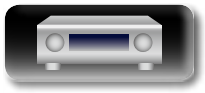
marantz®

AV Surround Receiver

NR1403

Owner's Manual



❑ SAFETY PRECAUTIONS

CAUTION
RISK OF ELECTRIC SHOCK DO NOT OPEN

CAUTION:
TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK). NO USER-SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

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

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

Hot surface mark

CAUTION:
HOT SURFACE. DO NOT TOUCH.
The top surface over the internal heat sink may become hot when operating this product continuously.
Do not touch hot areas, especially around the "Hot surface mark" and the top panel.

IMPORTANT SAFETY INSTRUCTIONS

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

13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. Batteries shall not be exposed to excessive heat such as sunshine, fire or the like.

CAUTION:
To completely disconnect this product from the mains, disconnect the plug from the wall socket outlet.
The mains plug is used to completely interrupt the power supply to the unit and must be within easy access by the user.

FCC INFORMATION (For US customers)

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

2. IMPORTANT NOTICE: DO NOT MODIFY THIS PRODUCT
This product, when installed as indicated in the instructions contained in this manual, meets FCC requirements. Modification not expressly approved by marantz may void your authority, granted by the FCC, to use the product.

3. NOTE
This product has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.
This product generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this product does cause harmful interference to radio or television reception, which can be determined by turning the product OFF and ON, the user is encouraged to try to correct the interference by one or more of the following measures:
- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the product into an outlet on a circuit different from that to which the receiver is connected.
- Consult the local retailer authorized to distribute this type of product or an experienced radio/TV technician for help.

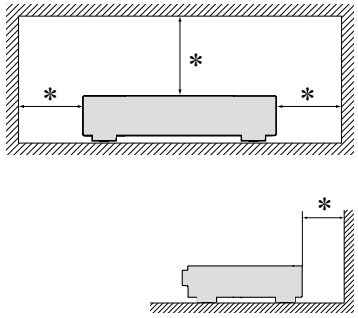
For Canadian customers:
This Class B digital apparatus complies with Canadian ICES-003.

❑ NOTES ON USE

WARNINGS

- Avoid high temperatures.
  Allow for sufficient heat dispersion when installed in a rack.
- Handle the power cord carefully.
  Hold the plug when unplugging the cord.
- Keep the unit free from moisture, water, and dust.
- Unplug the power cord when not using the unit for long periods of time.
- Do not obstruct the ventilation holes.
- Do not let foreign objects into the unit.
- Do not let insecticides, benzene, and thinner come in contact with the unit.
- Never disassemble or modify the unit in any way.
- Ventilation should not be impeded by covering the ventilation openings with items, such as newspapers, tablecloths or curtains.
- Naked flame sources such as lighted candles should not be placed on the unit.
- Observe and follow local regulations regarding battery disposal.
- Do not expose the unit to dripping or splashing fluids.
- Do not place objects filled with liquids, such as vases, on the unit.
- Do not handle the mains cord with wet hands.
- When the switch is in the OFF (STANDBY) position, the equipment is not completely switched off from MAINS.
- The equipment shall be installed near the power supply so that the power supply is easily accessible.

❑ CAUTIONS ON INSTALLATION



* **For proper heat dispersal, do not install this unit in a confined space, such as a bookcase or similar enclosure.**
- More than 12 in. (0.3 m) is recommended.
- Do not place any other equipment on this unit.

Getting started

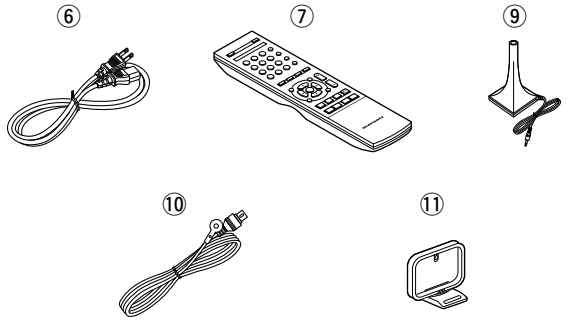
Thank you for purchasing this marantz product. To ensure proper operation, please read this owner's manual carefully before using the product.
After reading them, be sure to keep them for future reference.

Contents

Accessories

Check that the following parts are supplied with the product.

① Getting Started	1
② CD-ROM (Owner's manual)	1
③ Safety Instructions	1
④ Warranty card (for USA)	1
⑤ Warranty card (for CANADA)	1
⑥ Power cord	1
⑦ Remote control unit (RC018SR)	1
⑧ R03/AAA batteries	2
⑨ Setup microphone (ACM1HB)	1
⑩ FM indoor antenna	1
⑪ AM loop antenna	1



Features

With a discrete-circuit configuration, the power amplifier provides identical quality for all 5 channels (50 W x 5ch, 8 Ω)

The unit is equipped with a power amplifier that reproduces highfidelity sound in sound mode with equal quality and power for all channels, true to the original sound.
The power amplifier circuit adopts a discrete-circuit configuration that achieves high-quality surround sound reproduction.

"Setup Assistant", providing easy-to-follow setup instructions

First select the language when prompted. Then simply follow the instructions displayed on the TV screen to set up the speakers, etc.

Easy to use, Graphical User Interface

This unit is equipped with an easy to see "Graphical User Interface" that uses menu displays and levels. The use of level displays increases operability of the this unit.

HDMI connectors enable connection to various digital AV devices (input: 6, output: 1)

The unit is equipped with 6 HDMI input connectors for connecting devices with HDMI connectors, such as a Blu-ray Disc player, game machine, etc.

Supports HDMI (3D, ARC, Deep Color, "x.v.Color", Auto Lip Sync) and HDMI control function (☞page 7)

This unit can output 3D video signals input from a Blu-ray Disc player to a TV that supports a 3D system. This unit also supports the ARC (Audio Return Channel) function, which reproduces TV sound with this unit via an HDMI cable used for connecting the unit and a TV*.

* The TV should support the ARC function.

M-XPort (marantz-eXtension Port) (☞page 19)

This unit is equipped with the M-XPort, a marantz original innovation that provides outstanding expandability. You can connect the Wireless Receiver RX101 (sold separately) to this port.

Cautions on handling

- **Before turning the power on**
  Check once again that all connections are correct and that there are no problems with the connection cables.
- Power is supplied to some of the circuitry even when the unit is set to the standby mode. When going on vacation or leaving home for long periods of time, be sure to unplug the power cord from the power outlet.
- **About condensation**
  If there is a major difference in temperature between the inside of the unit and the surroundings, condensation (dew) may form on the operating parts inside the unit, causing the unit not to operate properly.
  If this happens, let the unit sit for an hour or two with the power turned off and wait until there is little difference in temperature before using the unit.
- **Cautions on using mobile phones**
  Using a mobile phone near this unit may result in noise. If that occurs, move the mobile phone away from this unit when it is in use.
- **Moving the unit**
  Turn off the power and unplug the power cord from the power outlet. Next, disconnect the connection cables to other system units before moving the unit.
- **About care**
  - Wipe the cabinet and control panel clean with a soft cloth.
  - Follow the instructions when using a chemical cleaner.
  - Benzene, paint thinner or other organic solvents as well as insecticide may cause material changes and discoloration if brought into contact with the unit, and should therefore not be used.

Basic version

Here, we explain the connections and basic operation methods for this unit.

Connections

Important information

Make connections before using this unit.
To create a home theater that can play back higher quality video and audio by fully utilizing the capabilities of this unit and your video devices, connect this unit to each of your video devices with HDMI cables.

❑ HDMI-compatible device

If your video device does not support HDMI connections, use the following connection.

❑ HDMI-incompatible device

This unit can change the source that is assigned to the DIGITAL AUDIO IN connectors.
You can change the source for connectors listed in Input connector setting within pages that describe connections for devices.
For details on assigning a source to connectors, see "Changing the source assigned to connectors" (☞page 12). For the setting method, see "Digital Assign" (☞page 68).

NOTE

- **The menu screen is only displayed on TV connected to this unit via HDMI. If your TV is connected to this unit via other video output connectors, perform menu operations while seeing the display on this unit.**
- Do not plug in the power cord until all connections have been completed. However, when the "Setup Assistant" is running, follow the instructions in the "Setup Assistant" (📖 page 7) screen for making connections. (During "Setup Assistant" operation, the input/output connectors do not conduct current.)
- When running the "Setup Assistant" (📖 page 7), turn off the power supply of connected devices.
- When making connections, also refer to the operating instructions of the other devices being connected.
- Be sure to connect the left and right channels properly (left with left, right with right).
- Do not bundle power cords together with connection cables. Doing so can result in noise.

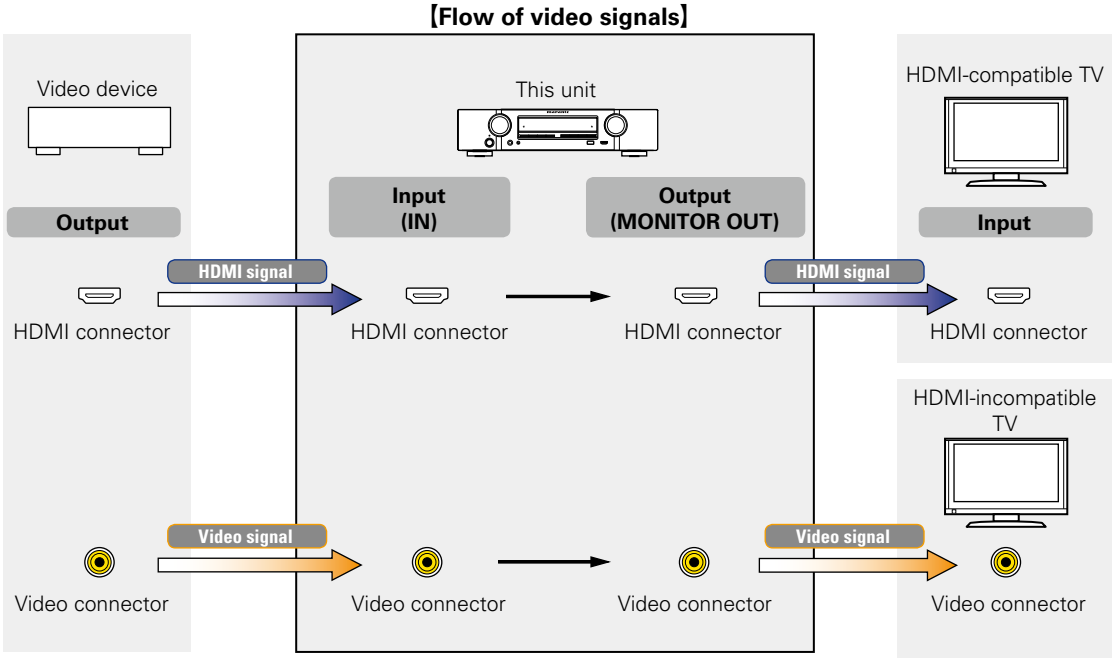
❑ HDMI-compatible device

TV ☞page 8	CBL/SAT ☞page 10	DVD ☞page 10
Blu-ray ☞page 10	GAME ☞page 10	AUX ☞page 10
MEDIA PLAYER ☞page 10		

❑ HDMI-incompatible device

TV ☞page 13	CBL/SAT ☞page 14	DVD ☞page 15
Blu-ray ☞page 16	CD ☞page 17	TUNER ☞page 18
M-XPort ☞page 19	SPEAKER ☞page 44	AC IN ☞page 20

Relationship between video signals and monitor output



Resolutions of HDMI-compatible TVs can be checked at "Monitor" (☞page 77).

NOTE

- **The menu screen is only displayed on TV connected to this unit via HDMI. If your TV is connected to this unit via other video output connectors, perform menu operations while seeing the display on this unit.**
- HDMI signals are digital. HDMI signals cannot be converted into analog signals (☞page 88).
- Analog signals cannot be converted into HDMI signals (☞page 88).

Connecting an HDMI-compatible device

You can connect up to seven HDMI-compatible devices (6-inputs/1-output) to the unit.
If the device connected to this unit is equipped with an HDMI connector, it is recommended to use HDMI connections. Connections with an HDMI cable offer the following benefits that can not be achieved with other connection methods.

- **High quality playback by transmitting audio and video via digital signals**
  HDMI connections can transmit high definition video and high quality audio formats adopted by Blu-ray disc players (Dolby Digital Plus, Dolby TrueHD, dts-HD, dts-HD Master Audio).
  HDMI connections also convey information required for playback between devices. The information is used for copyright protection and TV resolution recognition, the ARC function, the HDMI control function, etc.
- **Transmission of audio and video signals with a single HDMI cable**
  Previous connections require multiple audio and video cables, but HDMI connections require only a single HDMI cable to transmit audio and video signals. This allows wires in a home theater system, which tend to be complicated, to be more organized.
- **Mutual control through the HDMI control function (☞page 49)**
  This unit and the HDMI device connected via HDMI can be linked to perform operations such as power control, volume control, and input source switching.
- **Other video and audio functions, such as 3D video playback, Content Type, the ARC function, are supported (☞page 11).**

- There is more than one version of HDMI standard. The supported functions and the performance vary according to the version. This unit complies with the HDMI standard, supporting the ARC and 3D playback functions. To enjoy these functions, the HDMI device connected to this unit also needs to use the same version of the standard. For the version of the HDMI standard on the device connected to this unit, see the device's manual.
- Some TVs do not support audio input via HDMI connections. For details, see your TV's manual.

