A

RX-V2065

AV Receiver

OWNER'S MANUAL

Caution: Read this before operating your unit.

1 To assure the finest performance, please read this manual carefully. Keep it in a safe place for future reference.

2 Install this sound system in a well ventilated, cool, dry, clean place – away from direct sunlight, heat sources, vibration, dust, moisture, and/or cold. Allow ventilation space of at least 30 cm on the top, 20 cm on the left and right, and 20 cm on the back of this unit.

3 Locate this unit away from other electrical appliances, motors, or transformers to avoid humming sounds.

4 Do not expose this unit to sudden temperature changes from cold to hot, and do not locate this unit in an environment with high humidity (i.e. a room with a humidifier) to prevent condensation inside this unit, which may cause an electrical shock, fire, damage to this unit, and/or personal injury.

5 Avoid installing this unit where foreign objects may fall onto this unit and/or this unit may be exposed to liquid dripping or splashing. On the top of this unit, do not place:
- Other components, as they may cause damage and/or discoloration on the surface of this unit.
- Burning objects (i.e. candles), as they may cause fire, damage to this unit, and/or personal injury.
- Containers with liquid in them, as they may fall and liquid may cause electrical shock to the user and/or damage to this unit.

6 Do not cover this unit with a newspaper, tablecloth, curtain, etc. in order not to obstruct heat radiation. If the temperature inside this unit rises, it may cause fire, damage to this unit, and/or personal injury.

7 Do not plug in this unit to a wall outlet until all connections are complete.

8 Do not operate this unit upside-down. It may overheat, possibly causing damage.

9 Do not use force on switches, knobs and/or cords.

10 When disconnecting the power cable from the wall outlet, grasp the plug; do not pull the cable.

11 Do not clean this unit with chemical solvents; this might damage the finish. Use a clean, dry cloth.

12 Only voltage specified on this unit must be used. Using this unit with a higher voltage than specified is dangerous and may cause fire, damage to this unit, and/or personal injury. Yamaha will not be held responsible for any damage resulting from use of this unit with a voltage other than specified.

13 To prevent damage by lightning, keep the power cord and outdoor antennas disconnected from a wall outlet or the unit during a lightning storm.

14 Do not attempt to modify or fix this unit. Contact qualified Yamaha service personnel when any service is needed. The cabinet should never be opened for any reasons.

15 When not planning to use this unit for long periods of time (i.e. vacation), disconnect the AC power plug from the wall outlet.

16 Install this unit near the AC outlet and where the AC power plug can be reached easily.

17 Be sure to read the "Troubleshooting" section on common operating errors before concluding that this unit is faulty.

18 Before moving this unit, press Ⓛ**MAIN ZONE ON/OFF** to set this unit to the standby mode, and disconnect the AC power plug from the wall outlet in the main room.

19 The batteries shall not be exposed to excessive heat such as sunshine, fire or like.

20 Excessive sound pressure from earphones and headphones can cause hearing loss.

21 When replacing the batteries, be sure to use batteries of the same type. Danger of explosion may happen if batteries are incorrectly replaced.

WARNING
TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS UNIT TO RAIN OR MOISTURE.

As long as this unit is connected to the AC wall outlet, it is not disconnected from the AC power source even if you turn off this unit by Ⓛ**MAIN ZONE ON/OFF**. In this state, this unit is designed to consume a very small quantity of power.

■ Notes on remote controls and batteries

- Do not spill water or other liquids on the remote control.
- Do not drop the remote control.
- Do not leave or store the remote control in the following conditions:
  - places of high humidity, such as near a bath
  - places of high temperatures, such as near a heater or stove
  - places of extremely low temperatures
  - dusty places
- Insert the battery according to the polarity markings (+ and -).
- Change all batteries if you notice the following conditions:
  - the operation range of the remote control narrows
  - the transmit indicator does not flash or is dim
- If the batteries run out, immediately remove them from the remote control to prevent an explosion or acid leak.
- If you find leaking batteries, discard the batteries immediately, taking care not to touch the leaked material. If the leaked material comes into contact with your skin or gets into your eyes or mouth, rinse it away immediately and consult a doctor. Clean the battery compartment thoroughly before installing new batteries.
- Do not use old batteries together with new ones. This may shorten the life of the new batteries or cause old batteries to leak.
- Do not use different types of batteries (such as alkaline and manganese batteries) together. Specification of batteries may be different even though they look the same.
- Before inserting new batteries, wipe the compartment clean.
- If the remote control is without batteries for more than 2 minutes, or if exhausted batteries remain in the remote control, the contents of the memory may be cleared. In such a case, install new batteries and set the remote control code.
- Dispose of batteries according to your regional regulations.

Contents

INTRODUCTION

Features

■ Built-in 7-channel power amplifier

- Minimum RMS Output Power (20 Hz to 20 kHz, 0.08% THD, 8 Ω)
- FRONT L/R: 130 W + 130 W
- CENTER: 130 W
- SURROUND L/R: 130 W + 130 W
- SURROUND BACK L/R: 130 W + 130 W

■ Speaker/Preout outputs

- Speaker terminals (7-channel), extra speaker terminals (2-channel for presence or Zone2, 2-channel for Zone3), preout jacks (7.1-channel)

■ Input/Output terminals

Input terminals

- HDMI input x 5 (rear x 4, front V-AUX x 1)
- Audio/Visual input
  [Audio] Digital input (coaxial) x 2, digital input (optical) x 2, analog input x 3 (rear x 2, front V-AUX x 1)
  [Video] Component video x 2, Video x 5 (rear x 4, front V-AUX x 1)
- Audio input (analog) x 2
- Phono input (analog) x 1
- Multi-channel audio input (7.1-channel)
- DOCK terminal to connect a Yamaha iPod universal dock (such as YDS-11, sold separately) or Bluetooth wireless audio receiver (such as YBA-10, sold separately)
- USB port to connect a USB storage device
- NETWORK port to connect a PC or access the Internet Radio via LAN

Output terminals

- Monitor output
  [Audio/Video] HDMI x 2
  [Video] Component video x 1, Video x 1
- Audio/Visual output
  [Audio] Analog x 1
  [Video] Video x 1
- Audio output
  Digital (optical) x 1, Analog x 1
- Zone2/3 output
  Analog x 2

Other terminals

Remote input x 1, Remote output x 1
Trigger output x 2

■ Proprietary Yamaha technology for the creation of sound fields

- CINEMA DSP 3D
- Compressed Music Enhancer mode
- Virtual CINEMA DSP
- SILENT CINEMA

■ Digital audio decoders

- Dolby TrueHD, Dolby Digital Plus decoder
- DTS-HD Master Audio, DTS-HD High Resolution Audio, DTS Express
- Dolby Digital/Dolby Digital EX decoder
- DTS, DTS 96/24 decoder, DTS-ES Matrix 6.1, DTS-ES Discrete 6.1
- Dolby Pro Logic/Dolby Pro Logic II/Dolby Pro Logic IIx decoder
- DSD decoder
- DTS NEO:6 decoder

■ HDMI™ (High-Definition Multimedia Interface)

- HDMI interface for standard, enhanced or high-definition video as well as multi-channel digital audio.
  – Automatic audio and video synchronization (lip sync) information capability
  – Deep Color video signal (30/36 bit) transmission
  – "x.v.Color" video signal transmission capability
  – High refresh rate and high resolution video signals
  – High definition digital audio format signals capability
- Analog to analog and HDMI digital video up-conversion (video ↔ component video → HDMI) capability for monitor out
- Analog video input up-scaling for HDMI digital video output 480i(576i) or 480p(576p) → 720p, 1080i or 1080p
- HDMI control function supported
- Dual HDMI output (possible to select individual or simultaneous output)

■ Automatic speaker setup features

- "YPAO" (Yamaha Parametric Room Acoustic Optimizer) for automatically optimizing speaker outputs suitable for listening environments.

■ Other features

- 192-kHz/24-bit D/A converter
- GUI (graphic user interface) menus to optimize this unit to suit individual audiovisual system
- FM/AM tuning capability
- iPod, USB and PC file browsing
- Album art display capability
- Pure Direct mode for pure hi-fi sound for all sources
- Adaptive dynamic range controlling capability
- SCENE function for changing input sources and sound field programs with one key
- Bi-amplification connection capability
- Multi-zone function (Zone2/3)
- DHCP automatic or manual network configuration

About this manual

- Some operations can be performed by using either the keys on the front panel or the ones on the remote control. In case the key names differ between the front panel and the remote control, the key name on the remote control is given in parentheses.
- This manual is printed prior to production. Design and specifications are subject to change in part as a result of improvements, etc. In case of differences between the manual and product, the product has priority.
- For better viewing, we increase the size of characters used in example screen images in this manual. Therefore the size ratio of characters to other objects (such as icons) may be different from that of the actual display image.
- "Ⓛ**MAIN ZONE ON/OFF**" or "4**HDMI 1**" (example) indicates the name of the parts on the front panel or the remote control. Refer to the attached sheet or "Part names and functions" (page 4) for the information about each position of the parts.
- ☞ indicates the page describing the related information.
- indicates a tip for your operation.

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iPod™

"iPod" is a trademark of Apple Inc., registered in the U.S. and other countries.

Fraunhofer Institut Integrierte Schaltungen

MPEG Layer-3 audio coding technology licensed from Fraunhofer IIS and Thomson.

This receiver supports network connections.

Bluetooth™

Bluetooth is a registered trademark of Bluetooth SIG and is used by Yamaha in accordance with a license agreement.

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

x.v.Color

"x.v.Color" is a trademark of Sony Corporation.

"SILENT CINEMA" is a trademark of Yamaha Corporation.

Windows XP, Windows Vista, Windows Media Audio, Windows Media Connect and Windows Media Player are either registered trademarks or trademarks of Microsoft corporation in the United States and/or other countries.

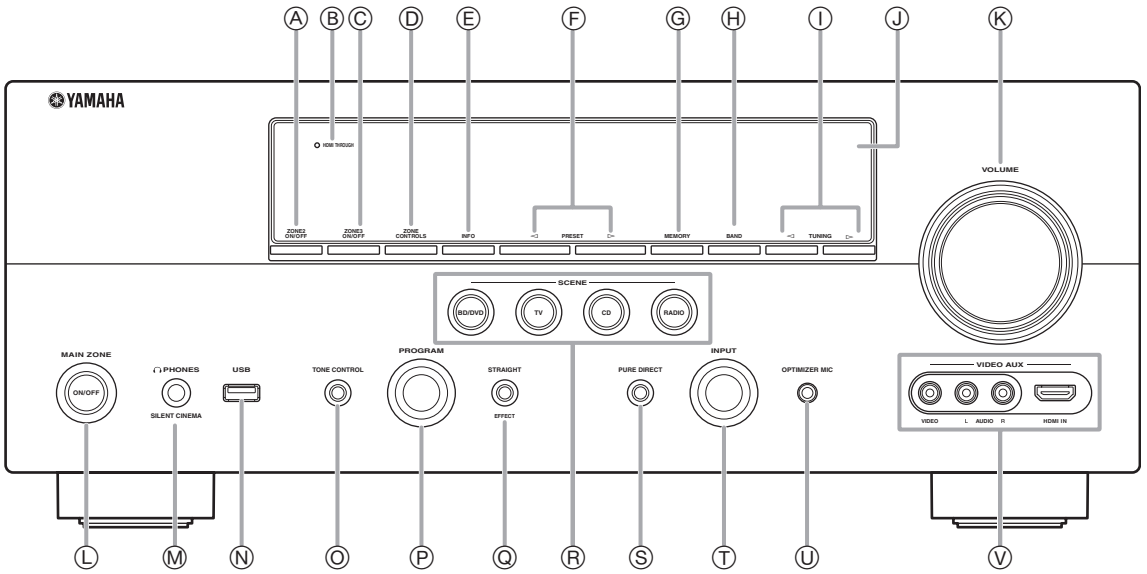
Supplied accessories

Check that you received all of the following parts.

- Remote control (page 6)
- Simplified remote control (page 8)
- Batteries (2) (AAA, R03, UM-4) (page 6)
- Power cable (page 20)
- Optimizer microphone (page 21)
- AM loop antenna (page 20)
- Indoor FM antenna (page 20)
- VIDEO AUX input cover (page 19)

Part names and functions

Front panel



Ⓐ **ZONE2 ON/OFF**
Switches Zone2 on and off (page 58).

Ⓑ **HDMI THROUGH**
Lights up in the following cases while this unit is on standby.
- when the HDMI control function is on
- when the HDMI signal standby-through function is currently working

Ⓒ **ZONE3 ON/OFF**
Switches Zone3 on and off (page 58).

Ⓓ **ZONE CONTROLS**
Selects a zone to control with the main amplifier operations (page 58).

Ⓔ **INFO**
Changes information (input, DSP program, audio decoder, etc) displayed on the front panel display (page 26).

Ⓕ **PRESET ⊲ / ⊳**
Selects an FM/AM preset station (page 32).

Ⓖ **MEMORY**
Registers FM/AM stations as preset stations (page 32).

Ⓗ **BAND**
Change the tuner bands between FM and AM.

Ⓘ **TUNING ⊲ / ⊳**
Changes FM/AM frequencies.

Ⓙ **Front panel display**
Displays information on this unit (page 6).

Ⓚ **VOLUME control**
Controls the volume of this unit (page 24).

Ⓛ **MAIN ZONE ON/OFF**
Turns this unit on and off (page 20).

Ⓜ **PHONES jack**
For plugging headphones (page 26).

Ⓝ **USB port**
For connecting a USB memory device or USB portable audio player (page 19)

Ⓞ **TONE CONTROL**
Adjusts high-frequency/low-frequency output of speakers (page 25).

Ⓟ **PROGRAM selector**
Changes sound field programs (page 27).

Ⓠ **STRAIGHT**
Toggles between the selected sound field program and straight decode mode (page 30).

Ⓡ **SCENE**
Switches between linked sets of input sources and sound field programs (page 24).

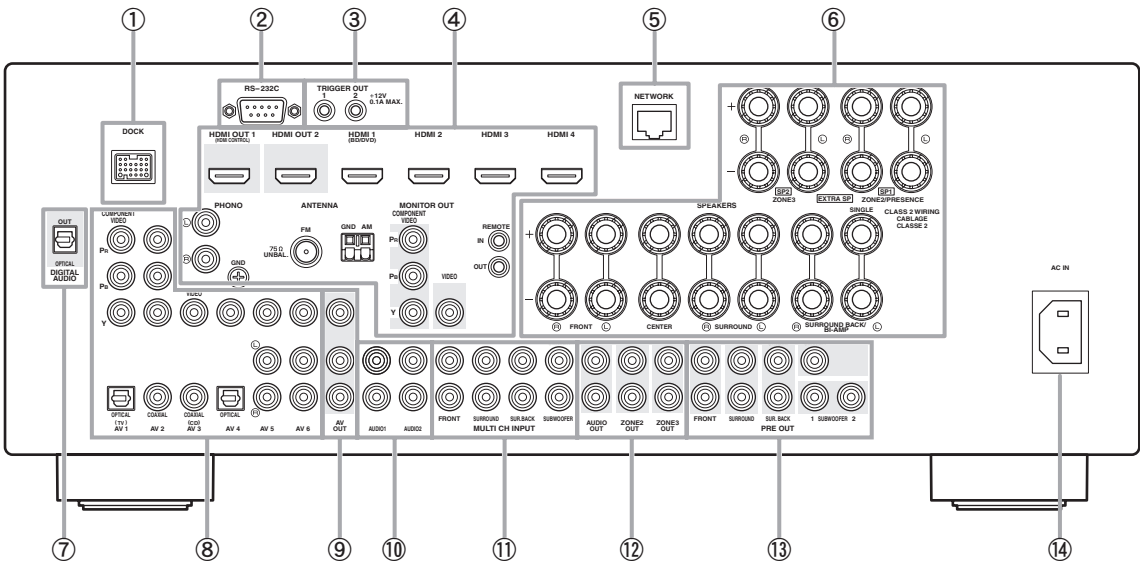
Ⓢ **PURE DIRECT**
Changes mode to Pure Direct mode (page 25). This key lights up when Pure Direct mode is on.

Ⓣ **INPUT selector**
Selects an input source (page 24).

Ⓤ **OPTIMIZER MIC jack**
For connecting the supplied optimizer microphone and adjusting output characteristics of speakers (page 21).

Ⓥ **VIDEO AUX jacks**
For connecting a game console, camcorder or digital camera to either the HDMI IN jack or analog AUDIO/VIDEO jacks (page 19).

Rear panel



① **DOCK terminal**
For connecting an optional Yamaha iPod universal dock (YDS-11) or Bluetooth wireless audio receiver (YBA-10) (page 18).

② **RS-232C terminal**
Control expansion terminal for factory use only. Consult your dealer for details.

③ **TRIGGER OUT 1/2 jacks**
For connecting an external terminal with a trigger input terminal to operate it linked with operation of this unit. Consult your dealer for details.

④ **HDMI OUT 1/2 jacks**
For connecting HDMI-compatible video monitors (page 14).

HDMI 1-4 jacks
For connecting external components for HDMI inputs 1-4 (page 16).

PHONO jacks
For connecting a turntable (page 16).

ANTENNA terminals
For connecting supplied FM and AM antennas (page 20).

MONITOR OUT jacks
Outputs visual signals from this unit to a video monitor, such as a TV (page 14).

REMOTE IN/OUT jacks
For connecting an external component that supports the remote control function (page 18).

⑤ **NETWORK port**
For connecting to the network (page 19).

⑥ **SPEAKERS terminals**
For connecting front, center, surround and surround back speakers (page 11). Connect the presence speakers (page 11) or the speakers for Zone2/3 (page 57) to EXTRA SP terminals.

⑦ **DIGITAL AUDIO jack**
Outputs audio signals from a selected digital audio input source to an external component (page 16).

⑧ **AV 1-6 jacks**
For connecting external components for audio/visual inputs 1-6 (page 16).

⑨ **AV OUT jacks**
Outputs audio/visual signals from a selected analog input source to an external component (page 16).

⑩ **AUDIO 1/2 jacks**
For connecting external components for audio inputs 1-2 (page 16).

⑪ **MULTI CH INPUT jacks**
For connecting a player that supports a multi-channel output (page 18).

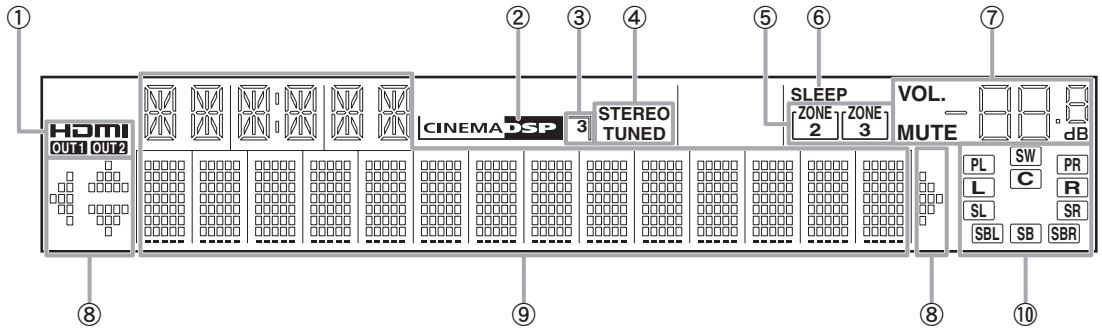
⑫ **AUDIO OUT jacks**
Outputs audio signals from a selected analog input source to an external component (page 16).

ZONE2/3 OUT jacks
Output sound of this unit to an external amplifier set in a different zone (page 56).

⑬ **PRE OUT jacks**
Outputs multi-channel signals from up to 7.1 channels to an external amplifier (page 18).

⑭ **AC IN**
For connecting the supplied power cable (page 20).

Front panel display



① **HDMI indicator**
Lights up during normal communication when HDMI is selected as an input source.

OUT 1/OUT 2 indicators
The respective indicator lights up when HDMI signals are output from the HDMI OUT 1/2 jacks.

② **CINEMA DSP indicator**
Lights up when a sound field program that uses CINEMA DSP is selected.

③ **CINEMA DSP 3D indicator**
Lights up when CINEMA DSP 3D is activated.

④ **Tuner indicator**
Lights up during receiving radio broadcast signals from an FM/AM station (page 31).

⑤ **ZONE2/ZONE3 indicator**
Lights up when Zone2 or Zone3 is turned on.

⑥ **SLEEP indicator**
Lights up when the sleep timer is activated (page 40).

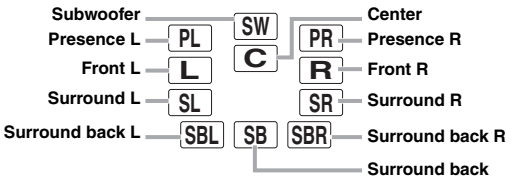
⑦ **MUTE indicator**
Flashes when audio is muted.

VOLUME indicator
Displays volume levels.

⑧ **Cursor indicators**
Light up if corresponding cursors on the remote control are available for operations.

⑨ **Multi information display**
Displays menu items and settings for the current operation.

⑩ **Speaker indicators**
Indicate speaker terminals from which signals are currently output.

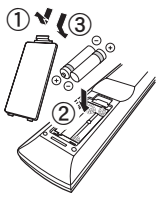


Remote control

Note

• Before installing batteries or using the remote control, make sure that you read "Notes on remote controls and batteries" in the "Caution" section.

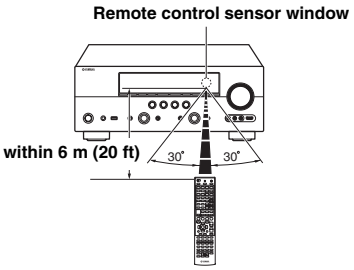
■ Installing batteries

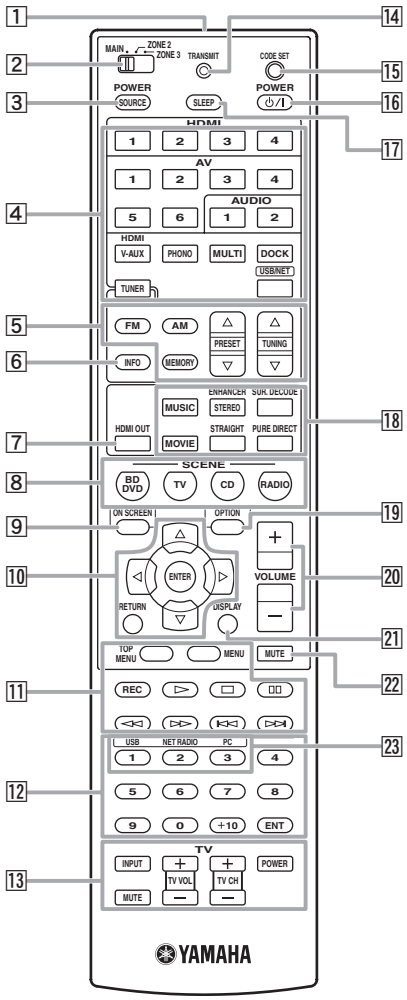


① Take off the battery compartment cover.
② Insert the two supplied batteries (AAA, R03, UM-4) according to the polarity markings (+ and -) on the inside of the battery compartment.
③ Snap the battery compartment cover back into the place.

■ Operation range

The remote control transmits a directional infrared ray. Be sure to aim the remote control directly at the remote control sensor on this unit during operation.





1 **Remote control signal transmitter**
Transmits infrared signals.

2 **Zone selection switch**
Switches amplifiers (main, Zone2 or Zone3) to be operated by the remote control (page 58).

3 **SOURCE POWER**
Switches an external component on and off.

4 **Input selection keys**

HDMI 1-4	Selects HDMI inputs 1 through 4.
AV 1-6	Selects AV inputs 1 through 6.
AUDIO 1/2	Selects AUDIO inputs 1 and 2.
V-AUX	Selects a signal input from the VIDEO AUX jacks.
PHONO	Selects a signal input from the PHONO jacks.
MULTI	Selects a signal input from the MULTI CH INPUT jacks.
DOCK	Selects a Yamaha iPod universal dock/Bluetooth wireless audio receiver connected to the DOCK terminal.
TUNER	Selects the FM/AM tuner.
USB/NET	Selects a USB device or a signal input via network (selected by 23**Sub-input selection keys**).

5 **Tuner keys**

FM/AM	Switches a band between FM and AM.
MEMORY	Presets radio stations.
PRESET △ / ▽	Selects a preset station.
TUNING △ / ▽	Changes FM/AM frequencies.

6 **INFO**
Changes the information shown on the front panel display (page 26).

7 **HDMI OUT**
Switches the HDMI OUT jacks to output HDMI signals (page 40).

8 **SCENE**
Switches between linked sets of input sources and sound field programs (page 24).

9 **ON SCREEN**
Displays the GUI screen (page 25).

10 **Cursors △ / ▽ / ◁ / ▷** Select menu items or change settings.
ENTER Confirms a selected item.
RETURN Returns to the previous screen or ends the menu display.

11 **External component operation keys**
Operate recording, playback etc. of external components (page 59).

12 **Numeric keys**
Enter numbers.

13 **TV control keys**
Enables operations of a TV or a projector (page 59).

14 **TRANSMIT**
Lights up when a signal is output from the remote control.

15 **CODE SET**
Sets remote control codes for external component operations (page 59).

16 **POWER**
Switches this unit on and standby (page 20).

17 **SLEEP**
Switches the sleep timer operations (page 40).

18 **Sound selection keys**
Selects sound field programs (page 27).

19 **OPTION**
Displays the Option menu (page 41).

20 **VOLUME +/–**
Adjust the volume of this unit (page 24).

21 **DISPLAY**
Displays the play information on the video monitor.
When an iPod is connected: Changes the operation mode of the iPod connected to the Yamaha iPod universal dock (page 33).

22 **MUTE**
Turns the mute function on and off (page 25).

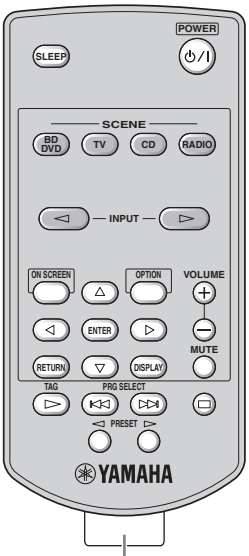
23 **Sub-input selection keys**
Selects USB, NET RADIO or PC when "USB/NET" is selected as the input source.

Simplified remote control

Use the supplied simplified remote control to make basic controls of this unit. Keys on the simplified remote control function as well as the identical keys on the main remote control (page 6).

Note

- Before using the simplified remote control or replacing the battery, make sure that you read "Notes on remote controls and batteries" in the "Caution" section.



Remove the insulation sheet

- To select an input source, press INPUT ◁ / ▷ repeatedly.
- The printings "TAG" and "PRG SELECT" are for U.S.A. model.

■ Setting the controlling zone

Follow the procedure below to select an amplifier (main, Zone2 or Zone3) to be operated by the simplified remote control (page 58).

Zone to select	Procedure
Main	Press and hold ▷ (right of ENTER) and BD/DVD for more than 3 seconds.
Zone2	Press and hold ▷ (right of ENTER) and TV for more than 3 seconds.
Zone3	Press and hold ▷ (right of ENTER) and CD for more than 3 seconds.

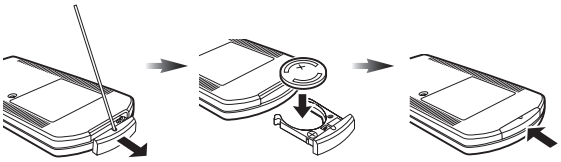
■ Setting the remote control ID

Follow the procedure below to set the remote control ID of the simplified remote control. For details about remote control ID, see page 61.

