Yellow or black jacks and plugs: For video or S-video signals

NOTE

Insert the plugs fully into the jacks. Loose connections may produce a humming sound or other noise interference.

Video equipment connections

FRONT

Camcorder
to VIDEO OUT
to AUDIO OUT

VIDEO 3
VIDEO IN   L-AUDIO IN-R

Video 2*4 or
LD*5/Cable TV

RF demodulator*5

to COAXIAL
DIGITAL OUT

Coaxial connecting cord

Optical connecting cord

VIDEO2 COAXIAL IN *2
VIDEO 1 OPTICAL IN *3
VIDEO 3 OPTICAL IN *3
CD OPTICAL IN
OPTICAL OUT

to OPTICAL
DIGITAL OUT

to AUDIO OUT
to VIDEO (S VIDEO) OUT
to AUDIO IN (Video 2)
to VIDEO (S VIDEO) IN (Video 2)

DVD or MD player

to FRONT OUT (DVD)
to SURROUND OUT (DVD)
to SUB-WOOFER OUT (DVD)
to CENTER OUT (DVD)

VIDEO 2/LD/TV   VIDEO 1/DVD   MONITOR
S VIDEO S VIDEO S VIDEO S VIDEO S VIDEO
IN   OUT   IN   OUT   OUT

AUDIO L R

SIGNAL EARTH

VIDEO

REAR

FRONT SURROUND CENTER
SUB-WOOFER IN
5.1 CH INPUT
VIDEO 2/LD/TV   VIDEO 1/DVD   TAPE   MONITOR   PHONO   AUX   CD

DVD or Video 1*4/MD player

to OPTICAL
DIGITAL OUT
(DVD)

to VIDEO (S VIDEO) OUT (Video 1)*1
to AUDIO OUT
to VIDEO (S VIDEO) IN (Video 1)
to AUDIO IN (Video 1/MD)

TV   to AUDIO OUT

to VIDEO (S VIDEO) IN

Audio equipment connections

Optical connecting cord

*3

*3

to OPTICAL DIGITAL OUT | to OPTICAL DIGITAL IN

CD-R/RW or MD recorder

to LINE IN

to LINE OUT

Tape deck

Turntable

REAR

SIGNAL EARTH

to OUTPUT

CD player

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*1 Be sure to connect the VIDEO (S VIDEO) OUT terminal of a DVD player directly to a TV set, not through this unit. Otherwise, the picture noise may appear when playing copy protected DVDs.

*2 Input sound through the 5.1CH INPUT terminals or the VIDEO 2 COAXIAL IN digital terminal cannot be recorded. To record the sound, connect the equipment to the corresponding ANALOG IN terminals of the receiver.

*3 Input sound through the OPTICAL IN digital terminals can be recorded by the equipment connected to the OPTICAL OUT digital terminal of the receiver (digital connections).
When recording by the analog connection, connect the equipment to the corresponding ANALOG IN terminals of the receiver.

*4 When connecting a monaural video, use a stereo-mono connecting cord (not supplied).

*5 When connecting an LD player equipped with the AC-3 RF OUT terminal, use an RF demodulator unit. Also connect the analog AUDIO OUT terminals of the LD player to the receiver to play all the sources. For further information, refer to the instructions of the LD player.

DVD PLAYERS CONNECTIONS
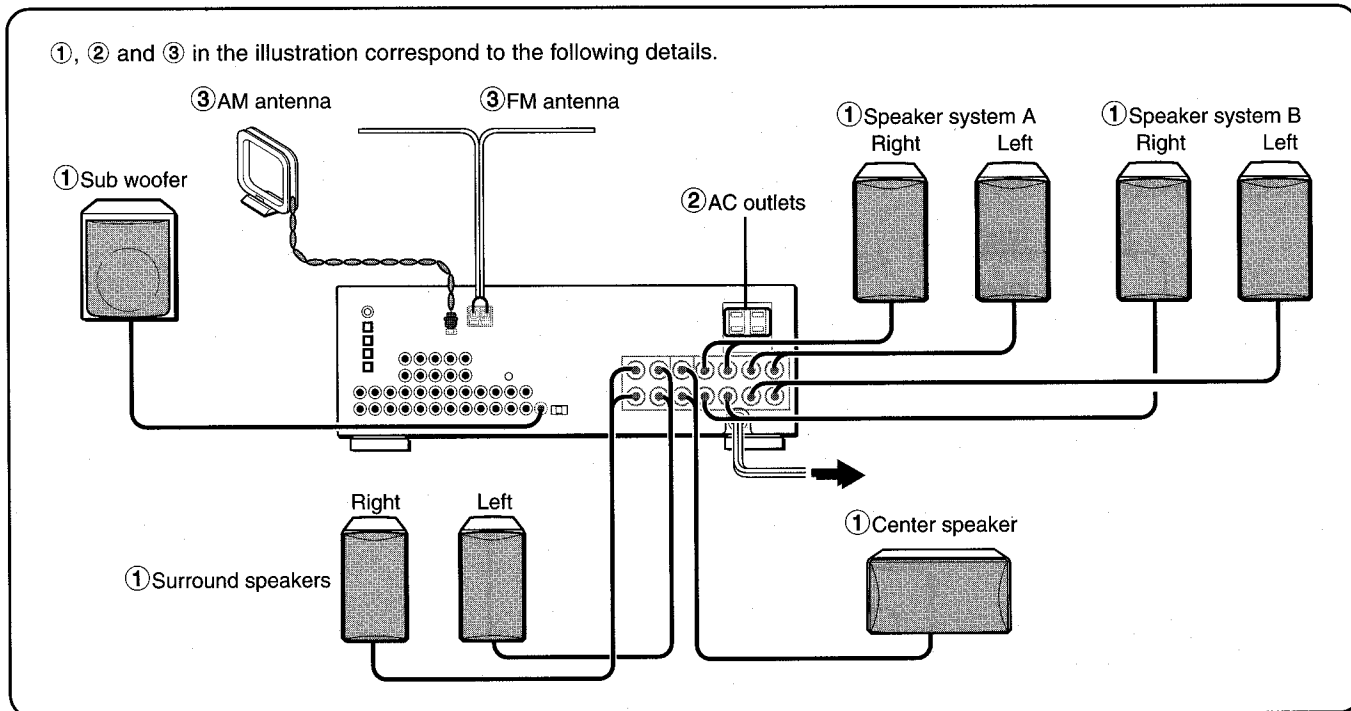
To connect a DVD player without a decoder, connect the player to the digital input terminal (VIDEO 1 or VIDEO 3 OPTICAL IN) of the unit.

To connect a DVD player with a decoder and 5.1 ch output terminals, connect the player to the 5.1CH INPUT terminals of the unit.

• The 5.1CH INPUT terminals are also available when connecting a digital TV with multi-audio output terminals.

①, ② and ③ in the illustration correspond to the following details.

③AM antenna   ③FM antenna   ①Speaker system A   ①Speaker system B
                                Right   Left   Right   Left
①Sub woofer   ②AC outlets

Right   Left
①Surround speakers   ①Center speaker

CONNECTING SPEAKERS①

Speaker terminals

Connect front speakers (system A and/or B), a center speaker, surround speakers and a sub woofer to the corresponding speaker terminals on the unit:
- the front speaker cords to the FRONT SPEAKERS terminals
- the center speaker cord to the CENTER SPEAKER terminals
- the surround speaker cords to the SURROUND SPEAKERS terminals.
- for more powerful bass, the sub woofer (with a built-in amplifier) cord to the SUB WOOFER ◁ jack

When connecting the sub woofer, be sure to select the "SUBW ON" (sub woofer on) mode (see page 7).

Speaker impedance
• Front and center speakers

Use the same impedance for both the front and center speakers. The SPEAKER IMPEDANCE SELECTOR on the rear should be set to the position that matches the impedance value of the front and center speakers.
When using 4 ohm speakers, set the selector to IMP:4Ω. When using 8 ohm speakers, set the selector to IMP:8Ω. Please unplug the AC cord before setting the selector.
• Surround speakers and sub woofer

The SPEAKER IMPEDANCE SELECTOR has no effect on the SURROUND SPEAKERS terminals and the SUB WOOFER ◁ jack. For the surround speakers and sub woofer, use speakers of 8 ohms or more.

Connecting + to +, − to − terminals

To get the proper sound effect, the speaker terminals on the unit and the speaker should be connected with proper polarity; the + terminal on the unit should be connected to the + terminal on the speaker (and − to −).

NOTE
- Be sure to connect the speaker cords correctly as shown in the illustration on the right column. Improper connections can cause short circuits in the SPEAKER(S) terminals.
- Do not leave objects generating magnetism near the speakers.

Front speakers

Insert the speaker cord lead into the terminal slot, then tighten the terminal. Check that the cord is connected securely.

Surround speakers
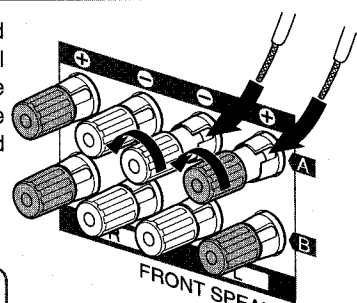
SPEAKER
IMPEDANCE
SELECTOR
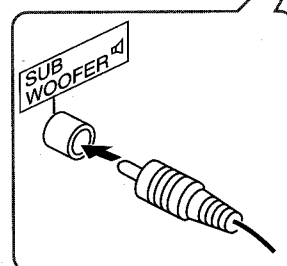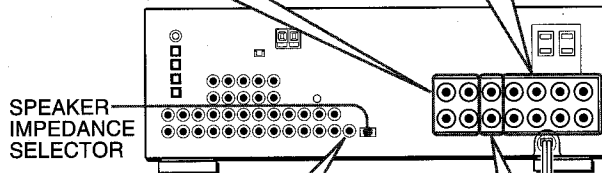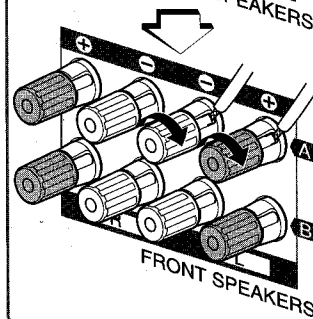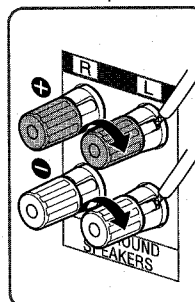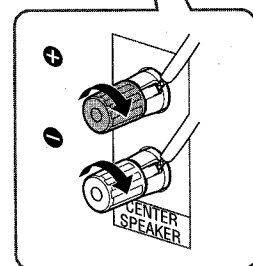
Sub woofer   Center speaker

POSITIONING THE SPEAKERS

Position the speakers to make the most of Dolby, DTS or DSP surround effect.

Front speakers (L/R)
Center speaker (C)
Position in the center of the two front speakers. In addition, position on or below the TV set, if connecting a TV set to the unit.
Surround speakers (LS/RS)
Place the surround speakers directly to the side of or slightly behind the listening area. Align them horizontally, about 1 meter (3.2 feet) above ear height.
Sub woofer (SW)
Place the sub woofer in any place between the two front speakers.

> **When connecting a sub woofer**
> Select "SUBW ON" mode.
> 1. Press MANUAL SELECT on the remote control once so that "SUBW OFF" appears on the display.
> 2. Within 4 seconds, press TUNING DOWN ∨ or turn MULTI JOG to the left to display "SUBW ON."
> If a sub woofer is not connected, be sure to select "SUBW OFF."
> Display "SUBW ON" in step 1 and press TUNING UP ∧ or turn MULTI JOG to the right in step 2.
> In "SUBW ON" mode, the sub woofer level can be adjusted (see page 18).