❏ **Before connecting this unit to TV via HDMI connections** (☞page 8)
❏ **Connecting this unit to a TV via HDMI connections** (☞page 9)

❏ **Connecting this unit to video devices via HDMI connections** (☞page 10)

❏ **HDMI function** (☞page 11)
❏ **Settings related to HDMI connections** (☞page 11)

Before connecting this unit to TV via HDMI connections

There are 2 methods to connect HDMI-compatible TV to this unit.
Use the connection method that suits your TV.

Does the TV to be connected to this unit support the ARC function?

Yes

Connecting this unit to a TV via HDMI connections (☞page 9)

No

Connecting this unit to a TV via HDMI connections (☞page 9)

+

Connecting a TV (☞page 13)

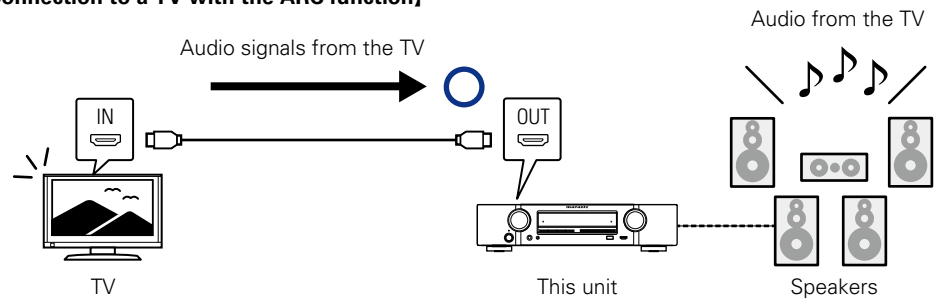
For audio connections, use a method other than HDMI connections.

❑ About ARC (Audio Return Channel) function

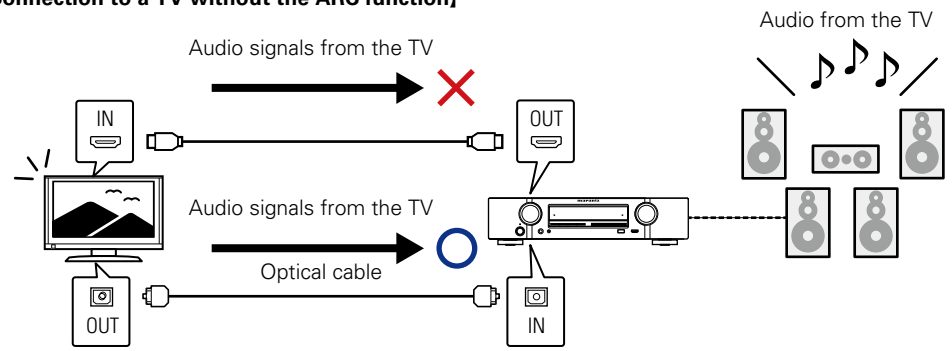
This function plays TV audio on this unit by sending the TV audio signal to this unit via HDMI cable.
If a TV without the ARC function is connected via HDMI connections, video signals of the playback device connected to this unit are transmitted to the TV, but this unit can not play back the audio from the TV. If you want to enjoy surround audio for TV program, a separate audio cable connection is required.
In contrast, if a TV with the ARC function is connected via HDMI connections, no audio cable connection is required. Audio signals from the TV can be input to this unit through the HDMI cable between this unit and the TV. This function allows you to enjoy surround playback on this unit for the TV.

When the ARC function is used, connect a device with a "Standard HDMI cable with Ethernet" or "High Speed HDMI cable with Ethernet" for HDMI.
Refer to the owner's manual for your TV for details about TV connection and settings.

【Connection to a TV with the ARC function】



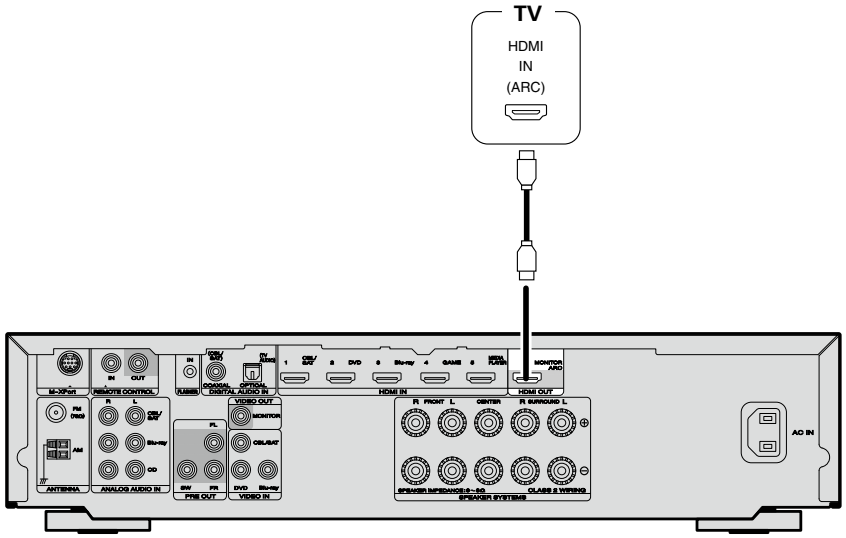
【Connection to a TV without the ARC function】



Connecting this unit to a TV via HDMI connections

Cables used for connections

Audio and video cable (sold separately)
HDMI cable



- Video signals are not output if the input video signals do not match the monitor's resolution. In this case, switch the Blu-ray Disc/DVD player's resolution to a resolution with which the monitor is compatible.
- When this unit and monitor are connected with an HDMI cable, if the monitor is not compatible with HDMI audio signal playback, only the video signals are output to the monitor. Make audio connections (☞page 13 "Connecting a TV").

NOTE

- The audio signal from the HDMI output connector (sampling frequency, number of channels, etc.) may be limited by the HDMI audio specifications of the connected device regarding permissible inputs.
- **When connecting a TV that does not support the ARC function, an audio cable connection is required in addition to the HDMI cable. In this case, refer to "Connecting a TV" (☞page 13) for the connection method.**
  For the ARC function, see "About ARC (Audio Return Channel) function" (☞page 8).

Connecting to a device equipped with a DVI-D connector

The DVI-D (Digital Visual Interface) method is also used for video transmission via digital signals. This is developed mainly for computers, and some AV devices such as projectors are equipped with this interface. To output HDMI video signals to a DVI-D video input compatible device, use an HDMI/DVI conversion cable, which converts HDMI video signals to DVI signals.
The DVI-D connector can transmit high quality digital signals, but the copy guard and other issues may hinder normal operations for some device combinations.

NOTE

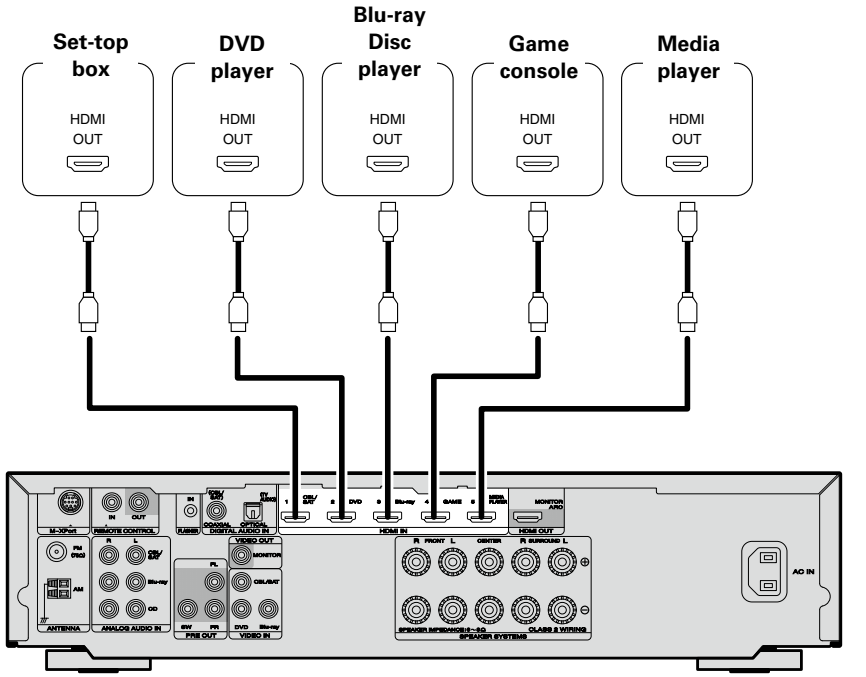
- No sound is output when connected to a device equipped with a DVI-D connector. Make audio connections as described in "Connecting a TV" (☞page 13).
- Signals cannot be output to DVI-D devices that do not support HDCP.
- Depending on the combination of devices, the video signals may not be output.

Connecting this unit to video devices via HDMI connections

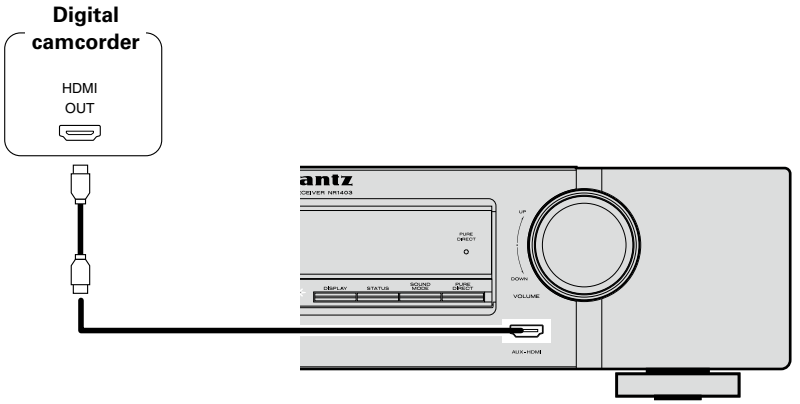
Cables used for connections

Audio and video cable (sold separately)
HDMI cable

• This interface allows transfer of digital video signals and digital audio signals over a single HDMI cable.



【Rear panel】



【Front panel】

• When this unit is connected to other devices with HDMI cables, connect this unit and TV also with an HDMI cable.
• When connecting a device that supports Deep Color, please use a "High Speed HDMI cable" or "High Speed HDMI cable with Ethernet".
• Video signals are not output if the input video signals do not match the monitor's resolution. In this case, switch the Blu-ray Disc/DVD player's resolution to a resolution with which the monitor is compatible.

HDMI function

This unit supports the following HDMI functions:

❑ About 3D function

This unit supports input and output of 3D (3 dimensional) video signals of HDMI.
To play back 3D video, you need a TV and player that provide support for the HDMI 3D function and a pair of 3D glasses.

NOTE

- When playing back 3D video, refer to the instructions provided in the manual of your playback device together with this manual.
- When playing back 3D video content, the menu screen or status display screen can be superimposed over the image. However, the menu screen or status display screen cannot be superimposed over certain 3D video content.
- If 3D video with no 3D information is input, the menu screen and status display on this unit are displayed over the playback video.
- If 2D video is converted to 3D video on the television, the menu screen and status display on this unit are not displayed correctly. To view the menu screen and status display on this unit correctly, turn the television setting that converts 2D video to 3D video off.

❑ HDMI control function (☞page 49)

This function allows you to operate external devices from the unit and operate the unit from external devices.

NOTE

- The HDMI control function may not work depending on the device it is connected to and its settings.
- You cannot operate a TV or Blu-ray Disc player/DVD player that is not compatible with the HDMI control function.

❑ About Content Type

This function was added with the HDMI standard. It automatically makes settings suitable for the video-output type (content information).

❑ Deep Color (☞page 89)

When a device supporting Deep Color is connected, use a cable compatible with "High Speed HDMI cable" or "High Speed HDMI cable with Ethernet".

❑ Auto Lip Sync (☞page 65, 89)

❑ "x.v.Color", sYCC601 color, Adobe RGB color, Adobe YCC601 color (☞page 89, 90)

❑ High definition digital audio format

❑ ARC (Audio Return Channel) (☞page 8)

Copyright protection system
In order to play back digital video and audio such as BD-Video or DVD-Video via HDMI connection, both this unit and TV or the player need to support the copyright protection system known as HDCP (High-bandwidth Digital Content Protection System). HDCP is copyright protection technology comprised of data encryption and authentication of the connected AV devices. This unit supports HDCP. • If a device that does not support HDCP is connected, video and audio are not output correctly. Read the owner's manual of your television or player for more information.

Settings related to HDMI connections

Set as necessary. For details, see the respective reference pages.