Zone to select	Procedure
ID1	Press and hold ◁ (left of ENTER) and BD/DVD for more than 3 seconds.
ID2	Press and hold ◁ (left of ENTER) and TV for more than 3 seconds.

■ Replacing the battery of the simplified remote control

Change the battery when the operation range of the simplified remote control decreases.



Use a straight pin to remove the cover.

Replace the battery with a new CR2025 battery.

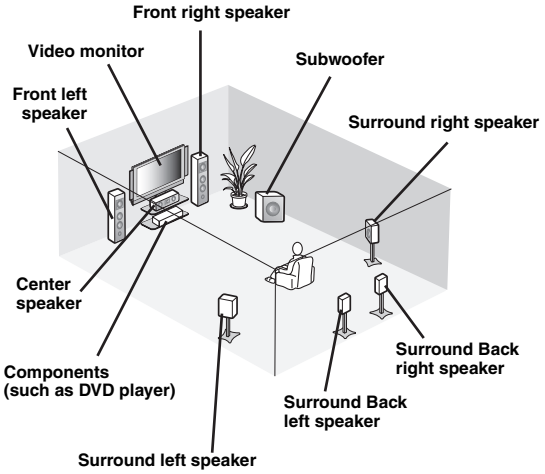
Close the cover.

Quick start guide

When you use this product for the first time, perform setup following the steps below. See the related pages for details on operations and settings.

Step 1: Prepare items for setup

Prepare speakers, DVD player, cables, and other items necessary for setup.
For example, prepare the following items for setting up a 7.1-channel sound system.



Requirements		qty.
Speakers	**Front speaker**	2
	Center speaker	1
	Surround speaker	2
	Surround back speaker	2
Active subwoofer		1
Speaker cable		7
Subwoofer cable		1
Reproduction component such as DVD player		1
Video monitor such as TV		1
Video cable or HDMI cable		2
Audio cable		2

- The priority of the requirement of other speakers is as follows:
  1 Two surround speakers
  2 One center speaker
  3 One (or two) surround back speaker(s)
- Video and audio cables are unnecessary if you use HDMI cables.

Step 2: Set up your speakers

Place your speakers in the room and connect them to this unit.

- Placing speakers ☞P. 10
- Connecting speakers ☞P. 11

- This unit has a YPAO (Yamaha Parametric Room Acoustic Optimizer) that automatically optimizes this unit based on room acoustic characteristics (audio characteristics of the speakers, speaker positions, and room acoustics, etc.).
  You can enjoy good balanced sound without special knowledge by using the YPAO technology (☞P. 21).

Step 3: Connect your components

Connect your TV, DVD player, or other components.

- Connecting a TV monitor or projector ☞P. 14
- Connecting other components ☞P. 16
- Connecting a multi-format player or an external decoder ☞P. 18
- Connecting an external amplifier ☞P. 18
- Connecting a USB storage device ☞P. 19
- Connecting a Yamaha iPod universal dock or Bluetooth wireless audio receiver ☞P. 18
- Connecting to the network ☞P. 19
- Connecting the FM and AM antennas ☞P. 20

Step 4: Turn on the power

Connect the power cable and turn on this unit.

- Connecting the power cable ☞P. 20
- Turning this unit on and off ☞P. 20

Step 5: Select the input source and start playback

Select the component connected in step 3 as an input source and start playback.

- Basic procedure ☞P. 24
- Selecting sound field programs ☞P. 27

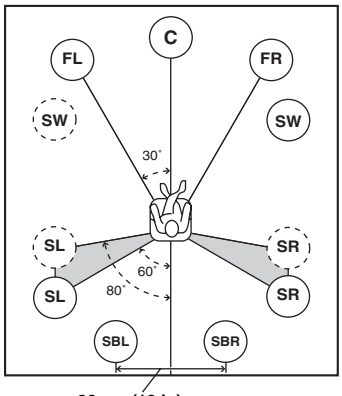
- This unit supports the SCENE function (page 24) that changes the input source and sound field program at one time. Four scenes are preset for different purposes for Blu-ray disc, DVD and CD, and you can select from a scene from those just by pressing a remote control key.

Connections

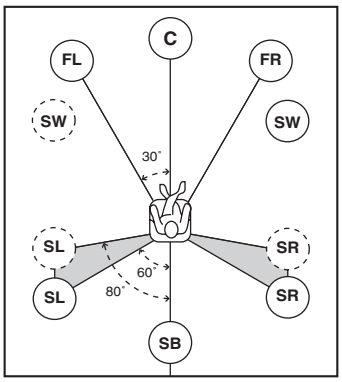
Placing speakers

This unit supports up to 7.1-channel surround. We recommend the following speaker layout in order to obtain the optimum surround effect.

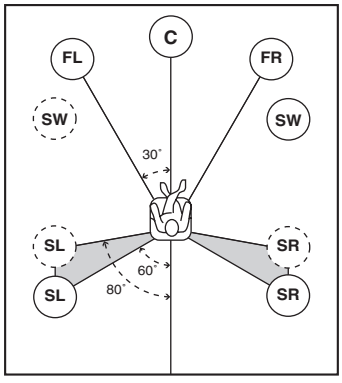
7.1-channel speaker layout



6.1-channel speaker layout



5.1-channel speaker layout



Speaker channels

■ Front left and right speakers (FL and FR)

The front speakers are used for the front channel sounds (stereo sound) and effect sounds. Place these speakers at an equal distance from the ideal listening position. Adjust the height of the TV or screen so that about 1/4 of the screen from the bottom is aligned with the tweeters of the front speakers.

■ Center speaker (C)

The center speaker is for the center channel sounds (dialog, vocals, etc.). Place it halfway between the left and right speakers. When using a TV, place the speaker just above or just under the center of the TV with the front surfaces of the TV and the speaker aligned. When using a screen, place it just under the center of the screen.

■ Surround left and right speakers (SL and SR)

The surround speakers are used for effect and surround sounds. Place them at the rear left and rear right facing the listening position. To obtain a natural sound flow in the 5.1-channel speaker layout, place them slightly further back than in the 7.1-channel speaker layout.

■ Surround back left and right speakers (SBL and SBR) / Surround back speaker (SB)

The surround back left and right speakers are used for rear effect sounds. Place them at the rear of the room facing the listening position at least 30 cm (1 ft) away from each other, ideally at the same distance as that between the front left and right speakers.

In the 6.1-channel speaker layout, surround back left and right channel sound signals are mixed down and output from the single surround back speaker.

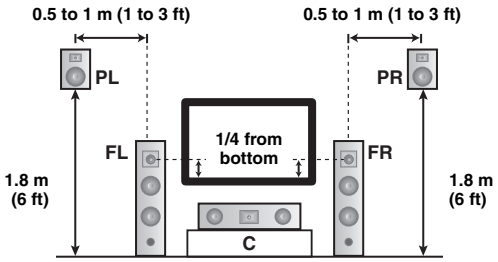
In the 5.1-channel speaker layout, surround back left and right channel sound signals are output from the surround left and right speakers.

■ Subwoofer (SW)

The subwoofer speaker is used for bass sounds and low-frequency effect (LFE) sounds included in Dolby Digital and DTS signals. Use a subwoofer with a built-in amplifier, such as the Yamaha Active Servo Processing Subwoofer System. Place it exterior to the front left and right speakers facing slightly inward to reduce reflections from a wall.

■ Presence left and right speakers (PL and PR)

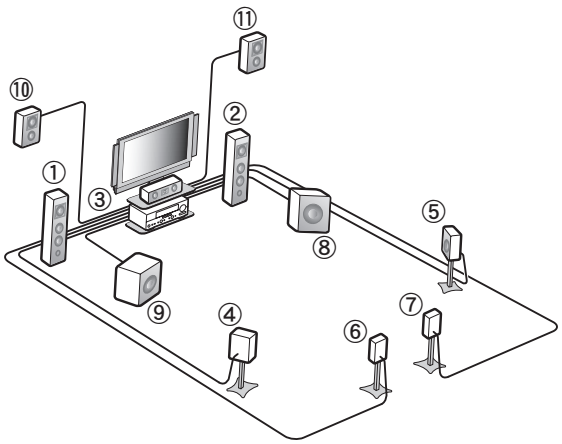
The presence speakers supplement the sound from the front speakers with extra ambient effects produced by the sound field programs (page 27). We recommend that you use the presence speakers especially for the CINEMA DSP sound field programs. To use the presence speakers, connect the speakers to SP1 terminals and then set "Extra Speaker Assignment" to "Presence" (page 47).

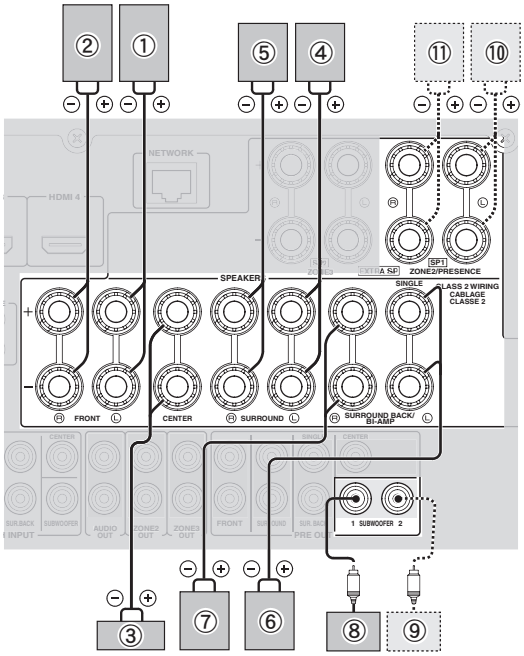


Connecting speakers

Connect your speakers to the respective terminals according to your speaker layout. The following illustration shows how to connect speakers for 7.1-channel speaker layout.

- You can connect Zone2/3 speakers to the EXTRA SP (SP1/SP2) terminals (page 57).
- You can connect up to two subwoofers. When two subwoofers are connected, the same sound is output from them.





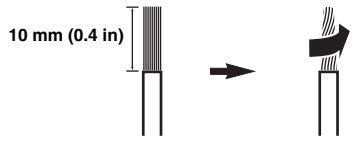
Speakers	Jacks on this unit	7.1-channel	6.1-channel	5.1-channel
① Front left	**FRONT (L)**	✔	✔	✔
② Front right	**FRONT (R)**	✔	✔	✔
③ Center	**CENTER**	✔	✔	✔
④ Surround left	**SURROUND (L)**	✔	✔	✔
⑤ Surround right	**SURROUND (R)**	✔	✔	✔
⑥ Surround back left (Surround back for 6.1-channel)	**SURROUND BACK (L) (SINGLE)**	✔	✔	
⑦ Surround back right	**SURROUND BACK (R)**	✔		
⑧ Subwoofer 1	**SUBWOOFER 1**	✔	✔	✔
⑨ Subwoofer 2	**SUBWOOFER 2**	Option	Option	Option
⑩ Presence left	**SP1 (L)**	Option	Option	Option
⑪ Presence right	**SP1 (R)**	Option	Option	Option

Caution

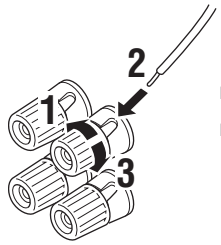
- A speaker cable is a pair of insulated cables running side by side in general. One of the cables is colored differently or striped to indicate a polarity. Connect one end of the colored/striped cable to the "+" (red) terminal of this unit and the other end to that of your speaker, and connect one end of the other cable to the "–" (black) terminal of this unit and the other end to that of your speaker.
- Before connecting the speakers, be sure to disconnect the power cable.
- Do not let the bare speaker wires touch each other or any metal part of this unit. This could damage this unit and/or speakers. If the circuit shorts out, "CHECK SP WIRES!" appears on the front panel display when this unit is turned on.
- If images on the monitor (CRT) are distorted, place the speakers away from the video monitor.
- Use speakers with an impedance of 6-ohm or larger. Set speaker impedance in the advanced setup menu before connecting the speakers (page 60). You can also use 4-ohm speakers as the front speakers when you set "SP IMP." to "6ΩMIN".

■ Connecting speaker cables

1 Remove approximately 10 mm (0.4 in) of insulation from the end of each speaker cable and then twist bare wires of the cable together so that they will not cause a short circuits.



2 Loosen the knob, insert the twisted bare wires into the hole and then tighten the knob.

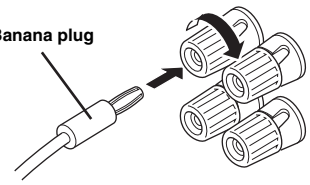


Red: positive (+)

Black: negative (–)

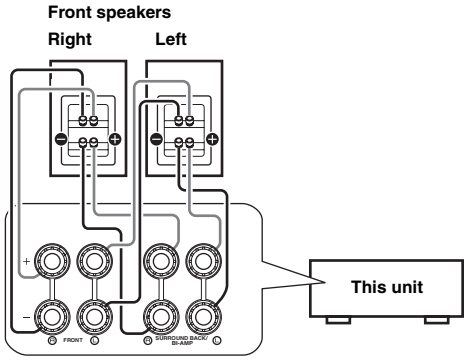
Connecting the banana plug (Except Korea, U.K., Europe, Russia and Asia models)

Tighten the knob and then insert the banana plug into the end of the terminal.



■ Using bi-amplification connections

If you do not connect surround back speakers, you can use the SURROUND BACK/BI-AMP jacks to make bi-amplification connections to one speaker system which supports bi-amplification connection as shown below. To activate the connections, set "BI-AMP" to "ON" in the advanced setup menu (page 60).



Caution

Before making bi-amplification connections, remove any brackets or cables that connect a woofer with a tweeter. Refer to the instruction manuals of speakers for details.

When not making bi-amplification connections, make sure that the brackets or cables are connected before connecting the speaker cables.

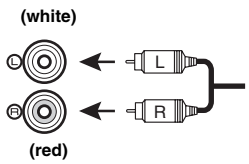
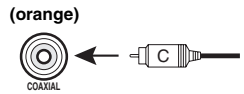
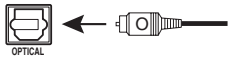
Note

- You cannot use surround back speakers or extra speakers (presence and Zone2 speakers) when bi-amplification connections are made.

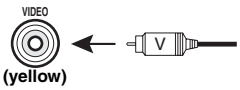
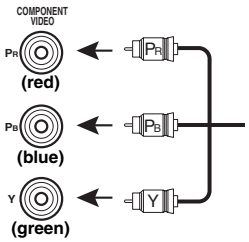
Information on jacks and cable plugs

This unit has the following input and output jacks. Use jacks and cables appropriate for components that you are connecting.

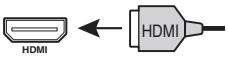
■ Audio jacks

Jack and cables	Description
Analog audio jacks 	To transmit conventional analog stereo audio signals. Use stereo pin cables.
COAXIAL jacks 	To transmit coaxial digital audio signals. Use pin cables.
OPTICAL jacks 	To transmit optical digital audio signals. Use optical fiber cables.

■ Video jacks

Jack and cables	Description
VIDEO jacks 	To transmit conventional composite video signals. Use pin cables.
COMPONENT VIDEO jacks 	To transmit component video signals that include luminance (Y), chrominance blue (PB) and chrominance red (PR) components. Use component video cables.

■ Video/audio jacks

Jack and cables	Description
HDMI jacks 	To transmit digital video and digital audio signals. Use HDMI cables.

- We recommend that you use a commercially available 19-pin HDMI cable no longer than 5 meters (16 feet) with the HDMI logo printed on it.
- Use a conversion cable (HDMI jack ↔ DVI-D jack) to connect this unit to other DVI components.
- You can check the potential problem about the HDMI connection (page 42).

PREPARATION

English

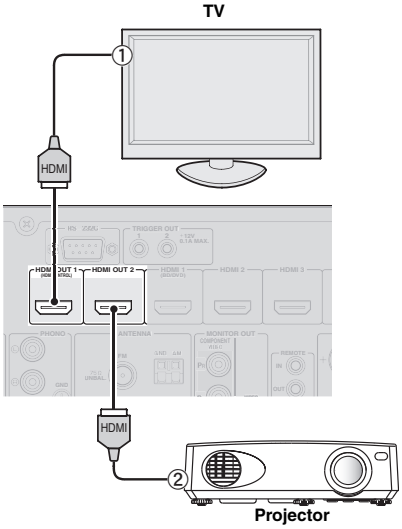
Connecting a TV monitor or projector

According to the types of video input jacks available on your video monitor (such as a TV or projector), choose one of the connection methods as shown below. When you connect video players such as a DVD player to this unit with an HDMI connection, connect your video monitor to this unit with an HDMI connection.

Note

- Make sure that this unit and other components are unplugged from the AC wall outlets.

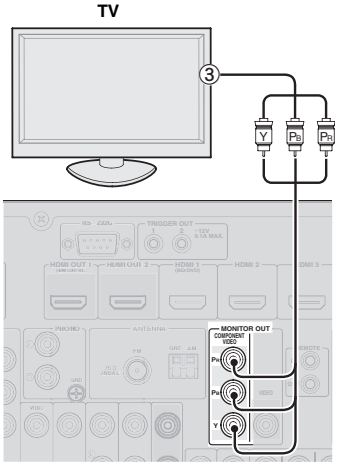
■ If your video monitor has an HDMI input jack



Jacks on components	Jacks on this unit
① HDMI input	HDMI OUT 1
② HDMI input	HDMI OUT 2

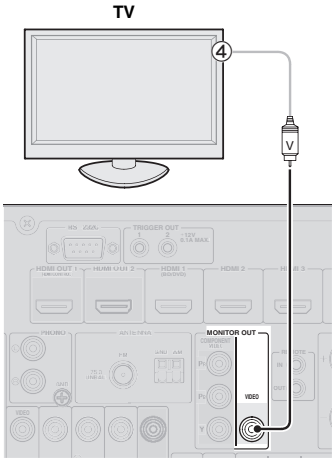
- This unit is equipped with two HDMI OUT jacks. You can select the active HDMI OUT jack(s) by pressing 7 **HDMI OUT** (page 40).
- This unit supports the HDMI control function (page 40). If your TV supports the HDMI control function, connect the TV to the HDMI OUT 1 jack to control this unit with the remote control of your TV.

■ If your video monitor does not have HDMI input jacks but component video input jacks



Jacks on components	Jacks on this unit
③ Component video output	MONITOR OUT (COMPONENT VIDEO)

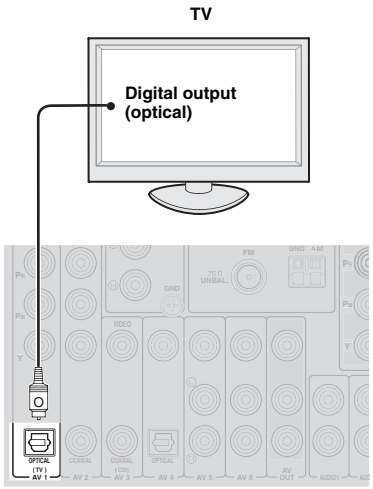
■ If your video monitor has neither HDMI nor component video input jacks



Jacks on components	Jacks on this unit
④ Video input (composite)	MONITOR OUT (VIDEO)

Outputting TV sounds from this unit

To output sound of a TV from this unit, make connection between one of the AV 1-6 jacks of this unit and an audio output jack of the TV.
If the TV supports an optical digital output, we recommend that you use the AV 1 jack. Connecting to the AV 1 jack allows you to switch an input source to the AV 1 jack with a just a single key operation using the SCENE function (page 24).

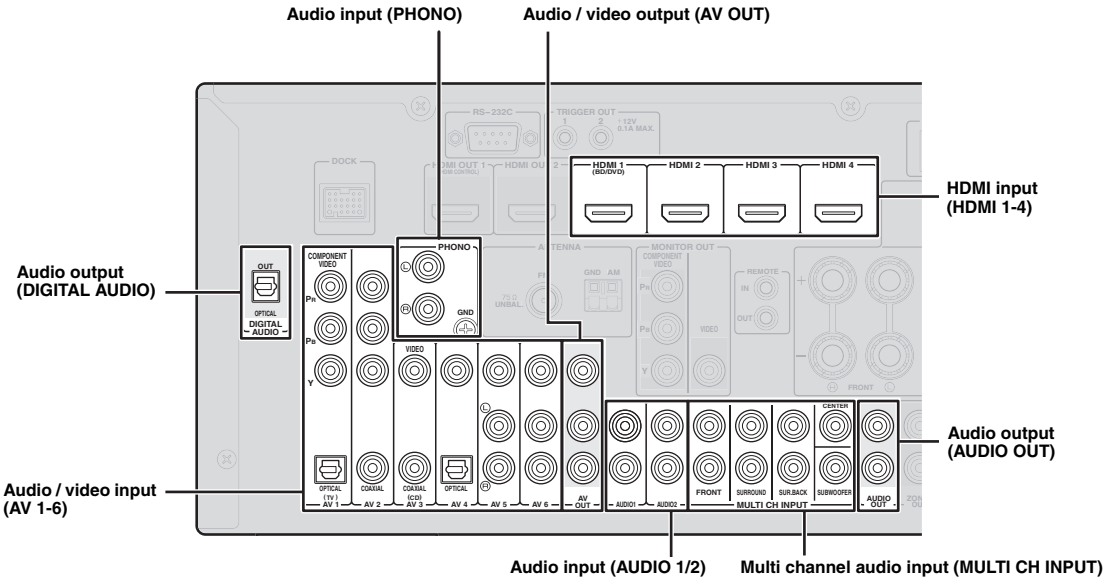


Connecting other components

This unit has input and output terminals for respective input and output sources. You can reproduce sound and movies from input sources selected with the front panel display or remote control.

Note

- Make sure that this unit and other components are unplugged from the AC wall outlets.



■ Audio and video player / Set-top box

External component	Signal	Output jacks on components	Input jacks on this unit	
External component with HDMI output	Audio/Video	HDMI output	HDMI 1 (BD/DVD)	
			HDMI 2	
			HDMI 3	
			HDMI 4	
External component with component video output	Audio	Optical digital output	AV 1 (TV)	OPTICAL
	Video	Component video output		COMPONENT VIDEO
	Audio	Coaxial digital output	AV 2	COAXIAL
	Video	Component video output		COMPONENT VIDEO
External component with composite video output	Audio	Coaxial digital output	AV 3 (CD)	COAXIAL
	Video	Composite output		VIDEO
	Audio	Optical digital output	AV 4	OPTICAL
	Video	Composite output		VIDEO
	Audio	Analog audio output	AV 5	Analog audio
	Video	Composite output		VIDEO
	Audio	Analog audio output	AV 6	Analog audio
	Video	Composite output		VIDEO

- Input jacks in parentheses indicate the jacks to which the SCENE function (page 24) is assigned by the initial factory settings. To use the SCENE function with the initial factory settings, connect external components that support the SCENE function to these jacks.
- You can change the name of the input source displayed on the front panel display as necessary (page 51).
- See page 56 on how to use the ZONE2/3 OUT jacks.
- When you connect an external component with analog audio and component video (or composite) output jacks, connect the analog audio output to the AUDIO 1 or AUDIO 2 jacks of this unit while making a video connection (component video or composite). Then select the video to be output when "AUDIO 1" or "AUDIO 2" is selected as the input source (page 43).

■ Audio player

External component	Output jacks on components	Input jacks on this unit	
External component with optical digital output	Optical digital output	AV 1 (TV)	OPTICAL
		AV 4	OPTICAL
External component with coaxial digital output	Coaxial digital output	AV 2	COAXIAL
		AV 3 (CD)	COAXIAL
External component with analog audio output	Analog audio output	AV 5	Analog audio
		AV 6	Analog audio
		AUDIO 1	Analog audio
		AUDIO 2	Analog audio
Turntable	Analog audio output	PHONO	Analog audio

- If your CD player has a coaxial digital output jack, connect it to the AV3 jack of this unit. In this case, you can use the SCENE function (page 24) with the initial factory settings.
- When connecting a turntable with a low-output MC cartridge to the PHONO jacks, use an in-line boosting transformer or MC-head amplifier.
- Connect your turntable to the GND terminal of this unit to reduce noise in the signal.

About audio/video output jacks

When using the AV OUT jacks: connect these jacks to composite video and analog audio input jacks of an external component.

When using the AUDIO OUT jacks: connect these jacks to analog audio input jacks of an external component.

When using the DIGITAL AUDIO (OPTICAL OUT) jack: connect this jack to optical digital input jack of an external component.

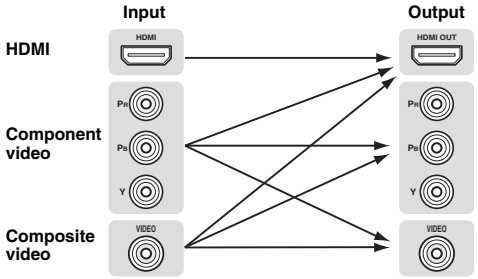
■ Internal signal flow

Video signal flow

This unit automatically converts input video signals and outputs the signals to the HDMI OUT jacks and MONITOR OUT (COMPONENT VIDEO and VIDEO) jacks (video conversion).

Note

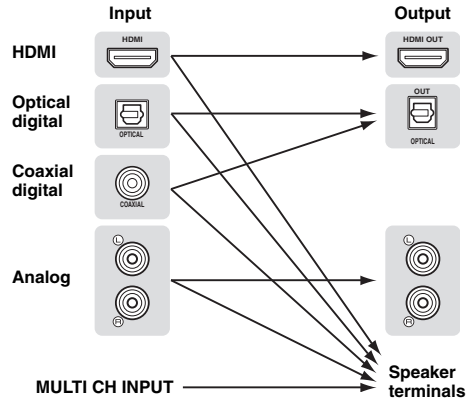
- The AV OUT (composite video) jack only outputs video signals input to the composite video input jacks.



Audio signal flow

Notes

- Audio signals input to the HDMI input jacks are output from either the speaker terminals or HDMI OUT 1/2 jacks depending on the "Audio Output" setting (page 49).
- The DIGITAL AUDIO (OPTICAL OUT) jack outputs digital audio signals only when signals are input to the optical or coaxial optical input jacks and corresponding input source is selected.

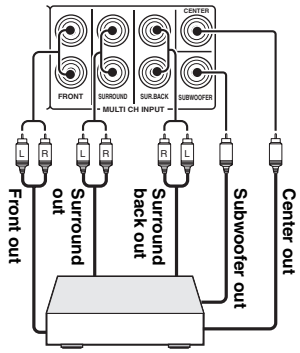


■ Connecting a multi-format player or an external decoder

This unit is equipped with 8 additional input jacks (Front L/R, Center, Surround L/R, Surround Back L/R and Subwoofer) for analog multi-channel input from a multi-format player, external decoder, etc.

Notes

- When you select "MULTI CH" as the input source, the digital sound field processor is automatically disabled.
- Since this unit does not redirect signals input at the MULTI CH INPUT jacks to accommodate for missing speakers, connect at least a 5.1-channel speaker system when using this feature.
- You can specify a video signal to be output during a multi-channel audio reproduction (page 42). If your DVD player has analog multi-channel output jacks, connect them to the MULTI CH INPUT jacks while making a video connection (component video or composite).



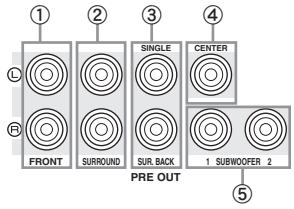
Multi-format player or external decoder (7.1-channel output)

■ Connecting an external amplifier

If you want to use another amplifier, connect an external amplifier to the PRE OUT jacks. Each PRE OUT jack outputs the same channel signals as the corresponding speaker terminals.

Note

- When you make connections to the PRE OUT jacks, do not make any connections to the speaker terminals.



① FRONT PRE OUT jacks
Front channel output jacks.

② SURROUND PRE OUT jacks
Surround channel output jacks.

③ SUR.BACK PRE OUT jacks
Surround back output jacks. When you only connect one external amplifier for the surround back channel, connect it to the left SUR.BACK (SINGLE) jack.