NOTE

Sound from the surround speakers or center speaker depends on the setting of Dolby, DTS or DSP surround.
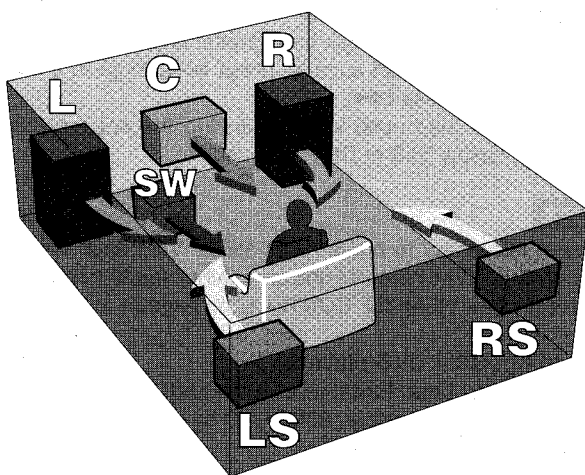
USING AC OUTLETS ON THE UNIT ②

The unit is equipped with AC outlets. You can use them once the unit is connected to an AC outlet on a wall.
SWITCHED: Electric current flows through it when the unit is turned on.
UNSWITCHED: Electric current always flows through it.
Do not connect equipment beyond their capacity (120 W, 1 A MAX. and TOTAL)

CONNECTING THE SUPPLIED ANTENNAS ③

Connect the FM antenna to the FM 75 Ω terminals and the AM antenna to the AM LOOP jack.

FM antenna
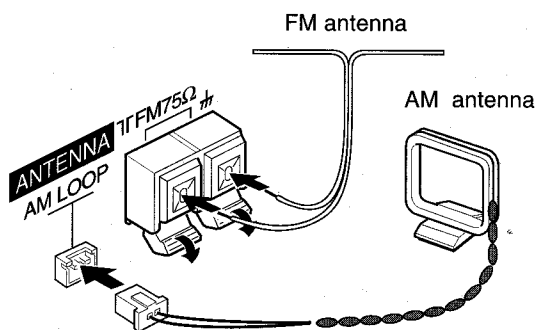
AM antenna

To stand the AM loop antenna on a surface
Fix the claw to the slot as shown in the illustration.
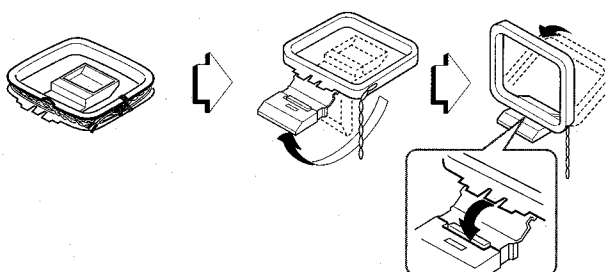
To position the antennas
FM feeder antenna:
Extend this antenna horizontally in a T shape and fix its ends to the wall.
AM loop antenna:
Position for the best reception.

NOTE

- Do not bring the FM antenna near metal objects or curtain rails.
- Do not bring the AM antenna near other external equipment, the unit itself, the AC power cord or speaker cords, as noise will be picked up.
- Do not unwind the AM loop antenna wire.

CONNECTING AN OUTDOOR ANTENNA

For better FM reception, use of an outdoor antenna is recommended. Connect the outdoor antenna to the FM 75 Ω terminals.
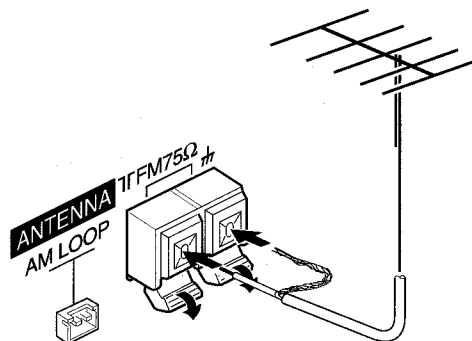
ABOUT THE REMOTE CONTROL

Inserting batteries

Detach the battery cover on the rear of the remote control and insert two R6 (size AA) batteries.

R6(AA)
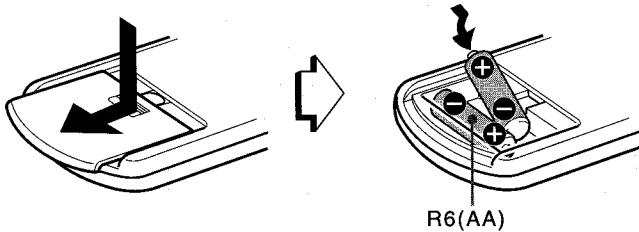
When to replace the batteries

The maximum operational distance between the remote control and the sensor on the unit should be approximately 5 meters (16 feet). When this distance decreases, replace the batteries with new ones.

Using the remote control

The instructions in this manual refer mainly to the buttons on the main unit. In principle the buttons on the remote control and the main unit with identical or similar indications have the same functions.

Important
- **ENTER on the remote control does not substitute for ENTER on the main unit.** This button is for operating the DVD player only (see right column.)
- In principal, ◄◄/►►◄ on the remote control substitute for ∨/∧ on the main unit **except when selecting the TUNER function.**


NOTE

- If the unit is not going to be used for an extended period of time, remove the batteries to prevent possible electrolyte leakage.
- The remote control may not operate correctly when:
  - The line of sight between the remote control and the remote sensor in the display window is exposed to intense light, such as direct sunlight.
  - Other remote controls are used nearby (those of a television, etc.)

REMOTE CONTROL OPERATION

This remote control system allows you to operate other external equipment besides the AIWA receiver. For details of the remote control operation for other external equipment, see "REMOTE CONTROL" on page 21.
The following is an explanation on how to operate the AIWA receiver and the AIWA DVD players.
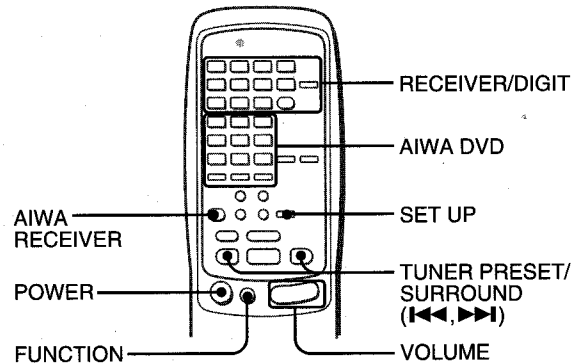
1 Press AIWA RECEIVER to set the remote control to AIWA receiver mode.

2 Press one of the buttons indicated above.

FUNCTION
Each time this button is pressed, the sound source changes cyclically.

TUNER PRESET/SURROUND
Tune in the station which has been preset on the receiver.
To go to a higher preset number, press ►►◄. To go to a lower preset number, press ◄◄.
This button is also used when adjusting the speaker level balance of Dolby, DTS or DSP surround etc.

NOTE

It is not necessary to press AIWA RECEIVER each time you operate the AIWA receiver unless another mode has already been set. (See "REMOTE CONTROL" on page 21.)

Operating AIWA DVD players
You can control basic functions of AIWA DVD players with the remote control. In principle, AIWA DVD have the same function as those on the DVD players.
For more details, refer to the operating instructions of the player.

If the receiver cannot be operated with the remote control

Follow the steps below using the remote control.

1 Press AIWA RECEIVER.

2 Press and hold SET UP down for about 3 seconds.
The indicator on the top of the remote control blinks twice while pressing the button.

3 Press DIGIT in the order of "0," "4," "0" and "6."

BEFORE OPERATION

Function indicators

POWER
&STANDBY/ON | ECO | MULTI JOG | ENTER

PHONES | FRONT SPEAKERS A,B
ECO indicator

To turn the unit on

Press POWER &STANDBY/ON.
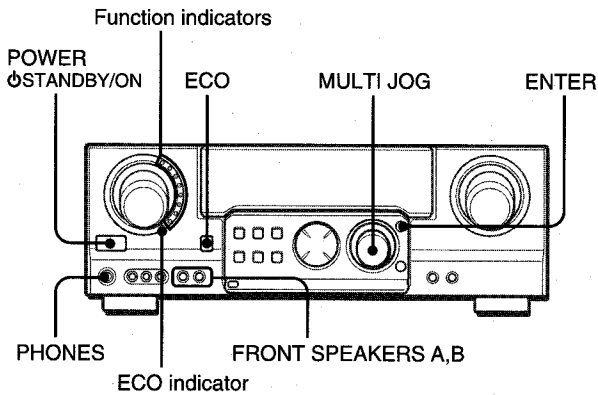Operation is possible after four seconds. The VOL (volume) level or function name is displayed one after the other for the first four seconds.
The selected function indicator lights up in red.

To change the brightness level of the display
1 Press ECO repeatedly until "DIM MODE" is displayed.
2 Within 4 seconds, press ENTER.
3 Within 4 seconds, turn MULTI JOG to select the dimmer mode as below.
The mode will be automatically set after 4 seconds. It will also be set if ENTER is pressed within 4 seconds after step 3.

→DIM-OFF ◄———► DIMMER 1 ◄———► DIMMER 2 ◄———┐

DIM-OFF: The normal display.
DIMMER 1: The illumination of the display is dimmer than usual.
DIMMER 2: The illumination of the display is dimmer than DIMMER 1. The function indicator turns off.

Using the headphones
Connect headphones to the PHONES jack with a standard stereo plug (ø6.3 mm, 1/4 inch). Be sure to set FRONT SPEAKERS A and B to ▮OFF. Otherwise sound is output from the speakers.

NOTE

When the headphones are plugged in:
- The 5.1CH INPUT, Dolby Pro Logic or DSP system is automatically canceled.
- The Dolby Digital or DTS surround mode is changed to "2chSTEREO (2CH DOWNMIX)".

To turn the unit off, press POWER &STANDBY/ON.

To select the front speaker system
To use speaker system A: Set FRONT SPEAKERS A to ▬ON.
To use speaker system B: Set FRONT SPEAKERS B to ▬ON.
To use both speaker systems: Set both the buttons to ▬ON.
Set the button(s) to ▮OFF to turn off the speaker system(s).

NOTE

As the front speaker systems A and B are connected in series:
- The sound will decrease slightly when using both speaker systems
- No sound can be heard if FRONT SPEAKERS A and B are set to ▬ON when only one speaker system is connected

POWER ECONOMIZING (ECO) MODE

Setting this unit to ECO mode reduces power consumption in standby mode.
Initial setting of ECO mode is ON.
• When the current time is set, the clock display disappears immediately.
• While the power is off, all the display lights turn off, and only the ECO indicator lights in red.

To cancel ECO mode
1 Press ECO to display "ECO MODE" while the unit is turned on.
2 Within 4 seconds, press ENTER.
3 Within 4 seconds, turn MULTI JOG to select "ECO OFF".
The mode will be automatically set after 4 seconds. It will also be set if ENTER is pressed within 4 seconds after step 3.