❑ HDMI Setup (☞page 65)

Make settings for HDMI video/audio output.

- Auto Lip Sync
- HDMI Control
- P.Off Control
- HDMI Audio Out
- Standby Source

NOTE

The audio signal input from the HDMI input connector can be output as an output signal from the HDMI output connector by setting the HDMI audio output destination to TV.
Audio signals input via the Analog/Coaxial/Optical input connectors cannot be output from the HDMI MONITOR output connector.

Connecting an HDMI-incompatible device

For high quality video and surround playback, it is recommended to use an HDMI cable to connect this unit to TV and other video devices (☞page 7 “Connecting an HDMI-compatible device”).
This section describes connections when your device does not support HDMI connections.

Connection methods for various devices

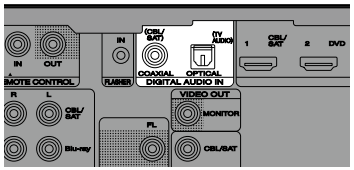
TV ☞page 13
CBL/SAT ☞page 14
DVD ☞page 15
Blu-ray ☞page 16
CD ☞page 17
TUNER ☞page 18
M-XPort ☞page 19
SPEAKER ☞page 44
AC IN ☞page 20

Cables used for connections

Video cable (sold separately)	
Video cable	
Audio cable (sold separately)	
Coaxial digital cable	
Optical cable	
Audio cable	

Changing the source assigned to connectors

This unit can change the source that is assigned to the DIGITAL AUDIO IN connectors.



Here, a connection to the DVD player is taken as an example for explanation. The rear panel video input and digital audio input connectors do not have the input connector indication for DVD players (DVD). You can assign DVD players to these connectors to use them for DVD players. Select “DVD” when switching functions on this unit to play back the source connected to these connectors.

❑ How to change the source assigned to connectors (☞page 68)

Connecting a TV

- This section describes how to connect when your TV does not support HDMI connections.
  For instructions on HDMI connections, see "Connecting an HDMI-compatible device" (☞page 7).
- If the TV connected to this unit is equipped with an HDMI connector that supports ARC, digital audio signals from TV can be transmitted to this unit (☞page 8 "About ARC (Audio Return Channel) function"). The ARC function allows you to enjoy on this unit the audio from TV programs and HDMI devices directly connected to TV, without having to make a separate audio connection. For the ARC function, also see your TV's manual.
- To listen to TV audio through this device, use the optical digital connection.

For video connections, see "Relationship between video signals and monitor output" (☞page 88).

❑ Audio connection

The following methods are available for connecting to this unit. **Use either of the methods to make a connection.**
The numbers prefixed with connectors indicate the recommendation order. The smaller the number is, the higher playback quality is achieved.

1 DIGITAL AUDIO OPTICAL connector
DIGITAL AUDIO COAXIAL connector ∗

When a multichannel audio (digital bit stream audio) is input, this unit decodes the audio to play back surround sound.

∗ When making this type of connection, you must change the settings on this unit.
(☞ **Input connector setting**)

❑ Video connection

The following methods are available for connecting to this unit.
The numbers prefixed with connectors indicate the recommendation order. The smaller the number is, the higher playback quality is achieved.

1 VIDEO OUT (MONITOR) connector

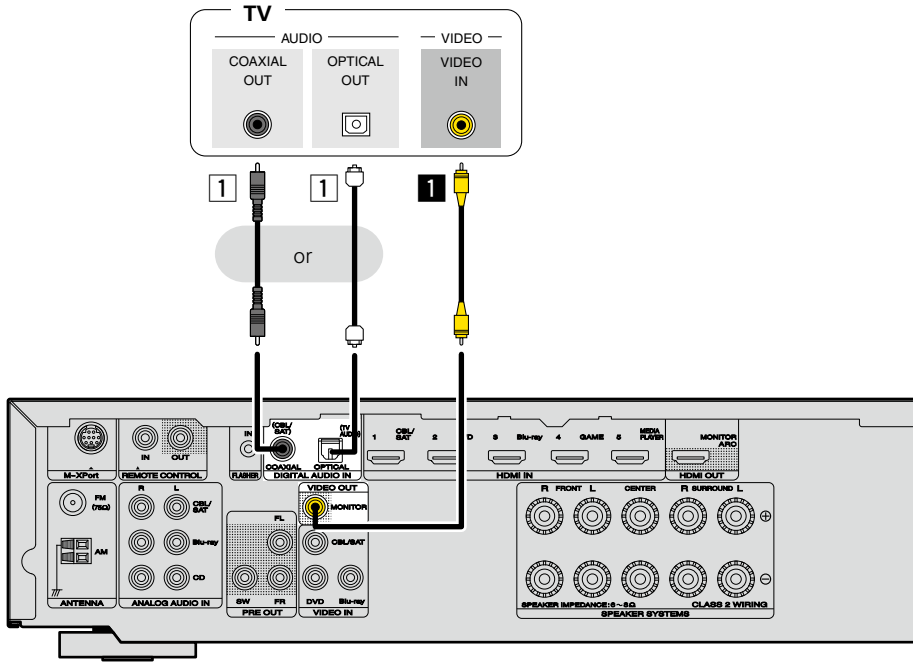
This makes an analog video connection.

Input connector setting

When making the following connection, you must change the input connector settings.

1 **DIGITAL AUDIO COAXIAL connector**
Change the default "CBL/SAT" to "TV AUDIO".

For how to change, see "Digital Assign" (☞page 68).



NOTE

The menu screen is only displayed on TV connected to this unit via HDMI. If your TV is connected to this unit via other video output connectors, perform menu operations while seeing the display on this unit.

Connecting a set-top box (Satellite tuner/cable TV)

This section describes how to connect when your satellite tuner or cable TV does not support HDMI connections.
For instructions on HDMI connections, see "Connecting an HDMI-compatible device" (☞page 7).

❑ Audio connection

The following methods are available for connecting to this unit. **Use either of the methods to make a connection.**
The numbers prefixed with connectors indicate the recommendation order. The smaller the number is, the higher playback quality is achieved.

1 DIGITAL AUDIO OPTICAL connector
DIGITAL AUDIO COAXIAL connector ✻

When a multichannel audio (digital bit stream audio) is input, this unit decodes the audio to play back surround sound.

✻ When making this type of connection, you must change the settings on this unit.
(☞ Input connector setting)

2 ANALOG AUDIO IN (CBL/SAT) connector

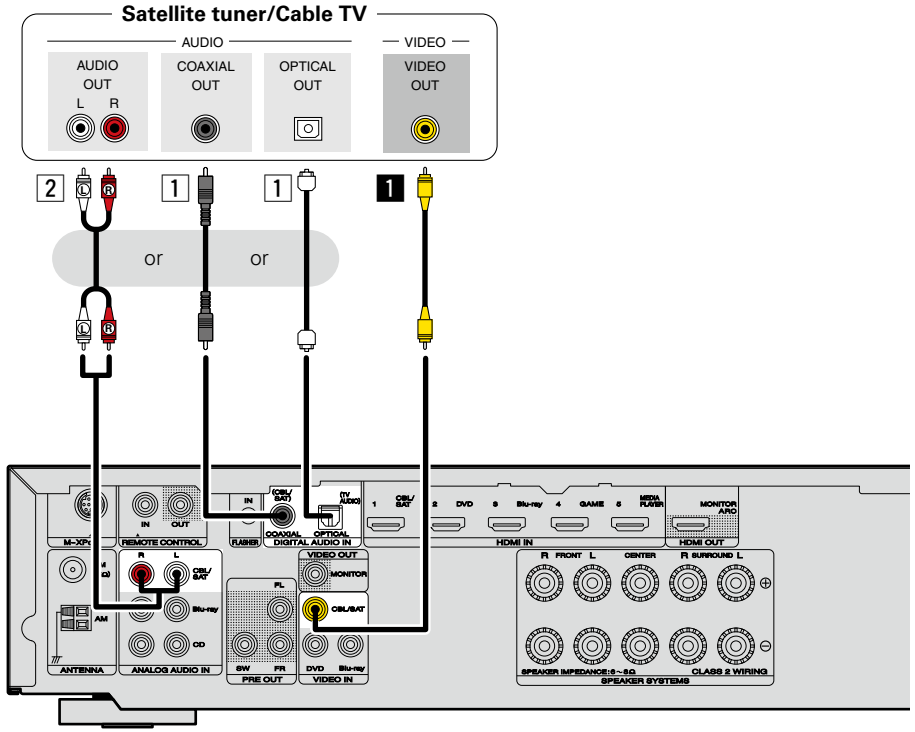
This makes an analog audio connection. This type of connection converts digital audio to analog audio, so the output audio may be degraded compared to connections 1.

❑ Video connection

The following methods are available for connecting to this unit.
The numbers prefixed with connectors indicate the recommendation order. The smaller the number is, the higher playback quality is achieved.

1 VIDEO IN (CBL/SAT) connector

This makes an analog video connection.



Input connector setting

When making the following connection, you must change the input connector settings.

1 **DIGITAL AUDIO OPTICAL connector**
Change the default "TV AUDIO" to "CBL/SAT".

For how to change, see "Digital Assign" (☞page 68).

Connecting a DVD player

This section describes how to connect when your DVD player does not support HDMI connections.
For instructions on HDMI connections, see "Connecting an HDMI-compatible device" (☞page 7).

❑ Audio connection

The following methods are available for connecting to this unit. **Use either of the methods to make a connection.**
The numbers prefixed with connectors indicate the recommendation order. The smaller the number is, the higher playback quality is achieved.

1 DIGITAL AUDIO COAXIAL connector
DIGITAL AUDIO OPTICAL connector

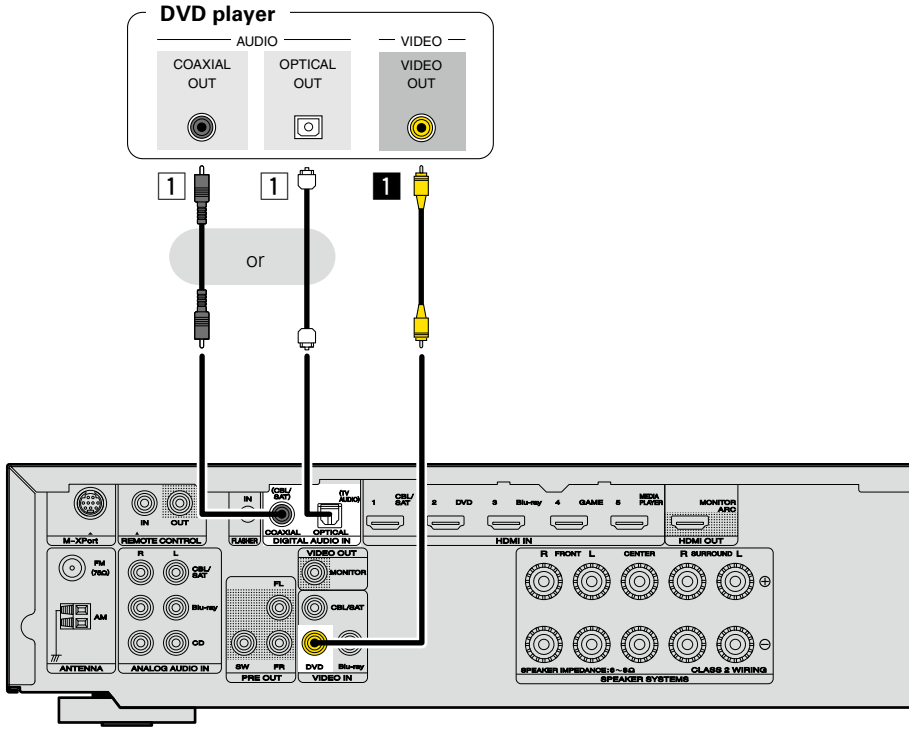
When a multichannel audio (digital bit stream audio) is input, this unit decodes the audio to play back surround sound.
When making this type of connection, you must change the settings on this unit.
(☞ **Input connector setting**)

❑ Video connection

The following methods are available for connecting to this unit.
The numbers prefixed with connectors indicate the recommendation order. The smaller the number is, the higher playback quality is achieved.

1 VIDEO IN (DVD) connector

This makes an analog video connection.



Input connector setting

When making the following connection, you must change the input connector settings.

1 **DIGITAL AUDIO COAXIAL connector**
Change the default "CBL/SAT" to "DVD".
DIGITAL AUDIO OPTICAL connector
Change the default "TV AUDIO" to "DVD".

For how to change, see "Digital Assign" (☞page 68).

Connecting a Blu-ray Disc player

This section describes how to connect when your Blu-ray disc player does not support HDMI connections. For instructions on HDMI connections, see "Connecting an HDMI-compatible device" (☞page 7).

❑ Audio connection

The following methods are available for connecting to this unit. **Use either of the methods to make a connection.**
The numbers prefixed with connectors indicate the recommendation order. The smaller the number is, the higher playback quality is achieved.