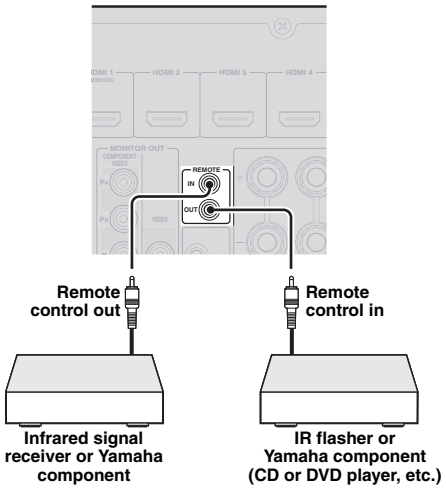
- To output surround back channel signals at these jacks, set "Surround Speaker" to any parameter except "None" (page 47).

④ CENTER PRE OUT jack
Center channel output jack.

⑤ SUBWOOFER PRE OUT 1/2 jack
Connect a subwoofer with a built-in amplifier.

■ Transmitting/receiving remote control signals

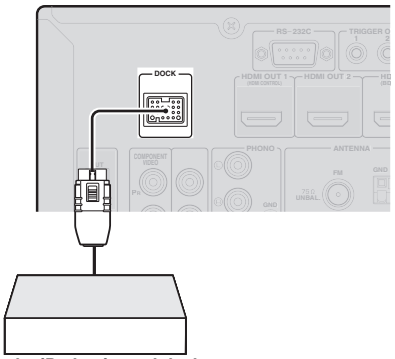
When the components have the capability of the transmission of the remote control signals, connect the REMOTE IN and REMOTE OUT jacks to the remote control input and output jack with the monaural analog mini cable as follows.



- If connecting a Yamaha component that supports the SCENE control signal reception to the REMOTE OUT jack of this unit, you can start playback on the Yamaha component by using the SCENE function (page 24).
- If connecting a component other than Yamaha products to the REMOTE OUT jack of this unit, set "SCENE IR" to "OFF" in the advanced setup menu (page 60).

Connecting a Yamaha iPod universal dock or Bluetooth™ wireless audio receiver

This unit has the DOCK terminal, to which you can connect a Yamaha iPod universal dock (YDS-11, sold separately) or a Bluetooth wireless audio receiver (YBA-10, sold separately). You can play an iPod or a Bluetooth component with this unit by connecting it to the DOCK terminal.



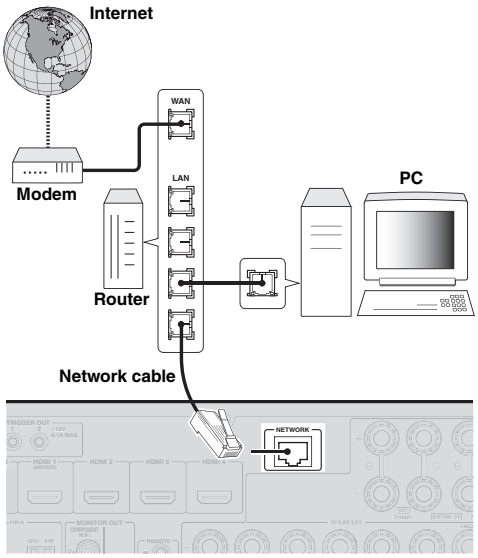
Yamaha iPod universal dock or Bluetooth wireless audio receiver

Connecting to the network

To connect this unit to your network, plug one end of a network cable (CAT-5 or higher straight cable) into the NETWORK port of this unit, and plug the other end into one of the LAN ports on your router that supports the DHCP (Dynamic Host Configuration Protocol) server function. To enjoy Internet Radio or music files saved on your PC, each device must be connected properly in the network.

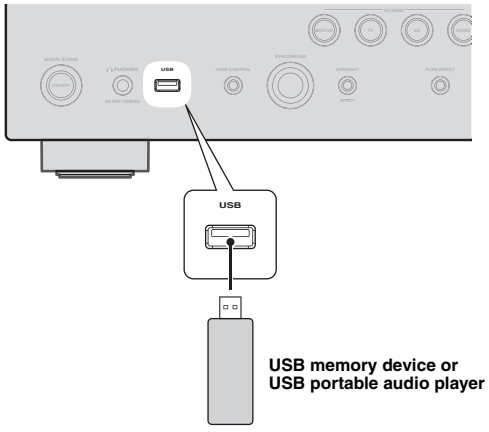
Note

- Use an STP (shielded twisted pair) cable (commercially available) to connect a network hub or router and this unit.
- If the DHCP server function on your router is disabled, you need to configure the network settings manually (page 51).



Connecting a USB storage device

Connect a USB memory device or USB portable audio player to the USB port on the front panel of this unit. For information about USB storage devices supported by this unit, see page 36.

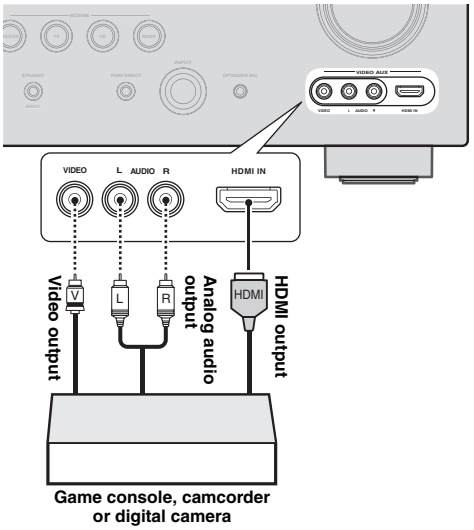


Using the VIDEO AUX jacks

Use either the HDMI IN jack or analog AUDIO/VIDEO jacks on the front panel to connect a game console, camcorder or digital camera to this unit. Be sure to turn down the volume of this unit and other components before making connections.

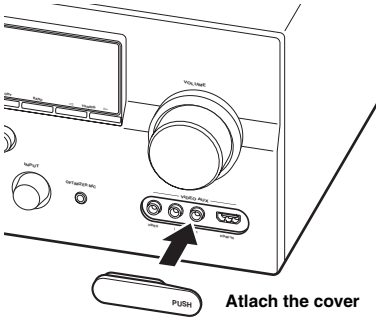
Note

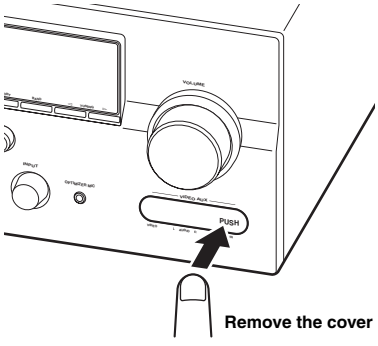
- When signals are input to the HDMI IN and analog input jacks (AUDIO L/R and VIDEO) at the same time, the HDMI connection has a priority.



Note

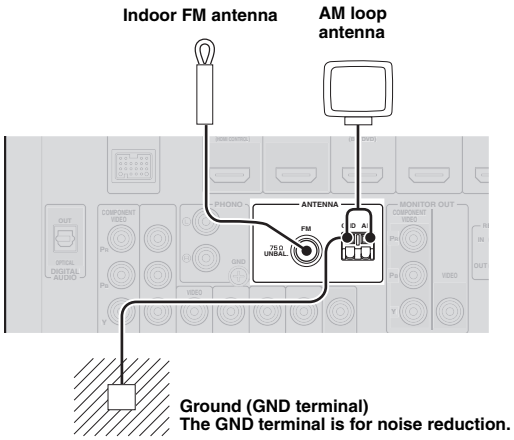
- To protect against dust, attach the supplied VIDEO AUX input cover to the VIDEO AUX jacks when you do not use the jacks. To remove the cover, push the right section of it.





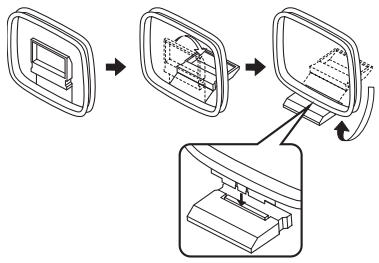
Connecting the FM and AM antennas

An indoor FM antenna and an AM loop antenna are supplied with this unit. Connect these antennas properly to the respective jacks.



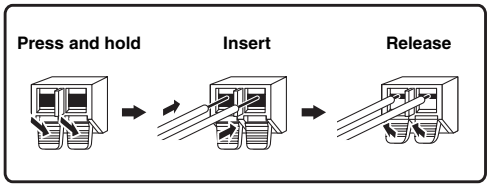
- The supplied antennas are normally sensitive enough to obtain good reception.
- Position the AM loop antenna away from this unit.
- If you cannot get good reception, we recommend that you use an outdoor antenna. For details, consult the nearest authorized Yamaha dealer or service center.
- Always use the AM loop antenna even when the outdoor antenna is connected.

Assembling the AM loop antenna



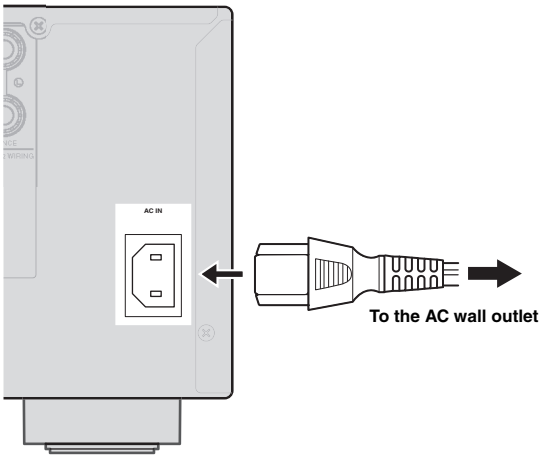
Connecting the AM loop antenna

The wires of the AM loop antenna have no polarity. You can connect either wire to the AM terminal and the other to the GND terminal.



Connecting the power cable

After all connections are complete, plug the supplied power cable into the AC inlet and then plug it into an AC wall outlet.



Turning this unit on and off

1 Press ⓁMAIN ZONE ON/OFF on the front panel (or 16POWER on the remote control) to turn on this unit.

2 Press ⓁMAIN ZONE ON/OFF (or 16POWER) again to turn off this unit (standby mode).

- The unit needs a few seconds until ready to play back.
- You can also turn on this unit by pressing ⓇSCENE (or 8SCENE).
- This unit consumes a small amount of electricity even in the standby mode. We recommend disconnecting the power cable from the AC wall outlet.

Caution

Do not unplug this unit while it is turned on. Doing so may damage this unit or cause the settings of this unit to be saved incorrectly.

Optimizing the speaker setting for your listening room (YPAO)

This unit has a Yamaha Parametric Acoustic Optimizer (YPAO). With the YPAO, this unit automatically adjusts the output characteristics of your speakers based on speaker position, speaker performance, and the acoustic characteristics of the room. We recommend that you first adjust the output characteristics with the YPAO when you use this unit.

Caution

- Be advised that it is normal for loud test tones to be output during the "Auto Setup" procedure. Do not allow small children to enter the room during the procedure.
- To achieve the best results, make sure the room is as quiet as possible while the "Auto Setup" procedure is in progress. If there is too much ambient noise, the results may not be satisfactory.

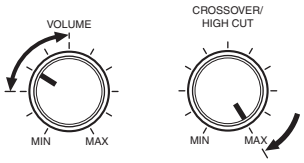
- You can manually adjust the output characteristics of your speakers with "Manual Setup" in the Setup menu (page 46).

Using Auto Setup

1 Check the following points.

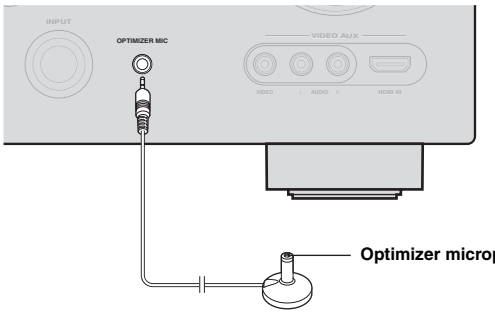
Before starting the automatic setup, check the following.

- All speakers and subwoofer are connected properly.
- Headphones are disconnected from this unit.
- The video monitor is connected properly.
- This unit and the video monitor are turned on.
- This unit is selected as the video input source of the video monitor.
- The connected subwoofer is turned on and the volume level is set to about half way (or slightly less).
- The crossover frequency controls of the connected subwoofer are set to the maximum.

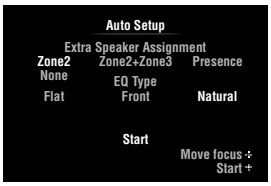


Subwoofer

2 Connect the supplied optimizer microphone to the ⓊOPTIMIZER MIC jack on the front panel.



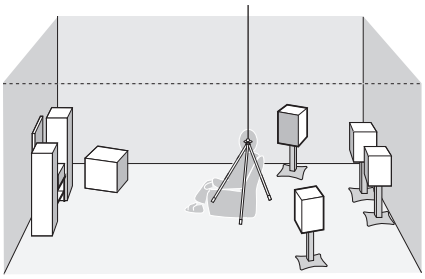
"MIC ON. View GUI MENU" appears on the front panel display.
The GUI screen appears on the video monitor.



- You can bring up the above menu screen from the Setup menu (page 46).

3 Place the optimizer microphone at your normal listening position on a flat level surface with the omni-directional microphone heading upward.

Optimizer microphone



- It is recommended that you use a tripod or something similar to fix the optimizer microphone at the same height as your ears would be when seated in your listening position. You can fix the optimizer microphone to the tripod with the attaching screw of the tripod.

4 When the speakers are connected to EXTRA SP terminals, press [10]Cursor △ repeatedly to select "Extra Speaker Assignment" and then press [10]Cursor ◁ / ▷ to select how to use EXTRA SP terminals from "Zone2", "Zone2+Zone3", "Presence" or "None".

If this unit does not work when you press [10]**Cursor**, press [9]**ON SCREEN** once and then operate this unit.

5 To select sound characteristics for adjustment, press [10]Cursor ▽ to select "EQ Type" and then press [10]Cursor ◁ / ▷.

If this unit does not work when you press [10]**Cursor**, press [9]**ON SCREEN** once and then operate this unit.

This unit has a parametric equalizer that adjusts the output levels for each frequency range. The equalizer is adjusted to produce a cohesive sound field based on automatically measured speaker characteristics.

In "EQ Type", you can select the following parametric equalizer characteristics suitable for the desired sound characteristics.

Flat

This adjusts each speaker to obtain the same characteristics. Select this if your speakers have similar qualities.

Front

This adjusts each speaker to obtain the same characteristics as the front left and right speakers. Select this if your front left and right speakers have significantly better qualities than the other speakers.

Natural

This adjusts all speakers to achieve natural sound. Select this if sounds in the high frequency range seem too strong when "EQ Type" is set to "Flat".

6 Press [10]Cursor ▽ to select "Start" and then press [10]ENTER to start the setup procedure.

A countdown starts and a measurement starts in 10 seconds. A loud test tone is output during measurement.

Notes

- During the automatic setup procedure, do not perform any operation on this unit.
- Press [10]**Cursor** △ to cancel the automatic setup procedure.

Measurement takes about 3 minutes. To obtain precise results, stay where you will not disturb the measurement, such as to the side of or behind the speakers or outside the room.

When measurement is successfully completed, "YPAO Complete" appears on the front panel display and the measurement result appears on the GUI screen.

Speaker Config

Displays the number of speakers connected to this unit in the following order:
Total of Front and Center/Total of Surround and Surround Back/Subwoofer

Distance (Min / Max)

Displays the speaker distance from the listening position in the following order:
Closest speaker distance/Farthest speaker distance

Level (Min / Max)

Displays the speaker output levels in the following order:
Lowest speaker output level/Highest speaker output level

Notes

- If "Error" appears on the GUI screen during "Auto Setup", measurement is canceled and the type of error is displayed. For details, see "When an error message is displayed during measurement" (page 23).
- If problems occur during measurement, "Check xx warning(s)" (xx indicates the number of warnings) appears in red. For details, see "When a warning message is displayed after measurement" (page 23).

7 Press [10]ENTER to confirm the settings.

To cancel the operation, press [10]**Cursor** ◁ / ▷ to select "Cancel" and press [10]**ENTER**.

The speaker characteristics are adjusted according to measurement results.

When the following screen appears, remove the optimizer microphone. "Auto Setup" is now complete.

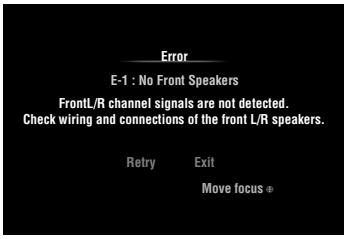
The optimizer microphone is sensitive to heat. Store it in a cool place and away from direct sunlight after measurement. Do not leave it in a place where it will be subjected to high temperatures such on an AV component.

- If you do not want to apply the measurement results, select "Cancel".
- Perform "Auto Setup" again if you change the number or positions of speakers.

When an error message is displayed during measurement

If an error is detected during measurement, the measurement is canceled and "Error" appears on the GUI screen. Check the error and solve the problem. For details on each error message, see page 70.

Press [10]Cursor ▽ once, press [10]Cursor ◁ / ▷ to select "Retry" or "Exit" and then press [10]ENTER.



Retry

Performs "Auto Setup" again.

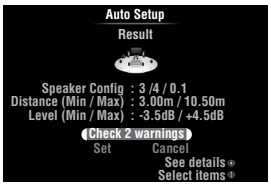
Exit

Terminates the measurement and "Auto Setup".

- When "E-5:NOISY" appears, you can continue measurement. To continue measurement, select "Proceed". However, we recommend that you solve the problem first and then perform measurement again.

When a warning message is displayed after measurement

If a problem occurs during measurement, "Check xx warning(s)" appears on the GUI screen. Check the warning and solve the problem. For details on each warning message, see page 71.



- Optimization will not be performed while a warning message is displayed. We recommend that you solve the problem and perform "Auto Setup" again.

1 Press [10]Cursor ▽ / △ to select "Check xx warning(s)" and then press [10]ENTER.

Details of the warning message are displayed. If there are multiple warning messages, you can display the next message using [10]Cursor ▷.

2 To return to the top result display, press [10]ENTER again.

Playback

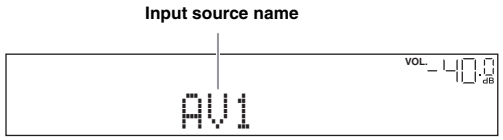
Basic procedure

1 Turn on external components (TV, DVD player, etc.) connected to this unit.

2 Rotate the ⓉINPUT selector (or press 4Input selection key) to select an input source.

If you press 4**USB/NET** on the remote control, press 23**Sub-input selection key** to select a sub-input source.

The name of the selected input source is displayed for a few seconds.



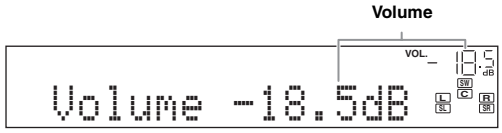
- If you connect two video monitors to the HDMI OUT jacks of this unit, press 7**HDMI OUT** repeatedly to select the active video monitor(s) (page 40).
- You can also select an input source from the GUI screen (page 25).
- You can change the input source name displayed on the front panel display or GUI screen as necessary (page 51).

3 Play the external component that you have selected as the source input, or select a radio station on the tuner.

Refer to the operating instructions of the external component for details on playback. For selecting radio stations or playback of an iPod, Bluetooth component, USB storage device or network contents using this unit, see the following.

- FM/AM radio tuning (page 31)
- iPod playback (page 33)
- Bluetooth component playback (page 35)
- USB storage device playback (page 36)
- Internet Radio playback (page 39)
- PC playback (page 37)

4 Turn the ⓀVOLUME control (or press 20VOLUME +/–) to adjust the volume.



Note

When you play back a DTS-CD, noise may be output in some conditions, which may cause a speaker malfunction. Make sure that the volume is set to low before starting playback. If noise is output, do the following.

1) When only noise is output
If a DTS bitstream signal is not properly input to this unit, only noise is output. Connect the playback component to this unit by digital connection and play back the DTS-CD. If the condition is not improved, the problem may results from the playback component. Consult the manufacturer of the playback component.

2) When noise is output during playback or skip operation
Before playing back the DTS-CD, display the Option menu after selecting the input source and set "Decoder Mode" to "DTS" (page 41).

Using the SCENE function

This unit has a SCENE function that allows you to change input sources and sound field programs with one key. Four scenes are available for different usages, such as playing movies or music. The following input sources and sound field programs are provided as the initial factory settings.

Keys	Input source	Sound field program
BD/DVD	HDMI 1	Straight
TV	AV 1	Straight
CD	AV 3	Straight
RADIO	TUNER	7ch Enhancer

- When this unit is on standby, you can turn on this unit by pressing Ⓡ**SCENE** (or 8**SCENE**).
- If you connect a Yamaha DVD/CD player that has the capability of the SCENE control signals to the REMOTE OUT jack of this unit, you can start playback on the player by using the SCENE function.

Selecting a SCENE

Press ⓇSCENE (or 8SCENE).

- You can also select a SCENE from the GUI screen (page 25).

Registering input source/sound field program to SCENE

Select the desired input source/sound field program and then press and hold ⓇSCENE (or 8SCENE) to edit until "SET Complete" appears on the front panel display.

- If you change the input source setting, register the remote control code of an external component to the input source (page 59).

Switching remotely controlled external components linked to scene selections

You can operate an external component with the remote control of this unit by setting a remote control code for the external component for each input source. Setting remote control codes for desired input sources allows you to switch between external components linked to scene selections.

1 Register the remote control code of an external component to the desired input source (page 59).

Note

- This feature is not available for TUNER input source.

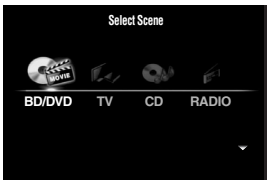
2 While holding down the desired 8 SCENE key, press and hold the 4 Input selection key to which you registered a remote control code in step 1.

From now on the external component can be remotely controllable just by selecting a scene.

Selecting a source on the GUI screen

1 Press 9 ON SCREEN on the remote control.

The GUI screen appears on the video monitor.



2 Use 10 Cursor △ / ▽ repeatedly to switch the page and 10 Cursor ◁ / ▷ repeatedly to select the desired source.

Category	Source
Select Scene	BD/DVD, TV, CD, RADIO
Select Input	HDMI1-4, V-AUX, PHONO, MULTI CH, DOCK, AV1-6, AUDIO1/2, USB, NET RADIO, PC, TUNER

- If an input source you want to select is available in "Select Scene", you can select the desired input source and sound field program at once.

3 Press 10 ENTER.

Muting audio output

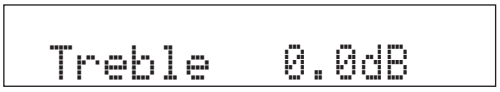
1 Press 22 MUTE on the remote control to mute the audio output.

2 Press 22 MUTE again to resume audio output.

Adjusting high/low frequency sounds (tone control)

You can adjust the balance of the high frequency range (Treble) and low frequency range (Bass) of sounds output from the front left and right speakers to obtain desired tone.

1 Press O TONE CONTROL on the front panel repeatedly to select "Treble" or "Bass".



2 Rotate the P PROGRAM selector to adjust the frequency range.

Control range: –10.0 dB to +10.0 dB
The display returns to the previous screen automatically in few seconds.

Note

- The tone control settings are not effective when this unit is in the Pure Direct mode or "MULTI CH" is selected as an input source.

Enjoying pure hi-fi sound

Use Pure Direct mode to enjoy the pure high fidelity sound of the selected source. When Pure Direct mode is activated, this unit plays back the selected source with the least circuitry.

Press S PURE DIRECT (or 18 PURE DIRECT) to turn the Pure Direct mode on or off.

S PURE DIRECT lights up when you set Pure Direct mode on.

The following features are disabled in the Pure Direct mode.

- sound field program, tone control
- display and operation of the Option menu and Setup menu
- multi-zone function

- The font panel display automatically turns off while this unit in the Pure Direct mode.

Using your headphones

Plug your headphones in the ⓂPHONES jack on the front panel.

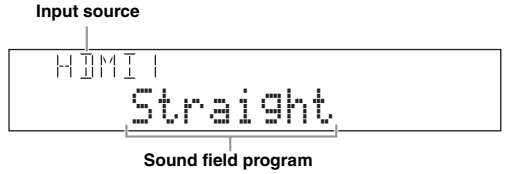
When you select a sound field program while using the headphones, the mode is automatically set to SILENT CINEMA mode.

Notes

- When you connect headphones, no signals are output at the speaker terminals.
- When multi-channel signals are processed, sounds in all channels are divided to left and right channels. When "MULTI CH" is selected as the input source, only front L/R sounds are output from the headphones.

Changing information on the front panel display

Press ⒺINFO (or 6INFO) repeatedly.
Available information differs depending on the selected input source.
For example, if you select HDMI1 input and display "DSP Program", the following screen appears on the front panel display.



Input source	Information
HDMI1-4 **AV1-6** **AUDIO1/2** **V-AUX** **PHONO** **iPod (DOCK) (simple remote mode)** **BLUETOOTH (DOCK)**	Input DSP Program Audio Decoder
MULTI CH	Input
TUNER	Frequency, DSP Program, Audio Decoder
iPod (DOCK) (menu browse mode) **USB (USB/NET)** **PC (USB/NET)**	(on play information display) DSP Program, Audio Decoder, Song, Artist, Album (on GUI screen) List
NET RADIO (USB/NET)	(on play information display) DSP Program, Audio Decoder, Station Name (on GUI screen) List

Enjoying the sound field programs

This unit is also equipped with a Yamaha digital sound field processing (DSP) chip. You can enjoy multi-channel sounds for almost all input sources using various sound field programs stored on the chip and a variety of surround decoders.

Selecting sound field programs

■ Selecting a sound field program on the front panel

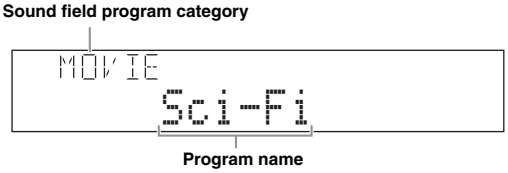
Rotate the Ⓟ**PROGRAM** selector to select a desired sound field program.

■ Selecting a sound field program with the remote control

Perform the following operations depending on the category of the sound field programs.

Sound field programs for movies/TV programs..... Press 18**MOVIE** repeatedly.
Sound field programs for music ..... Press 18**MUSIC** repeatedly.
Stereo reproduction ..... Press 18**STEREO** repeatedly.
Multi-channel stereo reproduction ..... Press 18**STEREO** repeatedly.
Compressed music enhancer ..... Press 18**STEREO** repeatedly.
Surround decoder ..... Press 18**SUR.DECODE** repeatedly.

For example, if you select “Sci-Fi”, the following screen appears on the front panel display.



Notes

- Sound field programs are stored for each input source. When you change the input source, the sound field program previously selected for that input source is applied again.
- When you play back DTS Express sources or audio signals with sampling frequency of higher than 96 kHz, the straight decode mode (page 30) is automatically selected.
- When you play back Dolby TrueHD sources with CINEMA DSP, another program may be automatically selected in specific cases.
- When you play back DTS-HD sources with CINEMA DSP, the DTS decoder is automatically selected.

Sound field program descriptions

This unit provides sound field programs for multiple categories including music, movies and stereo reproduction. Select a sound field program based on your listening preference, not merely on the name of the program, etc.

- You can check what speakers are currently outputting signals with the speaker indicators on the front panel display (page 6).
- Each program can adjust sound field elements (sound field parameters). For details, see page 52.
- CINEMA DSP in the table indicates the sound field program with CINEMA DSP (page 75).