En

CUSTOM AUDIO ADJUSTMENT
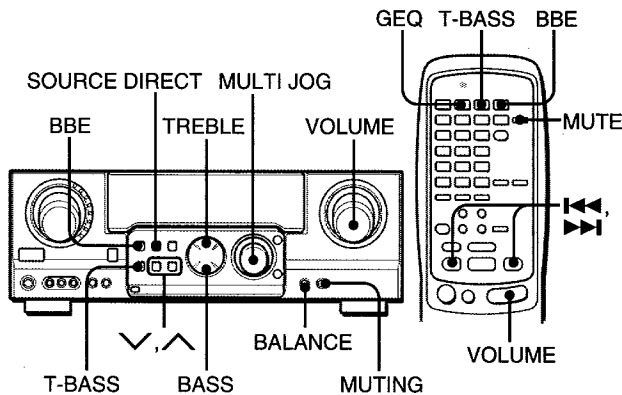
VOLUME CONTROL

Turn VOLUME on the unit, or press VOLUME on the remote control.

The volume level is shown on the display for four seconds. It can be adjusted between 0 and MAX (50). It flashes when set over the level of 44.

The volume level remains memorized even after the power is turned off. However, if the power is turned off when the volume is set to 21 or higher, it is automatically set to 20 the next time the power is turned on.

To adjust the left/right balance of the front speakers
Press BALANCE to display "L/R 0dB". Then press ∨/∧ repeatedly or turn MULTI JOG within four seconds.
Note that the front speaker balance for the Dolby and DTS surround is also changed.

To mute the sound temporarily
Press MUTING (MUTE) (–20 dB).
"MUTE ON" appears on the display for four seconds. While muting the sound, the selected function indicator flashes. Press MUTING again to restore the sound.

TONE CONTROL

You can adjust treble and bass sound (except in 5.1CH INPUT mode).

1 Press TREBLE or BASS.

2 Within 4 seconds, press ∨/∧ repeatedly or turn MULTI JOG to select the desired level.
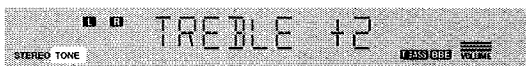
Both the levels can be adjusted between -10 dB and +10 dB in 2 dB steps.
"TONE" is displayed while the TREBLE or BASS control is activated.

To adjust with the remote control
1 Press GEQ repeatedly to display "TREBLE" or "BASS."
2 Press |◄◄/►►| to adjust the level.

BBE SYSTEM

The BBE system enhances the clarity of high-frequency sound.
Press BBE.
Each time it is pressed, the level changes. Select one of the three levels, or the off position to suit your preference.
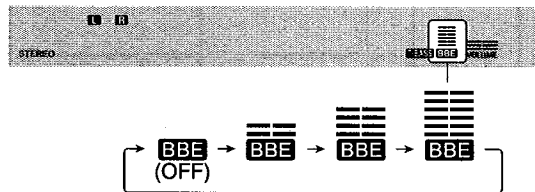
NOTE

The BBE system is automatically canceled and cannot be turned on:
- When 5.1CH INPUT or DIGITAL mode is selected
- When the Dolby Pro Logic is turned on

SUPER T-BASS SYSTEM

The T-BASS system enhances the realism of low-frequency sound (except in 5.1CH INPUT mode).
Press T-BASS.
Each time it is pressed, the level changes. Select one of the three levels, or the off position to suit your preference.
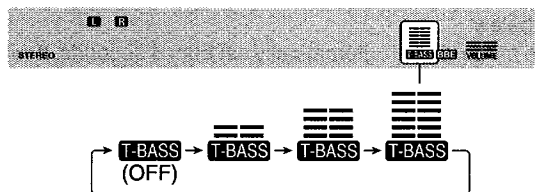
NOTE

Low-frequency sound may be distorted when the T-BASS system is used for a disc or tape in which low-frequency sound is originally emphasized. In this case, cancel the T-BASS system.

SOURCE DIRECT FUNCTION

You can cancel all the sound adjustments (except the volume), with their settings kept in memory, to listen to the original source sound.

Press SOURCE DIRECT.

"SOURCE DIRECT" runs through on the display and the indicator lights up.
Press it again to restore the sound adjustments.

NOTE

• While the source direct function is activated, 5.1CH INPUT, TAPE MONITOR and all the buttons to adjust the sound cannot be used.
• The source direct function is not available in digital mode. The mode changes to analog.

DSP SURROUND
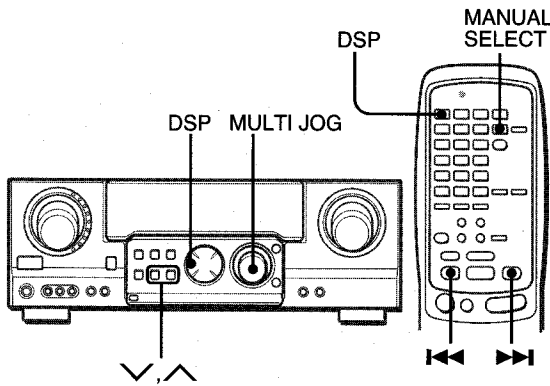
The DSP (Digital Signal Processor) surround circuits can recreate the effect of sounds reflected from walls or ceilings, to obtain the sound presence of real environments. The unit provides 30 DSP preset modes.

1 Press DSP.

2 Within 4 seconds, press ∨/∧ repeatedly or turn MULTI JOG to select the desired DSP mode.
The "DSP" and "S" (surround speakers) indicators light up.

```
→DISCO 1        THEATER ◄──────► CHURCH
  ↕             ↕                 ↕
  DISCO 2       ARENA 2           CAR
  ↕             ↕                 ↕
  DISCO 3       ARENA 1           PARTY 1
  ↕             ↕                 ↕
  LIVE 1        GAME 2            PARTY 2
  ↕             ↕                 ↕
  LIVE 2        GAME 1            CLASSIC
  ↕             ↕                 ↕
  LIVE 3        MOVIE 2           TV SPORT
  ↕             ↕                 ↕
  HALL 1        MOVIE 1           MUSEUM
  ↕             ↕                 ↕
  HALL 2        JAZZ 2            CONCERT
  ↕             ↕                 ↕
  HALL 3        JAZZ 1            BALLADE 1
  ↕             ↕                 ↕
  STADIUM 1◄────► STADIUM 2       BALLADE 2
  └────────────────────────────────┘
```
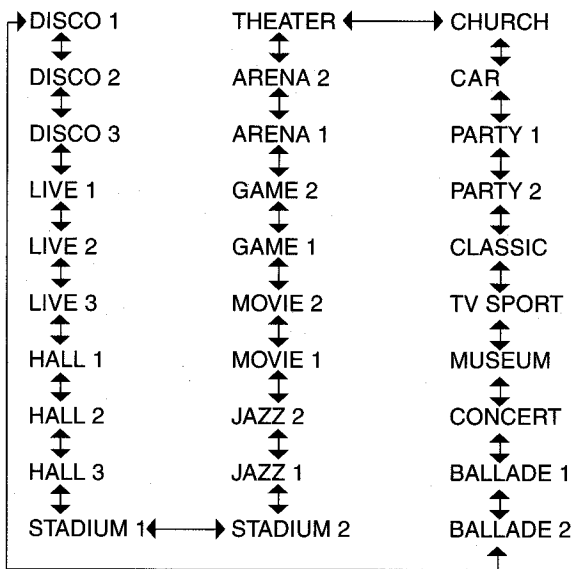

Selected mode

When the music source is monaural
The DSP system may not work effectively.

To cancel the selected mode
Press DSP to display the DSP mode name, and press the button again within 4 seconds. "DSP OFF" appears on the display.

To select with the remote control
1 Press DSP.
2 Within 4 seconds, press I◄◄/►►I repeatedly until the desired DSP mode is displayed.
   30 preset modes can be selected.

To adjust the volume of the surround speakers
1 Press MANUAL SELECT on the remote control repeatedly to display "S 0dB" while the DSP system is turned on.
2 Within 4 seconds, press I◄◄/►►I on the remote control.
   To operate on the unit, press ∨/∧ repeatedly or turn MULTI JOG.

NOTE

• The DSP surround system is automatically canceled and cannot be turned on:
  - When headphones are plugged in.
  - When 5.1 INPUT is selected.
  - When the bit stream of Dolby Digital or DTS surround comes in the unit in DIGITAL mode.
  - When the SOURCE DIRECT function is activated.
  - When the input signal is 96 kHz.
• The DSP surround system is automatically canceled when the Dolby Pro Logic system is turned on, and vice versa.

SOUND ADJUSTMENT DURING RECORDING

The output volume and tone of the speakers or headphones may be freely varied without affecting the level of the recording.

SELECTION OF AUDIO/VIDEO SOURCE

TAPE MONITOR

5.1CH INPUT

FUNCTION   MULTI JOG

TAPE MONITOR

ENTER

∨,∧

FUNCTION

Function indicators   BAND/DIGITAL/ANALOG
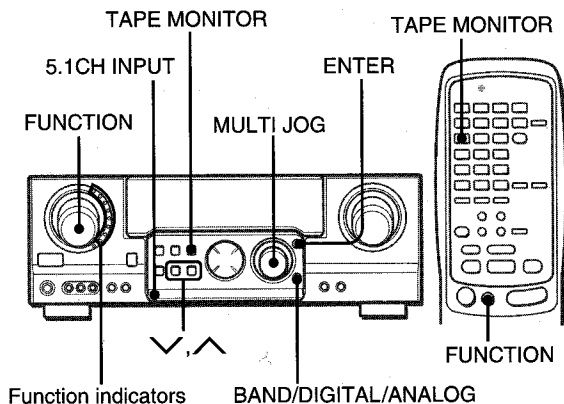
1 Select the program source.

Turn FUNCTION or press TAPE MONITOR. The selected function indicator lights in red.

To listen to or watch	The indicator in red
Tape	TAPE MONITOR
Radio	TUNER
Record	PHONO
Compact disc	CD
Television, etc.	AUX
Video	VIDEO 1/DVD/MD, VIDEO 2/LD/TV, VIDEO 3
LD or Cable TV	VIDEO 2/LD/TV
MD or DVD	VIDEO 1/DVD/MD

The function to be selected (except PHONO) depends on the equipment connected to the input terminals on the rear panel of the unit.

To select with the remote control
Press TAPE MONITOR or FUNCTION repeatedly.

NOTE

When using a turntable with a built-in equalizer amplifier, set the switch of the equalizer amplifier to off. See the instructions of the turntable for further information.

2 Start the selected program source.

3 Adjust the sound.

About the video source to the monitor or TV

Selected video source

V1: VIDEO 1, V2: VIDEO 2, V3: VIDEO 3

The selected video source is indicated on the display and the video signal is output through the MONITOR VIDEO OUT jack on the TV.

To select the video source
1 Turn FUNCTION to select PHONO, CD or AUX.
2 Press ENTER to display VIDEO 1.
3 Turn MULTI JOG to select VIDEO 2 or VIDEO 3.

To change a displayed name for the VIDEO 1 and VIDEO 2 function

When the VIDEO 1 function is selected, VIDEO 1 is displayed initially. It can be changed to DVD or MD.
Press BAND/DIGITAL/ANALOG while pressing ENTER, then release ENTER first.
The displayed name for the VIDEO 2 function can be changed to VIDEO 2, LD or TV; while the VIDEO 2 function is selected, press BAND/DIGITAL/ANALOG while pressing ENTER, then release ENTER first.