1 DIGITAL AUDIO COAXIAL connector
DIGITAL AUDIO OPTICAL connector

When a multichannel audio (digital bit stream audio) is input, this unit decodes the audio to play back surround sound. However, digital bit stream audio signals for HD audios from Blu-ray disc players (such as Dolby Digital Plus and dts-HD) can not be transmitted.
When making this type of connection, you must change the settings on this unit.
(☞ Input connector setting)

2 ANALOG AUDIO IN (Blu-ray) connector

This makes an analog audio connection. This type of connection converts digital audio to analog audio, so the output audio may be degraded compared to connections 1.

❑ Video connection

The following methods are available for connecting to this unit.
The numbers prefixed with connectors indicate the recommendation order. The smaller the number is, the higher playback quality is achieved.

1 VIDEO IN connector

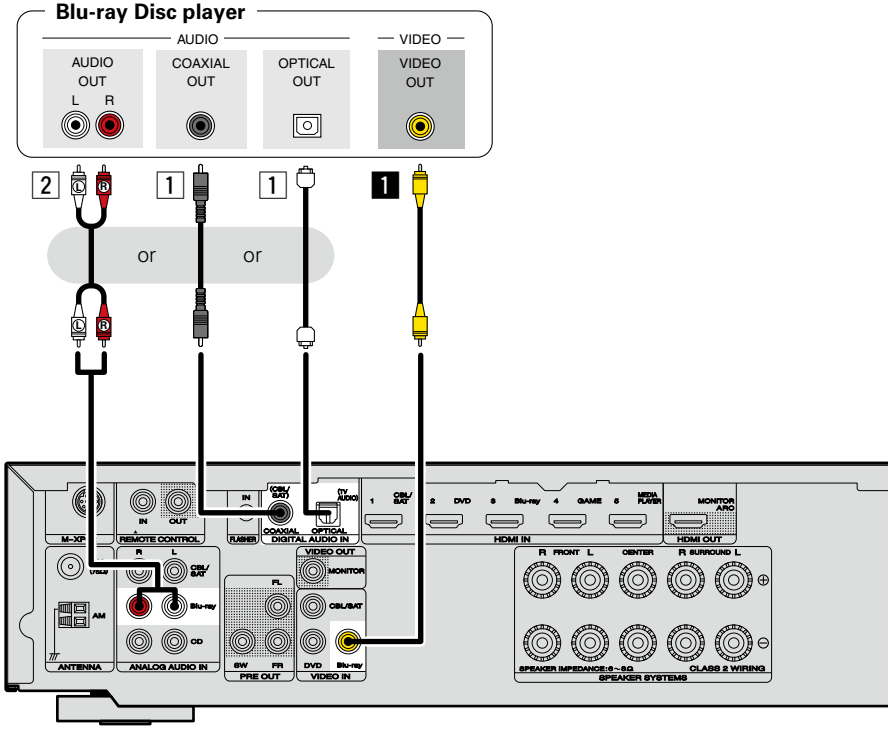
This makes an analog video connection.

Input connector setting

When making the following connection, you must change the input connector settings.

1 **DIGITAL AUDIO COAXIAL connector**
Change the default "CBL/SAT" to "Blu-ray".
DIGITAL AUDIO OPTICAL connector
Change the default "TV AUDIO" to "Blu-ray".

For how to change, see "Digital Assign" (☞page 68).



When you want to play back HD Audio (Dolby TrueHD, DTS-HD, Dolby Digital Plus, DTS Express) and Multi-channel PCM with this unit, use an HDMI connection (☞page 7 "Connecting an HDMI-compatible device").

Connecting a CD player

You can enjoy CD sound.

❑ Audio connection

The following methods are available for connecting to this unit. **Use either of the methods to make a connection.**

The numbers prefixed with connectors indicate the recommendation order. The smaller the number is, the higher playback quality is achieved.

1 DIGITAL AUDIO COAXIAL connector
DIGITAL AUDIO OPTICAL connector

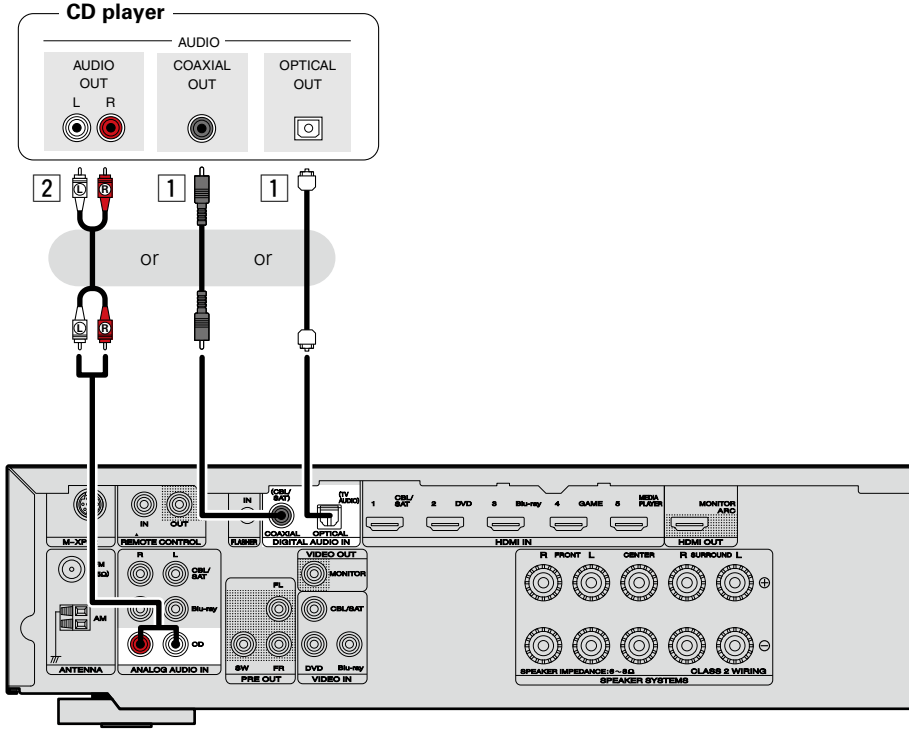
When a multichannel audio (digital bit stream audio) is input, this unit decodes the audio to play back surround sound.

When making this type of connection, you must change the settings on this unit.

(☞ **Input connector setting**)

2 ANALOG AUDIO IN (CD) connector

This makes an analog audio connection. This type of connection converts digital audio to analog audio, so the output audio may be degraded compared to connections 1.



Input connector setting

When making the following connection, you must change the input connector settings.

1 DIGITAL AUDIO COAXIAL connector

Change the default "CBL/SAT" to "CD".

DIGITAL AUDIO OPTICAL connector

Change the default "TV AUDIO" to "CD".

For how to change, see "Digital Assign" (☞page 68).

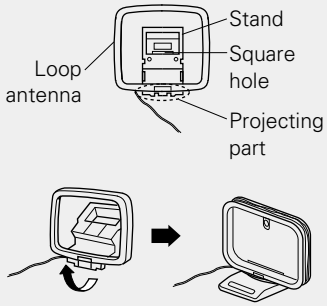
Connecting an FM/AM antenna

- Connect the FM antenna supplied with the unit to enjoy listening to radio broadcasts.
- After connecting the antenna and receiving a broadcast signal (☞page 30 "Listening to FM/AM broadcasts"), fix the antenna with tape in a position where the noise level becomes minimal.

❑ AM loop antenna assembly

1 **Put the stand section through the bottom of the loop antenna from the rear and bend it forward.**

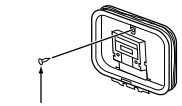
2 **Insert the projecting part into the square hole in the stand.**



❑ Using the AM loop antenna

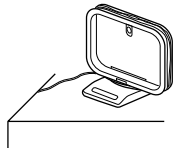
Suspending on a wall

Suspend directly on a wall without assembling.



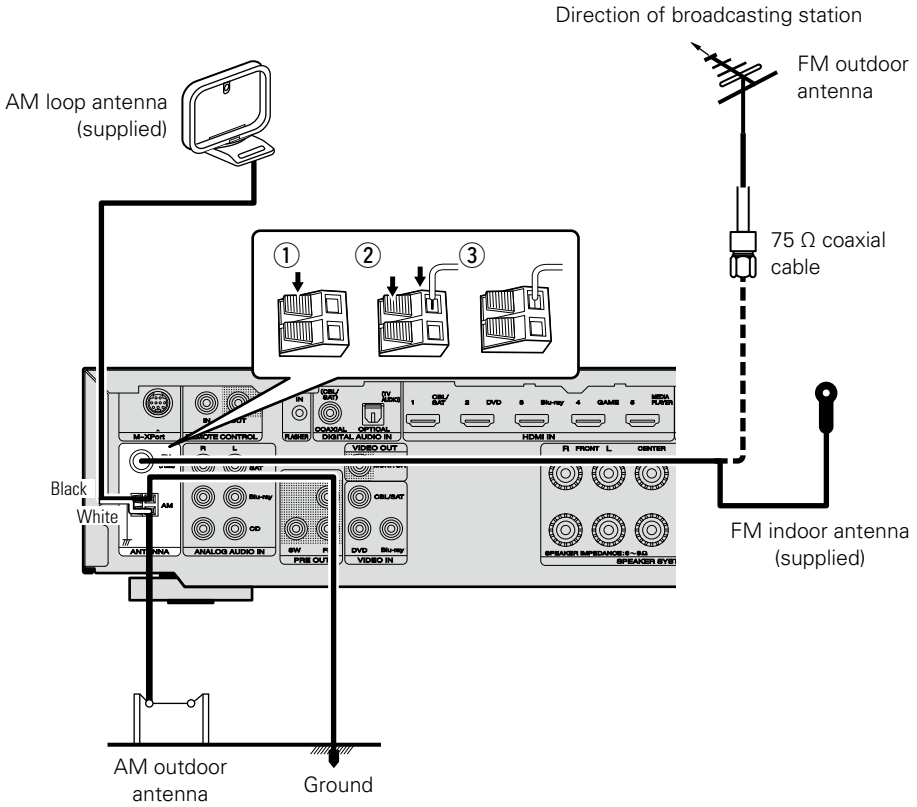
Standing alone

Use the procedure shown above to assemble.



NOTE

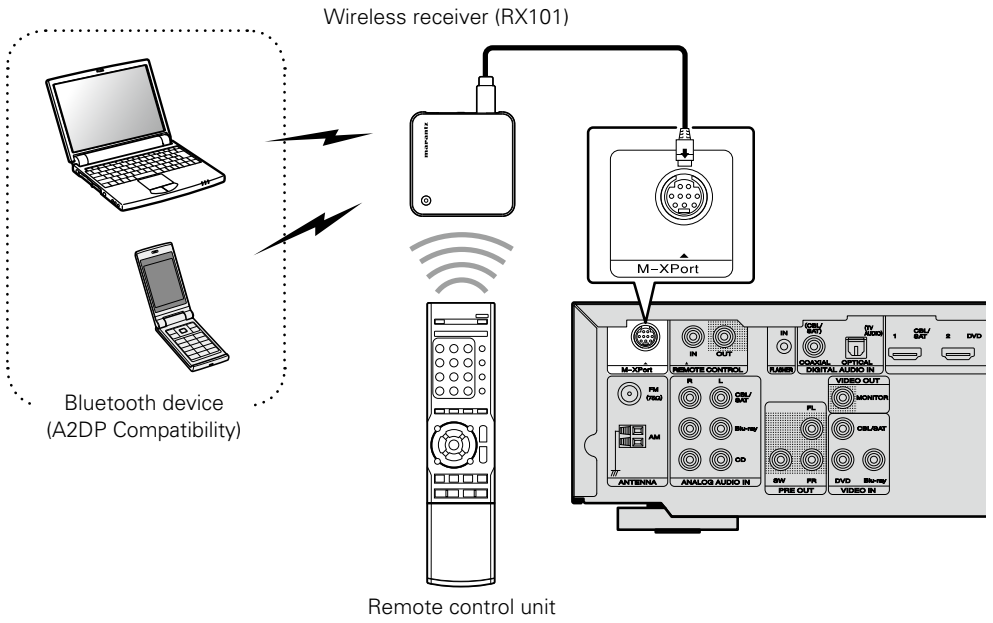
- Do not connect two FM antennas simultaneously.
- Even if an external AM antenna is used, do not disconnect the AM loop antenna.
- Make sure the AM loop antenna lead terminals do not touch metal parts of the panel.
- If the signal has noise interference, connect the ground terminal (GND) to reduce noise.
- If you are unable to receive a good broadcast signal, we recommend installing an outdoor antenna. For details, inquire at the retail store where you purchased the unit.