For movie/TV program sources (MOVIE) CINEMA DSP

Program	Descriptions
Standard	This program creates a sound field emphasizing the surrounding feeling without disturbing the original acoustic positioning of multi-channel audio such as Dolby Digital and DTS. It has been designed with the concept of “an ideal movie theater”, in which the audience is surrounded by beautiful reverberations from the left, right and rear.
Spectacle	This program represents the spectacular feeling of large-scale movie productions. It reproduces a broad theater sound field matching the cinemascope and wider-screen movies with an excellent dynamic range from very small to extremely large sound.
Sci-Fi	This program clearly reproduces the finely elaborated sound design of the latest science fiction and special effects-featuring movies. You can enjoy a variety of cinematographically created virtual spaces reproduced with clear separation between dialog, sound effects and background music.
Adventure	This program is ideal for precisely reproducing the sound design of action and adventure movies. The sound field restrains reverberations but puts emphasis on reproducing a powerful space expanded widely to the left and right. The reproduced depth is also restrained relatively to ensure the separation between audio channels and the clarity of the sound.

Program	Descriptions
Drama	This sound field features stable reverberations that match a wide range of movie genres from serious dramas to musicals and comedies. The reverberations are modest but offer an optimum 3D feeling, reproducing effects tones and background music softly but cubically around clear words and center positioning in a way that does not fatigue the listener even after long hours of viewing.
Mono Movie	This program is provided for reproducing monaural video sources such as a classic movie in an atmosphere of a good old movie theater. The program produces the optimum expansion and reverberation to the original audio to create a comfortable space with a certain sound depth.
Sports	This program allows the listeners to enjoy stereo sport broadcasts and studio variety programs with enriched live feeling. In sports broadcasts, the voices of the commentator and sportscaster are positioned clearly at the center while the atmosphere of the stadium expands in an optimum space to offer the listeners with a feeling of presence in the stadium.
Action Game	This sound field has been suitable for action games such as car racing and FPS games. It uses the reflection data that limits the effects range per channel in order to offer a powerful playing environment with a being-there feeling by enhancing various effects tones while maintaining a clear sense of directions.
Roleplaying Game	This sound field has been suitable for role-playing and adventure games. It combines the sound field effects for movies and the sound field designs for "Action Game" to represent the depth and 3D feeling of the field during play, while offering movie-like surround effects in the movie scenes in the game.

For audio music sources (MUSIC) CINEMA DSP

Program	Descriptions
Hall in Munich	This sound field simulates a concert hall with approximately 2500 seats in Munich, using stylish wood for the interior finishing as normal standards for European concert halls. Fine, beautiful reverberations spread richly, creating a calming atmosphere. The listener's virtual seat is at the center left of the arena.
Hall in Vienna	This is an approximately 1700-seated, middle-sized concert hall with a shoebox shape that is traditional in Vienna. Pillars and ornate carvings create extremely complex reflections from all around the audience, producing a very full, rich sound.
Chamber	This program creates a relatively wide space with a high ceiling like an audience hall in a palace. It offers pleasant reverberations that are suitable for courtly music and chamber music.
Cellar Club	This program simulates a live house with a low ceiling and homey atmosphere. A realistic, live sound field features powerful sound as if the listener is in a row in front of a small stage.
The Roxy Theatre	This is the sound field of a rock music live house in Los Angeles, with approximately 460 seats. The listener's virtual seat is at the center left of the hall.
The Bottom Line	This is the sound field at stage front in The Bottom Line, that was a famous New York jazz club once. The floor can seat 300 people to the left and right in a sound field offering real and vibrant sound.
Music Video	This sound field offers an image of a concert hall for live performance of pop, rock and jazz music. The listener can indulge oneself in a hot live space thanks to the presence sound field that emphasizes the vividness of vocals and solo play and the beat of rhythm instruments, and to the surround sound field that reproduces the space of a big live hall.

For stereo reproduction (STEREO)

Program	Descriptions
2ch Stereo	Use this program to mix down multi-channel sources to 2 channels.

- When multi-channel signals are input, they are downmixed to 2 channels and output from the front left and right speakers.

For multi-channel stereo reproduction (STEREO) CINEMA DSP

Program	Descriptions
7ch Stereo	Use this program to output sound from all speakers. When you play back multi-channel sources, this unit downmixes the source to 2 channels and then outputs the sound from all speakers. This program creates a larger sound field and is ideal for background music at parties, etc.

Compressed Music Enhancer (ENHANCER)

Program	Descriptions
Straight Enhancer	Use this program to enhance the sound nearest to the original depth and width of the 2-channel or multi-channel compression artifacts.
7ch Enhancer	Use this program to play back compression artifacts in 7-channel stereo.

Surround decode mode (SUR. DECODE)

Select this program to playback sources with selected decoders. You can playback 2-channel sources on multi-channels.

Decoder	Descriptions
Pro Logic	Dolby Pro Logic decoder suitable for all kinds of sources.
PLIIx Movie / PLII Movie	Dolby Pro Logic IIx (or Dolby Pro Logic II) decoder suitable for movies. If your listening environment is as follows, you cannot select the Dolby Pro Logic IIx decoder. • When the surround back speakers are not connected • When headphones are connected
PLIIx Music / PLII Music	Dolby Pro Logic IIx (or Dolby Pro Logic II) decoder suitable for music. If your listening environment is as follows, you cannot select the Dolby Pro Logic IIx decoder. • When the surround back speakers are not connected • When headphones are connected
PLIIx Game / PLII Game	Dolby Pro Logic IIx (or Dolby Pro Logic II) decoder suitable for games. If your listening environment is as follows, you cannot select the Dolby Pro Logic IIx decoder. • When the surround back speakers are not connected • When headphones are connected
Neo:6 Cinema	DTS decoder suitable for movies.
Neo:6 Music	DTS decoder suitable for music.

• An input source is played back in straight decode mode (page 30) when “MULTI CH” is selected as the input source.

Enjoying unprocessed input sources (Straight decode mode)

In straight decode mode, sounds are reproduced without sound field effect. 2-channel stereo sources are output from only the front left and right speakers. Multi-channel input sources are decoded straight into the appropriate channels and multi-channel sounds are reproduced without a sound field effect.

1 To enable straight decode mode, press ⓆSTRAIGHT (or ⑱STRAIGHT).

"Straight" appears on the front panel display.

2 To cancel straight decode mode, press ⓆSTRAIGHT (or ⑱STRAIGHT) again.

A sound field program name appears on the front panel display, and sound is reproduced with that sound field effect.

Enjoying sound field programs without surround speakers (Virtual CINEMA DSP)

Virtual CINEMA DSP allows you to enjoy DSP sound field surround effects even without any surround speakers by using virtual surround speakers. You can even enjoy Virtual CINEMA DSP using a minimal two-speaker system that does not include a center speaker.
When "Surround Speaker" in the Setup menu is set to "None" (page 47), this unit operates in Virtual CINEMA DSP mode.

Note

- Virtual CINEMA DSP is not available in the following conditions even if you set "Surround Speaker" to "None" (page 47).
  – headphone plug is connected to the PHONES jack.
  – 7ch Stereo of the field sound program is selected.
  – Pure Direct mode or straight decode mode is used.

Enjoy sound field programs with headphones (SILENT CINEMA™)

SILENT CINEMA allows you to enjoy multi-channel sources with your headphones. SILENT CINEMA mode is automatically selected when you connect the headphone plug to the PHONES jack.

Note

- SILENT CINEMA mode is not available in the following conditions.
  – 2ch Stereo of the sound field program is selected.
  – Pure Direct mode or straight decode mode is selected.

Using CINEMA DSP 3D mode

CINEMA DSP 3D mode creates the intensive and accurate stereoscopic sound field in the listening room. To use this unit in CINEMA DSP 3D mode, presence speakers are required. Connect the presence speakers to the SP1 terminals, perform the following settings and then select a CINEMA DSP related sound field program.

- Disconnect the headphones from the PHONES jack.
- Set "Extra Speaker Assignment" to "Presence" (page 47).
- Set "3D DSP" to "On" (page 53).

When the sound field program runs in CINEMA DSP 3D mode, the 3D indicator on the front panel display lights up.

FM/AM tuning

The FM/AM tuner of this unit provides the following two modes for tuning.

■ Frequency tuning mode

You can tune in to a desired FM/AM station by searching or specifying its frequency.

■ Preset tuning mode

You can preset the frequencies of FM/AM stations by registering them to specific numbers, and later just select those numbers to tune in.

Note

- Adjust the FM/AM antennas connected to this unit for the best reception.

Tuning in to the desired FM/AM station (Frequency tuning)

1 Rotate the ⓉINPUT selector (or press 4TUNER) to select "TUNER" as the input source.

2 Press ⒽBAND (or ⑤FM or ⑤AM) to select a band.

3 Press ⒾTUNING ⊲ / ⊳ (or 5TUNING △ / ▽) to specify the frequency.

The TUNED indicator on the front panel display lights up when the tuner is tuned in to a station. The STEREO indicator also lights up if the program being broadcasted is in stereo.

The frequency changes in the following manner according to how you press ⒾTUNING ⊲ / ⊳ (or 5TUNING △ / ▽).

When you press the key more than 1 second

The tuner searches the frequency of a station that is detectable around the current frequency. This is effective when the tuner can receive strong signals without any interference. Once the search starts, release the key. When you keep holding the key, the search continues even when a station is detected. This is useful when you want to tune in to a specific station.

When you press and release the key

The tuner increases or decreases the frequency in steps. Use this method when the tuner cannot receive strong signals and stations are skipped during the search.

- You can switch between stereo and monaural for FM broadcast in the Option menu (page 42).

4 To tune in by direct frequency tuning, press 12Numeric keys to enter the frequency of the station.

Notes

- When you press 12**Numeric keys** during preset tuning, a preset number is selected. Set tuning mode to frequency tuning mode using Ⓘ**TUNING** ⊲ / ⊳ (or 5**TUNING** △ / ▽) prior to the operation.
- "Wrong Station!" appears on the front panel display when you enter a frequency that is out of receivable range. Make sure that the entered frequency is correct.
- You do not need enter zero if it comes at the end of a decimal number. For example, enter "925" for "92.50 MHz" or "94" for "94.00 MHz".

Registering FM/AM stations and tuning in (Preset tuning)

You can register up to 40 FM/AM stations (Preset).

Registering stations by automatic station preset

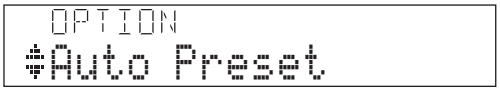
The tuner automatically detects FM stations with strong signals and registers up to 40 stations. To register AM stations, use manual station preset.

1 Rotate the ⓉINPUT selector (or press 4TUNER) to select "TUNER" as the input source.

2 Press 19OPTION on the remote control.

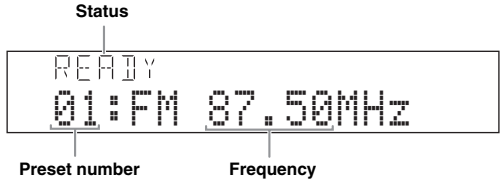
The Option menu for "TUNER" is displayed (page 41).

3 Select "Auto Preset" and then press 10ENTER.



Automatic station preset starts about 5 seconds later from the lowest frequency upwards.

- You can select the preset number at which the preset starts by pressing 5**PRESET** △ / ▽ or 10**Cursor** △ / ▽ while "READY" is displayed on the front panel display.
- To cancel registration, press 10**RETURN**.



During the automatic station preset, "MEMORY" appears in the front panel display each time a station is registered.
When registration is complete, "FINISH" appears and then the display returns to the Option menu.
To return the display to the original state, press 19**OPTION**.

Registering stations by manual station preset

You can manually register FM stations with weak signals or AM stations.

1 Tune in to the desired station (page 31).

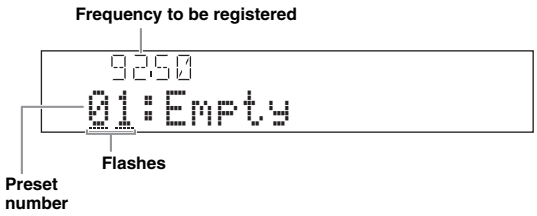
2 Press ⒼMEMORY (or 5MEMORY).

"Manual Preset" appears on the front panel display, followed soon by the preset number to which the station will be registered.

- By holding down ⒼMEMORY (or 5MEMORY) for more than 2 seconds, you can skip the following steps and automatically register the selected station to an empty preset number (next to the lastly-registered preset number).

3 Press ⒻPRESET ◁ / ▷ (or 5PRESET △ / ▽) to select the preset number to which the station will be registered.

When you select a preset number to which no station is registered, "Empty" appears. When you select a preset number to which any station has been already registered, the frequency of the station is displayed.



- You can also select a preset number using the 12**Numeric keys**.

4 Press ⒼMEMORY (or 5MEMORY).

When registration is complete, the display returns to the original state.

- To cancel registration, press 10**RETURN** or leave this unit without any operations for about 30 seconds.

Calling a preset station (Preset tuning)

You can call preset stations registered by automatic station preset or manual station preset.

Press ⒻPRESET ◁ / ▷ (or 5PRESET △ / ▽) to select a preset number.

- Preset numbers to which no stations are registered are skipped.
- "No Presets" or "No Presets in Memory" is displayed if no stations are registered.
- You can directly select a preset number by pressing 12**Numeric keys** while calling a preset station. "Empty" appears on the display if you enter a preset number to which no station is registered. "Wrong Num." appears if you enter an invalid number.
- When you press 12**Numeric keys** during normal tuning, a frequency is entered. Set tuning mode to preset tuning mode using ⒻPRESET ◁ / ▷ (or 5PRESET △ / ▽) prior to the operation.

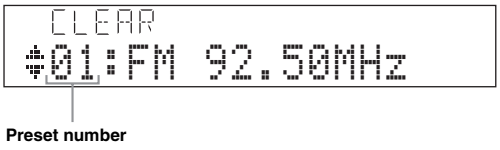
Clearing preset stations

1 Rotate the ⓉINPUT selector (or press 4TUNER) to select "TUNER" as the input source.

2 Press 19OPTION on the remote control.

The Option menu for "TUNER" is displayed (page 41).

3 Press 10Cursor △ / ▽ to select "Clear Preset" and then press 10ENTER.



- To cancel the operation and return to the Option menu, press 10**RETURN**.

4 Press 10Cursor △ / ▽ to select a preset number to reset and then press 10ENTER.

The preset station registered to the selected preset number is cleared. To clear the registration of multiple preset numbers, repeat step 4.

5 To exit the Option menu, press 19OPTION.

Using iPod™

Once you have stationed your iPod in a Yamaha iPod universal dock (such as the YDS-11, sold separately) connected to the DOCK terminal on the rear panel of this unit (page 18), you can enjoy playback of your iPod using the supplied remote control or the menu displayed on the GUI screen. You can also use the Compressed Music Enhancer mode of this unit to improve the sound quality of the compression artifacts (such as MP3 format) stored on your iPod (page 29).

Notes

- iPod touch, iPod (Click and Wheel including iPod classic), iPod nano, and iPod mini are supported.
- Some features may not be compatible depending on the model or the software version of your iPod.
- Some features may not be available depending on the model of Yamaha iPod universal dock. The following sections describe the procedure when using the YDS-11.

- Once the connection between your iPod and this unit is complete, "iPod connected" appears on the front panel display.
- For a complete list of status messages that appear on the front panel display and GUI screen, see "iPod" (page 67).

Controlling iPod™

You can control your iPod when you set it in the iPod universal dock and switch the input source to DOCK. The operations of your iPod can be done with the aid of the video display (menu browse mode) or without it (simple remote mode).
When you connect your iPod to this unit, you can perform the following operations with the remote control.

	Key	Function
	ENTER	Subsequent menu
	△	Menu up
10	▽	Menu down
	◁	Previous menu
	▷	Subsequent menu
	▷	Play (Menu browse mode) Play/Pause (Simple remote mode)
	□	Stop
	▯▯	Pause (Menu browse mode) Play/Pause (Simple remote mode)
11	◁◁	Search backward (Press and hold)
	▷▷	Search forward (Press and hold)
	⏮	Skip backward
	⏭	Skip forward
21	**DISPLAY**	Switch between Menu browse mode and Simple remote mode

Controlling iPod in simple remote mode

You can perform basic iPod operations (play, stop, skip, etc.) using the supplied remote control without displaying the menu on the GUI screen. You can also directly control your iPod in this mode.

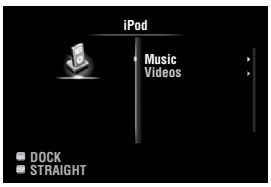
Controlling iPod in menu browse mode

You can browse song or video files stored on your iPod using the GUI screen. You cannot directly control your iPod in this mode.

- "_"(underscore) is displayed for characters that this unit cannot display.

1 Rotate the ⓉINPUT selector (or press 4DOCK) to select "iPod" (DOCK) as the input source.

2 Press 21DISPLAY on the remote control.



3 Press 10Cursor △ / ▽ to select "Music" or "Videos" and then press 10Cursor ▷.

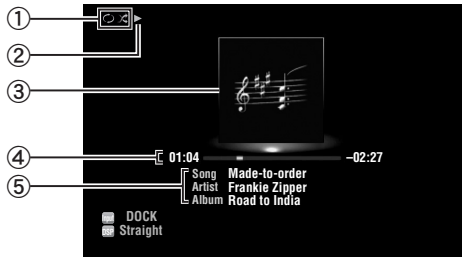
- Select "Music" to browse music files.
- Select "Videos" to browse video files.

Note

- The "Videos" menu does not appear unless the both your iPod and Yamaha iPod universal dock support the video browsing feature.

4 Press 10Cursor △ / ▽ / ◁ / ▷ to select a menu item and then press 10ENTER to start playback.

■ Play information display



① Shuffle and repeat icons
② ▶ (playback), ❚❚ (pausing), ▶▶ (search forward) and ◀◀ (search backward)
③ Album art (image of CD jacket, etc)
④ Elapsed time, progress bar, remaining time
⑤ Song title, artist name, album title

- You can switch the information displayed on the front panel display by pressing ⑮**INFO** (or 6**INFO**).
- Album arts are available only when the file contains image data.

■ Shuffle/repeat playback

When controlling iPod in simple remote mode, operate the iPod directly to set the shuffle and repeat playback.

1 Press 21DISPLAY to switch to menu browse mode while "DOCK" is selected as the input source.

2 Press 19OPTION on the remote control.
The Option menu for "iPod" is displayed (page 41).

3 Press 10Cursor △ / ▽ to select "Shuffle" or "Repeat", press 10ENTER and then press 10Cursor ◁ / ▷ to select the desired playback style.

Shuffle:
- Select "Off" if you do not want to play back in random order.
- Select "Songs" to play back songs in random order.
- Select "Albums" to play back albums in random order.

Repeat:
- Select "Off" if you do not want to play back repeatedly.
- Select "One" to repeat each song.
- Select "All" to repeat all songs.

4 To exit the Option menu, press 19OPTION.

Using Bluetooth™ components

You can connect a Yamaha Bluetooth wireless audio receiver (such as YBA-10, sold separately) to the DOCK terminal of this unit and enjoy the music contents stored in your Bluetooth component (such as a portable music player) without wiring between this unit and the Bluetooth component.

Note

- This unit supports A2DP (Advanced Audio Distribution Profile) of the Bluetooth profile.
- For a complete list of status messages that appear on the front panel display and GUI screen, see "Bluetooth™" (page 68).

About "Pairing"

Pairing (registration of the Bluetooth devices) must be performed when making Bluetooth connections between the Yamaha Bluetooth wireless audio receiver and your Bluetooth components for the first time. Once pairing is complete, you can select one of the Bluetooth components to connect to the Yamaha Bluetooth wireless audio receiver for playback.

- Yamaha Bluetooth wireless audio receiver YBA-10 can be paired with up to eight Bluetooth components. If ninth pairing data is registered, the pairing data for the component least recently used is cleared.

Pairing the Bluetooth™ wireless audio receiver and your Bluetooth component

- If the pairing data has been cleared from the Bluetooth wireless audio receiver or your Bluetooth component, you need to perform pairing again.
- For details on operations on your Bluetooth component, refer to the operating instruction of it.

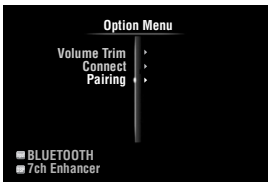
To ensure security, a time limit of 8 minutes is set for the pairing operation. You are recommended to read and fully understand all the instructions before starting.

1 Rotate the ⓉINPUT selector (or press 4DOCK) to select "BLUETOOTH" (DOCK) as the input source.

2 Turn on the Bluetooth component you want to pair with and set it to pairing mode.

3 Press 19OPTION on the remote control.

The Option menu for "BLUETOOTH" is displayed (page 41).



4 Press 10Cursor ▽ to select "Pairing" and then press 10ENTER.

"Searching" appears and the pairing operation starts.

- To cancel pairing, press 10RETURN.
- You can also start pairing operation by holding down ⒼMEMORY on the front panel.

5 Make sure the Bluetooth component recognizes the Bluetooth wireless audio receiver.

If the Bluetooth component detects the Bluetooth wireless audio receiver, "YBA-10 YAMAHA" (example) appears in the Bluetooth device list.

6 Select the Bluetooth wireless audio receiver in the Bluetooth device list, and enter a pass key "0000" into the Bluetooth component.

When pairing is complete, "Completed" appears on the front panel display.

Playback of the Bluetooth™ component

1 Rotate the ⓉINPUT selector (or press 4DOCK) to select "BLUETOOTH" (DOCK) as the input source.

2 Press 19OPTION on the remote control.

3 Press 10Cursor ▽ to select "Connect" and then press 10ENTER.

The Bluetooth connection is established between the Bluetooth wireless audio receiver and your Bluetooth component connected last time.

- If the Bluetooth wireless audio receiver cannot find the Bluetooth component connected last time, "Not found" appears on the front panel display.
- To disconnect the Bluetooth wireless audio receiver from the Bluetooth component currently connected, select "Disconnect" and then press 10ENTER or perform a disconnect operation on the Bluetooth component.
- To make a connection between the Bluetooth wireless audio receiver and another Bluetooth component (already paired), perform a connect operation on the Bluetooth component while no Bluetooth connection is established on the Bluetooth wireless audio receiver.

4 Start playback of the Bluetooth component.

5 To exit the Option menu, press 19OPTION.

Using USB storage devices

You can enjoy playback of WAV (PCM format only), MP3, WMA , MPEG-4 AAC and FLAC files stored on your USB memory device or USB portable player connected to the USB port on the front panel of this unit. This unit supports USB mass storage class devices (FAT 16 or FAT 32 format, except USB HDDs).

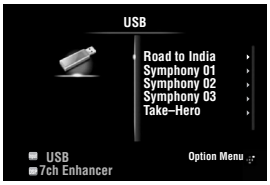
Notes

- You can play back only the files stored in the first partition.
- Some files may not be playable depending on models and types of USB storage devices.
- For a complete list of status messages that appear on the front panel display and GUI screen, see "USB and network" (page 68).

Playback of the USB storage device

1 Connect your USB storage device to the ⓃUSB port on the front panel (page 19).

2 Rotate the ⓉINPUT selector (or press 4USB/NET and then 23USB) to select "USB" as the input source.



If you have connected the USB storage device to this unit before, playback of the music file played at the last time automatically starts.

3 Press 10Cursor △ / ▽ / ◁ / ▷ to select a music file to play back.

- To select a file or folder, press 10**Cursor** △ / ▽.
- To confirm the selection, press 10**Cursor** ▷ or 10**ENTER**.
- To return to the previous menu, press 10**Cursor** ◁.

4 Press 10ENTER to start playback.

You can also perform the following operations with the remote control.

	Key	Function
11	▷	Play
	□	Stop
	▷▷|	Skip forward during playback
	|◁◁	Skip backward during playback

■ Play information display

① Shuffle and repeat icons
② ▶ (playback)
③ Album art (image of CD jacket, etc)
④ Elapsed time
⑤ Song title, artist name, album title

- You can switch the information displayed on the front panel display by pressing ⒺINFO (or ⑥**INFO**) (page 26).
- Album arts are available only when the file contains image data.

Shuffle/repeat playback

- These settings are also reflected in playback of PC contents.

1 Press 19OPTION on the remote control while "USB" is selected as the input source.

The Option menu for "USB" is displayed (page 41).

2 Press 10Cursor △ / ▽ to select "Shuffle" or "Repeat", press 10ENTER and then press 10Cursor ◁ / ▷ to select the desired playback style.

Shuffle:

- Select "Off" if you do not want to play back in random order.
- Select "On" to play back music files in random order.

Repeat:

- Select "Off" if you do not want to play back repeatedly.
- Select "One" to repeat each music file.
- Select "All" to repeat all music files in the folder.

3 To exit the Option menu, press 19OPTION.

Using PC servers

You can enjoy playback of audio files stored on PCs connected to this unit via your network. To play back audio files on your PC, you need to install Windows Media Player 11 on the PC and configure the media sharing setting of Windows Media Player 11.

Note

- If you do not use a DHCP server, configure the network parameters (IP address, etc) of this unit manually (page 51)

Windows Media Player 11 setup

1 Install Windows Media Player 11 on your PC.

You can download the installer of Windows Media Player 11 from the Microsoft website, or use the upgrade function of the installed Microsoft Windows Media Player.

2 Turn on your PC then allow media sharing.

Activate Windows Media Player 11 first, enable the media sharing and then select this unit as a device to which the media is shared.

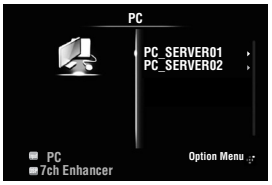
Note

- If the operating system (OS) of your PC is Windows Vista, Windows Media Player 11 is pre-installed (except some products).
- Some security software installed on your PC (anti-virus software, firewall software, etc.) may block the access of this unit to your PC. In such cases, configure the security software appropriately.
- You can connect this unit to up to 16 PC servers, and each server must be connected to the same subnet as this unit.

Playback of PC music contents

- For a complete list of status messages that appear on the front panel display and GUI screen, see "USB and network" (page 68).

1 Rotate the ⓉINPUT selector (or press 4USB/NET and then 23PC) to select "PC" as the input source.



2 Press 10Cursor △ / ▽ / ◁ / ▷ to select a PC server and music file to play back.

- To select a PC server, folder or file, press 10**Cursor** △ / ▽.
- To confirm the selection, press 10**Cursor** ▷ or 10**ENTER**.
- To return to the previous menu, press 10**Cursor** ◁.

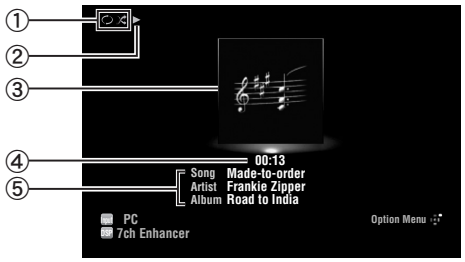
- To update the PC server list displayed in the GUI screen, press 19**OPTION**, press 10**Cursor** △ / ▽ to select "Refresh" and then press 10**ENTER**. To exit the Option menu, press 19**OPTION**.

3 Press 10ENTER to start playback.

You can also perform the following operations with the remote control.

	Key	Function
11	▷	Play
	□	Stop
	▷▷|	Skip forward during playback
	|◁◁	Skip backward during playback

■ Play information display



① Shuffle and repeat icons
② ▶ (playback)
③ Album art (image of CD jacket, etc)
④ Elapsed time
⑤ Song title, artist name, album title

- You can switch the information displayed on the front panel display by pressing ⒺINFO (or 6**INFO**) (page 26).
- Album arts are available only when the file contains image data.

BASIC OPERATION

English

Shuffle/repeat playback

- These settings are also reflected in playback of USB contents.