To select "ANALOG" or "DIGITAL" (auto) mode of the CD, VIDEO 1, VIDEO 2 or VIDEO 3 function

Press BAND/DIGITAL/ANALOG when the CD, VIDEO 1, VIDEO 2 or VIDEO 3 function is selected. The selected mode "ANALOG" or "DIGITAL" appears on the display.
In DIGITAL mode: Equipment connected to the CD, VIDEO 1 or VIDEO 3 OPTICAL IN terminal is selected as a source for the CD, VIDEO 1 or VIDEO 3 function, and equipment connected to the VIDEO 2 COAXIAL IN terminal for the VIDEO 2 function.
In ANALOG mode: Equipment connected to the CD, VIDEO 1/ DVD/MD IN or VIDEO 3 terminals is selected as a source for the CD, VIDEO 1 or VIDEO 3 function, and equipment connected to the VIDEO 2/LD/TV terminals for the VIDEO 2 function.

NOTE

"DIGITAL" mode changes to "ANALOG," when pressing TAPE MONITOR.

When the "OVER LEVEL" indicator lights up

The unit is equipped with the OVER LEVEL indicator. When input analog signals from the connected equipment are too high to accept, the indicator lights up. In this case, adjust the input level as mentioned below so that the indicator disappears.

To adjust the sound level of the connected source
The input sensitivity level of each function can be adjusted (except the TUNER, CD(DIGITAL), VIDEO 1 (DIGITAL), VIDEO 2 (DIGITAL) and VIDEO 3 (DIGITAL) functions).
When the sound level of the connected source is higher than that of the TUNER, adjust it as follows.

1 Select the function to be adjusted.
Turn FUNCTION or press TAPE MONITOR and play the source. Be sure to turn off the source direct function.

2 Press ∨ twice to lower the level.
To restore, press ∧ twice so that "0 dB" is displayed.

TO PLAY A DVD OR LD RECORDED IN DOLBY DIGITAL OR DTS SURROUND

This receiver is equipped with the Dolby Digital decoder and DTS decoder, and has the digital in (both OPTICAL and COAXIAL) terminals. Besides, the unit is equipped with the 5.1CH INPUT terminals to be able to connect all types of DVD players. When a DVD or LD player is connected to the receiver, you can enjoy theater-quality audio right in your home when playing discs recorded in Dolby Digital surround or DTS surround.

Before operation
- Check that TAPE MONITOR, 5.1CH INPUT or SOURCE DIRECT is not activated.
- When connecting an LD player equipped with the AC-3 RF OUT terminal, use an RF demodulator unit. Also connect the analog AUDIO OUT terminals of the LD player to the receiver to play all the sources. For further information, refer to the instructions of the LD player.

1 Turn FUNCTION to select the VIDEO 1 (CD, VIDEO 2 or VIDEO 3) function and press BAND/DIGITAL/ANALOG repeatedly until "DIGITAL"(auto) is displayed.

The equipment connected to the OPTICAL (COAXIAL) IN terminals is selected as a source.

2 Start playing the disc recorded in Dolby Digital or DTS surround.
- The "DOLBY DIGITAL" indicator will light on the display when the bit stream of the Dolby Digital surround comes in the unit.

To select Dolby Digital surround mode according to your speakers, see "SELECTING DOLBY SURROUND" on page 16.

- The "dts" indicator will light on the display when the bit stream of the DTS surround comes in the unit.

To select DTS surround mode according to your speakers, see "SELECTING DTS SURROUND" on page 20.

To play the DVD connected to the 5.1CH INPUT terminals, press 5.1CH INPUT and start playback on the connected player.

NOTE
- While TAPE MONITOR, 5.1CH INPUT or SOURCE DIRECT is activated, "DIGITAL" cannot be selected.
- When headphones are plugged in, Dolby Digital surround mode or DTS surround mode is automatically changed to "2chSTEREO" and the "STEREO" indicator lights on the display. Even if SURROUND is pressed while the headphones are plugged in, the mode cannot be changed.
- This unit supports input signals of the Dolby Digital surround bit stream, DTS surround bit stream and linear PCM whose sampling frequency is 32 kHz, 44.1 kHz, 48 kHz and 96kHz.
- When connecting some DVD players to the receiver through the digital in terminals, noise may be heard in the DVD operation: e.g. searching a disc, skipping a chapter.

RECORDING AN AUDIO SOURCE

FUNCTION   TAPE MONITOR
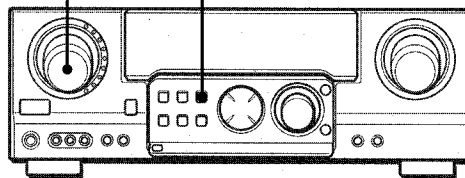
1 Select the program source to be recorded.
Turn FUNCTION.
When recording from the equipment connected to OPTICAL IN terminals, select DIGITAL mode.

2 Set the recorder to recording mode.

3 Start the selected program source.

To monitor recorded sound during recording (when the connected tape deck is a three-head system)
Press TAPE MONITOR. "TAPE ON" appears on the display for four seconds, and then the source name selected in step 1 comes back on. To cancel the tape monitor, press it again so that "TAPE OFF" appears.

NOTE
- TAPE MONITOR is not available when 5.1CH INPUT or SOURCE DIRECT is activated.
- Any sound control system has no effect on recording (see page 10).
- Input sound through the 5.1CH INPUT terminals or the VIDEO 2 COAXIAL IN digital terminal cannot be recorded. To record the sound, connect the equipment to the corresponding ANALOG IN terminals of the receiver.
- Input sound through the OPTICAL IN digital terminals can be recorded by the equipment connected to the OPTICAL OUT digital terminal of the receiver (digital connections). When recording by the analog connection, connect the equipment to the corresponding ANALOG IN terminals of the receiver.
- When recording audio sources by the MD recorder connected to the VIDEO 1/DVD/MD AUDIO OUT terminals, the selected video source (see page 12) should be V2 or V3. Recording cannot be done while the V1 (VIDEO 1) is selected and displayed on the window.
- Input sound from the tape deck connected to the TAPE MONITOR IN terminals cannot be recorded.

Selecting DTS digital mode
There are some audio CDs recorded in DTS surround. You can play DTS audio CDs in the same way as DVDs, but there may be a noise at the beginning part of the disc.
When playing DTS audio CDs, it is recommended to select "DTS" digital mode.
1 Select "ANALOG" mode.
2 Hold down BAND/DIGITAL/ANALOG until "DTS" appears on the display.
To restore auto "DIGITAL" mode, repeat the above so that "DIGITAL" appears on the display.

NOTE
When selecting DTS digital mode, **do not play discs recorded in linear PCM whose sampling frequency is 96 kHz.**
Otherwise there will be a noise.

MANUAL TUNING

TUNER/BAND   MONO TUNER

FUNCTION

∨,∧   ⏮   ⏭
BAND/DIGITAL/ANALOG
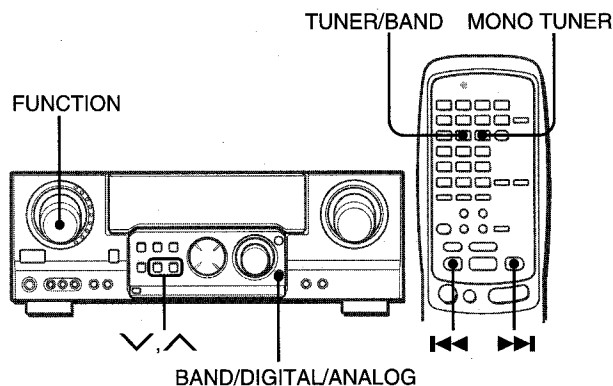
1 Turn FUNCTION to select the TUNER function, and press BAND/DIGITAL/ANALOG repeatedly to select the desired band.

┌──→ FM ──→ AM ──┐
└─────────────────┘
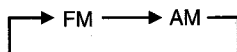
The display changes to frequency indications after indicating band and video source (V1, V2 or V3) for two seconds.

2 Press ∨/∧ to select a station.
Each time the button is pressed, the frequency changes.
When a station is received, "TUNE" is displayed for two seconds. During FM stereo reception, ((◎)) is displayed.

    ▮ ▯   F M   T U N E

NOTE

To tune in to a station with the remote control, preset the stations first (see the next page). You can select the desired band with TUNER/BAND and tune in to the preset stations by pressing ⏮/⏭.

To search for a station quickly (Auto Search)
Keep ∨/∧ pressed until the tuner starts searching for a station. After tuning in to a station, the search stops.
To stop the Auto Search manually, press ∨/∧.
• The Auto Search may not stop at stations with very weak signals.

When an FM stereo broadcast contains noise
Press MONO TUNER on the remote control so that "MONO" appears on the display.
Noise is reduced, although reception is monaural.

    ▮ ▯   M O N O

To restore stereo reception, repeat the above so that "STEREO" appears.

When the reception contains noise interference
Move the unit away from other electrical appliances, especially digital audio devices, or turn off the appliances that generate noise signals.

To change the AM tuning interval
The default setting of the AM tuning interval is 10 kHz/step. If you use this unit in an area where the frequency allocation system is 9 kHz/step, change the tuning interval.
Hold down BAND/DIGITAL/ANALOG and press POWER ⏻STANDBY/ON.
To reset the interval, repeat this procedure.

PRESETTING STATIONS

TUNER/BAND

ENTER

MULTI JOG   I◄◄   ►►I

The unit can store a total of 32 preset stations. When a station is stored, a preset number is assigned to the station. Use the preset number to tune in to a preset station directly.

1 Tune in to a station to be preset.

2 Press ENTER to store the station.
A preset number assigned to the station, beginning from 1 in consecutive order for each band, appears in the display for two seconds.

3 Repeat steps 1 and 2.
No more stations will be stored and "FULL" appears if a total of 32 stations have already been stored for all the bands.

NOTE

When the AM tuning interval is changed, all preset stations are cleared. The preset stations have to be set again.

PRESET NUMBER TUNING

1 Select a band.

2 Turn MULTI JOG to select a preset number.

When operating with the remote control
1 Press TUNER/BAND to select the desired band.
2 Press I◄◄/►►I to select a preset number.

To clear a preset station
Select the preset number of the station to be cleared. Then, press ENTER, and press it again within four seconds.
The preset numbers of all other stations in the band with higher numbers are decreased by one.

En

This unit is equipped with the Dolby Pro Logic decoder, Dolby Digital decoder and DTS decorder.

The unit and the center and surround speakers (standard) assure full-scale home theater sound. When playing back discs or video software that have been recorded in Dolby Pro Logic, Dolby Digital surround or DTS surround, astonishingly realistic sound surrounds the listener to create a new level of audio/visual entertainment.

Independent control of the five channels allows the listener to enjoy the same type of sound reproduction experienced in movie theaters. Voices are reproduced in the front and center sound field, while ambient sounds like cars and crowds are reproduced on all sides of the listener for an incredibly lifelike audio/video experience. Please read the following carefully to "tune" the system's output to match the characteristics of your listening space.

Check the following:
• **Before enjoying Dolby surround sound or DTS surround sound, adjust the speaker sound levels to the proper balance (see page 17).**
• Make sure the speakers are properly connected and positioned (see pages 6 and 7).
• Make sure the TV set and video unit are properly connected (see page 4).
• Make sure the disc and video tape, etc., support Dolby Pro Logic, Dolby Digital surround or DTS surround.

SELECTING DOLBY SURROUND

The optimal Dolby Digital surround and Dolby Pro Logic modes and settings depend on the type and placement of the speakers. Check the current type and placement of your speakers and select the recommended mode accordingly.