Connecting a wireless receiver (RX101)

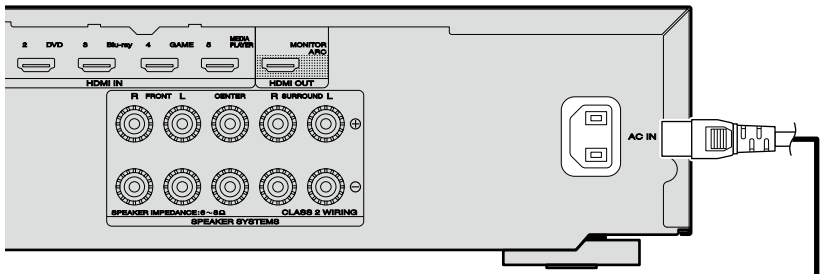
- You can connect a wireless receiver (RX101, sold separately) to play back music on your Bluetooth device with this unit.
- To do this, switch the input source to "M-XPort" (☞page 28 "Selecting the input source").
- This unit supports the A2DP standard of the Bluetooth profile.
- See also the manuals for your wireless receiver and Bluetooth device.

- When connecting your Bluetooth device to the wireless receiver for the first time, paring is necessary. Once paring is completed, the communication between your Bluetooth device and the wireless receiver can be established just by connecting them. Paring is necessary for each Bluetooth device.
- You can also use the wireless receiver as an IR receiver. In this case, disable the remote control signal receiving function (☞page 52 "Remote lock function").



Connecting the power cord

After completing all the connections, insert the power plug into the power outlet.



To household power outlet (AC 120 V, 60 Hz)

Power cord (supplied)

NOTE

- **Do not plug in the power cord until all connections have been completed.**
- Do not bundle power cords together with connection cables. Doing so can result in humming or noise.

Here, we explain "Audyssey® Setup", which allows you to automatically make the optimal settings for your speakers.

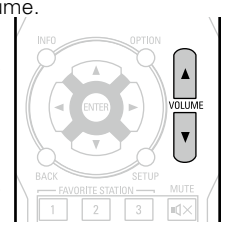
Set up speakers (Audyssey® Setup) GUI

The acoustic characteristics of the connected speakers and listening room are measured and the optimum settings are made automatically. This is called "Audyssey® Setup".
To perform measurement, place the setup microphone in multiple locations all around the listening area. For best results, we recommend you measure in six positions, as shown in the illustration (up to six positions).

- When performing Audyssey® Setup, Audyssey MultEQ®/ Audyssey Dynamic EQ®/Audyssey Dynamic Volume® functions become active (☞page 61).
- To set up the speakers manually, use "Speakers" (☞page 71) on the menu.

NOTE

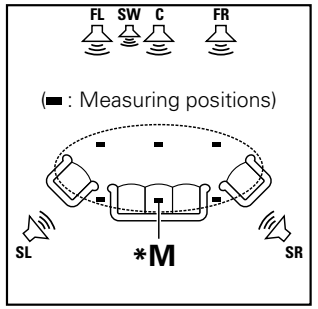
- Make the room as quiet as possible. Background noise can disrupt the room measurements. Close windows and turn off the power on electronic devices (TVs, radios, air conditioners, fluorescent lights, etc.). The measurements could be affected by the sounds emitted by such devices.
- During the measurement process, place cell phones outside the listening room. Cell phone signals could disrupt the measurements.
- Do not unplug the setup microphone from the main unit until Audyssey® Setup is completed.
- Do not stand between the speakers and setup microphone or allow obstacles in the path while the measurements are being made. This will cause inaccurate readings.
- During the measurement process, loud test sounds may be played, but this is part of normal operation. If there is background noise in room, these test signals will increase in volume.
- Operating **VOLUME ▲▼** on the remote control unit or **VOLUME** on the main unit during the measurements will cancel the measurements.
- Measurement cannot be performed when headphones are connected. Unplug the headphones before performing Audyssey® Setup.



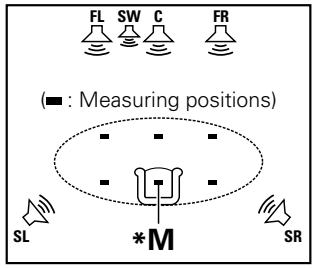
About setup microphone placement

- Measurements are performed by placing the setup microphone successively at multiple positions throughout the entire listening area, as shown in **【Example ①】**. For best results, we recommend you measure in six positions, as shown in the illustration (up to six positions).
- Even if the listening environment is small as shown in **【Example ②】**, measuring at multiple points throughout the listening environment results in more effective correction.

【Example ①】



【Example ②】



FL Front speaker (L)
FR Front speaker (R)
C Center speaker
SW Subwoofer
SL Surround speaker (L)
SR Surround speaker (R)

About the main listening position (*M)

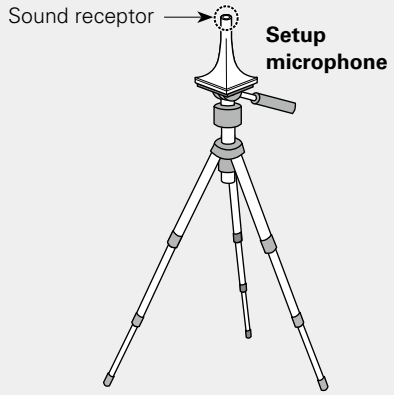
The main listening position is the position where listeners would normally sit or where one would normally sit alone within the listening environment. Before starting Audyssey® Setup, place the setup microphone in the main listening position. Audyssey MultEQ® uses the measurements from this position to calculate speaker distance, level, polarity, and the optimum crossover value for the subwoofer.

☞ See overleaf

1 Prepare the included setup microphone

Mount the setup microphone on a tripod or stand and place it in the main listening position.

When placing the setup microphone, adjust the height of the sound receptor to the level of the listener's ear.



If you do not have a tripod or stand, set up the microphone on, for example, a seat without a back.

NOTE

- Do not hold the setup microphone in your hand during measurements.
- Avoid placing the setup microphone close to a seat back or wall as sound reflections may give inaccurate results.

2 Set up the subwoofer

If using a subwoofer capable of the following adjustments, set up the subwoofer as shown below.

For details, see your subwoofer's manual.

❑ When using a subwoofer with a direct mode

Set the direct mode to "On" and disable the volume adjustment and crossover frequency setting.

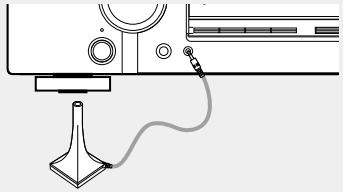
❑ When using a subwoofer without a direct mode

Make the following settings:

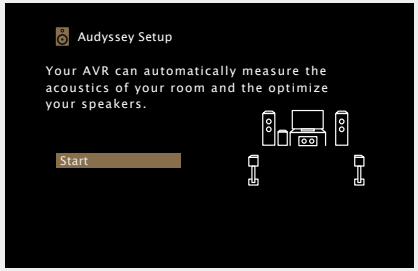
- **Volume** : "12 o'clock position"
- **Crossover frequency** : "Maximum/Highest Frequency"
- **Low pass filter** : "Off"
- **Standby mode** : "Off"

Preparation

3 Connect the setup microphone to the SETUP MIC jack of this unit.



When the setup microphone is connected, the following screen is displayed.

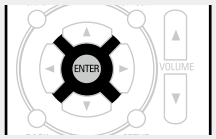


- For configuration and connection of speakers, see "Installation/ connection of speakers (Advanced)" (☞page 43).
- For connection to a TV, see "Connecting this unit to a TV via HDMI connections" (☞page 9).

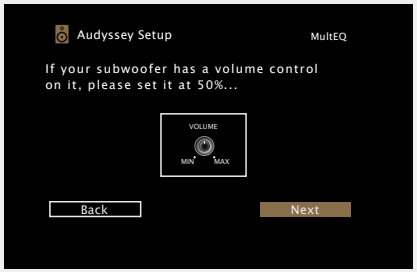
☞ See overleaf

Preparation (Continued)

4 **Select "Start" and then press ENTER.**
The subwoofer volume setting screen is displayed.



5 **Select "Next" and then press ENTER.**



Detection & Measurement (Main)

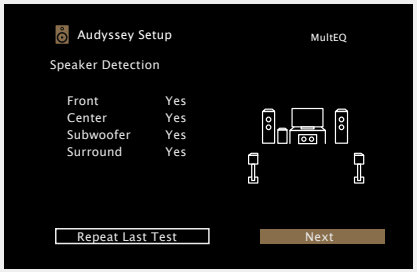
- This step automatically checks the speaker configuration and speaker size, and calculates the channel level, distance, and crossover frequency.
It also corrects distortion in the listening area.

6 **Select "Begin Test" and then press ENTER.**
When measuring begins, a test tone is output from each speaker.

- Measurement requires several minutes.

7 **The detected speakers are displayed.**

- The illustration below shows an example of when the front speakers, center speaker, subwoofer and surround speakers have been detected.



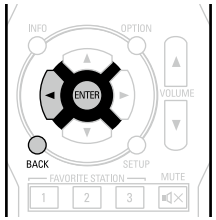
NOTE

If a connected speaker is not displayed, the speaker may not be connected correctly. Check the speaker connection.

8 **Select "Next" and then press ENTER.**

NOTE

If "Caution!" is displayed on TV screen:
Go to "Error messages" (☞page 26). Check any related items, and perform the necessary procedures.
If the problem is resolved, return and restart "Audyssey® Setup".



Going back to the previous screen

Select "Back" and then press **ENTER**.

When measuring has stopped

① Press **BACK** to display the popup screen.
② Press ◁ to select "Yes", and then press **ENTER**.

Setting up the speakers again

Repeat the operation from step 3.

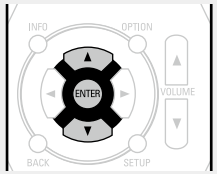
☞ See overleaf

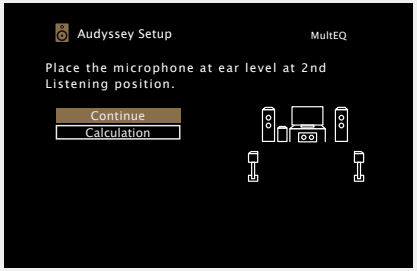
Measurement (2nd – 6th)

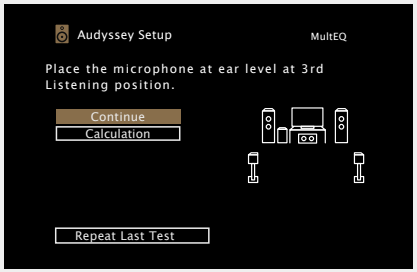
- In this step, you will perform measurements at multiple positions (two to six positions) other than the main listening position.
- Just one position can be measured but measuring multiple positions increases the accuracy of the correction of acoustic distortion within the listening area.

9 Move the setup microphone to position 2, select "Continue", and then press ENTER.

The measurement of the second position starts. Measurements can be made in up to six positions.



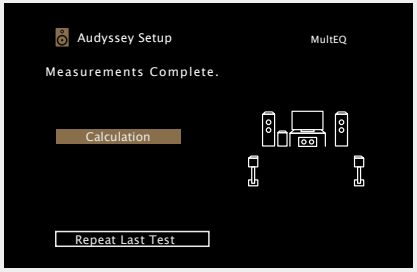




- To skip measuring the third and subsequent listening position, use △▽ to select "Calculation" and press **ENTER** to proceed to step 12.
- To measure the second position again, use △▽ to select "Repeat Last Test" and press **ENTER**.

10 Repeat step 9, measuring positions 3 to 6.

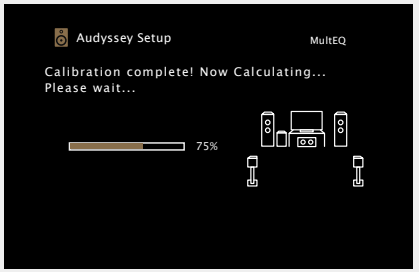
When measurement of position 6 is completed, a "Measurements Complete." message is displayed.



Calculation

11 Select "Calculation" and then press ENTER.

Measuring results are analyzed, and the frequency response of each speaker in the listening room is determined.

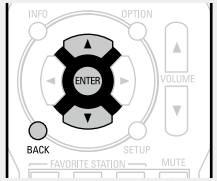


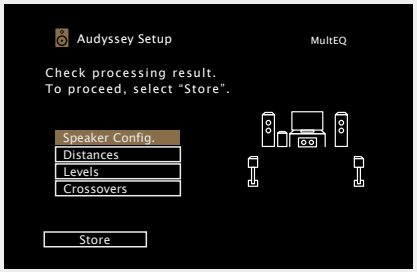
- Analysis takes several minutes to complete. The more speakers and measurement positions that there are, the more time it takes to perform the analysis.

See overleaf

Check

12 Use △▽ to select the item you want to check, and then press ENTER.





- Subwoofers may measure a greater reported distance than the actual distance due to added electrical delay common in subwoofers.
- If you want to check another item, press **BACK**.