1 **Press [19]OPTION on the remote control while "PC" is selected as the input source.**

The Option menu for "PC" is displayed (page 41).

2 **Press [10]Cursor △ / ▽ to select "Shuffle" or "Repeat", press [10]ENTER and then press [10]Cursor ◁ / ▷ to select the desired playback style.**

Shuffle:

- Select "Off" if you do not want to play back in random order.
- Select "On" to play back music files in random order.

Repeat:

- Select "Off" if you do not want to play back repeatedly.
- Select "One" to repeat each music file.
- Select "All" to repeat all music files in the folder.

3 **To exit the Option menu, press [19]OPTION.**

Using the Internet Radio feature

You can listen to Internet Radio stations using the vTuner Internet Radio station database service particularly customized for this unit, providing a database of over 2000 radio stations. Also, you can store your favorite stations with bookmarks.

Note

- To use this feature, your network must be connected to the Internet.
- A narrowband Internet connection (i.e. 56K modem, ISDN) will not provide satisfactory results, and a broadband connection is strongly recommended (i.e. a cable modem, an xDSL modem, etc.). For detailed information, consult with your ISP.
- If you do not use a DHCP server, configure the network parameters (IP address, etc) of this unit manually (page 51)
- Some security devices (such as firewall) may block the access of this unit to Internet Radio stations. In such cases, configure the security settings appropriately.
- This service may be discontinued without notice.
- Some Internet Radio stations may not be played

Listening to Internet Radio

- For a complete list of status messages that appear on the front panel display and GUI screen, see "USB and network" (page 68).

1 Rotate the ⓉINPUT selector (or press 4USB/NET and then 23NET RADIO) to select "NET RADIO" as the input source.

2 Press 10Cursor △ / ▽ / ◁ / ▷ to select an item to play back.

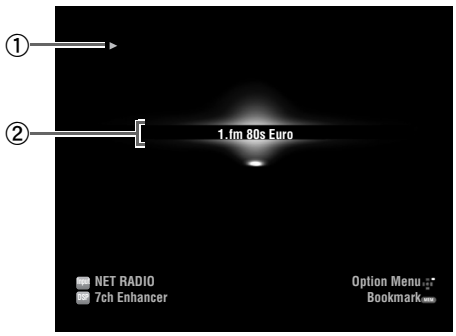
- To select an item, press 10**Cursor** △ / ▽.
- To confirm the selection, press 10**Cursor** ▷ or 10**ENTER**.
- To return to the previous menu, press 10**Cursor** ◁.

3 Press 10ENTER to start playback.

You can also perform the following operations with the remote control.

	Key	Function
11	▷	Play
	□	Stop

■ Play information display



① ▶ (playback)
② Station name

- You can switch the information displayed on the front panel display by pressing ⒺINFO (or 6INFO) (page 26).

Storing your favorite Internet Radio stations with bookmarks

1 Select the desired Internet Radio station.

2 Press 5MEMORY.

The selected Internet Radio station is added to the "Bookmarks" list in "NET RADIO" .

- To remove stations from the "Bookmarks" list, select the station under "Bookmarks" and then press 5**MEMORY**.
- You can also register your favorite Internet Radio stations on this unit by accessing the website with the web browser on your PC. To use this feature, you need the vTuner ID of this unit (page 52) and your e-mail address to create your personal account. For details, refer to the help information on the website. URL: http://yradio.vtuner.com/

Selecting the HDMI OUT jack

Use this feature to select the HDMI OUT jack(s) to output the input signals.

Press [7]HDMI OUT repeatedly to select the active HDMI OUT jack(s).

HDMI OUT1+2	Outputs the signals from both the HDMI OUT 1 and HDMI OUT 2 jacks simultaneously.
HDMI OUT 1	Outputs the signals from the HDMI OUT 1 jack.
HDMI OUT 2	Outputs the signals from the HDMI OUT 2 jack.
HDMI OFF	Not to output any signals from the HDMI OUT jacks. Select this setting when you do not use the video monitor connected to one of the HDMI OUT jacks.

- This unit automatically activates the HDMI OUT 1 jack when receiving an HDMI control signal through the HDMI OUT 1 jack while the HDMI OUT 1 jack is not selected.

Using the HDMI™ control function

You can operate the following functions of this unit with the remote control of your TV when the TV (HDMI control function supported) is connected to the HDMI OUT 1 jack of this unit.

- Turning on this unit or to the standby (conjunction with TV)
- Adjusting the volume
- Selecting a device to reproduce TV sounds (this unit or TV)

- Even if your TV supports the HDMI control function, some functions may not be available. For details, refer to the manual supplied with your TV.
- If you connect this unit and Blu-ray player or DVD player (HDMI control function supported) with HDMI, you can also control those devices with the HDMI control function. For details, refer to the manual supplied with each device.
- We suggest that you use products (TV, Blu-ray/DVD player, etc.) from the same manufacturer.
- The HDMI control-compatible components include Panasonic VIERA Link compatible TV, DVD player/recorder and Blu-ray Disc player.

(Steps 1 through 3 are required for the HDMI control function setup.)

1 Turn on all devices connected to this unit with HDMI.

2 Enable the HDMI control function on each device.

For this unit, set "HDMI Control" to "On" (page 49). For external devices, refer to the manual supplied with each device.

3 Turn off the TV and then turn on it again.

(Steps 4 through 6 are required for making the TV learn linked devices. If the connections or devices are switched, you need to carry out these steps again.)

4 Select this unit as the input source of the TV.

5 Turn on the HDMI control device (Blu-ray or DVD player) connected to this unit.

6 Select the HDMI control device (Blu-ray or DVD player) as the input source of this unit to check the video input.

7 Check if the HDMI control function works (turn on this unit or adjust the volume level using the remote control of the TV).

Note

- In case the HDMI control function does not work, check the followings. Also, turning off (unplug) and turning on (plug) the TV may be effective.
  – The TV is connected to the HDMI OUT 1 jack of this unit.
  – "HDMI Control" is set to "On" on this unit.
  – The HDMI control function is enables on the TV.

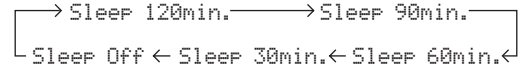
- This unit automatically selects the TV scene (page 24) when you select this unit as the device to reproduce TV sounds using the remote control of your TV. That is, if you connect an audio output jack of your TV to the AV 1 (OPTICAL) jack of this unit, you can enjoy TV sounds with the specified sound field program soon.

Using the sleep timer

The sleep timer is useful if you want to go to sleep while this unit is playing or recording a source.

Press [17]SLEEP repeatedly to select the amount of time.

The sleep timer setting changes as follows.



If the sleep timer is set, the SLEEP indicator on the front panel display lights up.
To disable the sleep timer, select "Sleep Off".

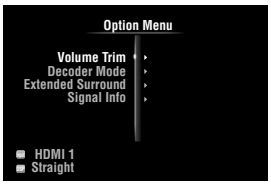
Setting the option menu for each input source (Option menu)

The Option menu allows users to configure various settings for each input source and reflect corresponding settings automatically when an input source is switched. Also, you can view the signal information for certain input sources. The procedure for setting the Option menu items is described below.

1 Rotate the ⓉINPUT selector (or press 4Input selection key) to select the desired input source.

If you press 4**USB/NET** on the remote control, press 23**Sub-input selection key** to select a sub-input source.

2 Press 19OPTION on the remote control.



3 Press 10Cursor △ / ▽ to select the desired menu item and then press 10ENTER.

4 Press 10Cursor △ / ▽ / ◁ / ▷ to select the desired setting and then press 10ENTER

5 To exit the Option menu, press 19OPTION.

To return to the previous menu, press 10**RETURN**.

Note

- In case 10**Cursor** △ / ▽ / ◁ / ▷ or other keys do not work after closing the Option menu, press 4**Input selection key** to select the current input source again.

Option menu items

The following menu items are provided for each input source.

Input source	Menu items
HDMI1-4 **AV1-4** **V-AUX*1**	Volume Trim, Decoder Mode, Extended Surround, Signal Info
AV5-6 **PHONO**	Volume Trim
AUDIO1/2 **MULTI CH**	Volume Trim, Video Out
iPod (DOCK)*2	Volume Trim, Shuffle, Repeat
NET RADIO (USB/NET)	Volume Trim, Signal Info
USB (USB/NET)	Volume Trim, Signal Info, Shuffle, Repeat
PC (USB/NET)	Volume Trim, Signal Info, Shuffle, Repeat, Refresh
BLUETOOTH (DOCK)	Volume Trim, Connect/Disconnect, Pairing
TUNER	Volume Trim, FM Mode, Auto Preset, Clear Preset

Notes

*1 Only "Volume Trim" is available when no external device is connected to the HDMI IN jack.

*2 "Shuffile" and "Repeat" are not available during the simple remote mode.

Details of the menu items are as follows. The configuration will be reflected to the input source currently selected.

- The default settings are marked with "*".

Volume Trim

Input source: All
Adjustable range: –6.0dB to 0.0dB* to +6.0dB (in 0.5 dB steps)

Reduces any change in volume when switching input sources by correcting volume differences between input sources.

Decoder Mode

Input source: HDMI1-4, AV1-4, V-AUX
Choices: Auto*, DTS

Selects DTS digital audio signals for reproduction.

Auto	Automatically selects audio input signals.
DTS	Selects DTS signals only. Other input signals are not reproduced.

Extended Surround

Input source: HDMI1-4, AV1-4, V-AUX
Choices: Auto*, PLIIxMovie, PLIIxMusic, EX/ES, Off

Selects whether to reproduce multi-channel (or 2-channel) input signals in 6.1- or 7.1-channel when surround back speakers are used.

Auto	Automatically selects the most suitable decoder if a flag for reproducing surround back channel is present, and reproduces the signals in 6.1- or 7.1-channel.
PLIIx Movie	Always reproduces signals in 7.1-channel using the PLIIxMovie decoder whether or not surround back channel signals are contained. You can select this parameter when two surround back speakers are connected.

PLIIx Music — Always reproduces signals in 6.1- or 7.1-channel using the PLIIxMusic decoder whether or not surround back channel signals are contained. You can select this parameter when one or two surround back speakers are connected.

EX/ES — Automatically selects the most suitable decoder for input signals whether or not the flag for reproducing surround back channel is present, and always reproduces signals in 6.1-channel.

Off — Always reproduces original signals whether or not the flag for reproducing surround back channel is present.

Signal Info

Input source: HDMI1-4, AV1-4, V-AUX, USB (USB/NET), NET RADIO (USB/NET), PC (USB/NET)

Displays information on audio and video signals on the GUI screen and front panel display. You can change items to be displayed using 10**Cursor** △ / ▽.

- Audio information

Format	Format of digital audio signals.
Channel	The number of input signal channels (front/surround/LFE). For example, if input signal channels are 3 front channels, 2 surrounds and LFE, "3/2/0.1" is displayed. If a channel that cannot be expressed as the above, a total number of channels such as "5.1ch" may be displayed.
Sampling Frequency	The sampling frequency per second in analog-to-digital conversion.
Bitrate	The bit rate of input signal per second.

Notes

- "No Signal" is displayed when no signals are input and "---" is displayed when signals that this unit cannot recognize are input.
- The bit rate may vary during playback.

- Video information

Video In	Format and resolution of video input signal.
Video Out	Format and resolution of video output signal.
Message	Error messages about HDMI signals and HDMI components. See the following for details of the error messages.

- HDMI error message
  (appears only when an error has occurred)

HDCP Error	HDCP authentication failed.
Device Over	The number of HDMI components connected is over the limit.
Out of Res.	The connected monitor is not compatible with the video input signal.

FM Mode

Input source: TUNER
Choices: Stereo*, Mono

Sets FM broadcasting receiving mode.

Stereo — Receives in stereo mode by priority.

Mono — Receives in monaural mode. You can get a better reception in monaural mode.

Auto Preset

Input source: TUNER

Automatically detects FM radio stations and registers them as preset stations (page 31).

Clear Preset

Input source: TUNER

Clears preset station (page 32).

Shuffle

Input source: iPod (DOCK), USB (USB/NET), PC (USB/NET)
Choices: iPod (DOCK): Off*, Songs, Albums
USB (USB/NET), PC (USB/NET): Off*, On

Changes the shuffle playback style.

- This setting is shared among the USB/NET sub-input sources (USB and PC).

Repeat

Input source: iPod (DOCK), USB (USB/NET), PC (USB/NET)
Choices: Off*, One, All

Changes the repeat playback style.

- This setting is shared among the USB/NET sub-input sources (USB and PC).

Refresh

Input source: PC (USB/NET)

Updates the PC server list displayed in the GUI screen (page 37).

Connect / Disconnect

Input source: BLUETOOTH (DOCK)

Connects to or disconnects from a Bluetooth component (page 35).

Pairing

Input source: BLUETOOTH (DOCK)

Performs pairing of this unit and a Bluetooth component (page 35).

Video Out

Input source: AUDIO 1/2, MULTI CH
Choices: AV1 to AV6, Off*

Specifies a video signal to be output during an audio reproduction. For details, see "Selecting a video signal to be output during an audio reproduction" on this page.

Selecting a video signal to be output during an audio reproduction

This function enables this unit to output video signals when "AUDIO 1", "AUDIO 2" or "MULTI CH" is selected as the input source. Follow the procedure below to select the video to be output during an audio reproduction.

1 **Rotate the ⓉINPUT selector (or press 4Input selection keys) to select "AUDIO 1", "AUDIO 2" or "MULTI CH" as the input source.**

2 **Press 19OPTION on the remote control.**
The Option menu for the selected input source is displayed.

3 **Press 10Cursor △ / ▽ to select "Video Out" and then press 10ENTER.**

4 **Press 10Cursor ◁ / ▷ to select a video input jack to be used during an audio reproduction.**
- AV1-2 (COMPONENT VIDEO)
- AV3-6 (VIDEO)
- Off (no video output)

5 **To exit the Option menu, press 19OPTION.**

Operating various settings for this unit (Setup menu)

You can call the Setup menu using the remote control and change the settings of various menus.
For details, read “Basic operation of the Setup menu” first, and see the respective pages.

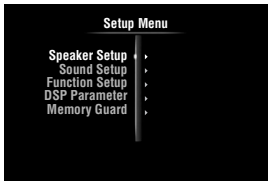
Menu/Submenu	Function	Page
Speaker Setup	Sets items for speakers.	46
Auto Setup (YPAO)	Automatically adjusts output characteristics of speakers.	46
Manual Setup	Manually adjusts output characteristics of speakers.	46
Speaker Configuration	Sets speaker configurations, such as connection status of speaker and a size of the connected speaker (sound reproduction capacity), suitable for the listening environment.	46
Speaker Level	Separately adjusts volume of each speaker.	48
Speaker Distance	Adjusts timing at which each speaker outputs sound based on distances between speakers and the listening position.	48
Equalizer	Selects an equalizer that adjusts speaker output characteristics.	48
Test Tone	Generates test tones.	48
Sound Setup	Sets various items for sound outputs.	49
Dynamic Range	Adjusts dynamic ranges of speakers and headphones.	49
Lipsync	Adjusts delay in output timing between video signals and audio signals.	49
HDMI OUT1	Fine adjusts the delay time of automatic lipsync applied when only the HDMI OUT 1 jack is used or when both the HDMI OUT 1 and HDMI OUT 2 jacks are used.	49
HDMI OUT2	Fine adjusts the delay time of automatic lipsync applied when only the HDMI OUT 2 jack is used.	49
ANALOG MONITOR OUT	Adjusts the delay time applied when only the analog MONITOR OUT (COMPONENT VIDEO or VIDEO) jacks are used.	49

Menu/Submenu	Function	Page
Function Setup	Sets various items for HDMI and display.	49
HDMI	Sets various items for input sources.	49
HDMI Control	Selects on or off of the HDMI control function when a component that supports the HDMI control function is connected to the HDMI OUT 1 jack of this unit.	49
Standby Through	Selects on or off of output of HDMI signals input from the HDMI 1-4 jacks or HDMI IN (VIDEO AUX) jack to the active HDMI OUT jack(s) when this unit is on standby.	49
Audio Output	Selects this unit or a component connected to the HDMI OUT 1 jack of this unit for reproducing sound signals.	49
Resolution	Sets resolution of the HDMI output that is converted from analogy visual input signals.	50
Aspect	Set an aspect ratio of images reproduced by HDMI signals converted from analog video input signals.	50
Display	Sets items for a video monitor or the front panel display.	50
Dimmer	Sets brightness of the front panel display.	50
Front Panel Display Scroll	Selects the way to display characters on the front panel display.	50
GUI Position	Adjusts top and bottom positions of the GUI screen displayed on the video monitor.	50
Volume	Sets items for volumes.	50
Adaptive DRC	Adjusts the dynamic range (difference between the maximum volume and the minimum volume) in conjunction with the volume level.	50
Max Volume	Sets the maximum volume level so that the volume will not be accidentally increased.	51
Initial Volume	Sets the volume at the time this unit is turned on.	51
Input Rename	Changes input source names to be displayed on the GUI screen or the front panel display.	51
Zone	Sets the maximum volume level and initial volume level of Zone2/3.	51
Zone2 Max Volume	Sets the maximum volume level of Zone2.	51
Zone2 Initial Volume	Sets the volume level of Zone2 applied when this unit is turned on.	51
Zone3 Max Volume	Sets the maximum volume level of Zone3.	51
Zone3 Initial Volume	Sets the volume level of Zone3 applied when this unit is turned on.	51
Network	Sets items for network features.	51
IP Address	Sets the network parameters (IP address, etc) manually.	51
MAC Address Filter	Sets MAC address filter to restrict access to this unit via LAN.	51
Network Standby	Selects whether or not to accept the commands via network when this unit is on standby.	52
Information	Displays network information.	52
DSP Parameter	Sets parameters for the sound field programs.	52
Memory Guard	Protects some settings against accidental alteration.	55

Basic operation of the Setup menu

The Setup menu screen appears on both the GUI screen and front panel display.

GUI screen



Front panel display

In this section, procedures of setting menus using the video monitor are described.

1 Press [9]ON SCREEN on the remote control.

The GUI screen appears on the video monitor.

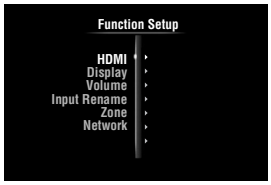
2 Press [10]Cursor ▽ to select "Setup" and then press [10]ENTER.

The Setup menu appears on the video monitor.

3 Press [10]Cursor △ / ▽ to select the desired menu then press [10]ENTER.

Items of the selected menu are displayed.

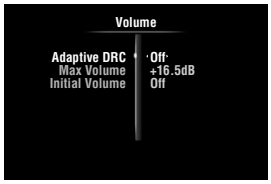
Example (Function Setup)



- To return to the previous menu, press [10]RETURN.

4 If necessary, press [10]Cursor △ / ▽ to select the desired submenu then press [10]ENTER.

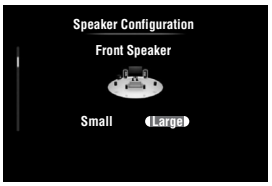
Example (Volume)



5 Press [10]Cursor △ / ▽ to select an item to edit and then press [10]Cursor ◁ / ▷ to change the setting.

Some items in "Manual Setup" of "Speaker Setup" take up a full screen. To display other items in "Manual Setup", press [10]Cursor △ / ▽.

Example (Speaker Configuration)



- To configure other items, repeat step 5.

6 To turn off the GUI screen, press [9]ON SCREEN.

Note

- In case [10]Cursor △ / ▽ / ◁ / ▷ or other keys do not work after closing the Setup menu, press [4]Input selection key to select the current input source again.

Speaker Setup

You can set various items for speakers. Two kinds of adjustments are available. One is "Auto Setup" (YPAO) for automatic adjustment and another is "Manual Setup" for manual adjustment.

- The default settings are marked with "*".

Auto Setup

Automatically adjusts output characteristics of speakers to obtain optimum balance for the output sound based on positions and performances of the speakers and acoustic characteristics or the room, which are automatically measured. For details on operations, see page 21.

Manual Setup

Adjusts output characteristics of speakers based on manually set parameters.
After "Auto Setup" (YPAO) is performed, you can check automatically adjusted parameters in the "Manual Setup" menu. Fine adjust the parameters for your preference if necessary.

■ Speaker Configuration

Sets speaker configurations, such as connection status of speaker and a size of the connected speaker (sound reproduction capacity), suitable for the listening environment.

- The speaker configuration includes items for defining a speaker size: "Large" or "Small". "Large" and "Small" refer to speakers with woofer diameters 16 cm or larger and smaller than 16 cm, respectively.

Extra Speaker Assignment

Choices: Zone2*, Zone2 + Zone3, Presence, None

Selects the application for the EXTRA SP (SP1/SP2) terminals.

Zone2	Assigns the SP1 terminals for Zone2 speakers and disables the SP2 terminals.
Zone2 + Zone3	Assigns the SP1 terminals for Zone2 speakers and SP2 terminals for Zone3 speakers.
Presence	Assigns the SP1 terminals for presence speakers and disables the SP2 terminals.
None	Disables the EXTRA SP (SP1/SP2) terminals.

Note

- When setting "Extra Speaker Assignment" to "Zone2" or "Presence", surround back channel signals for main unit are separately output from other channels.
- When setting "Extra Speaker Assignment" to "Zone2 + Zone3", surround and surround back channel signals for main unit are separately output from other channels.

LFE / Bass Out

Choices: Subwoofer, Front, Both*

Selects speaker(s) for outputting low-frequency components of the LFE (low-frequency effect sound) channel or other channels. The output status is as follows.

LFE channel signals

Parameter	Subwoofer	Front speakers	Other speakers
Subwoofer	Output	Not output	Not output
Front	Not output	Output	Not output
Both	Output	Not output	Not output

Low-frequency components of other channel signals

Parameter	Subwoofer	Front speakers	Other speakers
Subwoofer	[1]	[2]	[2]
Front	Not output	[3]	[2]
Both	[3]	[4]	[2]

[1] Outputs low-frequency components of the channel of speaker, the size of which is set to "Small".
[2] Outputs low-frequency components when the sizes of speakers are set to "Large".
[3] Outputs low-frequency components of the front left and right channels and the channel of speaker, the size of which is set to "Small".
[4] Outputs low-frequency components of the front left and right channels.

Front Speaker

Choices: Small, Large*

Sets the sizes of front left and right speakers.

Small	Select this when small speakers are connected. Low-frequency components of the front left and right channels are output from a subwoofer.
Large	Select this when large speakers are connected.

Note

- If "LFE / Bass Out" is set to "Front", "Front Speaker" automatically switches to "Large" even when it is set to "Small".

Center Speaker

Choices: None, Small*, Large

Sets the size of center speaker.

None	Select this when no center speaker is connected. Center channel signals are spread to front left and right speakers.
Small	Select this when a small center speaker is connected. Low-frequency components of center channel are output from a subwoofer. If a subwoofer is not connected they are output from front speakers.
Large	Select this when a large center speaker is connected.

Surround Speaker

Choices: None, Small*, Large

Sets sizes of left and right surround speakers.

None	Select this when no surround speakers are connected. Surround channel signals are spread to front left and right speakers. "Surround Back Speaker" automatically switches to "None" when this is selected.
Small	Select this when small surround speakers are connected. Low-frequency components of surround channels are output from a subwoofer. If a subwoofer is not connected they are output from front speakers.
Large	Select this when large surround speakers are connected.

- When "None" is selected, the sound field programs automatically enter the Virtual CINEMA DSP mode.

Surround Back Speaker

Choices: None, Large x 1, Small x 1, Large x 2, Small x 2*

Sets sizes of left and right surround back speakers.

None	Select this when no surround back speaker are connected. Surround back channel signals are output from the surround L/R speakers and subwoofer. If the subwoofer is disabled, they are output from the surround L/R speakers and front speakers.
Large x 1	Select this when one large surround back speaker is connected.
Small x 1	Select this when one small surround back speaker is connected.
Large x 2	Select this when two large surround back speakers are connected.
Small x 2	Select this when two small surround back speakers are connected.

- When "Surround Back Speaker" is set to "None", "PLIIx Movie", "PLIIx Music" and "PLIIx Game" of the surround decode mode (page 29) are not available.

Bass Crossover Frequency

Choices: 40Hz, 60Hz, 80Hz*, 90Hz, 100Hz, 110Hz, 120Hz, 160Hz, 200Hz

Sets the lower limit of the low-frequency component output from a speaker with a size set to "Small" (Small x 1, Small x 2) Sound with a frequency below that limit is output from a subwoofer or front speakers.
If your subwoofer has a volume control or a crossover frequency control, set the volume to half or the crossover frequency at the maximum.

Subwoofer Phase

Choices: Normal*, Reverse

Sets the phase of your subwoofer if bass sounds are lacking or unclear.

Normal	Select this not to change the phase of your subwoofer.
Reverse	Select this to reverse the phase of your subwoofer.

■ Speaker Level

Adjustable range: –10.0dB to +10.0dB (0.5dB step)
Defaults: 0dB (FR.L, FR.R, SWFR, PR.L, PR.R)
–1.0dB (CNTR, SUR.L, SUR.R, SBL, SBR)

Separately adjusts volume of each speaker so that the sounds form speakers are at the same volume at the listening position. Items to be displayed vary depending on the number of speakers connected.

- When only one surround back speaker is connected, "SB" appears instead of "SBL" and "SBR".
- You can adjust the volume listening to test tones when you set "Test Tone" to "On" (on this page).
- If your subwoofer has a volume control or a crossover frequency control, set the volume to half or the crossover frequency at the maximum.

■ Speaker Distance

Adjusts timing at which each speaker outputs sound so that sounds from speakers reach the listening position at the same time. Set unit (Unit) first and set the distance of each speaker.

Unit

Choices: meters (m)*, feet (ft)

meters (m)	Displays the speaker distance in meters.
feet (ft)	Displays the speaker distance in feet.

FR.L / FR.R / CNTR / SUR.L / SUR.R / SBL / SBR / SWFR / PR.L / PR.R

Adjustable range: 0.30m to 24.00m (1.0ft to 80.0ft)
Defaults: 3.00m (10.0ft) (FR.L, FR.R, SWFR, PR.L, PR.R)
2.60m (8.5ft) (CNTR)
2.40m (8.0ft) (SUR.L, SUR.R, SBL, SBR)

- Available items differ depending on the "Speaker Configuration" settings (page 46).
- When only one surround back speaker is connected, "SB" appears instead of "SBL" and "SBR".

■ Equalizer

Adjusts sound quality and tone using a parametric graphic equalizer.

EQ Type Select

Choices: Auto PEQ, GEQ*, Off

Selects an equalizer type.

Auto PEQ	Uses a parametric equalizer selected in "Auto Setup". Characteristics of the currently used parametric equalizer are displayed below "Auto PEQ".
GEQ	Uses a graphic equalizer. Press 10**ENTER** to adjust the characteristics of the graphic equalizer.
Off	Not use a graphic equalizer.

GEQ

Channels Front Left, Front Right, Center, Surround Left, Surround Right, Surround Back Left, Surround Back Right
Choices: 63Hz, 160Hz, 400Hz, 1kHz, 2.5kHz, 6.3kHz, 16kHz
Adjustable range: –6.0dB to 0dB* to +6.0dB (0.5dB step)

Adjusts sound quality of each speaker using a graphic equalizer. The graphic equalizer of this unit can adjust signal levels in 7 frequency ranges.
To adjust the signal level within each range, press 10**Cursor** ◁ / ▷ to select the desired speaker while "Channel" is selected, press 10**Cursor** △ / ▽ to select the desired frequency band and then press 10**Cursor** ◁ / ▷ to adjust the signal level.

■ Test Tone

Choices: Off*, On

Switches between on and off of an oscillator that generates test tones. When "On" is selected, you can adjust the settings of "Manual Setup" while listening to a test tone.