Recommended mode

[Dolby Digital Surround]

	Center speaker		
	Larger-size	Smaller-size	No speaker
Surround speaker (Rear speaker)	DOLBY D-WIDE	DOLBY D-NORMAL	PHANTOM
No surround speaker	3 STEREO-WIDE	3 STEREO-NORMAL	2chSTEREO

[Dolby Pro Logic]

	Center speaker		
	Larger-size	Smaller-size	No speaker
Surround speaker (Rear speaker)	PRO LOGIC-WIDE	PRO LOGIC-NORMAL	PHANTOM
No surround speaker	3 STEREO-WIDE	3 STEREO-NORMAL	–

PHANTOM mode: Select this mode when the center speaker is not connected. All center channel signals are redistributed to the left and right channel speakers.
3 STEREO mode: Select this mode when the surround speakers are not connected.

TO SELECT DOLBY SURROUND MODE
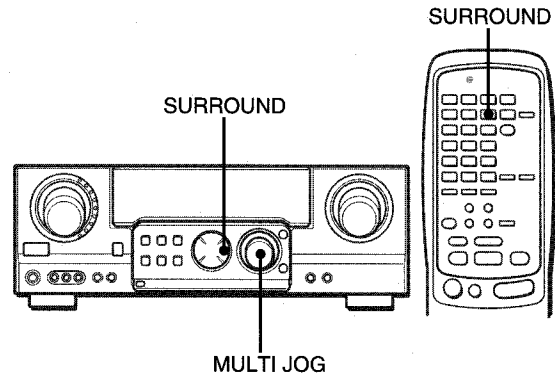
Preparations
• When selecting Dolby Digital surround mode, select the CD (DIGITAL) VIDEO 1 (DIGITAL), VIDEO 2 (DIGITAL) or VIDEO 3 (DIGITAL) function (see page 13) **and play a disc recorded in Dolby Digital surround before selecting the mode.**
• When selecting Dolby Pro Logic mode, select the function except CD (DIGITAL) VIDEO 1 (DIGITAL), VIDEO 2 (DIGITAL) or VIDEO 3 (DIGITAL).

1 Press SURROUND and turn MULTI JOG to select the appropriate mode.
The selected mode name appears on the display.

[Dolby Digital Surround]


```
┌─► DOLBY D ──► PHANTOM ──► 3 STEREO─┐
└────────────────────────────────────┘
```
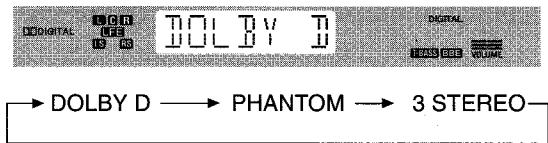
To select 2chSTEREO mode, press SURROUND repeatedly until "2chSTEREO" appears.

NOTE
Select Dolby Digital surround mode while playing a source recorded in Dolby Digital surround.

[Dolby Pro Logic]


```
┌─► PRO LOGIC ──► PHANTOM ──► 3 STEREO ─┐
└────────────────────────────────────────┘
```
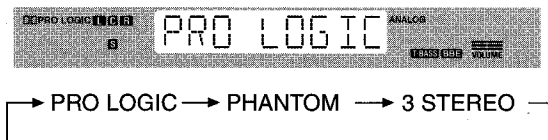
2 Press SURROUND again and hold it down until the center speaker mode to be selected appears. (Except 2chSTEREO and PHANTOM modes.)
"NORMAL" and "WIDE" appear one after the other.

When operating with the remote control
Press SURROUND repeatedly to select the mode, and hold it down to select the center speaker mode.

NOTE

- Depending on the sound source or listening condition, surround effect may not be obtained even when Dolby Digital surround or Dolby Pro Logic is selected.
- The full Dolby Digital surround or Dolby Pro Logic effect cannot be obtained when using software not recorded in Dolby Digital surround or Dolby Pro Logic system. In this case, use the DSP surround system instead (see page 11).
- When headphones are plugged in:
  - The Dolby Pro Logic system is automatically canceled.
  - The Dolby Digital surround mode is automatically changed to "2chSTEREO."
- While headphones are plugged in:
  - The Dolby Pro Logic cannot be turned on.
  - The Dolby Digital surround mode cannot be changed.
- The Dolby Pro Logic system is automatically canceled and cannot be turned on when the input signal is 96 kHz.

ADJUSTING SPEAKER LEVEL BALANCE

MANUAL SELECT
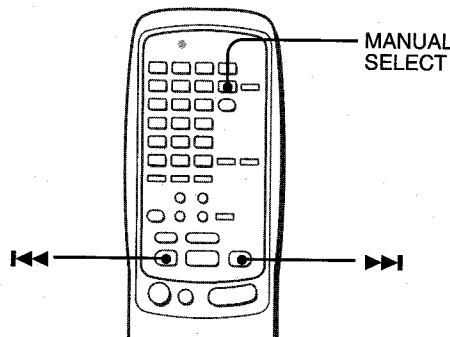
The unit is equipped with a built-in test signal generator called a noise sequencer for easy balance adjustment of all five channels. The sequencer outputs a noise signal that "travels" from channel to channel, enabling the simple adjustment of sound level to achieve the same apparent loudness, at your listening position, from each channel.

Preparation
- Before adjusting the speaker level balance, turn off the DSP surround system.
- Operate the unit while playing the source recorded in Dolby Digital surround or Dolby Pro Logic.

1 Select Dolby Digital surround (except "2chSTEREO") or Dolby Pro Logic mode according to the current type and placement of your speakers.
(See page 16.)

2 Press MANUAL SELECT on the remote control and hold it down for about two seconds until "L" of "L/R 0dB" starts to flash.

A noise signal is sent to each channel in turn as follows:

DOLBY D (PRO LOGIC) NORMAL or WIDE mode

L/R 0dB (Left front speaker)*
↓
C 0dB (Center speaker)
↓
L/R 0dB (Right front speaker)*
↓
RS 0dB (Right surround speaker)
↓
LS 0dB (Left surround speaker)

To be continued

PHANTOM mode

```
┌──► L/R 0dB* ──► L/R 0dB* ──┐
│                            │
└── LS 0dB ◄───── RS 0dB ◄───┘
```

3 STEREO NORMAL or WIDE mode

```
┌──► L/R 0dB* ──► C 0dB ──► L/R 0dB* ┐
│                                    │
└────────────────────────────────────┘
```

* "L" or "R" flashes to indicate one of the front speakers from which the noise signal is output.

3 Adjust the sound level of the center and surround speakers.

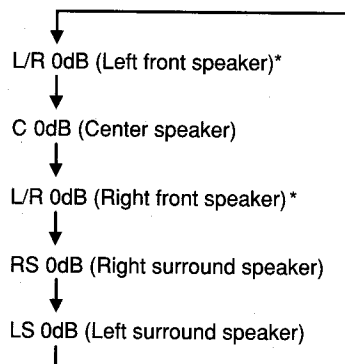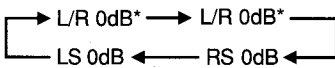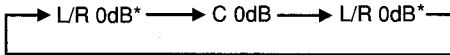While "C," "RS" or "LS" flashes in the display, press I◄◄/►►I on the remote control so that the sound level of the center or surround speakers matches that of the front speakers.

The balance of the front speakers can be adjusted as well while "L/R" is displayed.

NOTE

∨/∧ on the main unit cannot be used.

4 Press MANUAL SELECT again to stop the noise signal.

NOTE

When adjusting the speaker level balance of Dolby Digital surround, that of Dolby Pro Logic is also changed and vice versa.

About the channels

The left and right speakers create the stereo effect.
The center speaker helps precise sound positioning over a broad sound field.
The rear-mounted surround speakers enhance the "depth" of the sound field.

To change the delay time of the surround speakers or center speaker in Dolby Digital surround or Dolby Pro Logic mode

1 While Dolby Digital surround (except "2chSTEREO") or Dolby Pro Logic is activated, press MANUAL SELECT on the remote control repeatedly so that "C 0mS" or "S 5mS" (S 20mS) is displayed.
2 Within 4 seconds, press I◄◄/►►I on the remote control. To operate on the unit, press ∨/∧ repeatedly or turn MULTI JOG.

[Center speaker]

Adjust the delay time so that lines (voice in a movie) are heard clearly and naturally.
The center speaker delay time is initially set to 0 ms (milliseconds). It can be adjusted between 0 and 5 ms in 1 ms step.


```
┌─► 0mS ◄► 1mS ◄► 2mS ◄► 3mS ◄► 4mS ◄► 5mS ◄┐
│                                            │
└────────────────────────────────────────────┘
```
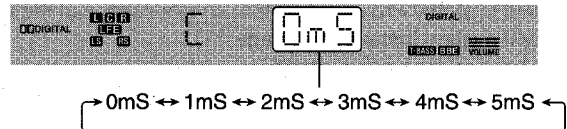
[Surround speakers]

Adjust the delay time to suite your preference.
Dolby Digital Surround
The speakers delay time is initially set to 5 ms. It can be adjusted between 0 and 15 ms in 5 ms steps.
Dolby Pro Logic
The speakers delay time is initially set to 20 ms. It can be adjusted between 15 and 30 ms in 5 ms steps.

NOTE

• When adjusting the delay time of the surround speakers or center speaker for Dolby Digital surround, that of Dolby Pro Logic is changed, and vice versa.
• When the surround speakers delay time of Dolby Digital surround is set to 0 ms (5 ms, 10 ms , or 15 ms), that of Dolby Pro Logic is set to 15 ms (20 ms, 25 ms or 30 ms), and vice versa.

To adjust the speaker level balance while listening to the source

The speaker level balance can be changed after adjusting it with the noise sequencer. In "SUBW ON" mode, the sub woofer level can be adjusted as well. The balance can be changed whenever Dolby Digital surround or Dolby Pro Logic is activated.

1 Play a disc or video software recorded in Dolby Pro Logic or Dolby Digital surround.
2 Press MANUAL SELECT on the remote control repeatedly so that "S-W (sub woofer)," "L/R," "C," "RS" or "LS" appears on the display.
3 Within 4 seconds, press I◄◄/►►I on the remote control. To operate on the unit, press ∨/∧ repeatedly or turn MULTI JOG.

ADJUSTING LFE AND DYNAMIC RANGE

ENTER

∨,∧   MULTI JOG
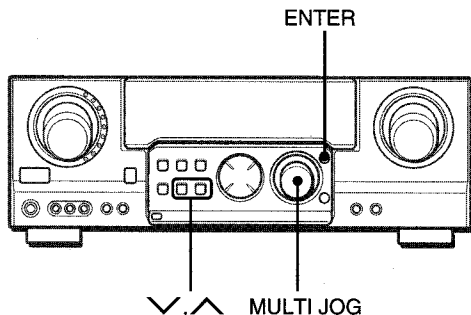
ADJUSTING LOW FREQUENCY SOUND EFFECT(LFE)

The disc recorded in Dolby Digital and DTS surround contains special signals called LFE to enhance low frequency sound effect. The LFE signals are recorded in some particular parts on the disc and output from the connected sub-woofer to reproduce astonishingly powerful low sound.
The sound level of the LFE signals can be adjusted according to your speakers while Dolby Digital or DTS surround is activated.

Preparation
• When connecting a sub-woofer, select "SUBW ON" (see page 7).
• Play a disc recorded in Dolby Digital or DTS surround.

1 Press ∨/∧ and hold it down until "LFE" is displayed.

2 Press ∨/∧ repeatedly or turn MULTI JOG to adjust the LFE level.
The unit is initially set to 0 dB (maximum) and can be adjusted as shown below.