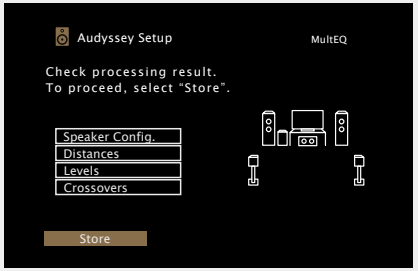
NOTE

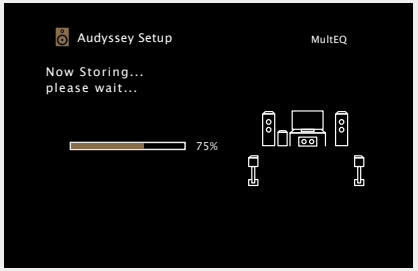
- If the result differs from the actual connection status, or if "Caution!" is displayed, see "Error messages" (☞page 26). Then carry out Audyssey® Setup again.
- If you change speaker positions or orientation, perform Audyssey® Setup again to find the optimal equalizer settings.

Store

13 Select "Store" and then press ENTER.

Save the measurement results.





- Saving the results requires about 10 seconds.
- During saving of measurements results, "Now Storing...Please wait..." is displayed. When saving is completed, "Storing complete. Audyssey® Setup is now finished." is displayed.

NOTE

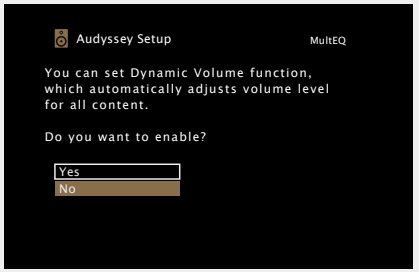
During saving of measurement results, be sure not to turn off the power.

Finish

14 Unplug the setup microphone from the unit's SETUP MIC jack.

15 Select "Next" and then press ENTER.

16 Set Audyssey Dynamic Volume®.



- This feature adjusts the output volume to the optimal level while constantly monitoring the level of the audio input to the unit.
  Optimal volume control is performed automatically without any loss in the dynamism and clarity of the sound when, for example, the volume suddenly increases for commercials shown during television programs.

❑ When turning Dynamic Volume® on

- Press △ to select "Yes", and then press **ENTER**.
  The unit automatically enters "Medium" (☞page 62) mode.

❑ When turning Dynamic Volume® off

- Press ▽ to select "No", and then press **ENTER**.

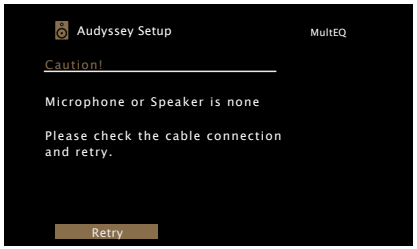
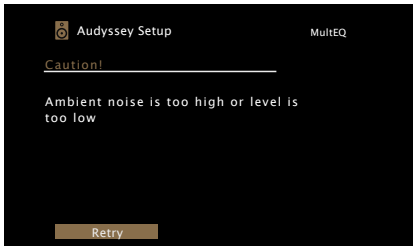
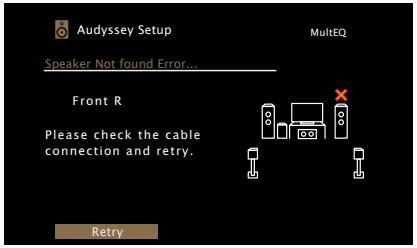
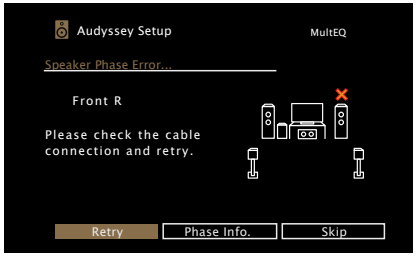
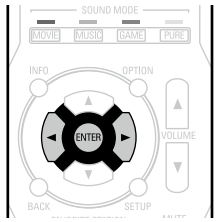
NOTE

After performing Audyssey® Setup, do not change the speaker connections or subwoofer volume. In event of a change, perform Audyssey® Setup again.

Error messages

NOTE

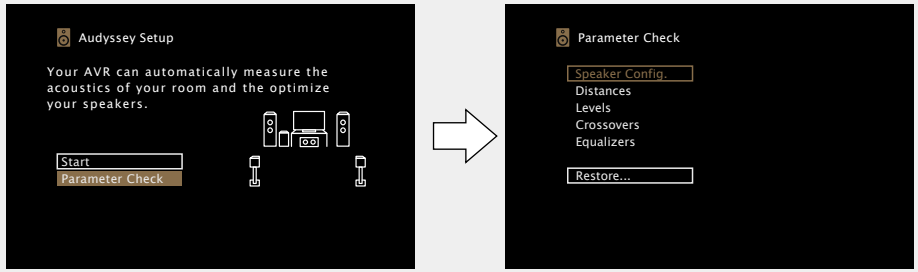
- An error message is displayed if Audyssey® Setup could not be completed due to speaker placement, the measurement environment, etc. If an error message is displayed, check the relevant items and perform the necessary measures. Then perform Audyssey® Setup again.
- If the result still differs from the actual connection status after remeasurement or the error message still appears, it is possible that the speakers are not connected properly. Turn this unit off, check the speaker connections and repeat the measurement process from the beginning.
- Be sure to turn off the power before checking speaker connections.

Examples	Error details	Measures
	• The connected setup microphone is broken, or a device other than the supplied setup microphone is connected. • Not all speakers could be detected. • A front speaker (left) was not properly detected.	• Connect the included setup microphone to the SETUP MIC jack of this unit. • Check the speaker connections.
	• There is too much noise in the room for accurate measurements to be made. • Speaker or subwoofer sound is too low for accurate measurements to be made.	• Either turn off any device generating noise or move it away. • Perform again when the surroundings are quieter. • Check the speaker installation and the direction in which the speakers are facing. • Adjust the subwoofer's volume.
	• The displayed speaker could not be detected. (The screen on the left indicates that the front right speaker cannot be detected.)	• Check the connections of the displayed speaker.
	• The displayed speaker is connected with the polarity reversed. (The screen on the left indicates that the polarity phases of the front right speakers are reversed.)	• Check the polarity of the displayed speaker. • For some speakers, this error message may be displayed even if the speaker is properly connected. If you are sure the connection is correct, use ◁ ▷ to select "Skip", then press **ENTER**. 

Parameter Check

This function enables you to check the measurement results and equalizer characteristics after Audyssey® Setup.

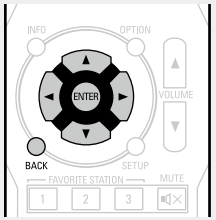
1 Use △▽ to select "Parameter Check" and then press ENTER.



2 Use △▽ to select the item you want to check, then press ENTER or ▷.

Measurement results for each speaker are displayed.

Speaker Config.	Check the speaker configuration.
Distances	Check the speaker distance.
Channels	Check the speaker channel level.
Crossovers	Check the speaker crossover frequency.
Equalizers	Check the equalizer.



- If "Equalizers" is selected, press △▽ to select equalizing curve ("Audyssey" or "Audyssey Flat") to be checked.
  Use ◁ ▷ to switch the display between the different speakers.

3 Press ◁ or BACK.

The confirmation screen reappears. Repeat step 2.

Retrieving Audyssey® Setup settings

If you set "Restore..." to "Yes", you can return to Audyssey® Setup measurement result (value calculated at the start by MultEQ®) even when you have changed each setting manually.

Playback (Basic operation)

Important information

Before starting playback, make the connections between the different devices and the settings on the unit.

NOTE

Also refer to the operating instructions of the connected devices when playing them.

Turning the power on

Press ON/STANDBY ⏻ to turn on power to the unit.
The power turns on.

You can also switch the power to standby by pressing ⏻ **ON/STANDBY** on the main unit.

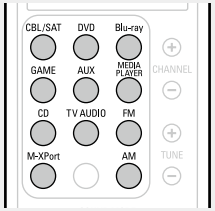
❑ When power is switched to standby

Press **ON/STANDBY** ⏻.

[STANDBY indicator status in standby mode]
- Normal standby : Red
- When "HDMI Control" (☞page 65) is set to "On" : Orange

Selecting the input source

Press the input source select button (CBL/SAT, DVD, Blu-ray, GAME, AUX, MEDIA PLAYER, CD, TV AUDIO, FM, M-XPort or AM) to be played back.
The desired input source can be selected directly.



You can also use the following operation to select an input source.

❑ Using the button on the main unit

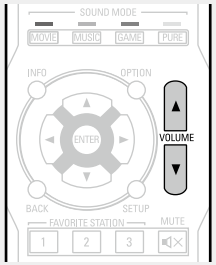
Turn **INPUT SELECTOR**.
- Turning **INPUT SELECTOR** switches the input source, as shown below.

CBL/SAT ◄► DVD ◄► Blu-ray ◄► GAME ◄► AUX ◄
► M-XPort ◄► TV AUDIO ◄► TUNER ◄► CD ◄► MEDIA PLAYER ◄

Adjusting the master volume

Use VOLUME ▲▼ to adjust the volume.

- The volume display method varies depending on the "Scale" setting (☞page 61).



❑ **When the "Scale" setting (☞page 61) is "0 – 98"**

[Adjustable range] 0.0 0.5 – 98.0

❑ **When the "Scale" setting (☞page 61) is "–79.5dB – 18.0dB"**

[Adjustable range] –––.– –79.5dB – 18.0dB

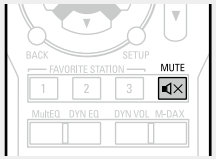
- The variable range differs according to the input signal and channel level setting.

You can also adjust the master volume by turning **VOLUME** on the main unit.

Turning off the sound temporarily

Press MUTE 🔇.

- "MUTE" indicator on the display flashes.
- 🔇 appears on a TV screen.



- The sound is reduced to the level set at "Mute Level" (☞page 61).
- To cancel, press **MUTE** 🔇 again. Muting can also be canceled by adjusting the master volume.

Playing a Blu-ray Disc player/DVD player

The following describes the procedure for playing Blu-ray Disc player/DVD player.

1 Prepare for playback.

① Turn on the power of the TV, subwoofer and player.
② Change the TV input to the input of this unit.
③ Load the disc in the player.

2 Press ON/STANDBY ⏻ to turn on power to the unit.

3 Press Blu-ray or DVD to switch an input source for a player used for playback.

4 Play the Blu-ray Disc player or DVD player.

- Make the necessary settings on the player (language setting, subtitles setting, etc.) beforehand.

Playing a CD player

The following describes the procedure for playing CD player.

1 Prepare for playback.

① Turn on the power of the subwoofer and player.
② Load the disc in the player.

2 Press ON/STANDBY ⏻ to turn on power to the unit.

3 Press CD to switch the input source to "CD".

4 Play the CD player.

Listening to FM/AM broadcasts

For antenna connections, see "Connecting an FM/AM antenna" (☞page 18).

How to tune in

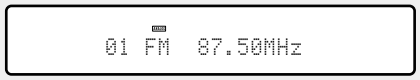
The modes for receiving FM broadcasts consists of "Auto" mode that automatically searches available broadcast stations and "Manual" mode that lets you tune in using buttons to change the frequency. The default setting is "Auto". You can also use "Direct Tune" to tune in by entering the frequency directly.
In "Auto" mode, you cannot tune in to radio stations if the reception is not good. If this is the case, then use the "Manual" mode or "Direct Tune" to tune in.

Listening to FM/AM broadcasts

1 **Press FM or AM to switch the input source.**

【TV Screen】

【Display of this unit】



2 **Press TUNE + or TUNE – to select the station you want to hear.**

Scanning is performed until it finds an available radio station. When it finds a radio station, it stops the scan automatically and tunes in.

❑ Adding to the FAVORITES STATION button

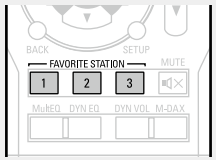
You can add up to three types of content.

NOTE

Please note that if you add new content to a number that already contains content, the older content is deleted.

While content is playing, press and hold one of the FAVORITE STATION 1 – 3 buttons for more than 3 seconds.

The content is added to the button you pressed.



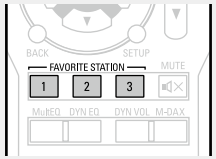
Add input sources and radio stations to **FAVORITE STATION 1 – 3**.

Playing back content added to the FAVORITES STATION button

You can easily call up content by pressing the **FAVORITE STATION** button.

Press one of the FAVORITE STATION 1 – 3 buttons that you added content to.

Playback starts.



☞ See overleaf

Operations available through the OPTION button

Press the **OPTION** button to display a menu of functions that can be used on the TV screen. Select the function you want to use from this menu. You can easily find and use the desired function.

❑ Changing the tuning mode (Tune Mode)

You can change the mode for tuning into FM/AM broadcasts. If you cannot tune in automatically with "Auto" mode, then change the mode to "Manual" and tune in manually.