Off	Not generate test tones.
On	Generates test tones.

Sound Setup

You can set various items for sound outputs.

■ Dynamic Range

Choices: Min/Auto, STD, Max*

Selects the dynamic range adjustment method for reproducing bitstream signals.

Min/Auto	(Min) Sets the dynamic range suitable for low volume or a quiet environment, such as at night, for bitstream signals except for Dolby TrueHD signals. (Auto) Adjusts the dynamic range for Dolby TrueHD signals based on input signal information.
STD	Sets the standard dynamic range recommended for regular home use.
Max	Outputs sound without adjusting the dynamic range of the input signals.

■ Lipsync

Adjusts delay between video output and audio output. This unit automatically adjusts the delay (automatic lipsync) when a TV that supports the automatic lipsync is connected to the HDMI OUT 1 or HDMI OUT 2 jack of this unit and HDMI signals are output only from the corresponding HDMI OUT jack.

HDMI OUT1

Adjustable range: 0* to 240ms (1 ms step)

Displays the delay time adjusted by automatic lipsync for HDMI signals output from the HDMI OUT 1 jack. To fine adjust the delay time, set an offset time in the "Offset" field. This offset time is also applied to the signals output from the HDMI OUT 2 jack when both the HDMI OUT 1 and HDMI OUT 2 jacks are active.

HDMI OUT2

Adjustable range: 0* to 240ms (1 ms step)

Displays the delay time adjusted by automatic lipsync for HDMI signals output from the HDMI OUT 2 jack. To fine adjust the delay time, set an offset time in the "Offset" field.

ANALOG MONITOR OUT

Adjustable range: 0* to 240ms (1 ms step)

Adjusts the delay time applied when only the analog MONITOR OUT (COMPONENT VIDEO or VIDEO) jacks are used.

Function Setup

You can set various items for HDMI and display.

HDMI

You can set items for HDMI.

■ HDMI Control

Choices: On, Off*

Selects on or off of the HDMI control function when a component that supports the HDMI control function is connected to the HDMI OUT 1 jack of this unit. When this parameter is set to "On", this unit output signals input from the HDMI 1-4 jacks or HDMI IN (VIDEO AUX) jack to the video monitor even when this unit is on standby.

On	Enables the HDMI control function.
Off	Disables the HDMI control function.

- The Ⓑ**HDMI THROUGH** indicator lights up in the following cases while this unit is on standby.
  – when the HDMI control function is on
  – when the HDMI signal standby-through function is currently working
- When "HDMI Control" is set to "On", this unit consumes 1 to 3 watts of power depending on a condition of an HDMI signal passing through this unit.

■ Standby Through

Choices: On, Off*

Selects on or off of output of HDMI signals input from the HDMI 1-4 jacks or HDMI IN (VIDEO AUX) jack to the active HDMI OUT jack(s) when this unit is on standby. When this parameter is set to "On", this unit output signals input from the HDMI 1-4 jacks or HDMI IN (VIDEO AUX) jack to the video monitor(s) even when this unit is on standby.

On	Outputs the HDMI signals to the active HDMI OUT jack(s)
Off	Not output the HDMI signals to the HDMI OUT 1/2 jacks.

- This parameter is not available when "HDMI Control" is set to "On".
- To enables HDMI signal standby-through output, any one of the input sources connected to the HDMI 1-4 jacks or HDMI IN (VIDEO AUX) jack must be selected before switching to standby.
- When "Standby Through" is set to "On", the Ⓑ**HDMI THROUGH** indicator lights up. In this state, the amount of power consumption in the standby mode increases.

■ Audio Output

Choices: Amplifier*, TV, Amplifier + TV

Selects this unit or a component connected to the HDMI OUT 1 jack of this unit for reproducing sound signals input from the HDMI 1-4 jacks or HDMI IN (VIDEO AUX) jack.

Amplifier	Outputs HDMI sound signals form the speakers connected to this unit.

TV	Outputs HDMI sound signals from the speakers of a TV connected to the HDMI OUT 1/2 jacks of this unit. Sound output from the speakers connected to this unit is muted.
Amplifier + TV	Outputs HDMI sound signals from the speakers connected to this unit and the speakers of a TV connected HDMI OUT 1/2 jacks of this unit.

Note

- Signal formats of audio and visual signals output from this unit to the TV vary depending on specifications of the monitor.

- This parameter is not available when "HDMI Control" is set to "On".

■ Resolution

Choices: Through*, 480p(576p), 720p, 1080i, 1080p

Upscales the resolution of HDMI output that is converted from analog video input signals and output from the HDMI OUT 1/2 jacks.

Notes

- Resolution of the HDMI output converted from 720p or 1080i analog video signals cannot be upscaled.
- When a video monitor is connected to one of the HDMI OUT 1/2 jacks and the corresponding HDMI OUT jack is selected (page 40), this unit automatically detects a resolution that the monitor supports. An asterisk (*) appears on the left of detected resolution.
- When a video monitor is connected to both of the HDMI OUT 1/2 jacks and "HDMI OUT 1+2" is selected (page 40), this unit automatically selects a resolution depending on the lower-resolution monitor.
- If this unit cannot detect the resolution that the monitor supports, set "MON.CHK" in the advanced setup menu to "SKIP" (page 60) and try again.

■ Aspect

Choices: Through*, 16:9, Smart Zoom

Sets a horizontal to vertical ratio (aspect ratio) of images reproduced by HDMI signals output from the HDMI OUT 1/2 jacks when the HDMI signals are converted from analog video input signals by a video conversion function.

Through	Outputs the video signals without changing the aspect ratio.
16:9	Outputs the video signals that displays 4:3 images on a 16:9 TV with black bands on the right and left sides of the TV screen.
Smart Zoom	Outputs the video signals that displays 4:3 images on a 16:9 TV by stretching right and left of images to fit on the TV screen.

Notes

- You cannot change the aspect ratio of the screen when "Resolution" is set to "Through".
- This setting is not effective for inputs with the aspect ratio other than 4:3.
- You cannot obtain an effect of the aspect ratio when visual signals are input from the HDMI 1-4 jacks or HDMI IN (VIDEO AUX) jack or when 720p, 1080i or 1080p signals are input.

Display

You can set items for a video monitor and the front panel display.

■ Dimmer

Adjustable range: –4 to 0*

Sets brightness of the front panel display. As the value is lowered, the brightness of the front panel display is darkened.

Note

- The brightness of display does not become bright in Pure Direct mode even if the value is increased.

■ Front Panel Display Scroll

Choices: Continuous*, Once

Selects the way to scroll the screen when a total number of characters exceed a display area of the front panel display.

Continuous	Repeatedly displays all characters by scrolling.
Once	Displays all characters by scrolling once, halts scrolling and then displays first 14 characters.

■ GUI Position

Adjustable range: –5 to 0* to +5 (vertical/horizontal direction)

Adjusts the position of the GUI screen displayed on the video monitor. To move the screen up (or to the right), set this value larger. To move the screen down (or to the left), set this value smaller.

Volume

You can set items for volumes.

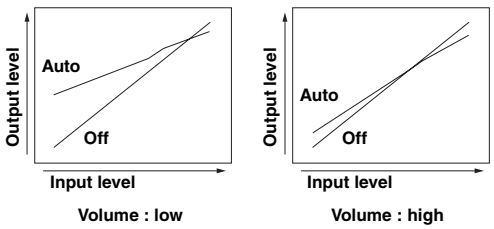
■ Adaptive DRC

Choices: Auto, Off*

Adjust the dynamic range in conjunction with the volume level. This feature is useful when you are listening at lower volumes or at night. When this function is enabled, the dynamic range is adjusted as follows.

When the volume level is low: narrow the dynamic range

When the volume level is high: widen the dynamic range



Auto	Adjusts the dynamic range automatically.
Off	Not adjust the dynamic range automatically.

- This setting is also effective for headphones.

■ Max Volume

Adjustable range: –30.0dB to +15.0dB, +16.5dB* (5.0 dB step)

Sets the maximum volume level so that the volume will not be accidentally increased. For example, you can adjust the volume between –80.0 dB and –5.0 dB (or Mute) when you set this parameter to "–5.0dB". The volume increases to the maximum level when this parameter is set to +16.5 dB (default).

■ Initial Volume

Adjustable range: Off*, Mute, –80.0dB to +16.5dB (0.5 dB step)

Sets the volume at the time this unit is turned on. When this parameter is set to "Off", the volume level used when this unit was set to standby is applied.

Note

- When you set "Max Volume" and "Initial Volume" the setting of "Max Volume" becomes effective. For example, when you set "Max Volume" to "–30.0dB" and "Init. Volume" to "0.0dB", the volume is automatically set to "–30.0dB" at the next time this unit is turned on.

Input Rename

Changes input source names to be displayed on the front panel display.

Selecting a name to be displayed from templates

Press [10]**Cursor** △ / ▽ to select the input source name to edit and then press [10]**Cursor** ◁ / ▷ to select a new name from the templates (Blu-ray, DVD, SetTopBox, etc.).

Entering an original name

Press [10]**Cursor** △ / ▽ to select the input source name to edit and then press [10]**ENTER**. Enter up to 9 characters by selecting one character at a time with the following key operations.

[10]**Cursor** ◁ / ▷	Selects a character to edit.
[10]**Cursor** △ / ▽	Selects a character to enter.
[10]**ENTER**	Enters a selected character.

The following characters are available for input.
A to Z, 0 to 9, a to z, symbols (#, *, –, +, etc.) and space

Zone

Sets the maximum volume level and initial volume level of Zone2/3.

- The menu items for Zone2 are available only when "Extra Speaker Assignment" is set to "Zone2" or "Zone2 + Zone3" (page 47).
- The menu items for Zone3 are available only when "Extra Speaker Assignment" is set to "Zone2 + Zone3" (page 47).

■ Zone2/3 Max Volume

Adjustable range: –30.0dB to +15.0dB, +16.5dB* (5.0 dB step)

Sets the maximum volume level of Zone2/3, so that the volume will not be accidentally increased. For example, you can adjust the volume between –80.0 dB and –5.0 dB when you set this parameter to "–5.0dB".

■ Zone2/3 Initial Volume

Adjustable range: Off*, Mute, –80.0dB to +16.5dB (0.5 dB step)

Use this feature to set the volume level of Zone2/3 when the power of Zone2/3 unit is turned on. When this parameter is set to "Off", the volume level used at the time when the Zone2/3 unit was set to standby is applied.

Note

- The "Zone2 Max Volume" or "Zone3 Max Volume" setting takes priority over the "Zone2 Initial Volume" or "Zone3 Initial Volume" setting. For example, if you set "Zone2 Max Volume" to "–30.0dB" and "Zone2 Initial Volume" to "0.0dB", the volume is automatically set to "–30.0dB" at the next time the Zone2 unit is turned on.

Network

You can set items for network features.

■ IP Address

Sets the network parameters (IP address, etc).

DHCP

Choices: On*, Off

Select whether or not this unit obtain the network parameters (IP address, subnet mask, default gateway, primary DNS server and secondary DNS server) from the DHCP server of the connected network.

On	Select this setting when this unit can obtain the network parameters from the DHCP server of the connected network.
Off	Select this setting when you set the network parameters manually.

IP Address

Use this parameter to specify the IP address assigned to this unit. This value must not be the same as the one used for other devices in the target network.

Subnet Mask

Use this parameter to specify the subnet mask value assigned to this unit.

Default Gateway

Use this parameter to specify the IP address of the default gateway.

DNS Server (P) / DNS Server (S)

Use this parameter to specify the IP address of the primary and secondary DNS (Domain Name System) servers.

- If you have only one DNS address, enter the DNS address in "DNS Server (P)". If you have two or more DNS addresses, enter one of them in "DNS Server (P)" and another in "DNS Server (S)".

■ MAC Address Filter

Sets MAC address filter to restrict access to this unit via LAN.

MAC Address Filter

Choices: Off*, On

Select whether or not to use the MAC address filter function.

Off	Disables the MAC address filter function.

On Permit access to this unit only from network devices with the specified MAC addresses.

MAC Address 1-10

Specify MAC addresses of network devices that are permitted to access to this unit when "MAC Address Filter" is set to "On".

■ Network Standby

Choices: Off*, On

Selects whether or not to accept the commands via network when this unit is on standby.

Off Not accept the commands via network.
On Accept the commands via network.

- When "Network Standby" is set to "On", the amount of power consumption in the standby mode increases.

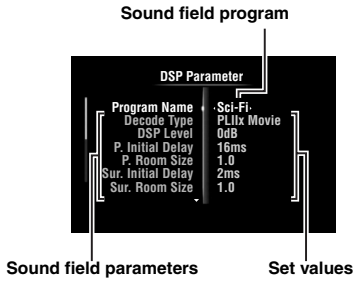
■ Information

Displays the network parameters (IP address, etc.) or vTuner ID assigned to this unit.

DSP Parameter

Although the field sound programs would satisfy you as they are with the default parameters, you can arrange sound effect or decoders suitable for acoustical conditions of sources or rooms by setting the parameters.

1 Press [10]Cursor △ / ▽ to select "DSP Parameter" and then press [10]ENTER.



2 Press [10]Cursor △ / ▽ to select "Program Name" and then press [10]Cursor ◁ / ▷ to select a sound field program to edit.

3 Press [10]Cursor △ / ▽ to select a parameter to edit and then press [10]Cursor ◁ / ▷ to change the setting.

- Repeat steps 2 and 3 to change other sound field program parameters.

To initialize the parameters of the selected sound field program, press [10]Cursor ▽ repeatedly to select "Initialize" and then press [10]Cursor ▷. Then, press [10]Cursor ▷ again to execute the initialization or [10]Cursor ◁ to cancel it.

CINEMA DSP basic parameters

DSP Level

Adjustable range: –6dB to 0dB* to +3dB

Fine adjusts an effect level (level of the sound field effect to be added). You can adjust the level of the sound field effect while checking sound levels. Adjust "DSP Level" as follows.

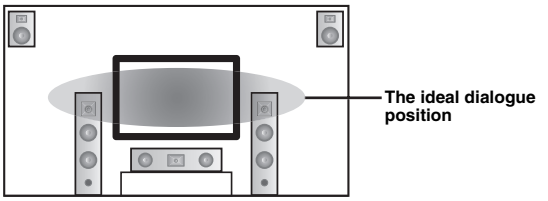
- The effect sound is too soft.
- There are no differences between effects of the sound field programs.
  →Increase the effect level.

- The sound is dull.
- The sound field effect is added too much.
  →Reduce the effect level.

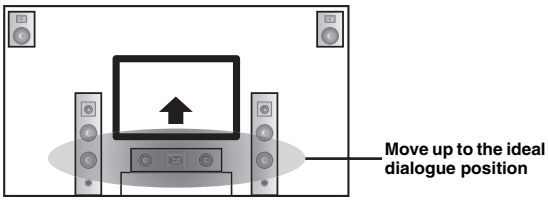
Dialogue Lift

Choices: 0* to 5

Use this feature to adjust the vertical position of the dialogues in movies. The ideal position of the dialogues is at the center of the video monitor screen.



If the dialogues are heard at the lower position of the video monitor screen, increase the value of "Dialogue Lift".



When the value is set to zero, the position is at the lowest. The position gets higher as you increase the value.

Notes

- This setting is available only when "Extra Speaker Assignment" is set to "Presence" (page 47).
- You cannot move the dialogue position down from the initial dialogue position.

3D DSP

Choices: On*, Off

When CINEMA DSP 3D is enabled, sets whether to use sound field programs in 3D mode.

Note

- This setting is available only when "Extra Speaker Assignment" is set to "Presence" (page 47).

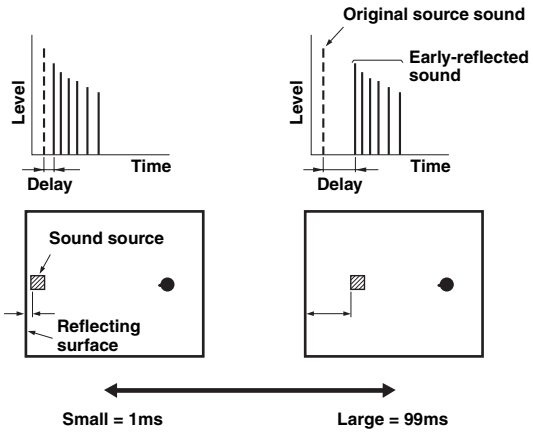
Sound field parameters for advanced configurations

■ Parameters for adjusting early-reflected sound

Initial Delay / P. Initial Delay / Sur. Initial Delay / Sur. Back Initial Delay

Adjustable range: 1 to 99ms (Initial Delay / P. Initial Delay), 1 to 49ms (Sur. Initial Delay / Sur. Back Initial Delay)

Adjusts attenuation characteristics of early-reflected sound. You can create a lively sound field (with a high reverberant sound level) as you increase the value, and a dead sound field (with a low reverberant sound level) as you decrease the value. Creating either a lively sound field or a dead sound field in an actual music hall is determined by the acoustic absorption characteristics of reflection surfaces. A dead sound field is created when the attenuation time is short while a lively sound field is created when the attenuation time is long.



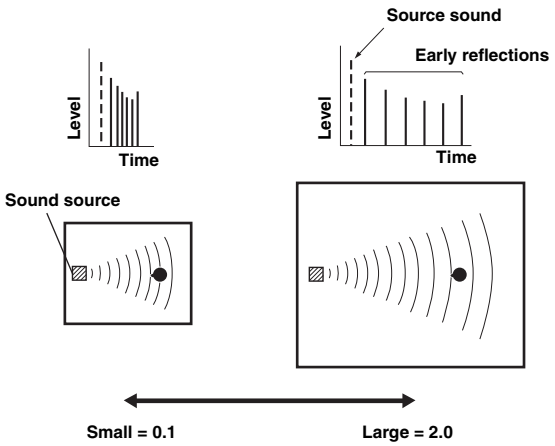
- We recommended that you adjust the size of corresponding sound field when you adjust the delay time.

■ Parameters for specifying room size

Room Size / P. Room Size / Sur. Room Size / Sur. Back Room Size

Adjustable range: 0.1 to 2.0

Produces different senses of sound expansion according to room sizes specified. In a large size room such as a music hall, the duration from when reflected sound is heard until when the next reflected sound is heard is long. Thus, different senses of sound expansion can be created by changing the duration. 1.0 is the original room size. When this parameter is set to 2.0, each side of the room is defined as twice larger than the original room size.

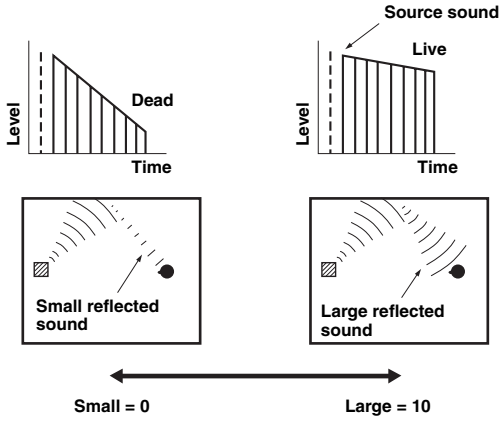


■ Parameters for defining attenuation characteristics of early-reflected sound

Liveness / P. Liveness / Sur. Liveness / Sur. Back Liveness

Adjustable range: 0 to 10

Adjusts the attenuation of reflected sound. You can create a lively sound field (with a high reverberant sound level) as you increase the value, and a dead sound field (with a low reverberant sound level) as you decrease the value. Creating either a lively sound field or a dead sound field in an actual music hall is determined by the acoustic absorption characteristics of reflection surfaces. A dead sound field is created when the attenuation time is short while a lively sound field is created when the attenuation time is long.

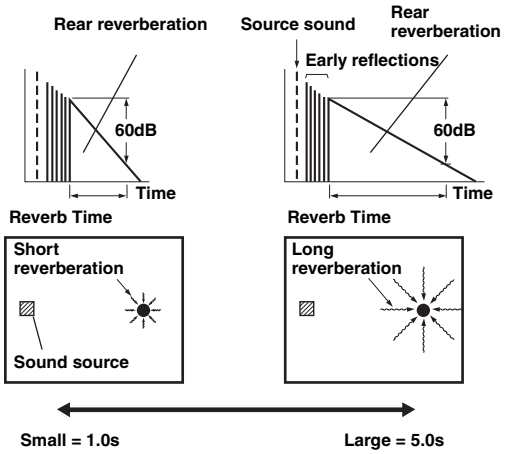


■ Parameters for adjusting reverberant sound

Reverb Time

Adjustable range: 1.0 to 5.0s

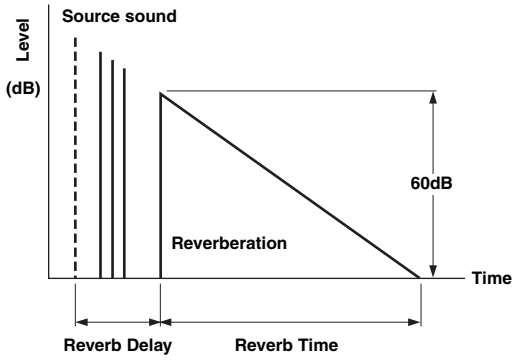
Reverb Time parameter adjusts the attenuation time of the rear reverberant sound based on the time that about 1kHz reverberant sound takes for 60dB of attenuation. Reverberant sound attenuates faster as you decrease the value. Reverb Time adjustment allows you to create a natural reverberant sound, by setting the attenuation time longer for a sound source or room with less echo, or shorter for a sound source or room with more echo.



Reverb Delay

Adjustable range: 0 to 250ms

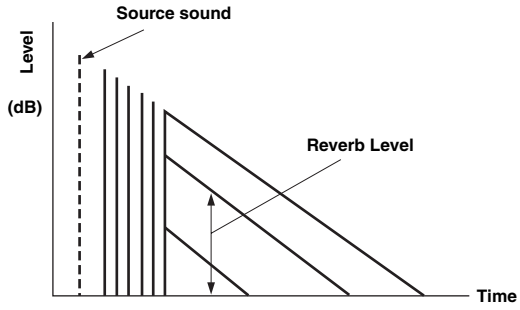
Reverb Delay parameter adjusts the time difference between the beginning of the direct sound and the beginning of the reverberation sound. The larger the value, the later the reverberation sound begins. Increasing the value of Reverb Delay allows you to create a reverberant sound in a wider area for the same Reverb Time.



Reverb Level

Adjustable range: 0 to100%

Reverb Level parameter adjusts the reverberation sound level. Increasing the value of Reverb Level makes the reverbration sound level higher, which allows you to create more echo.



Parameters for certain sound field programs

■ Parameter for MOVIE sound field programs

Decode Type

Choices: PLIIx Movie (PLII Movie), Neo:6 Cinema

Selects the decoder type for use with the MOVIE sound field programs.

Note

- You cannot select a decoder for the following MOVIE sound field programs.
  – Mono Movie
  – Sports
  – Action Game
  – Roleplaying Game

■ Parameter for 2ch Stereo

Direct

Choices: Auto*, Off

Automatically bypasses the DSP circuit and tone control circuit when an analog sound source is selected as the input source. You can enjoy a higher quality sound.

Auto Outputs sound by bypassing the DSP circuit and tone control circuit when the "Bass" and "Treble" tone controls are both set to 0 dB.

Off Do not bypass the DSP circuit and tone control.

■ Parameters for 7ch Stereo

Center Level / Surround L Level / Surround R Level / Surround Back Level / Presence L Level / Presence R Level

Adjustable range: 0 to 100%

Adjusts the volume of the center, surround L/R, surround back and presence L/R channels in the 7ch Stereo program. The available parameters differ depending on the setting of the speakers.

■ Parameter for Straight Enhancer and 7ch Enhancer

Effect Level

Choices: High*, Low

Adjusts the Compressed Music Enhancer effect level. When the high-frequency signals of the source is emphasized too much, set the effect level to "Low". To reduce the effect, set this parameter to "Low".

Decoder parameters

You can customize decoder effects by setting the following parameters. For details about the types of decoders, see "Surround decode mode" (page 29).

■ Parameter for PLIIx Music and PLII Music

Panorama

Choices: Off*, On

Adjusts the soundscape of the front sound field. Sends stereo signals to the surround speakers as well as the front speakers for a wraparound effect.

Dimension

Adjustable range: –3 to STD* to +3

Adjusts the difference in level between the front sound field and the surround sound field. You can adjust the difference in level created by the software being played back to obtain the preferred sound balance. The surround sound gets stronger as you make the value more negative and the front sound gets stronger as you make the value more positive.

Center Width

Adjustable range: 0 to 3* to 7

You can spread the center sound toward left and right according to your preference. Set this parameter to 0 for outputting the center sound from the center speaker only, or to 7 for outputting it from the front left/right speaker.

■ Parameter for Neo:6 Music

Center Image

Adjustable range: 0.0 to 0.3* to 1.0

Adjusts the front left and right channel output relative to the center channel to make the center channel more or less dominant as necessary.

Memory Guard

Choices: Off*, On

Protects the Setup menu settings against accidental alteration.

Off Not protect settings.

On Protects the Setup menu settings (except for "Decode Type" in "DSP Parameter" and "Memory Guard").

Note

- When this parameter is switched to "On", " 🔒 " appears at the top left corner of the Setup menu screen.

Using multi-zone configuration

This unit allows you to configure a multi-zone audio system. This feature allows you to set this unit to reproduce separate input sources in the main zone, second zone (Zone2) and third zone (Zone3). You can control this unit from the second zone or third zone using the supplied remote control.

Only analog signal can be sent to the second and third zones. If you want to output sounds to Zone2/3, connect an external component to the AV5-6 or AUDIO1-2 jacks (by analog connection). For example, if you want to output sound from an HDMI DVD player to the second zone, you must connect the HDMI DVD player to this unit by both HDMI and analog connections.