OFF ↔ –20dB ↔ –15dB ↔ –10dB ↔ –5dB ↔ 0dB

• When setting the LFE level to OFF, the "LFE" indicator goes off.
• When selecting "SUBW OFF", the LFE signals are redistributed to other speakers.

ADJUSTING DYNAMIC RANGE

Dynamic range of the Dolby Digital surround sound can be adjusted. The unit is initially set to "STD" (standard) mode.

1 While Dolby Digital surround is activated, press ENTER and hold it down until "MID NIGHT THEATER" runs through on the display.

2 Press ∨/∧ or turn MULTI JOG to select "MAX," "STD" or "MIN".

MIN ↔ STD ↔ MAX

[MIN]
You can enjoy the full dynamic range of sound like in the movie theater.
[STD]
Original position, when playing back in home, that is recommended by the software producers.
[MAX]
Select this mode when playing back at low volume. This is the mode used with the midnight setting.

En

SELECTING DTS SURROUND

The optimal DTS surround modes and settings depend on the type and placement of the speakers.
Check the current type and placement of your speakers and select the recommended mode accordingly.

Recommended mode

	Center speaker	No center speaker
Surround speaker (Rear speaker)	5.1ch	4 ch
No surround speaker	3 STEREO	2chSTEREO

4 ch mode: Select this mode when the center speaker is not connected. All center channel signals are redistributed to the left and right channel speakers.
3 STEREO mode: Select this mode when the surround speakers are not connected.

TO SELECT DTS SURROUND MODE

SURROUND

ENTER
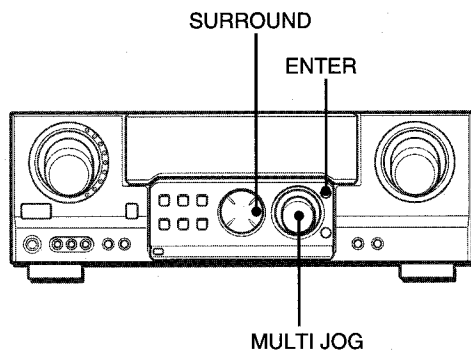
MULTI JOG

Preparation
When selecting DTS surround mode, select the DIGITAL function **and play a disc recorded in DTS surround before selecting the mode.**

1 Press SURROUND and turn MULTI JOG to select the appropriate mode.
The selected mode name appears on the display.

┌→ 5.1ch ↔ 4ch ↔ 3 STEREO ←┐
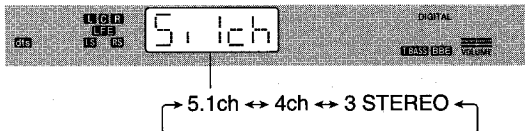
To select 2chSTEREO mode, press SURROUND repeatedly until "2chSTEREO" appears.

Before playing a disc, adjust the speaker level balance in Dolby Digital or Dolby Pro Logic mode as described in page 17.
To adjust the balance while listening to the source, see the right column in page 18 and follow the steps 2 and 3. The delay time of the center and surround speakers cannot be adjusted in DTS surround mode.

NOTE

* Depending on the sound source or listening condition, surround effect may not be obtained even when DTS surround is selected.
* The full DTS surround effect cannot be obtained when using software not recorded in DTS surround. In this case, use the DSP surround system instead (see page 11).
* When headphones are plugged in, DTS surround mode is automatically changed to "2chSTEREO."
* While headphones are plugged in, DTS surround mode cannot be changed.

TO LISTEN TO THE ORIGINAL DTS SOUND

When "dts" appears on the display, all the sound settings can be canceled.

1 While DTS surround is activated, press ENTER so that "BYPASSOFF" appears on the display.

2 Press ENTER again to display "BYPASS ON."

To restore the sound settings
Repeat steps 1 and 2 so that "BYPASSOFF" appears.

OPERATING TV, CABLE TV, VCR AND CD PLAYER

You can control basic functions of a TV, CABLE TV, VCR and CD player with this remote control.

TO ENTER THE ID CODE OF THE EXTERNAL EQUIPMENT
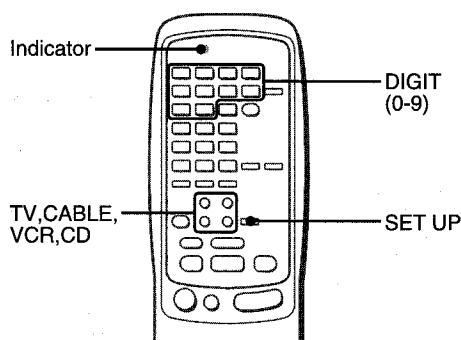
Before attempting to control them, be sure to enter the ID code of the external equipment to the remote control as follows.

1 Confirm the code number of the external equipment.
See the ID code list in the "APPENDIX" at the end of this manual.

2 Press either TV, CABLE, VCR or CD in the MODE SELECT area.

NOTE

When entering the ID code of a DSS satellite, press CABLE.

3 Press and hold SET UP down for about 3 seconds.
Confirm that the indicator blinks twice while pressing SET UP.

4 Press four DIGIT buttons which correspond to the ID code of the external equipment.
For example, if your CD player is an AIWA unit, the required ID code is 0124 or 0157. In this case, press the DIGIT buttons in the order of "0," "1," "2" and "4" (or "0," "1," "5" and "7").

After the fourth DIGIT button is pressed, the indicator blinks twice indicating that the ID code is correct and is stored on the remote control.

To confirm the stored ID code
You can check the stored ID code by counting the indicator blinking.

1 Press either TV, CABLE, VCR or CD.
For example, to check the stored code for CD player, press CD.

2 Press and hold SET UP down for about 3 seconds.

3 Press "9," "9" and "0."

4 Press "1," and count the indicator blinks.
For example, in the case that the stored ID is "0157."
The indicator does not blink.

5 Press "2," and count the indicator blinks.
The indicator blinks once.

6 Press "3," and count the indicator blinks.
The indicator blinks five times.

7 Press "4," and count the indicator blinks.
The indicator blinks seven times.

TO CONTROL TV, CABLE TV, VCR AND CD PLAYER
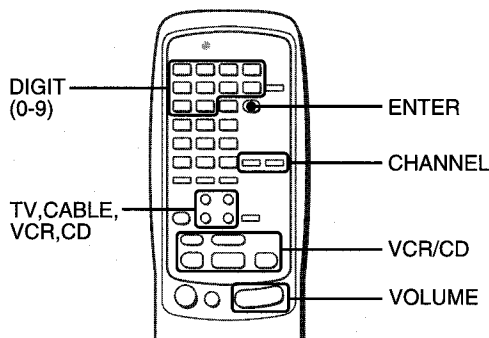
1 Press any button in the MODE SELECT area (TV, CABLE, VCR or CD).
The remote control is ready to operate the selected mode equipment.

2 Press one of the buttons indicated above.

For the use of 0 - 9 and ENTER, see the instruction manual supplied with the unit to be controlled.

Other buttons indicated above have the same function which you will find on the unit to be controlled.

NOTE

• Reenter the ID code of the external equipment after replacing the batteries of the remote control.
• If there are plural ID codes for external equipment in the "APPENDIX," try each number listed until you can control the external equipment.

SETTING THE CLOCK

CLOCK
ENTER
MULTI JOG

∨,∧

BAND/DIGITAL/ANALOG
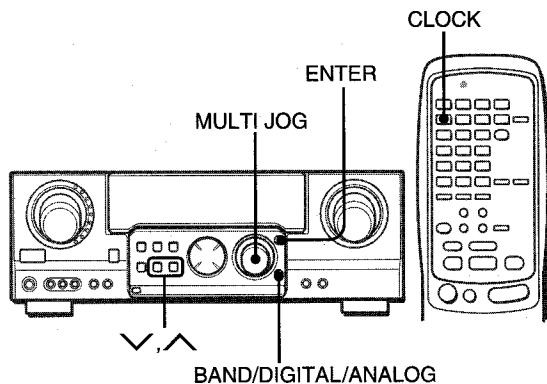
When the AC cord is connected for the first time, the clock on the display flashes.
Set the time as follows while the power is off.

1 Press ENTER.

The display becomes a little brighter.

2 Within 4 seconds, turn MULTI JOG to designate the hour and the minute.

The time advances by turning it to the right, and decreases by turning it to the left.
∨/∧ on the main unit is also available. Press the button repeatedly. To change the time rapidly in 10-minute steps, hold it down.

3 Press ENTER.

The clock starts from 00 seconds.

NOTE

When the clock is set for the first time after purchase
Everything on the display will clear.
This is because the power economizing mode of the unit is activated, and is not a malfunction.
The power economizing mode can be canceled. See page 9 for details.

To correct the current time
Press POWER ⏻STANDBY/ON to turn the unit off. Carry out steps 1 to 3 above.

To display the current time
Press CLOCK on the remote control. The clock is displayed for 4 seconds.

To switch to the 24-hour standard
Display the current time, and press BAND/DIGITAL/ANALOG on the unit within 4 seconds.
Repeat the same procedure to restore the 12-hour standard.
In the 12-hour standard, "AM 12:00" indicates midnight and "PM 12:00" indicates noon.

If the clock display flashes while the power is off
This is caused by a power interruption. The current time needs to be reset.
If power is interrupted for more than approximately 24 hours, all settings stored in memory after purchase need to be reset.

SETTING THE SLEEP TIMER

SLEEP

I◀◀,▶▶I
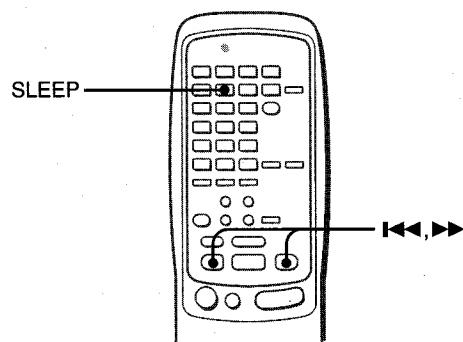
The receiver can be automatically turned off at a specified time.

Press SLEEP on the remote control.

The unit will be turned off after about 60 minutes.

To specify the time until the power is turned off
Within 4 seconds after the above, press I◀◀/▶▶I repeatedly.
You can change the time between 5 and 240 minutes in 5-minute steps.

Specified time

To check the time remaining until the power is turned off
Press SLEEP once. The remaining time is displayed for four seconds.

To cancel the sleep timer
Press SLEEP twice so that "SLEEPoFF" appears on the display.