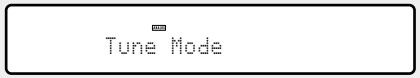
1 **Press FM or AM to switch the input source.**

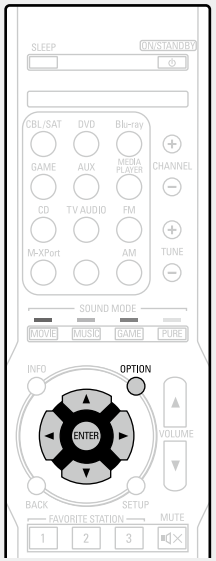
2 **Press OPTION.**
The option menu screen is displayed.

3 **Use △▽ to select "Tune Mode", then press ENTER.**

【TV Screen】

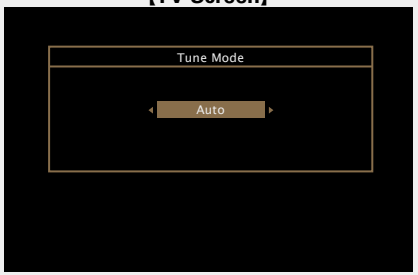
【Display of this unit】





4 **Use ◁ ▷ to select tuning mode, then press ENTER.**

【TV Screen】



【Display of this unit】

Auto	Automatically tune to the station.
Manual	Manually tune to the station.

5 **Press TUNE + or TUNE – to select the station you want to hear.**
The frequency changes in steps each time the button is pressed.

When tuning in stations manually, press and hold **TUNE +** or **TUNE –** to change frequencies continuously.

❑ Changing the screen display duration

Make this setting at "Audio Display" (☞page 66) in the menu. The default setting is "30s".
Press △▽◁ ▷ while the display is off to return to the original screen.

☞ See overleaf

❑ Tuning in by entering the radio frequency (Direct Tune)

You can enter the receiving frequency directly to tune in.

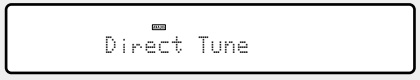
1 **Press FM or AM to switch the input source.**

2 **Press OPTION.**
The option menu screen is displayed.

3 **Use △▽ to select "Direct Tune", then press ENTER.**
The direct tuner screen is displayed and "–" in the display flashes.

【TV Screen】

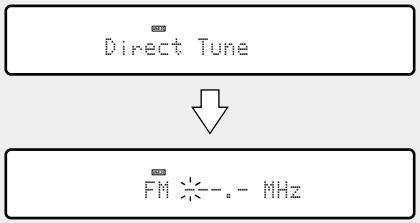
【Display of this unit】



4 **Use △▽ to select a number and press ▷.**
The screen that lets you enter the frequency is displayed.

【TV Screen】

【Display of this unit】



• If ◁ is pressed, the immediately preceding input is cancelled.

5 **Repeat step 4 and enter the frequency of the radio station you want to hear.**

6 **When setting is completed, press ENTER.**
The preset frequency is tuned in.

See overleaf

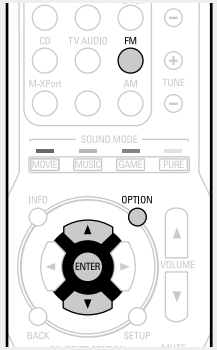
Presetting broadcast stations

❑ Tuning in to radio stations and presetting them automatically (Auto Preset)

Up to 56 stations can be preset.
If "Auto Preset" is performed after performing "Preset Memory", the "Preset Memory" settings will be overwritten.

1 **Press FM to switch the input source.**

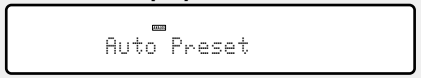
2 **Press OPTION.**
The option menu screen is displayed.



3 **Use △▽ to select "Auto Preset", then press ENTER.**

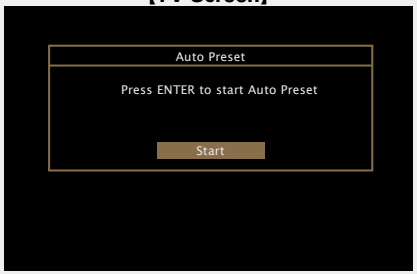
【TV Screen】

【Display of this unit】

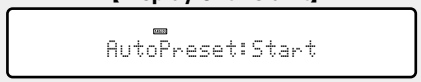


4 **Press ENTER.**
The unit starts to tune in to radio stations automatically and preset them.

【TV Screen】



【Display of this unit】



- When presetting is completed, "Completed" is displayed for about 5 seconds and the option menu screen turns off.

☞ See overleaf

❑ Presetting the current broadcast station (Preset Memory)

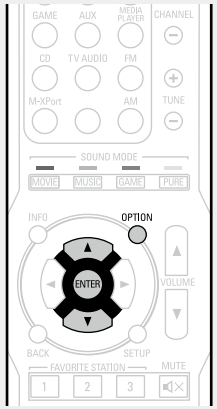
Your favorite broadcast stations can be preset so that you can tune them in easily. Up to 56 stations can be preset.

1 **Tune in the broadcast station you want to preset.**

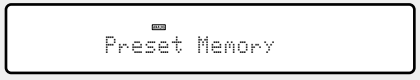
2 **Press OPTION.**
The option menu screen is displayed.

3 **Use △▽ to select "Preset Memory", then press ENTER.**
The list of already preset channels is displayed.

【TV Screen】



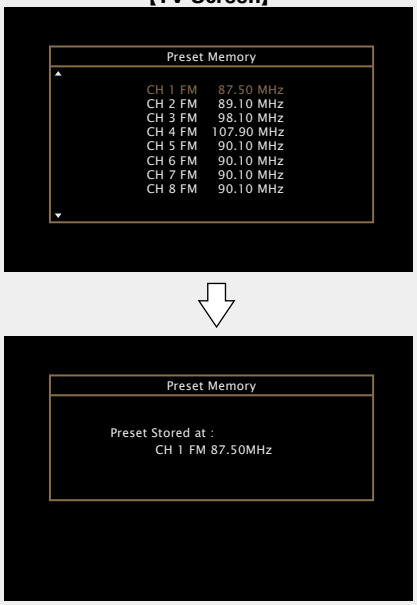
【Display of this unit】



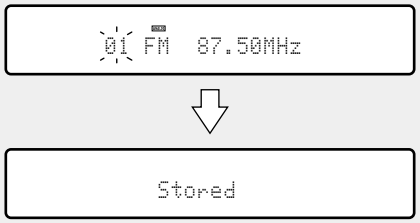
4 **Use △▽ to select the channel you want to preset, then press ENTER.**
The current broadcast station that is preset.

• To preset other stations, repeat steps 1 to 4.

【TV Screen】



【Display of this unit】



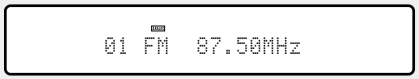
The channel numbers of broadcast stations set as "Preset Skip" (☞page 36) are grayed out, but these stations can be preset.
When grayed out channel numbers are preset, these are highlighted and the "Preset Skip" setting changes to "On".

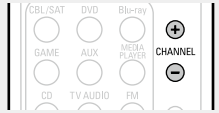
Channel	Default Settings
1 – 8	87.50 / 89.10 / 98.10 / 107.90 / 90.10 / 90.10 / 90.10 / 90.10 MHz
9 – 16	520 / 600 / 1000 / 1400 / 1500 / 1710 kHz, 90.10 / 90.10 MHz
17 – 24	90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 MHz
25 – 32	90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 MHz
33 – 40	90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 MHz
41 – 48	90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 MHz
49 – 56	90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 / 90.10 MHz

Listening to preset stations

Use CHANNEL +, – to select the desired preset channel.

【Display of this unit】





You can also select preset broadcast stations by pressing **PRESET CH +** or **PRESET CH –** on the main unit.

☞See overleaf

❑ Specify a name for the preset broadcast station (Preset Name)

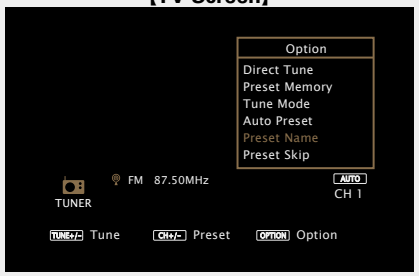
You can set the name to the preset broadcast station or change it. Up to eight characters can be input.

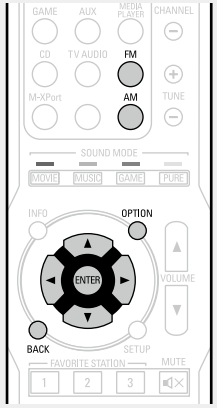
1 **Press FM or AM to switch the input source.**

2 **Press OPTION.**
The option menu screen is displayed.

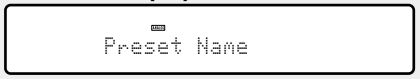
3 **Use △▽ to select "Preset Name", then press ENTER.**
The Preset Name screen is displayed.

【TV Screen】





【Display of this unit】

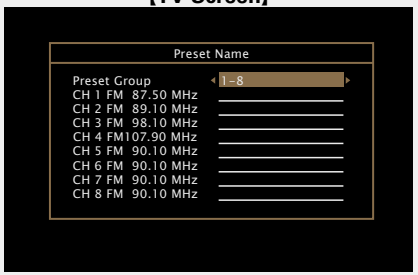


4 **Use ◁ ▷ to select the group of the broadcast station you want to name, then press ENTER.**
The screen that lets you edit the preset name is displayed.

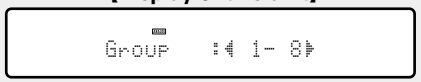
• Each time ◁ ▷ is pressed, the setting is changed as shown below.

1 – 8 ⟷ 9 – 16 ⟷ 17 – 24 ⟷ 25 – 32 ⟷ 49 – 56 ⟷ 41 – 48 ⟷ 33 – 40

【TV Screen】



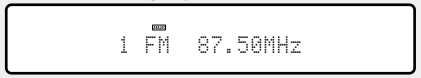
【Display of this unit】



5 **Use △▽ to select the broadcast station you want to name, then press ENTER.**

【TV Screen】

【Display of this unit】



6 **Use △▽ to select a name label, then press ENTER.**
The screen that lets you edit the preset name is displayed.

• If you select "Set Defaults", then the unit returns to displaying the frequency.

7 **Enter the characters, then press OK.**

• For character input, see page 57.

8 **Press BACK twice.**
The display returns to the playback screen.

See overleaf

❑ Skipping preset broadcast stations (Preset Skip)

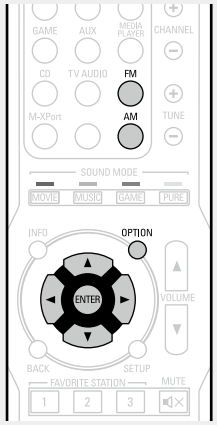
You can set in advance, the stations you do not want to be displayed when tuning in, by groups or by stations.
The preset skip setting is useful when tuning in, because only your favorite stations are displayed.

1 **Press FM or AM to switch the input source.**

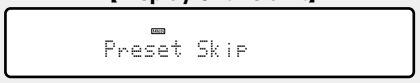
2 **Press OPTION.**
The option menu screen is displayed.

3 **Use △▽ to select "Preset Skip", then press ENTER.**
The Preset Skip screen is displayed.

[TV Screen]



[Display of this unit]



4-1 【To set the stations you want to skip by groups】

① Use ◁ ▷ to select the group of broadcast stations you want to skip.

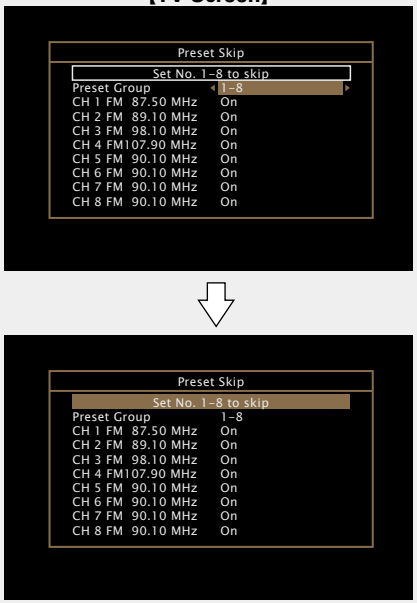
- Each time ◁ ▷ is pressed, the setting is changed as shown below.

1 – 8 ↔ 9 – 16 ↔ 17 – 24 ↔ 25 – 32
49 – 56 ↔ 41 – 48 ↔ 33 – 40

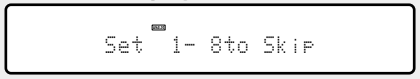
② Press △ to select "Set No. ∗ – ∗ to skip", then press ENTER.
All broadcast stations in the group "∗ – ∗" you selected are not displayed.
(∗ are the selected group numbers)

③ Press BACK.

[TV Screen]



[Display of this unit]



4-2 【To set the stations you want to skip by stations】

① Use ◁ ▷ to select the group of broadcast stations you want to skip.

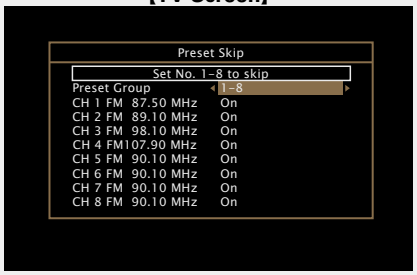
- Each time ◁ ▷ is pressed, the setting is changed as shown below.