Connecting Zone2/3

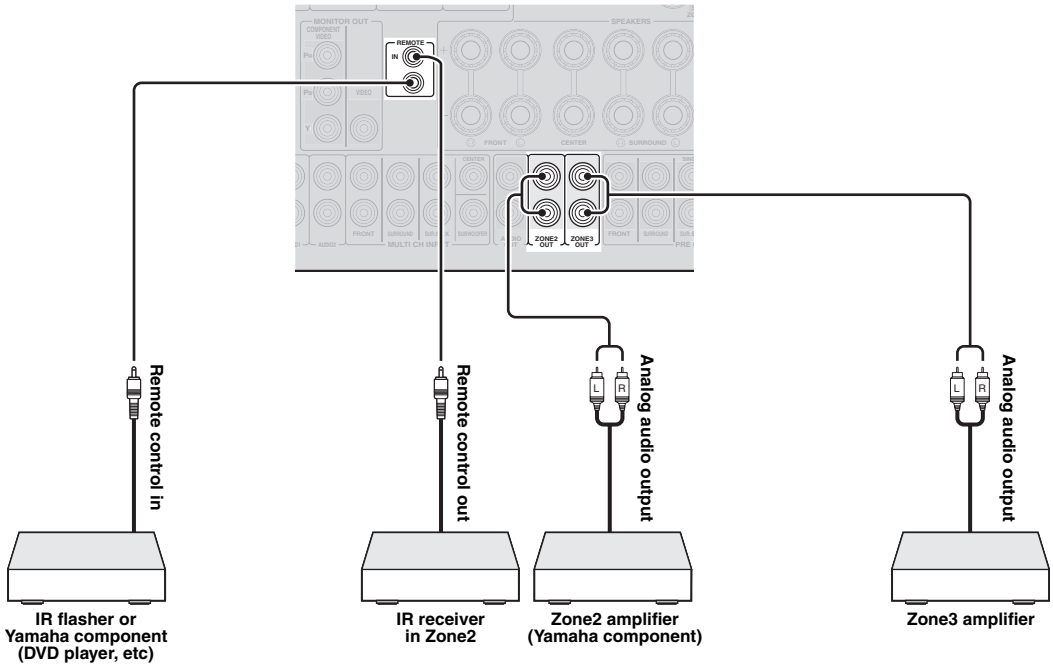
You need the following additional equipment to use the multi-zone functions of this unit:

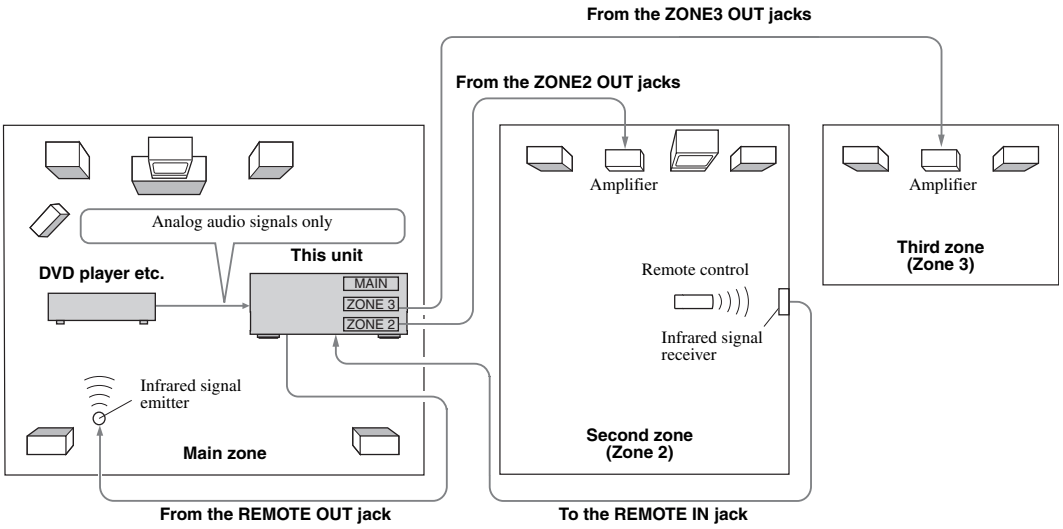
- An infrared signal receiver in the second zone and/or third zone.
- An infrared signal emitter in the main zone. This emitter transmits infrared signals from the remote control to a CD player or a DVD player, etc. in the main zone via the infrared signal receiver in the second zone and/or third zone.
- An amplifier and speakers in the second zone and/or third zone.

- Since there are many possible ways to connect and use this unit in a multi-zone configuration, we recommend that you consult with your nearest authorized Yamaha dealer or service center about the Zone2/3 connections that best meet your requirements.
- Some Yamaha models can be directly connected to the REMOTE jacks of this unit. You may not need use an infrared signal emitter for these products. Up to 6 components can be connected using monaural analog mini cables or via an IR flashers. For details about connections, see "Transmitting/receiving remote control signals" (page 18).

Using external amplifiers

Connect an amplifier/receiver in the second zone and/or third zone and other components to this unit as follows.





Using the internal amplifiers of this unit

Important safety notice

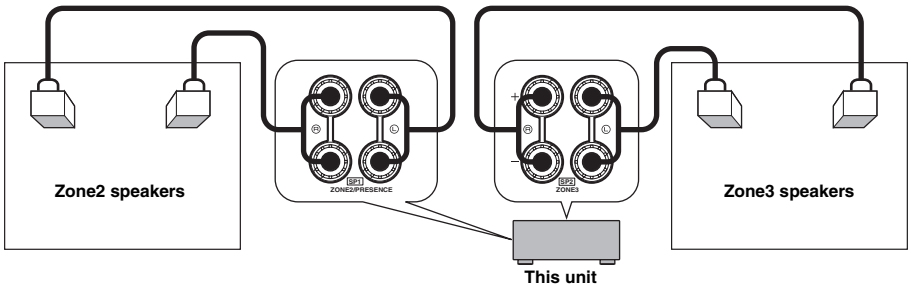
The EXTRA SP terminals of this unit should not be connected to a Passive Loudspeaker Selector Box or more than one loudspeaker per channel.
Connection to a Passive Loudspeaker Selector Box or multiple speakers per channel could create an abnormally low impedance load resulting in amplifier damage. See this owner's manual for correct usage.
Compliance with minimum speaker impedance information for all channels must be maintained at all times. This information is found on the back panel of your unit.

If you want to use one internal amplifier of this unit

Connect the Zone 2 speakers directly to the SP1 terminals and then set "Extra Speaker Assignment" to "Zone2" (page 47)

If you want to use two internal amplifiers of this unit

Connect the Zone 2 and Zone 3 speakers directly to the SP1 and SP2 terminals and then set "Extra Speaker Assignment" to "Zone2 + Zone3" (page 47).



- You can use the speakers connected to EXTRA SP (SP1/SP2) terminals as the front speaker system of another zone.
- When you use the internal amplifiers for the Zone2/3 speakers, you can adjust the volume level and set the initial volume and maximum volume of the Zone2/3 speakers (page 51).

Controlling Zone2/3

You can select and control Zone2/3 by using the control keys on the front panel or on the remote control. The available operations are as follows:

- Selecting the input source.
- Tuning into the desired station (when "TUNER" is selected as the input source)
- Adjusting the volume of Zone2/3 (when Zone2/3 speakers are connected to the EXTRA SP terminals).

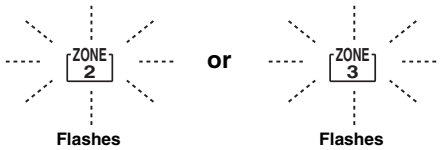
Switching to the Zone2/3 operation mode

Before controlling Zone2/3 by using the control keys on the front panel or on the remote control, follow the procedure below to switch this unit to the Zone2/3 operation mode.

■ To control Zone2/3 by using the front panel control keys

Press ⒹZONE CONTROLS repeatedly to select the zone you want to control while the target zone is turned on.

The zone indicator flashes on the front panel display for approximately 10 seconds.



Note

- Complete each step while the zone indicator is flashing on the front panel display. Otherwise, the Zone2 or Zone3 operation mode is automatically canceled and this unit returns to the main zone operation mode.

■ To control Zone2/3 by using the remote control

Switch 2 Zone selection switch **to "ZONE2" or "ZONE3" position.**

Operations in the Zone2/3 operation mode

■ Turning on or set Zone2 to standby

Press ⒶZONE2 ON/OFF (or 16POWER).

■ Turning on or set Zone3 to standby

Press ⒸZONE3 ON/OFF (or 16POWER).

■ Operating Zone2/3

Rotate the ⓉINPUT selector (or press 4Input selection key) to select the desired input source.

If you press 4**USB/NET** on the remote control, press 23**Sub-input selection key** to select a sub-input source.

- Select "AV5", "AV6", "AUDIO1", "AUDIO2" or "PHONO" to listen to the input source in the selected zone.
- Select "DOCK" to use the iPod features (page 33) or Bluetooth features (page 35) in the selected zone.
- Select "TUNER" to use the FM/AM radio features (page 31) in the selected zone.
- Select "USB" to use the USB features (page 36) in the selected zone.
- Select "NET RADIO" to use the Internet Radio features (page 39) in the selected zone.
- Select "PC" to use the PC features (page 37) in the selected zone.

Note

- The sub-input source (USB, NET RADIO and PC) for "USB/NET" is shared among all zones (main, Zone2 and Zone3). You cannot select different sub-input source for each zone.

Controlling other components with the remote control

You can control external components for a selected input source with the remote control. The keys available for controlling external components are as follows:

3 SOURCE POWER
Turns on and off an external component.

10 Cursor, ENTER, RETURN
Operates the menus of external components.

11 External component operation keys
Function as a recording or playback key of an external component, or a menu display key.

12 Numeric keys
Function as numeric keys of an external component.

13 TV control keys

INPUT Switches visual inputs of TV
MUTE Mutes audio of TV
TV VOL +/– Controls the volume of TV
TV CH +/– Switches channels of TV
POWER Turns on and off TV

21 DISPLAY
Switches between the screens of external components.

- You can use **13 TV control keys** to control your TV regardless of a selected input source if a remote control code for your TV is assigned to **4 AV1**, **4 AV4** or **4 PHONO** (in the order of descending priorities).
- You need to set the remote control code first to control external components.
- The remote control keys for controlling external components are available only when the external components have corresponding control keys.

The following remote control codes are assigned to input sources as factory default settings.

■ Default remote control code settings

Input source	Category	Manufacturer	Default code
[HDMI 1]	Blu-ray Disc	Yamaha	2018
[HDMI 2]	—	—	—
[HDMI 3]	—	—	—
[HDMI 4]	—	—	—
[AV 1]	—	—	—
[AV 2]	—	—	—
[AV 3]	CD	Yamaha	5013
[AV 4]	—	—	—
[AV 5]	—	—	—
[AV 6]	—	—	—
[AUDIO 1]	—	—	—
[AUDIO 2]	—	—	—
[V-AUX]	—	—	—
[PHONO]	—	—	—
[MULTI]	—	—	—
[DOCK]	DOCK	Yamaha	5011 (fixed)
[TUNER]	Tuner	Yamaha	5007 (fixed)
[USB/NET]	—	Yamaha	— (fixed)

"—" indicates no assignment

- An external component controlled by the remote control is automatically selected according to selection of the scenes (page 24).

Setting remote control codes

You can control other components by setting the appropriate remote control codes. For a complete list of available remote control codes, refer to "List of remote control codes" at the end of this manual.
You should perform each step within 1 minute after the previous step.

1 Press 15 CODE SET on the remote control using a pointed object such as the tip of a ballpoint pen.
14 TRANSMIT blinks twice.

2 Press the desired 4 Input selection key.
To use **13 TV control keys** to control your TV, assign a remote control code for your TV to **4 AV1**, **4 AV4** or **4 PHONO**.

3 Press 12 Numeric keys to enter a remote control code.
Once the remote control code is registered, **14 TRANSMIT** blinks twice. If it fails, **14 TRANSMIT** blinks six times. Repeat from step 1.

Resetting all remote control codes

You can reset all remote control codes to the factory default settings.

1 Press 15 CODE SET on the remote control using a pointed object such as a tip of a ballpoint pen.
14 TRANSMIT blinks twice.

2 Press 9 ON SCREEN.

3 Press 12 Numeric keys to enter "9981".
Once the initialization is complete, **14 TRANSMIT** blinks twice. If it fails, **14 TRANSMIT** blinks six times. Repeat from step 1.

Advanced setup

In the advanced setup menu, you can set basic operations of this unit, such as on and off of a bi-amp connection, or initialize user settings.

1 Set this unit to standby.

2 While holding down ⓆSTRAIGHT on the front panel, press ⓁMAIN ZONE ON/OFF.

Keep holding down ⓆSTRAIGHT until "ADVANCED SETUP" appears on the front panel display.

3 Rotate the ⓅPROGRAM selector to select the parameter you want to change.

The default setting are marked with "*".

- Set values are placed in XXX of the following parameters on an actual display screen.

SP IMP. -XXX

Choices: 6ΩMIN, 8ΩMIN*

Selects output impedance of this unit according to connected speakers. When you connect 4-ohm speakers to the FRONT speaker terminals, set "SP IMP." to "6ΩMIN.".

RS232C STBY -X

Choices: Y (Yes), N (No)*

Selects whether or not to transmit data via the RS-232C terminal when this unit is in the standby mode.

REMOTE ID -XXX

Choices: ID1*, ID2

Sets a remote control ID. When using multiple Yamaha AV receivers, you can operate them with a single remote control by setting the receiver IDs to the same setting.

BI AMP - XXX

Choices: ON, OFF*

Switches on and off of bi-amp connection of main speakers. For bi-amp connection, see page 12.

SCENE IR -XXX

Choices: ON*, OFF

Selects whether or not to transmit the control signals to an external component connected to the REMOTE OUT jack on this unit when BD/DVD or CD SCENE function is selected.

MON.CHK - XXXX

Choices: YES*, SKIP

Adds upscaling limitation on output signals to a video monitor connected to this unit via the HDMI OUT jack.

INIT-XXXXXXXXX

Choices: DSP PARAM, VIDEO, NETWORK, ALL, CANCEL*

Initializes various settings stored in this unit. You can select an initialization method from the following.

DSP PARAM:	All parameters of sound field programs
VIDEO	Video conversion settings (resolution/ aspect) in the Setup menu and the GUI display position
NETWORK	Network settings in the Setup menu
ALL	All
CANCEL	Cancellation of initialization

USB FirmUpdate

NET FirmUpdate

Updates the firmware of this unit. For details on how to update the firmware, refer to information supplied with updates.

Notes

- Do not use this feature unless you need to update the firmware.
- Be sure to read information supplied with updates before updating the firmware.

VERXXX.XXX.XXX

Displays the firmware of this unit.

4 Press ⓆSTRAIGHT repeatedly to change the selected parameter setting.

To change other settings, repeat steps 3 and 4.

5 Press ⓁMAIN ZONE ON/OFF to set this unit to standby.

The settings you made are reflected next time you turn on this unit.

Setting a remote control ID

Two IDs are provided for the remote control of this unit. If another Yamaha amplifier is in the same room, setting a different remote control ID to this unit prevents unwanted operation of the other amplifier.

"ID1" is set for both the main unit and remote control by default. If you have changed the remote control ID, make sure that you select the same ID for the main unit in the the advanced setup menu.

- For details on how to set the remote control ID of the simplified remote control, see page 8.

1 Press 15 CODE SET on the remote control using a pointed object such as the tip of a ballpoint pen.

14 **TRANSMIT** blinks twice.

2 Press 9 ON SCREEN.

3 Enter the desired remote control ID code.

To switch to ID1, press 12 **Numeric keys** to enter "5019".

To switch to ID2, press 12 **Numeric keys** to enter "5020".

Once the remote control code is registered, 14 **TRANSMIT** blinks twice.

If it fails, 14 **TRANSMIT** blinks six times. Repeat from step 1.

- If you initialize the settings of this unit, "REMOTE ID" (remote control code of this unit) is set to "ID1".

APPENDIX

Troubleshooting

Refer to the table below when this unit does not function properly. If the problem you are experiencing is not listed below or if the instruction below does not help, turn off this unit, disconnect the power cable, and contact the nearest authorized Yamaha dealer or service center.

General

Problem	Cause	Remedy	See page
This unit does not operate properly.	The internal microcomputer is frozen due to an external electric shock (such as lightning or excessive static electricity) or by a drop in power supply voltage.	Disconnect the power cable from the AC wall outlet, wait about 30 seconds and then plug it in again.	—
This unit suddenly enters the standby mode	The internal temperature is too high and the overheat protection circuitry has been activated.	Wait about 1 hour for this unit to cool down and then turn it back on.	—
	The protection circuitry has been activated because of a short circuit, etc.	Check that the speaker impedance setting is correct.	60
		Check that the speaker wires are not touching each other and then turn this unit back on.	—
	The sleep timer has turned off this unit.	Turn on this unit and play the source again.	—
This unit fails to turn on or enters the standby mode soon after the power is turned on.	The power cable is not connected or the plug is not completely inserted.	Connect the power cable properly to an AC wall outlet.	20
	The speaker impedance setting is incorrect.	Set the speaker impedance to match your speakers.	60
	(When this unit is turned back on and "CHECK SP WIRES!" is displayed.) The protection circuitry has been activated because this unit was turned on while a speaker cable was shorted.	Make sure that all speaker cables between this unit and speakers are connected properly.	11
This unit cannot be turned off.	The internal microcomputer is frozen due to an external electric shock (such as lightning or excessive static electricity) or by a drop in power supply voltage.	Disconnect the power cable from the AC wall outlet, wait about 30 seconds and then plug it in again.	—

Problem	Cause	Remedy	See page
No picture.	An appropriate video input is not selected on the video monitor.	Select an appropriate video input on the video monitor.	—
	An appropriate HDMI OUT jack is not selected.	Select the HDMI OUT jack which your video monitor is connected.	40
	The external video component is connected to one of the HDMI 1-4 jacks or HDMI IN (VIDEO AUX) jack while your video monitor is connected to the MONITOR OUT (COMPONENT VIDEO or VIDEO) jacks.	Connect the external video component to the video input jacks other than the HDMI 1-4 jacks or connect the video monitor to one of the HDMI OUT jacks or HDMI IN (VIDEO AUX) jack.	14, 16
	This unit outputs the video signals not supported by the video monitor connected to one of the HDMI OUT jacks.	Displays the advanced setup menu and select "VIDEO" in "INIT" to reset the video parameters.	60
		Displays the advanced setup menu and set "MON.CHK" to "YES".	60
	Video signals are input from a game console while your video monitor is connected to one of the HDMI OUT jacks.	Connect the video monitor to the MONITOR OUT (COMPONENT VIDEO) jacks.	14
	Non-standard video signals are input.	Connect the video monitor to the MONITOR OUT (COMPONENT VIDEO or VIDEO) jacks.	14
The picture is disturbed.	The video software is copy-protected.		
No sound.	Incorrect input or output cable connections.	Connect the cables properly. If the problem persists, the cables may be defective.	16
	No appropriate input source has been selected.	Rotate the ⓉINPUT selector (or press 4**Input selection key**) to select the desired input source.	24
	Speaker connections are not secure.	Secure the connections.	11
	The volume is turned down or muted.	Turn up the volume.	24
	Signals this unit cannot reproduce are being input from a source component, such as a CD-ROM.	Display "Signal Info" in the Option menu and check the input signal format. If "No Signal" is displayed, check if the playback component is properly connected to this unit (or a proper input source is selected). If "___" is displayed, the input signal in that format cannot be reproduced by this unit.	—
	The HDMI components connected to this unit do not support the HDCP copy protection standards.	Connect HDMI components that support the HDCP copy protection standards.	76
	"Audio Output" in "HDMI" is set to "TV".	Set "Audio Output" (Function Setup → HDMI → Audio Output) to the other setting.	49
	A proper audio decoder is not selected.	Display the Option menu and set "Decoder Mode" to "Auto".	41
Only the center speaker outputs substantial sound.	When a monaural source sound field program is applied, sound of all channels are output from the center speaker for some surround decoders.	Try another sound field program.	27
	The playback component or speakers are not connected properly.	Connect the cables properly. If the problem persists, the cables may be defective.	12, 16

Problem	Cause	Remedy	See page
No sound is output from a specific speaker.	Output from that speaker is disabled.	Check the Speaker indicators on the front panel display. If the corresponding indicator is turned off, try the following. 1) Change the input source to another one. 2) With the selected sound field program, sound is not output from that speaker. Select another sound field program. 3) "None" may have been selected for that speaker on this unit. Display "Speaker Setup" in the "Setup" menu and enables output of that speaker.	6, 24, 27, 46
	The volume of that speaker is set to minimum in "Speaker Setup" in the "Setup" menu.	Display "Speaker Setup" in the "Setup" menu and adjust the volume (Manual Setup → Speaker Level).	48
	This unit is in the straight decode mode.	Press ⓠ**STRAIGHT** (or ⑱**STRAIGHT**) to turn off the straight decode mode.	30
	Sound may not be output from certain channels depending on input sources or sound field programs.	Try another sound field program.	27
	The speaker is malfunction.	Check the speaker indicators on the front panel display. If the corresponding indicator lights up, connect another speaker and check if sound is output. If sound is not output, this unit may be malfunction.	—
No sound is heard from the subwoofer.	"LFE / Bass Out" is set to "Front" and a Dolby Digital, DTS or AAC signals is being played.	Set "LFE / Bass Out" to "Subwoofer" or "Both".	47
	"LFE / Bass Out" is set to "Subwoofer" or "Front" and a 2-channel source is being played.	Set "LFE / Bass Out" to "Both".	47
	The source does not contain low frequency signals.		
No sound is heard from the surround back speakers.	"Extended Surround" in the Option menu is set to "Off", or an input signal does not contain a surround back flag with "Extended Surround" set to "Auto".	Set "Extended Surround" other than "Off" or "Auto".	41
The audio input sources cannot be played in the desired digital audio signal format.	The connected component is not set to output the desired digital audio signals.	Set the playback component properly referring to its operating instructions.	—
Multi-channel playback is not available.	The connected component is set to output 2-ch or PCM signals.	Set the playback component properly referring to its operating instructions.	—
	"Audio Output" is set to "Amplifier + TV".	Set "Audio Output" to "Amplifier".	49

Problem	Cause	Remedy	See page
Noise/hum noise is heard.	Incorrect cable connection.	Connect the audio cables properly. If the problem persists, the cables may be defective.	—
	A DTS-CD is being played back.	1) When only noise is output If a DTS bitstream signal is not properly input to this unit, only noise is output. Connect the playback component to this unit by digital connection and play back the DTS-CD. If the condition is not improved, the problem may results from the playback component. Consult the manufacturer of the playback component. 2) When noise is output during playback or skip operation Before playing back the DTS-CD, display the Option menu after selecting the input source and set "Decoder Mode" to "DTS".	16, 41
The volume level cannot be increased, or the sound is distorted.	The component connected to the AUDIO 1/2 jacks of this unit is turned off.	Turn on the power of the component.	59
"Memory Guard!" is displayed and the setting cannot be changed.	"Memory Guard" in "Set Menu" is set to "On".	Set "Memory Guard" to "Off".	55
There is noise interference from digital or radio frequency equipment.	This unit is too close to other digital or radio frequency equipment.	Move this unit further away from such equipment.	—

HDMI™

Problem	Cause	Remedy	See page
No picture or sound.	The number of the connected HDMI components is over the limit.	Disconnect some of the HDMI components.	—
	The connected HDMI component does not support high-bandwidth digital copyright protection (HDCP).	Connect an HDMI component that supports HDCP.	76

Tuner (FM/AM)

	Problem	Cause	Remedy	See page
FM	**FM stereo reception is noisy.**	You are too far from the station transmitter or the input from the antenna is weak.	Check the antenna connections.	20
			Replace the outdoor antenna with a more sensitive multi-element antenna.	—
			Switch to monaural mode.	42
	There is distortion, and clear reception cannot be obtained even with a good FM antenna.	There is multi-path interference.	Adjust the antenna height or orientation, or place it in a different location.	—
	The desired station cannot be tuned into with the automatic tuning method.	You are in an area far from a station or an input from the antenna is weak.	Replace an outdoor antenna with more sensitive multi element antenna.	—
			Tune in manually or by direct frequency tuning.	31
AM	**The desired station cannot be tuned into with the automatic tuning method.**	The signal is weak or the antenna connections are loose.	Adjust the AM loop antenna orientation.	20
			Use the manual tuning method.	31
	There are continuous crackling and hissing noises.	Supplied AM loop antenna is not connected.	Connect the AM loop antenna correctly even if you use an outdoor antenna.	20
		The noises may be caused by lightning, fluorescent lamps, motors, thermostats and other electrical equipment.	It is difficult to completely eliminate noise, but it can be reduced by installing and properly grounding an outdoor AM antenna.	20
	There are buzzing and whining noises.	A TV set is being used nearby.	Move this unit away from the TV set.	—

Remote control

Problem	Cause	Remedy	See page
The remote control does not work or function properly.	Wrong distance or angle.	The remote control will function within a maximum range of 6 m (20 ft) and no more than 30 degrees offaxis from the front panel.	6
	Direct sunlight or lighting (from an inverter type of fluorescent lamp, strobe light, etc.) is striking the remote control sensor of this unit.	Adjust the lighting angle or reposition this unit.	—
	The batteries are weak.	Replace all batteries.	6, 8
	The remote control ID of the remote control and this unit do not match.	Match the remote control ID of this unit and the remote control.	61
	The remote control code is not correctly set.	Set the remote control code correctly using “List of remote control codes” at the end of this manual.	59
		Try setting another code of the same manufacturer using “List of remote control codes” at the end of this manual.	59
		If this unit does not work when you press 10**Cursor**, do the following. When the key does not work during DVD disc menu operation: press the 4**Input selection keys** on the remote control again. When the key does not work during Option menu or Setup menu operation: press the key applicable for the current menu operation again.	—
	Even if the remote control code is correctly set, there are some models that do not respond to the remote control.		

iPod™

Note

- In case of a transmission error without a status message appearing on the front panel display and GUI screen, check the connection of your iPod (page 18).

Status message	Cause	Remedy	See page
Loading...	This unit is in the middle of recognizing the connection with your iPod.		
	This unit is in the middle of acquiring song lists from your iPod.		
Connect error	There is a problem with the signal path from your iPod to this unit.	Turn off this unit and reconnect the Yamaha iPod universal dock to the DOCK terminal of this unit.	18
		Remove your iPod in the Yamaha iPod universal dock and then place it back in the dock.	33
Unknown iPod	The iPod being used is not supported by this unit.	Use an iPod supported by this unit.	—
iPod Connected	Your iPod is properly placed in the Yamaha iPod universal dock.		

Status message	Cause	Remedy	See page
Disconnected	Your iPod is removed from the Yamaha iPod universal dock.		33
Unable to play	This unit cannot play back the songs currently stored on your iPod.	Check that the songs currently stored on your iPod are playable.	—

Bluetooth™

Status message	Cause	Remedy	See page
Searching...	The Bluetooth wireless audio receiver and the Bluetooth component are in the middle of the pairing.		
	The Bluetooth wireless audio receiver and the Bluetooth component are in the middle of establishing the connection.		
Completed	The pairing is completed.		
Canceled	The pairing is canceled.		
BT Connected	The connection between the Yamaha Bluetooth wireless audio receiver and the Bluetooth component is established.		
Disconnected	The Bluetooth component is disconnected from the Yamaha Bluetooth wireless audio receiver.		
Not Found	No Bluetooth components are found during a pairing process.	Pairing must be performed on the both this unit and your Bluetooth component at the same time. Check whether your Bluetooth component is set to the paring mode and then try again.	35
	No Bluetooth components are found during a Bluetooth connection.	Check whether your Bluetooth component is turned on and then try again.	35
		Locate your Bluetooth component within 10 meters (33 feet) of this unit and then try again.	35

USB and network

Problem	Cause	Remedy	See page
The music files and folders in the USB storage device cannot be browsed.	The music files and folders are stored the locations other than the FAT area.	Place the music files and folders in the FAT area.	—
	You are attempting to browse directory hierarchies of over 8 levels or a directory with more than 500 files.	Modify the data structure on your USB storage device.	—
	This unit cannot recognize some characters used in the file name or folder name.	Edit the file name or folder name using a PC and then try again.	—
The USB storage device cannot be recognized.	The USB storage device is not compatible with mass storage class (except USB HDDs).	Use a USB storage device that is compatible with mass storage class (except USB HDDs).	—
	This unit does not recognize the USB storage device properly.	Turn this unit off and then turn on again.	20

Problem	Cause	Remedy	See page
The PC server/ Internet Radio does not function properly.	The network cable is not connected properly.	Connect the network cable properly.	19
	The IP address is not set properly.	Set the DHCP server function of the router to ON. Alternately, perform manual configuration according to the current operating environment.	51
The music on the PC server cannot be played back.	The PC does not have Windows Media Player 11 installed on it.	Install Windows Media Player 11 on the PC.	—
	The music is recorded in a format that cannot be played on this unit. This unit cannot play music formats other than WAV (PCM format only), MP3, WMA, MPEG-4 AAC or FLAC. Also note some music files cannot be played regardless of the file formats.	Play music recorded in a format that this unit is compatible with.	—
Internet Radio stations cannot be played.	The firewall of the network device is activated. Internet Radio stations can only be played when the signal pass through the port designated by the individual radio stations. The port number varies from station to station.	Check the firewall setting of the network device.	—
	Connection to the Internet is not available.	Check the configuration of the network device and contact your Internet service provider.	—

Status message	Cause	Remedy	See page
USB Connected	Your USB storage device is connected.		—
USB Disconnected	Your USB storage device has been disconnected from the USB port of this unit.	Check the connection between this unit and your USB storage device.	—
Access Error	This unit cannot access your USB storage device.	Try another USB storage device.	—
	There is a problem with the signal path from your USB storage device to this unit.	Turn off this unit and reconnect your USB storage device to the USB port of this unit.	19, 20
		Try resetting your USB storage device.	—
	This unit cannot connect to the data server due to network error, etc.	Check the network settings and contact your Internet service provider.	51
Access Denied	The PC you are attempting to connect has denied connection.	Configure the sharing setting of Windows Media Player 11 and select this unit as a device to which music contents are shared.	37
Unable to play	This unit cannot play back the songs currently stored on your PC.	Make sure Windows Media Player 11 is installed on your PC.	—
		Play music recorded in a format that this unit is compatible with (WAV (PCM format only), MP3, WMA, MPEG-4 AAC or FLAC).	—
License unavailable	You are attempting to play back expired digital rights management (DRM) encrypted content.	Select a file that is not protected by DRM	—
	Windows Media Player 11 does not acquire the digital rights management (DRM) license for the file.	Acquire the license to play back the file on Windows Media Player 11.	—

Auto Setup (YPAO)

Notes

- If the an error or warning message appears, resolve the problem and then run "Auto Setup" again.
- Warning message "W-2" or "W-3" indicates that the adjusted settings may not be optimal.
- Depending on the speakers, warning message "W-1" may appears even if the speaker connections are correct.
- If error message "E-10" occurs repeatedly, contact a qualified Yamaha service center.