SPECIFICATIONS

FM tuner section

Tuning range	87.5 MHz to 108 MHz
Usable sensitivity (IHF)	13.2 dBf
Antenna terminals	75 ohms (unbalanced)

AM tuner section

Tuning range	530 kHz to 1710 kHz (10 kHz step), 531 kHz to 1602 kHz (9 kHz step)
Usable sensitivity	350 µV/m
Antenna	Loop antenna

Amplifier section

Power output

Front
120 W + 120 W (40Hz – 20kHz, T.H.D. less than 1%, 8 ohms)
150 W + 150 W (1 kHz, T.H.D. less than 10%, 8ohms)

Rear (Surround)
120 W + 120 W (40Hz – 20kHz, T.H.D. less than 1%, 8 ohms)
150 W + 150 W (1 kHz, T.H.D. less than 10%, 8ohms)

Center
120 W (40Hz – 20kHz, T.H.D. less than 1%, 8 ohms)
150 W (1 kHz, T.H.D. less than 10%, 8ohms)

Total harmonic distortion
0.1 % (65 W, 1 kHz, 8 ohms, Front)

Inputs

AUDIO IN
PHONO: 2.5 mV, adjustable (47 kohms)
VIDEO 1/DVD/MD, VIDEO 2/LD/TV, VIDEO 3, CD: 300 mV, adjustable (47 kohms)
TAPE MONITOR: 350 mV, adjustable (47 kohms)
AUX: 300 mV, adjustable (47 kohms)
5.1CH INPUT
FRONT, CENTER, SURROUND SUB-WOOFER: 300 mV (47 kohoms)
DIGITAL IN
COAXIAL (VIDEO 2):
OPTICAL (VIDEO 1):
OPTICAL (VIDEO 3):
OPTICAL (CD)
accept linear PCM signals and bit stream of Dolby Digital and DTS surround (32 kHz, 44.1 kHz, 48 kHz and 96 kHz)
VIDEO IN: 1 Vp-p (75 ohms)

Outputs

AUDIO OUT (REC OUT): 300 mV (1 kohm)
DIGITAL OUT
OPTICAL OUT
VIDEO OUT (MONITOR): 1 Vp-p (75 ohms)
SUPER WOOFER: 1.5 V
FRONT SPEAKERS IMP: 8Ω/4Ω selectable (front speakers A and B):
with the SPEAKER IMPEDANCE SELECTOR set to 4Ω, accepts speakers of 4 ohms.
with the SPEAKER IMPEDANCE SELECTOR set to 8Ω, accepts speakers of 8 ohms or more.
SURROUND SPEAKERS IMP: 8Ω (surround speakers): accepts speakers of 8 ohms or more
CENTER SPEAKER IMP: 8Ω/4Ω selectable
with the SPEAKER IMPEDANCE SELECTOR set to 4Ω, accepts speaker of 4 ohms.
with the SPEAKER IMPEDANCE SELECTOR set to 8Ω, accepts speaker of 8 ohms or more.
PHONES (stereo jack): accepts headphones of 32 ohms or more

Muting −20 dB

General

Power requirements	120 V AC, 60 Hz
Power consumption	190 W
Power consumption in standby mode	ECO OFF: 43 W ECO ON: 1.3 W
Dimensions (W × H × D)	430 × 155 × 402 mm (17 × 6⅛ × 15⅞ in.)
Weight	11.7 kg (25 lb 13 oz.)

Specifications and external appearance are subject to change without notice.

BBE SYSTEM
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CARE AND MAINTENANCE

Occasional care and maintenance of the unit is needed to optimize the performance of your unit.

To clean the cabinet
Use a soft dry cloth.
If the surfaces are extremely dirty, use a soft cloth lightly moistened with mild detergent solution. Do not use strong solvents, such as alcohol, benzine or thinner as these could damage the finish of the unit.

TROUBLESHOOTING GUIDE

If the unit fails to perform as described in these Operating Instructions, check the following guide.

GENERAL
There is no sound.
• Is the AC cord connected properly?
• Is there an incorrect connection? (→ page 4-6)
• There may be a short circuit in the speaker terminals.
   → Disconnect the AC cord, then correct the speaker connections.
• Was an incorrect function button pressed?
• Was TAPE MONITOR pressed?
• Are FRONT SPEAKERS A and B set correctly? (→ page 9)
Sound is emitted from one speaker only.
• Is BALANCE set appropriately?
• Is the other speaker disconnected?
Sound is heard at a very low volume.
• Has MUTING been pressed?
An erroneous display or a malfunction occurs.
   → Reset the unit as stated below.

TUNER SECTION
There is constant, wave-like static.
• Is the antenna connected properly? (→ page 7)
• Is the FM signal weak?
   → Connect an outdoor antenna.
The reception contains noise interference or the sound is distorted.
• Is the system picking up external noise or multipath distortion?
   → Change the orientation of the antenna.
   → Move the unit away from other electrical appliances.

To reset
If an unusual condition in the display window or malfunction occurs, reset the unit as follows.
1 Press POWER ⏻STANDBY/ON to turn off the power.
2 Press POWER ⏻STANDBY/ON while pressing ENTER.
   Everything stored in memory after purchase is canceled.
If the power cannot be turned off in step 1 because of a malfunction, reset by disconnecting the AC cord and carry out step 2.

PARTS INDEX

Instructions about each part on the unit or remote control are indicated on the pages listed below.

(in alphabetical order)

AIWA DVD	8
AIWA RECEIVER	8
AUDIO	8
BALANCE	10
CLOCK	22
BAND/DIGITAL/ANALOG	12-14, 22
BBE	10
CHANNEL	21
DISC SKIP (CD)	8
SURROUND	16, 17, 20
DSP	11
DVD PAUSE	8
ECO	9
ENTER	8, 9, 12, 15, 19-22, 24
FRONT SPEAKERS A, B	9
FUNCTION	7, 12-14
GEQ	10
MANUAL SELECT (TEST)	7, 11, 17, 18
MENU	8
MONO TUNER	14
MULTI JOG	7, 9-12, 15, 16, 18-20, 22
MUTING (MUTE)	10
PHONES	9
POWER ⏻STANDBY/ON	9, 14, 22, 24
RECEIVER/DIGIT	8, 21
RETURN	8
SET UP	8, 21
SLEEP	22
TAPE MONITOR	12, 13
T-BASS	10
TITLE	8
TUNER/BAND	14, 15
TUNING DOWN ∨(I◄◄)	7, 8, 10-12, 14, 15, 17-19, 22
TUNING UP ∧(►►I)	7, 8, 10-12, 14, 15, 17-19, 22
TV, CABLE, VCR, CD	21
VCR/CD	21
VOLUME	10
5.1CH INPUT	13

ID CODES FOR TV
CÓDIGOS DE INDENTIFICACIÓN PARA TELEVISIÓN
CODES ID DE TELEVISEURS

BRAND NAME MARCA NOM DE MARQUE	ID CODE CÓDIGO DE IDENTIFICATION CODE ID
A-Mark	0003
Abex	0032
Admiral	0093, 0463
Adventura	0046
Aiko	0092
Akai	0030
Alaron	0179
Ambassador	0177
America Action	0180
Ampro	0751
Anam	0180
Anam National	0055
AOC	0003, 0019, 0030, 0052, 0185
Archer	0003
Audiovox	0003, 0092, 0180, 0451, 0623
Baysonic	0180
Belcor	0019
Bell & Howell	0016, 0154
Bradford	0180
Brockwood	0019
Broksonic	0003, 0236, 0463
Candle	0030, 0046, 0056, 0186
Carnivale	0030
Carver	0054
Celebrity	0000
Cineral	0092, 0451
Citizen	0030, 0039, 0046, 0056, 0060, 0092, 0186, 0280
Clairtone	0185
Concerto	0056
Contec	0180, 0185
Craig	0180
Crosley	0054
Crown	0039, 0180
Curtis Mathes	0016, 0030, 0039, 0047, 0051, 0054, 0056, 0060, 0093, 0145, 0154, 0166, 0451, 0466
CXC	0180
Daewoo	0019, 0039, 0092, 0451, 0623, 0624

Daytron	0019
Denon	0145
Dumont	0017, 0019
Dwin	0720, 0774
Electroband	0000, 0185
Emerson	0019, 0038, 0039, 0154, 0177, 0178, 0179, 0180, 0185, 0236, 0280, 0282, 0463, 0623, 0624
Envision	0030
Fisher	0154, 0159
Fujitsu	0179, 0683
Funai	0171, 0179, 0180
Futuretech	0180
GE	0021, 0027, 0047, 0051, 0055, 0093, 0135, 0178, 0282, 0451
Gibralter	0017, 0019, 0030
GoldStar	0001, 0019, 0030, 0032, 0056, 0178
Gradiente	0053, 0056
Grunpy	0179, 0180
Hallmark	0178
Harley Davidson	0179
Harman/ Kardon	0054
Harvard	0180
Hitachi	0016, 0032, 0038, 0056, 0145, 0151
Infinity	0054
Inteq	0017
Janeil	0046
JBL	0054
JCB	0000
JVC	0053
Kaypani	0052
KEC	0180
Kenwood	0019, 0030
Kloss	0024, 0046
KTV	0030, 0039, 0180, 0185, 0280
LG	0056
Logik	0016
Luxman	0056
LXI	0047, 0054, 0154, 0156, 0178
Magnavox	0020, 0024, 0030, 0054, 0096, 0179, 0186, 0187, 0386

Majestic	0016
Marantz	0030, 0054
Matsushita	0250
Megatron	0003, 0145, 0178
MEI	0185
Memorex	0016, 0056, 0150, 0154, 0178, 0250, 0463
MGA	0019, 0030, 0150, 0178
Midland	0017, 0032, 0039, 0047, 0051, 0135
Minutz	0021
Mitsubishi	0019, 0093, 0150, 0178
Motorola	0055, 0093
MTC	0019, 0030, 0056, 0060, 0185
Multitech	0180
NAD	0156, 0166, 0178
NEC	0019, 0030, 0056, 0497
Nikko	0030, 0092, 0178
Noshi	0018
NTC	0092
Onwa	0180
Optimus	0154, 0166, 0250
Optonica	0093, 0165
Orion	0179, 0236, 0463
Panasonic	0051, 0055, 0250
Penney	0003, 0018, 0019, 0021, 0027, 0030, 0032, 0039, 0047, 0051, 0056, 0060, 0135, 0156, 0178
Philco	0019, 0020, 0030, 0054, 0096, 0145, 0463
Philips	0054
Pilot	0019, 0030, 0039
Pioneer	0038, 0166
Portland	0019, 0039, 0092
Prism	0051
Proscan	0047
Proton	0003, 0052, 0178, 0466
Pulsar	0017, 0019
Quasar	0051, 0055, 0165, 0250

Radio Shack	0019, 0030, 0032, 0039, 0047, 0056, 0154, 0165, 0178, 0180
RCA	0018, 0019, 0038, 0047, 0051, 0090, 0093, 0135, 1447
Realistic	0019, 0030, 0032, 0039, 0056, 0154, 0165, 0178, 0180
Rhapsody	0185
Runco	0017, 0030, 0497, 0603
Sampo	0030, 0032, 0039, 0052
Samsung	0019, 0030, 0032, 0056, 0060, 0178
Samsux	0039
Sansei	0451
Sansui	0463
Sanyo	0154, 0159
Scimitsu	0019
Scotch	0178
Scott	0019, 0178, 0179, 0180, 0236
Sears	0047, 0054, 0056, 0154, 0156, 0159, 0171, 0178, 0179
Semivox	0180
Semp	0156
Sharp	0039, 0093, 0165, 0386
Shogun	0019
Signature	0016
Simpson	0186, 0187
Sony	0000, 0080
Soundesign	0178, 0179, 0180, 0186
Spectricon	0003
Squareview	0171
SSS	0019, 0180
Starlite	0180
Supre-Macy	0046
Supreme	0000
Sylvania	0020, 0030, 0054, 0096

Symphonic	0171
Tandy	0093
Tatung	0003, 0055
Technics	0051, 0250
Technol Ace	0179
Techwood	0003, 0051, 0056
Teknika	0016, 0019, 0039, 0054, 0056, 0060, 0092, 0150, 0179, 0180, 0186
Telefunken	0056
TMK	0056, 0177, 0178
Toshiba	0060, 0154, 0156
Tosonic	0185
Totevision	0039
Universal	0027
Vector Research	0030
Victor	0053
Vidikron	0054
Vidtech	0019, 0178
Viking	0046
Wards	0016, 0019, 0020, 0021, 0027, 0030, 0054, 0056, 0080, 0096, 0165, 0178, 0179
White Westinghouse	0463, 0623, 0624
Yamaha	0019, 0030
Zenith	0016, 0017, 0092, 0463, 0624
Zonda	0003