Before Auto Setup

Error message	Cause	Remedy	See page
Connect MIC!	Optimizer microphone is not connected.	Connect the supplied optimizer microphone to the OPTIMIZER MIC jack on the front panel.	21
Unplug HP!	Headphones are connected.	Unplug the headphones.	—
Memory Guard!	The parameters of this unit are protected.	Set "Memory Guard" to "Off".	55

During Auto Setup

Error message	Cause	Remedy	See page
E-1:NO FRONT SP	Front L/R channel signals are not detected.	Check the front L/R speaker connections.	11
E-2:NO SUR. SP	Only a signal from one of the surround channels are detected.	Check the surround L/R speaker connections.	11
E-3:NO PRNS SP	Only signals from one of the presence L/R channels are detected.	Check the presence L/R speaker connections.	11
E-4:SBR->SBL	Only right surround back channel signal is detected.	If you connect only one surround back speaker, connect it to the left SUR.BACK (SINGLE) jack.	11
E-5:NOISY	Measurement cannot be performed accurately due to loud ambient noise.	Try running "Auto Setup" in a quiet environment.	—
		Turn off noisy electric equipment like air conditioners or move them away from the optimizer microphone.	—
E-6:CHECK SUR.	Surround back speakers are connected, though surround L/R speakers are not.	When using surround back speakers, you need to connect surround L/R speakers.	11
E-7:NO MIC	The optimizer microphone was unplugged during the "Auto Setup" procedure.	Do not touch the optimizer microphone during "Auto Setup".	21
E-8:NO SIGNAL	The optimizer microphone does not detect test tones.	Check whether the microphone is properly placed.	21
		Check whether the speakers are properly placed and connected.	10, 11
		The optimizer microphone or OPTIMIZER MIC jack may be defective. Contact the nearest Yamaha dealer or service center.	—
E-9:USER CANCEL	"Auto Setup" was canceled due to an inappropriate user operation.	Run "Auto Setup" again.	21
E-10:INTERNAL ERROR	An internal error occurred.	Run "Auto Setup" again.	21

After Auto Setup

Error message	Cause	Remedy	See page
W-1:OUT OF PHASE	Speaker polarity is not correct. This message may appear depending on the speakers even when the speakers are connected correctly.	Check the polarities (+, –) of the displayed speaker. If they are correct, the speakers work properly even when this message is displayed.	12
W-2:OVER 24m (80ft)	The distance between the speaker and the listening position is over 24 m (80 ft).	Bring the speaker within 24 m (80 ft.) area around the listening position.	—
W-3:LEVEL ERROR	The difference of volume level among speakers is excessive.	Recheck the speaker positions and make sure all speakers are placed in a similar environment.	—
		Check the polarities (+, –) of the speakers.	12
		We recommended that you use speakers with the same or similar specifications.	—
		Adjust the output volume of the subwoofer.	—
W-4:CHECK PRNS	Presence speakers were not detected during measurement with “Extra Speaker Assignment” set to “Presence”.	Check the presence speaker connections and perform measurement again. If presence speakers are not connected, set the “Extra Speaker Assignment” to other than “Presence”.	11, 47

Glossary

■ Audio and video synchronization (lip sync)

Lip sync, an abbreviation for lip synchronization, is a technical term that involves both a problem and a capability of maintaining audio and video signals synchronized during post-production and transmission. Whereas the audio and video latency requires complex end-user adjustments, HDMI version 1.3 incorporates an automatic audio and video syncing capability that allows devices to perform this synchronization automatically and accurately without user interaction.

■ Bi-amplification connection

A bi-amplification connection uses two amplifiers for a speaker. One amplifier is connected to the woofer section of a loudspeaker while the other is connected to the combined mid and tweeter section. With this arrangement each amplifier operates over a restricted frequency range. This restricted range presents each amplifier with a much simpler job and each amplifier is less likely to influence the sound in some way.

■ Component video signal

With the component video signal system, the video signal is separated into the Y signal for the luminance and the PB and PR signals for the chrominance. Color can be reproduced more faithfully with this system because each of these signals is independent. The component signal is also called the “color difference signal” because the luminance signal is subtracted from the color signal. A monitor with component input jacks is required in order to output component signals.

■ Composite video signal

With the composite video signal system, the video signal is composed of three basic elements of a video picture: color, brightness and synchronization data. A composite video jack on a video component transmits these three elements combined.

■ Deep Color

Deep Color refers to the use of various color depths in displays, up from the 24-bit depths in previous versions of the HDMI specification. This extra bit depth allows HDTVs and other displays go from millions of colors to billions of colors and eliminate on-screen color banding for smooth tonal transitions and subtle gradations between colors. The increased contrast ratio can represent many times more shades of gray between black and white. Also Deep Color increases the number of available colors within the boundaries defined by the RGB or YCbCr color space.

■ Dolby Digital

Dolby Digital is a digital surround sound system that gives you completely independent multi-channel audio. With 3 front channels (front L/R and center), and 2 surround stereo channels, Dolby Digital provides 5 full-range audio channels. With an additional channel especially for bass effects, called LFE (Low Frequency Effect), the system has a total of 5.1-channels (LFE is counted as 0.1 channel). By using 2-channel stereo for the surround speakers, more accurate moving sound effects and surround sound environment are possible than with Dolby Surround. The wide dynamic range from maximum to minimum volume reproduced by the 5 full-range channels and the precise sound orientation generated using digital sound processing provide listeners with unprecedented excitement and realism.
With this unit, any sound environment from monaural up to a 5.1-channel configuration can be freely selected for your enjoyment.

■ Dolby Digital Surround EX

Dolby Digital EX creates 6 full-bandwidth output channels from 5.1-channel sources.
For the best results, Dolby Digital EX should be used with movie sound tracks recorded with Dolby Digital Surround EX. With this additional channel, you can experience more dynamic and realistic moving sound especially with scenes with “fly-over” and “fly-around” effects.

■ Dolby Digital Plus

Dolby Digital Plus is an advanced audio technology developed for high-definition programming and media including HD broadcasts, and Blu-ray Disc. Selected as an optional audio standard for Blu-ray Disc, this technology delivers multichannel sound with discrete channel output. Supporting bitrates up to 6.0 Mbps, Dolby Digital Plus can carry up to 7.1 discreet audio channels simultaneously. Supported by HDMI version 1.3 and designed for the optical disc players and AV receivers/amplifiers of the future, Dolby Digital Plus also remains fully compatible with the existing multichannel audio systems that incorporate Dolby Digital.

■ Dolby Pro Logic II

Dolby Pro Logic II is an improved technique used to decode vast numbers of existing Dolby Surround sources. This new technology enables a discrete 5-channel playback with 2 front left and right channels, 1 center channel, and 2 surround left and right channels instead of only 1 surround channel for conventional Pro Logic technology. There are three modes available: “Music mode” for music sources, “Movie mode” for movie sources and “Game mode” for game sources.

■ Dolby Pro Logic IIx

Dolby Pro Logic IIx is a new technology enabling discrete multichannel playback from 2-channel or multi-channel sources. There are three modes available: “Music mode” for music sources, “Movie mode” for movie sources (for 2-channel sources only) and “Game mode” for game sources.

■ Dolby Surround

Dolby Surround is widely used with nearly all video tapes and laser discs, and in many TV and cable broadcasts as well. Dolby Surround uses a 4-channel analog recording system to reproduce realistic and dynamic sound effects: 2 front left and right channels (stereo), a center channel for dialog (monaural), and a surround channel for special sound effects (monaural). The surround channel reproduces sound within a narrow frequency range. The Dolby Pro Logic decoder built into this unit employs a digital signal processing system that automatically stabilizes the volume on each channel to enhance moving sound effects and directionality.

■ Dolby TrueHD

Dolby TrueHD is an advanced lossless audio technology developed for high-definition disc-based media including Blu-ray Disc. Selected as an optional audio standard for Blu-ray Disc, this technology delivers sound that is bit-for-bit identical to the studio master, offering a high-definition home theater experience.
Supporting bitrates up to 18.0 Mbps, Dolby TrueHD can carry up to 8 discrete channels of 24-bit/96 kHz audio simultaneously.
Dolby TrueHD also remains fully compatible with the existing multichannel audio systems and retains the metadata capability of Dolby Digital, allowing dialog normalization and dynamic range control.

■ DSD

Direct Stream Digital (DSD) technology stores audio signals on digital storage media, such as Super Audio CDs. Using DSD, signals are stored as single bit values at a high-frequency sampling rate of 2.8224 MHz, while noise shaping and oversampling are used to reduce distortion, a common occurrence with very high quantization of audio signals. Due to the high sampling rate, better audio quality can be achieved than that offered by the PCM format used for normal audio CDs. The frequency is equal to or higher than 100 kHz and the dynamic range is 120 dB. This unit can transmit or receive DSD signals input from the HDMI jack.

■ DTS 96/24

DTS 96/24 offers an unprecedented level of audio quality for multi-channel sound on DVD video, and is fully backward-compatible with all DTS decoders. “96” refers to a 96 kHz sampling rate compared to the typical 48 kHz sampling rate. “24” refers to 24-bit word length. DTS 96/24 offers sound quality transparent to the original 96/24 master, and 96/24 5.1-channel sound with full-quality full-motion video for music programs and motion picture soundtracks on DVD video.

■ DTS Digital Surround

DTS digital surround was developed to replace the analog soundtracks of movies with a 5.1-channel digital sound track, and is now rapidly gaining popularity in movie theaters around the world. DTS, Inc. has developed a home theater system so that you can enjoy the depth of sound and natural spatial representation of DTS digital surround in your home. This system produces practically distortion-free 6-channel sound (technically, front left and right, center, surround left and right, and LFE 0.1 (subwoofer) channels for a total of 5.1 channels). This unit incorporates a DTS-ES decoder that enables 6.1-channel reproduction by adding the surround back channel to the existing 5.1-channel format.

■ DTS Express

This is an audio format for next-generation optical discs such as Blu-ray discs. It uses optimized low bit rate signals for network streaming. In the case of a Blu-ray disc, this format is used with secondary audio, enabling you to enjoy the commentary of the movie producer via the Internet while playing the main program.

■ DTS-HD High Resolution Audio

DTS-HD High Resolution Audio is a high resolution audio technology developed for high-definition disc-based media including Blu-ray Disc. Selected as an optional audio standard for Blu-ray Disc, this technology delivers sound that is virtually indistinguishable from the original, offering a high-definition home theater experience. Supporting bitrates up to 6.0 Mbps for Blu-ray Disc, DTS-HD High Resolution Audio can carry up to 7.1 discrete channels of 24-bit/96 kHz audio simultaneously.
DTS-HD High Resolution Audio also remains fully compatible with the existing multichannel audio systems that incorporate DTS Digital Surround.

■ DTS-HD Master Audio

DTS-HD Master Audio is an advanced lossless audio technology developed for high-definition disc-based media including Blu-ray Disc. Selected as an optional audio standard for Blu-ray Disc, this technology delivers sound that is bit-for-bit identical to the studio master, offering a high-definition home theater experience. Supporting bitrates up to 24.5 Mbps for Blu-ray Disc, DTS-HD Master Audio can carry up to 7.1 discrete channels of 24-bit/96 kHz audio simultaneously. Supported by HDMI version 1.3 and designed for the optical disc players and AV receivers/amplifiers of the future, DTS-HD Master Audio also remains fully compatible with the existing multichannel audio systems that incorporate DTS Digital Surround.

■ FLAC

This is a file format for lossless audio data compression. FLAC is inferior to lossy compression formats in compression rate but provides higher audio quality.

■ HDMI

HDMI (High-Definition Multimedia Interface) is the first industry-supported, uncompressed, all-digital audio/video interface. Providing an interface between any source (such as a set-top box or AV receiver) and an audio/video monitor (such as a digital television), HDMI supports standard, enhanced or high-definition video as well as multi-channel digital audio using a single cable. HDMI transmits all ATSC HDTV standards and supports 8-channel digital audio, with bandwidth to spare to accommodate future enhancements and requirements.
When used in combination with HDCP (High-bandwidth Digital Content Protection), HDMI provides a secure audio/video interface that meets the security requirements of content providers and system operators. For further information on HDMI, visit the HDMI website at “http://www.hdmi.org/”.

■ LFE 0.1 channel

This channel reproduces low-frequency signals. The frequency range of this channel is from 20 Hz to 120 Hz. This channel is counted as 0.1 because it only enforces a low-frequency range compared to the full-range reproduced by the other 5/6 channels in Dolby Digital or DTS 5.1/6.1-channel systems.

■ MP3

One of the audio compression methods used by MPEG. It employs the irreversible compression method, which achieves a high compression rate by thinning out the data of hardly audible part to the human ears. It is said to be capable of compressing the data quantity by about 1/11 (128 kbps) while maintaining a similar audio quality to music CD.

■ MPEG-4 AAC

An MPEG-4 audio standard. As it allows compression of data at a bit rate lower than that of MPEG-2 AAC, it is used among others for mobile telephones, portable audio players and other low-capacity devices requiring high sound quality.
In addition to the above types of devices, MPEG-4 AAC is also used to distribute contents on the Internet, and as such is supported by computers, media servers and many other devices.

■ Neo:6

Neo:6 decodes the conventional 2-channel sources for 6- channel playback by the specific decoder. It enables playback with the full-range channels with higher separation just like digital discrete signal playback. There are two modes available: “Music mode” for music sources and “Cinema mode” for movie sources.

■ PCM (Linear PCM)

Linear PCM is a signal format under which an analog audio signal is digitized, recorded and transmitted without using any compression. This is used as a method of recording CDs and DVD audio. The PCM system uses a technique for sampling the size of the analog signal per very small unit of time. Standing for “Pulse Code Modulation”, the analog signal is encoded as pulses and then modulated for recording.

■ Sampling frequency and number of quantized bits

When digitizing an analog audio signal, the number of times the signal is sampled per second is called the sampling frequency, while the degree of fineness when converting the sound level into a numeric value is called the number of quantized bits. The range of rates that can be played back is determined based on the sampling rate, while the dynamic range representing the sound level difference is determined by the number of quantized bits. In principle, the higher the sampling frequency, the wider the range of frequencies that can be played back, and the higher the number of quantized bits, the more finely the sound level can be reproduced.

■ WAV

Windows standard audio file format, which defines the method of recording the digital data obtained by converting audio signals. It does not specify the compression (coding) method so a desired compression method can be used with it. By default, it is compatible with the PCM method (no compression) and some compression methods including the ADPCM method.

■ WMA

An audio compression method developed by Microsoft Corporation. It employs the irreversible compression method, which achieves a high compression rate by thinning out the data of hardly audible part to the human ears. It is said to be capable of compressing the data quantity by about 1/22 (64 kbps) while maintaining a similar audio quality to music CD.

■ “x.v.Color”

A color space standard supported by HDMI version 1.3. It is a more extensive color space than sRGB, and allows the expression of colors that could not be expressed before. While remaining compatible with the color gamut of sRGB standards, “x.v.Color” expands the color space and can thus produce more vivid, natural images. It is particularly effective for still pictures and computer graphics.

Sound field program information

■ Elements of a sound field

What really creates the rich, full tones of a live instrument are the multiple reflections from the walls of the room. In addition to making the sound live, these reflections enable us to tell where the player is situated as well as the size and shape of the room in which we are sitting. There are two distinct types of sound reflections that combine to make up the sound field in addition to the direct sound coming straight to our ears from the playerfs instrument.

Early reflections

Reflected sounds reach our ears extremely rapidly (50 ms to 100 ms after the direct sound), after reflecting from one surface only (for example, from a wall or the ceiling). Early reflections actually add clarity to the direct sound.

Reverberations

These are caused by reflections from more than one surface (for example, from the walls, and/or the ceiling) so numerous that they merge together to form a continuous sonic afterglow. They are nondirectional and lessen the clarity of the direct sound.

Direct sound, early reflections and subsequent reverberations taken together help us to determine the subjective size and shape of the room, and it is this information that the digital sound field processor reproduces in order to create sound fields.
If you could create the appropriate early reflections and subsequent reverberations in your listening room, you would be able to create your own listening environment.
The acoustics in your room could be changed to those of a concert hall, a dance floor, or a room with virtually any size at all. This ability to create sound fields at will is exactly what Yamaha has done with the digital sound field processor.

■ CINEMA DSP

Since the Dolby Surround and DTS systems were originally designed for use in movie theaters, their effect is best felt in a theater having many speakers designed for acoustic effects. Since home conditions, such as room size, wall material, number of speakers, and so on, can differ so widely, it is inevitable that there are differences in the sound heard.
Based on a wealth of actually measured data, Yamaha CINEMA DSP provides the audiovisual experience of a movie theater in the listening room of your own home by using the Yamaha original sound field technology combined with various digital audio systems.

■ CINEMA DSP 3D

The actually measured sound field data contain the information of the height of the sound images. CINEMA DSP 3D feature achieves the reproduction of the accurate height of the sound images so that it creates the accurate and intensive stereoscopic sound fields in a listening room.

■ SILENT CINEMA

Yamaha has developed a natural, realistic sound effect DSP algorithm for headphones. Parameters for headphones have been set for each sound field so that accurate representations of all the sound field programs can be enjoyed on headphones.

■ Virtual CINEMA DSP

Yamaha has developed a Virtual CINEMA DSP algorithm that allows you to enjoy DSP sound field surround effects even without any surround speakers by using virtual surround speakers. It is even possible to enjoy Virtual CINEMA DSP using a minimal two-speaker system that does not include a center speaker.

■ Compressed Music Enhancer

The Compressed Music Enhancer feature of this unit enhances your listening experience by regenerating the missing harmonics in a compression artifact. As a result, flattened complexity due to the loss of high-frequency fidelity as well as lack of bass due to the loss of low-frequency bass is compensated, providing improved performance of the overall sound system.

Information on HDMI™

■ HDMI signal compatibility

Audio signals

Audio signal types	Audio signal formats	Compatible media
2ch Linear PCM	2ch, 32 to 192 kHz, 16/20/24 bit	CD, DVD-Video, DVD-Audio, etc.
Multi-ch Linear PCM	8ch, 32 to 192 kHz, 16/20/24 bit	DVD-Audio, Blu-ray Disc, HD DVD, etc.
DSD	2/5.1ch, 2.8224 MHz, 1 bit	SA-CD, etc.
Bitstream	Dolby Digital, DTS	DVD-Video, etc.
Bitstream (High definition audio)	Dolby TrueHD, Dolby Digital Plus, DTS-HD Master Audio, DTS-HD High Resolution Audio, DTS Express	Blu-ray Disc, HD DVD, etc.

- If the input source component can decode the bitstream audio signals of audio commentaries, you can play back the audio sources with the audio commentaries mixed down by using the following connections:
  – multi-channel analog audio input (page 18)
  – digital input (OPTICAL or COAXIAL)
- Refer to the supplied instruction manuals of the input source component, and set the component appropriately.

Notes

- When CPPM copy-protected DVD-Audio is played back, video and audio signals may not be output depending on the type of the DVD player.
- This unit is not compatible with HDCP-incompatible HDMI or DVI components.
- To decode audio bitstream signals on this unit, set the input source component appropriately so that the component outputs the bitstream audio signals directly (does not decode the bitstream signals on the component). Refer to the supplied instruction manuals for details.
- This unit is not compatible with the audio commentary features (for example, the special audio contents downloaded via Internet) of Blu-ray Disc or HD DVD. This unit does not play back the audio commentaries of the Blu-ray Disc or HD DVD contents.

Video signals

This unit is compatible with the video signals of the following resolutions:

- 480i/60 Hz
- 576i/50 Hz
- 480p/60 Hz
- 576p/50 Hz
- 720p/60 Hz, 50 Hz
- 1080i/60 Hz, 50 Hz
- 1080p/60 Hz, 50 Hz, 24 Hz

Specifications

AUDIO SECTION

- Minimum RMS Output Power for Front, Center, Surround, Surround back
  20 Hz to 20 kHz, 0.08% THD, 8 Ω ..... 130 W
- Dynamic Power (IHF)
  Front Speakers 8/6/4/2 Ω ..... 160/200/260/330 W
- Maximum Useful Output Power (JEITA)
  [General, China, Korea, Australia and Asia models]
  1 kHz, 10% THD, 8 Ω ..... 175 W
- Maximum Output Power [U.K, Europe and Russia models]
  1 kHz, 0.7% THD, 4 Ω ..... 180 W
- Dynamic Headroom [U.S.A. and Canada models]
  8 Ω ..... 0.9 dB
- IEC Output Power [U.K, Europe and Russia models]
  Front Speakers 1 kHz, 0.08% THD, 8 Ω ..... 130 W
- Damping Factor (IHF)
  Front Speakers, 20 Hz to 20 kHz, 8 Ω ..... 100 or more
- Input Sensitivity/Input Impedance
  PHONO ..... 3.5 mV/47 kΩ
  AV5, etc. ..... 200 mV/47 kΩ
- Maximum Input Voltage
  PHONO (1 kHz, 0.1% THD) ..... 60 mV or more
  AV5, etc. (1 kHz, 0.5% THD) ..... 2.3 V or more
- Rated Output Voltage/Output Impedance
  AUDIO OUT ..... 200 mV/1.2 kΩ
  PRE OUT ..... 1.0 V/1.2 kΩ
  SUBWOOFER (2ch Stereo, Front Speaker: Small)
  ..... 1.0 V/1.2 kΩ
  ZONE2/3 OUT ..... 200 mV/1.4 kΩ
- Headphone Jack Rated Output/Impedance
  AV5, etc. (1 kHz, 50 mV, 8 Ω) ..... 100 mV/470 Ω
- Frequency Response
  AV5 to FRONT ..... 10 Hz to 100 kHz, +0/–3 dB
- RIAA Equalization Deviation
  PHONO ..... 0 ± 0.5 dB
- Total Harmonic Distortion
  PHONO to AUDIO OUT
  (20 Hz to 20 kHz, 1 V) ..... 0.02% or less
  AV5, etc. to FRONT, Pure Direct
  (20 Hz to 20 kHz, 50 W, 8 Ω) ..... 0.06% or less
- Signal to Noise Ratio (IHF-A Network)
  PHONO Input Shorted (5.0 mV to AUDIO OUT)
  [U.S.A., Canada, General and China models] ..... 86 dB or more
  [Other models] ..... 81 dB or more
  AV5, etc. Input Shorted (250 mV to Front Speakers)
  ..... 100 dB or more
- Residual Noise (IHF-A Network)
  Front Speakers ..... 150 µV or less
- Channel Separation (1 kHz/10 kHz)
  PHONO (Input Shorted) ..... 60 dB/55 dB or more
  AV5, etc. (5.1 kΩ shortened) ..... 60 dB/45 dB or more
- Volume Control ..... Mute / –80 dB to +16.5 dB
- Tone Control (Front Speakers)
  Bass Boost/Cut ..... ±10 dB at 50 Hz
  Bass Turnover Frequency ..... 350 Hz
  Treble Boost/Cut ..... ±10 dB at 20 kHz
  Treble Turnover Frequency ..... 3.5 kHz
- Filter Characteristics (fc=40/60/80/90/100/110/120/160/200 Hz)
  H.P.F. (Front, Center, Surround, Surround back: Small)
  ..... 12 dB/oct.
  L.P.F. (Subwoofer) ..... 24 dB/oct.

VIDEO SECTION

- Video Signal Type (Gray Back)
  [U.S.A., Canada, General and Korea models] ..... NTSC
  [Other models] ..... PAL
- Video Signal Type (Video Conversion) ..... NTSC/PAL
- Signal Level
  Composite ..... 1 Vp-p/75 Ω
  S-video [U.K., Europe and Russia models]
  ..... 1 Vp-p/75 Ω (Y), 0.286 Vp-p/75 Ω (C)
  Component ..... 1 Vp-p/75 Ω (Y), 0.7 Vp-p/75Ω (Cb/Cr)
- Maximum Input Level (Video Conversion: Off)
  ..... 1.5 Vp-p or more
- Signal to Noise Ratio ..... 50 dB or more
- Frequency Response [MONITOR OUT]
  Component (Video Conversion: Off)
  ..... 5 Hz to 60 MHz, –3 dB

FM SECTION

- Tuning Range
  [U.S.A. and Canada models] ..... 87.5 to 107.9 MHz
  [General and Asia models] ..... 87.5/87.50 to 108.0/108.00 MHz
  [Other models] ..... 87.50 to 108.00 MHz
- 50 dB Quieting Sensitivity (IHF)
  Mono ..... 3.0 µV (20.8 dBf)
- Signal to Noise Ratio (IHF)
  Mono/Stereo ..... 74 dB/70 dB
  HD [U.S.A. model] ..... 80 dB
- Harmonic Distortion (1 kHz)
  Mono/Stereo 0.3/0.3%
  HD [U.S.A. model] 0.03%
- Antenna Input (unbalanced) ..... 75 Ω

AM SECTION

- Tuning Range
  [U.S.A. and Canada models] ..... 530 to 1710 kHz
  [General and Asia models] ..... 530/531 to 1710/1611 kHz
  [Other models] ..... 531 to 1611 kHz

GENERAL

- Power Supply
  [U.S.A. and Canada models] ..... AC 120 V, 60 Hz
  [General model] ..... AC 110/120/220/230–240 V, 50/60 Hz
  [China model] ..... AC 220 V, 50 Hz
  [Korea model] ..... AC 220 V, 60 Hz
  [Australia model] ..... AC 240 V, 50 Hz
  [U.K., Europe and Russia models] ..... AC 230 V, 50 Hz
  [Asia model] ..... AC 220/230–240 V, 50/60 Hz
- Power Consumption
  [U.S.A. and Canada models] ..... 450 W/560 VA
  [Other models] ..... 450 W
- Standby Power Consumption (reference data)
  (HDMI Control/Standby Through/Network Standby: Off, RS232C STBY: No) ..... 0.2 W or less
  (HDMI Control/Standby Through/Network Standby: On)
  No Repeat ..... 2.1 W or less
  Repeat ..... 7 W or less
- Maximum Power Consumption
  [General and Asia models] ..... 680 W
- Dimensions (W x H x D) ..... 435 x 171 x 365 mm (17-1/8 x 6-3/4 x 14-3/8 in)
- Weight ..... 12.4 kg (27.4 lbs)

* Specifications are subject to change without notice.

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"Ⓛ **MAIN ZONE ON/OFF**" or "4 **HDMI**" (example) indicates the name of the parts on the front panel or the remote control. Refer to "Part names and functions" on page 4.

Information about software

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