ID CODES FOR CABLE TV
CÓDIGOS DE INDENTIFICACIÓN PARA CABLEVISIÓN
CODES ID DE DECODEURS

BRAND NAME MARCA NOM DE MARQUE	ID CODE CÓDIGO DE IDENTIFICATION CODE ID
ABC	0001, 0003, 0007, 0008, 0011, 0013, 0014, 0017
Allegro	0153, 0315
Americast	0899
Antronix	0022, 0207
Archer	0022, 0153, 0207, 0797
BBT	0267
Belcor	0056
Bell & Howell	0014
Bell South	0899
Cable Star	0056
Cabletenna	0022
Cableview	0022
Century	0153
Citizen	0153, 0315
Colour Voice	0025, 0031
Comtronics	0040
Contec	0019
Digi	0637
Eastern	0002
Emerson	0797
Everquest	0015, 0040
Focus	0400
Garrard	0153
GC Electronics	0056, 0207
Gemini	0015, 0797
General Instrument	0011, 0276, 0476, 0810
GoldStar	0040, 0144
Goodmind	0779
Hamlin	0009, 0020, 0034, 0259
Hitachi	0011
Hytex	0007
Jasco	0015, 0153, 0315
Jerrold	0003, 0011, 0012, 0014, 0015, 0024, 0276, 0476, 0810
Linsay	0440
Magnavox	0027

Memorex	0000
Movie Time	0063, 0156
Novaplex	0618
NSC	0063, 0156
Oak	0007, 0019
Optimus	0021
Panasonic	0000, 0021, 0107
Panther	0637
Paragon	0000
Philips	0025, 0027, 0031, 0153
Pioneer	0023, 0144, 0533, 0877
Popular Mechanics	0400
Pulsar	0000
Quasar	0000
Radio Shack	0015, 0315, 0797, 0883
RCA	0021
Realistic	0207
Recoton	0400
Regal	0020, 0259
Regency	0002
Rembrandt	0011
Runco	0000
Samsung	0040, 0144
Scientific Atlanta	0008, 0017, 0477, 0877
Seam	0510
Signal	0015, 0040
Signature	0011
SL Marx	0040
Sprucer	0021
Starcom	0003, 0015
Stargate	0015, 0040, 0797
Starquest	0015
Sylvania	0001
Tandy	0258
TeleCaption	0221
Teleview	0040
Texscan	0001
TFC	0310
Timeless	0418
Tocom	0012, 0013
Toshiba	0000

Tusa	0015
TV86	0063
Unika	0022, 0153, 0207
United Artists	0007
Universal	0022, 0056, 0153, 0191, 0207
Viewstar	0027, 0063, 0258
Zenith	0000, 0054, 0525, 0899
Zentek	0400

ID CODES FOR VCR
CÓDIGOS DE IDENTIFICACIÓN PARA VIDEOGRABADORAS
CODES ID DE MAGNETOSCOPES

BRAND NAME MARCA NOM DE MARQUE	ID CODE CÓDIGO DE IDENTIFICATION CODE ID
Admiral	0048, 0209
Adventura	0000
Aiko	0278
Aiwa	0000, 0037, 0307, 0406, 0436, 0468, 0557
Akai	0041, 0061, 0106
American Action	0278
American High	0035
Asha	0240
Audiovox	0037
Beaumark	0240
Bell & Howell	0104
Broksonic	0002, 0121, 0184, 0209, 0479
Calix	0037
Canon	0035
Capehart	0020
Carver	0081
CCE	0072, 0278
Cineral	0278
Citizen	0037, 0278
Colt	0072
Craig	0037, 0047, 0072, 0240, 0271
Curtis Mathes	0035, 0041, 0060, 0162
Cybernex	0240
Daewoo	0020, 0045, 0278, 0561
Daytron	0020
Denon	0042
Dynatech	0000
Electrohome	0037
Electrophonic	0037
Emerex	0032
Emerson	0000, 0002, 0036, 0037, 0043, 0061, 0068, 0121, 0184, 0208, 0209, 0212 0278, 0479, 0561
Fisher	0047, 0054, 0066, 0104

Fuji	0033, 0035
Funai	0000
Garrard	0000
GE	0035, 0048, 0060, 0202, 0240
Go Video	0432, 0526
GoldStar	0037, 0038
Gradiente	0000, 0008
Harley Davidson	0000
Harman/Kardon	0038, 0081
Harwood	0068, 0072
Headquarter	0046
HI-Q	0047
Hitachi	0000, 0041, 0042, 0105
Hughes Network Systems	0042
Jensen	0041
JVC	0008, 0041, 0067
KEC	0037, 0278
Kenwood	0038, 0041, 0067
KLH	0072
Kodak	0035, 0037
Lloyd's	0000, 0208
Logik	0072
LXI	0037
Magnasonic	0278
Magnavox	0000, 0035, 0039, 0081, 0110, 0149
Magnin	0240
Marantz	0035, 0081
Marta	0037
Matsushita	0035, 0162, 0454
MEI	0035
Memorex	0000, 0035, 0037, 0039, 0046, 0047, 0048, 0104, 0209, 0240, 0307, 0454, 1162
MGA	0043, 0061, 0240
MGN Technology	0240
Minolta	0042, 0105
Mitsubishi	0043, 0048, 0061, 0067
Motorola	0035, 0048
MTC	0000, 240
Multitech	0000, 0072

NEC	0038, 0041, 0067, 0104
Nikko	0037
Nikon	0034
Noblex	0240
Olympus	0035
Optimus	0037, 0048, 0104, 0162, 0432, 0454, 1162
Optonica	0062
Orion	0002, 0184, 0209, 0479
Panasonic	0035, 0077, 0162, 0225, 0454, 0616, 1162
Penney	0035, 0037, 0038, 0042, 0054, 0240
Pentax	0042, 0105
Philco	0035, 0209, 0479
Philips	0035, 0062, 0081, 0110, 0618
Pilot	0037
Pioneer	0067
Portland	0020
Profitronic	0240
Proscan	0060, 0202
Protec	0072
Pulsar	0039
Quarter	0046
Quartz	0046
Quasar	0035, 0077, 0162, 0454, 1162
Radio Shack	0000
Radix	0037
Randex	0037
RCA	0035, 0042, 0048, 0060, 0077, 0105, 0106, 0149, 0202, 0240
Realistic	0000, 0035, 0037, 0046, 0047, 0048, 0062, 0066, 0104
ReplayTV	0614, 0616
Ricoh	0034
Runco	0039
Samsung	0045, 0240

ID CODES FOR CD PLAYER
CÓDIGOS DE IDENTIFICACÓN PARA REPRODUCTORES DE DISCOS COMPACTOS
CODES ID DE LECTEURS CD

Sanky	0039, 0048
Sansui	0000, 0041, 0067, 0209, 0271, 0479
Sanyo	0046, 0047, 0104, 0240
Scott	0043, 0045, 0121, 0184, 0210, 0212
Sears	0000, 0035, 0037, 0042, 0046, 0047, 0054, 0066, 0104, 0105
Semp	0045
Sharp	0048, 0062
Shintom	0072
Shogun	0240
Singer	0072
Sony	0000, 0032, 0033, 0034, 0035
STS	0042
Sylvania	0000, 0035, 0043, 0081, 0110
Symphonic	0000
Tatung	0041
Teac	0000, 0041
Technics	0035, 0162
Teknika	0000, 0035, 0037
Thomas	0000
Tivo	0618
TMK	0036, 0208, 0240
Toshiba	0043, 0045, 0066, 0210, 0212
Totevision	0037, 0240
Unitech	0240
Vector	0045
Vector Research	0038
Video Concepts	0045, 061
Videosonic	0240
Wards	0000, 0035, 0042, 0047, 0048, 0060, 0062, 0072, 0081, 0149, 0212, 0240
White Westinghouse	0209, 0278
XR-1000	0000, 0035, 0072
Yamaha	0038
Zenith	0000, 0033, 0034, 0039, 0209, 0479

BRAND NAME MARCA NOM DE MARQUE	ID CODE CÓDIGO DE IDENTIFICATION CODE ID
ADC	0018
Adcom	0155, 0234
Aiwa	0012, 0124, 0157, 0213, 0830
Akai	0156
Audio Alchemy	0194
Audio-Techinica	0170
BSR	0194, 0245
Burmester	0420
California Audio Labs	0029
Carrera	0194
Carver	0157, 0179, 0437
DAK	0245
Denon	0003, 0873
DKK	0000
Emerson	0155, 0164, 0305, 0469
Fisher	0088, 0174, 0179, 0342
Garrard	0245, 0280, 0393, 0420
GE	0009
Genexxa	0032, 0164, 0305
Harman/ Kardon	0157, 0173, 0426
Hitachi	0032, 0155
JVC	0072
Kenwood	0028, 0037, 0190, 0626, 0681, 0826
Kodak	0287
Krell	0157
Kyocera	0018
Linn	0157
Luxman	0093
LXI	0305
Magnavox	0157, 0305
Marantz	0029, 0157, 0180
McIntosh	0287
MCS	0029
Mission	0157
MTC	0420
NEC	0234
Nikko	0164 0170, 0174

NSM	0157
Onkyo	0101, 0868
Optimus	0000, 0032, 0037, 0087, 0145, 0179, 0194, 0280, 0305, 0342, 0420, 0426, 0437, 0468, 1063
Panasonic	0029, 0303, 0367, 0752
Parasound	0194, 0420
Philips	0157, 0287, 0626
Pioneer	0032, 0244, 0305, 0468, 1063
Proton	0157
QED	0157
Quasar	0029
RCA	0009, 0053, 0155, 0179, 0305, 0764
Realistic	0155, 0164, 0179, 0180, 0420
Rotel	0157, 0420
SAE	0157
Sansui	0157, 0202, 0305
Sanyo	0087, 0179
Scott	0155, 0164, 0305
Sears	0305
Sharp	0037, 0180, 0861
Sherwood	0180, 0426
Sony	0000, 0185, 0490, 0604, 0605
Soundesign	0145
STS	0018
Tascam	0420
Teac	0174, 0180, 0393, 0420
Technics	0029, 0303
Vector Research	0194
Victor	0072
Wards	0053, 0157
Yamaha	0036, 0170, 0187
Yorx	0461

ID CODES FOR DSS SATELLITE
CÓDIGOS DE IDENTIFICACIÓN PARA RECEPTORES DSS DE SATÉLITES
CODES ID DE SATELLITES DSS

BRAND NAME MARCA NOM DE MARQUE	ID CODE CÓDIGO DE IDENTIFICATION CODE ID
AlphaStar	0772
Echostar	0775, 1005
Expressvu	0775
General Instrument	0361, 0627, 0869
Hitachi	0819
HTS	0775
Hughes Network Systems	0749
Jerrold	0361, 0627
JVC	0775
Magnavox	0722, 0724
Memorex	0724
Next Level	0869
Panasonic	0701
Philips	0722, 0724
Primestar	0361, 0627
Radio Shack	0869
RCA	0143, 0392, 0566, 0855
Sony	0639
Star Choice	0869
Toshiba	0790
Uniden	0722, 0724
Zenith	0856

NOTE

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 circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

CAUTION

Modifications or adjustments to this product, which are not expressly approved by the manufacturer, may void the user's right or authority to operate this product.