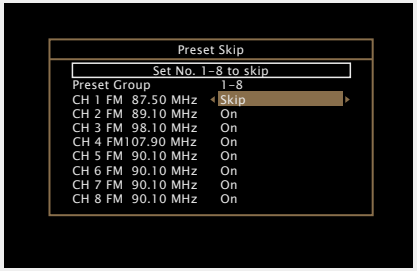
1 – 8 ↔ 9 – 16 ↔ 17 – 24 ↔ 25 – 32
49 – 56 ↔ 41 – 48 ↔ 33 – 40

② Use △▽ to select the broadcast station you want to skip.

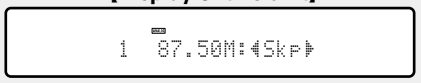
③ Use ◁ ▷ to select "Skip".
The station you selected is not displayed.

[TV Screen]





[Display of this unit]



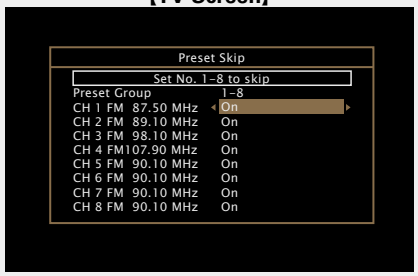
☞ See overleaf

Cancelling preset skip

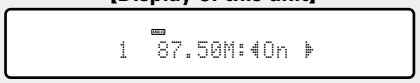
1 While the Preset Skip screen is displayed, use ◁ ▷ to select a group containing a broadcast station to cancel the skip for.

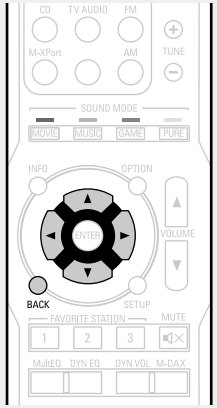
2 Use △▽ to select a broadcast station to cancel the skip for.

【TV Screen】



【Display of this unit】



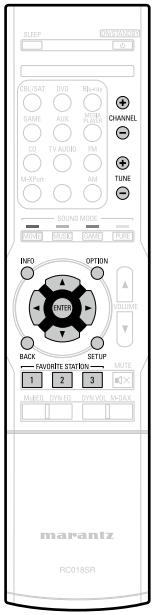


3 Use ◁ ▷ to select "On".
The skip is cancelled.

NOTE

You cannot cancel the skip for each group.

❑ Tuner (FM/AM) operation buttons



Operation buttons	Function
CHANNEL +, –	Preset channel selection
TUNE +, –	Tuning (up/down)
INFO	Display of information such as the source name, volume, and sound mode name
OPTION	Switch tuning modes / Direct frequency tuning / Preset Memory / Auto Preset / Preset Name / Preset Skip
△▽◁▷	Cursor operation
ENTER	Enter
BACK	Return
SETUP	Setup menu
FAVORITE STATION 1 – 3	Add/call up favorites (☞page 30)

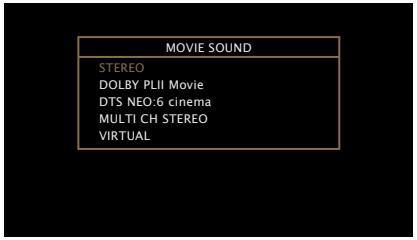
Selecting a listening mode (Sound Mode)

This unit allows you to enjoy various kinds of surround and stereo playbacks.

Multi-channel audio formats are adopted by many of the contents including Blu-ray disc and DVD as well as digital broadcasting and Internet-delivered movies and music.
This unit supports playback of almost all of these multi-channel audio formats. It also supports surround playback of audio formats other than multi-channel audio such as 2-channel stereo audio.

This unit automatically generates a list of all the playable sound modes based on the input audio format and the current speaker setup configuration and displays the list on the screen. Therefore, you can select a correct surround playback mode even if you are not familiar with sound mode selection. Try out various surround playback modes and enjoy surround playback in your favorite mode.

[Example] When **MOVIE** is pressed and held



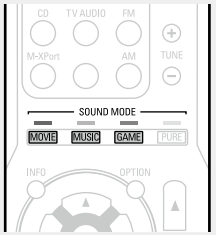
This unit provides not only sound modes that conform to the formats recorded in discs such as Dolby and DTS but also "original listening modes" that create atmosphere of MULTI CH STEREO and VIRTUAL, etc.
The displayed sound modes include the 2-channel stereo playback mode.

For audio formats recorded in a disc, see the disc jacket.

Selecting a listening mode

1 **Play the selected device (☞page 29, 30).**

2 **Press and hold MOVIE, MUSIC or GAME to select a listening mode.**
This unit automatically generates and displays a list of selectable sound modes.



- Each time **MOVIE**, **MUSIC** or **GAME** is pressed, the listening mode is switched.

MOVIE Switches to the listening mode suitable for enjoying movies and TV programs.

MUSIC Switches to the listening mode suitable for enjoying music.

GAME Switches to the listening mode suitable for enjoying games.

- Pressing **MOVIE**, **MUSIC** or **GAME** displays a list of the listening modes that can be selected. Each time you press **MOVIE**, **MUSIC** or **GAME**, the listening mode changes.
- While the list is displayed, you can also use △▽ to select a listening mode.

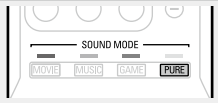
- The **MOVIE**, **MUSIC**, or **GAME** button memorizes the last sound mode selected for its button. Pressing **MOVIE**, **MUSIC**, or **GAME** recalls the same sound mode as the one selected at the previous playback.
- If the content played back does not support the previously selected sound mode, the most standard sound mode for the content is automatically selected.
- This can also be set by pressing **SOUND MODE** on the main unit.

Direct playback

Sound recorded in source is played as is.

1 **Play the selected device (☞page 29, 30).**

2 **Press PURE to select "DIRECT".**
Direct playback begins.



Pure direct playback

This mode is for playback in higher sound quality than in "DIRECT" mode. Turn the display of the amplifier off to stop the analogue video circuit. This suppresses the source of noise that affects sound quality.

1 **Play the selected device (☞page 29, 30).**

2 **Press PURE to select "PURE DIRECT On".**
The display goes dark, and pure direct playback begins.

- In DIRECT and PURE DIRECT listening mode, the following items cannot be adjusted.
  - Tone (☞page 60)
  - MultEQ® (☞page 61)
  - Dynamic EQ® (☞page 62)
  - Dynamic Volume® (☞page 62)
  - M-DAX (☞page 60)
- This can also be set by pressing **PURE DIRECT** on the main unit.

NOTE

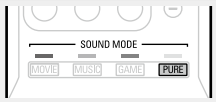
- Video signals are only output when HDMI signals are played in the PURE DIRECT mode.
- When in the PURE DIRECT mode, the menu screen is not displayed.
- When in the PURE DIRECT mode, the display turns off and appears as if there is no electricity.

Auto surround playback

This mode detects the type of input digital signal, and automatically selects the corresponding mode for playback.

1 **Play the selected device (☞page 29, 30).**

2 **Press PURE to select "AUTO".**
Auto surround playback begins.



❑ Listening mode

- The following listening modes can be selected using the **MOVIE**, **MUSIC**, **GAME**, and **PURE** buttons.
- Adjust the sound field effect with the menu "Surr.Parameter" (☞page 59) to enjoy your favorite sound mode.

Operation button	Input signal		Listening mode
MOVIE	2-channel *1		STEREO
			AUTO *2
			DOLBY PLII Movie *3
			DOLBY Pro Logic *3
			DTS NEO:6 Cinema *3
			MULTI CH STEREO
			VIRTUAL
	Multi-channel *4		STEREO
			AUTO *2
		Dolby Digital	DOLBY DIGITAL
		Dolby TrueHD	DOLBY TrueHD
		Dolby Digital Plus	DOLBY DIGITAL Plus
		DTS	DTS SURROUND
			DTS 96/24
		DTS-HD / DTS Express	DTS-HD HI RES
			DTS-HD MSTR
			DTS Express
		PCM multi-channel	MULTI CH IN
			MULTI CH STEREO
			VIRTUAL
MUSIC	2-channel *1		STEREO
			AUTO *2
			DOLBY PLII Music *3
			DTS NEO:6 Music *3
			MULTI CH STEREO
			VIRTUAL
	Multi-channel *4		STEREO
			AUTO *2
		Dolby Digital	DOLBY DIGITAL
		Dolby TrueHD	DOLBY TrueHD
		Dolby Digital Plus	DOLBY DIGITAL Plus
		DTS	DTS SURROUND
			DTS 96/24
		DTS-HD / DTS Express	DTS-HD HI RES
			DTS-HD MSTR
			DTS Express
		PCM multi-channel	MULTI CH IN
			MULTI CH STEREO
			VIRTUAL

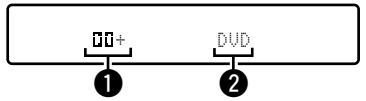
*1 2-channel also includes analog input.
*2 When AUTO mode is selected, the sound mode that is compatible with the input signal is used for playback.
*3 This mode plays back 2-channel source in 5.1-channel playback. It cannot be selected when headphones are used, or when only front speakers are used.
*4 Some listening modes cannot be selected, depending on the audio format or number of channels of the input signal. For details, see "Types of input signals, and corresponding sound modes" (☞page 87).

☞ See overleaf

Operation button	Input signal		Listening mode
GAME	2-channel *1		STEREO
			AUTO *2
			DOLBY PLII Game *3
			MULTI CH STEREO
			VIRTUAL
	Multi-channel *4		STEREO
			AUTO *2
		Dolby Digital	DOLBY DIGITAL
		Dolby TrueHD	DOLBY TrueHD
		Dolby Digital Plus	DOLBY DIGITAL Plus
		DTS	DTS SURROUND
			DTS 96/24
		DTS-HD / DTS Express	DTS-HD HI RES
			DTS-HD MSTR
			DTS Express
		PCM multi-channel	MULTI CH IN
			MULTI CH STEREO
			VIRTUAL
PURE	All		DIRECT
			PURE DIRECT
			AUTO *2

*1 2-channel also includes analog input.
*2 When AUTO mode is selected, the sound mode that is compatible with the input signal is used for playback.
*3 This mode plays back 2-channel source in 5.1-channel playback. It cannot be selected when headphones are used, or when only front speakers are used.
*4 Some listening modes cannot be selected, depending on the audio format or number of channels of the input signal. For details, see "Types of input signals, and corresponding sound modes" (☞page 87).

Views on the TV screen or display



❶ Shows a decoder to be used.
• A DOLBY DIGITAL Plus decoder is displayed as "□□+".

❷ Shows the name of the input source being played back.

❑ Description of listening mode types

Dolby listening mode

Listening mode type	Description
DOLBY PLII	This mode can be selected when a Dolby Pro Logic II decoder is used to play back 2-channel source in 5.1-channel surround sound with a natural, realistic feel.
DOLBY Pro Logic	This mode can be selected when a Dolby Pro Logic decoder is used to play 2-channel source in 4.1-channel surround sound (Left/Center/Right/Surround Mono).
DOLBY DIGITAL	This mode can be selected when playing sources recorded with Dolby Digital.
DOLBY TrueHD	This mode can be selected when playing sources recorded in Dolby TrueHD.
DOLBY DIGITAL Plus	This mode can be selected when playing sources recorded with Dolby Digital Plus.

DTS listening mode

Listening mode type	Description
DTS NEO:6	This mode can be selected when a DTS NEO:6 decoder is used to play back 2-channel source in 5.1-channel surround sound. There is a "Cinema" mode optimized for movie playback, and a "Music" mode optimized for music playback.
DTS SURROUND	This mode can be selected when playing sources recorded in DTS.
DTS 96/24	This mode can be selected when playing sources recorded in DTS 96/24.
DTS-HD	This mode can be selected when playing sources recorded in DTS-HD.
DTS Express	This mode can be selected when playing sources recorded in DTS Express.

PCM multi-channel listening mode

Listening mode type	Description
MULTI CH IN	This mode can be selected when playing multi-channel PCM sources .

Original listening mode

Listening mode type	Description
MULTI CH STEREO	This mode is for enjoying stereo sound from all speakers. The same sound as that from the front speakers (L/R) is played back at the same level from the surround speakers (L/R).
VIRTUAL	This mode is for enjoying surround effects using only the front speakers or headphones.
AUTO	In this mode, the type of digital signal input, such as Dolby Digital, Dolby TrueHD, Dolby Digital Plus, DTS, DTS-HD, PCM (multi-channel) is detected, and the playback mode switches automatically to the corresponding mode. If the input signal is analog or PCM (2-channel), stereo playback is used.

STEREO listening mode

Listening mode type	Description
STEREO	This is the mode for playing in stereo. The tone can be adjusted. • Sound is output from the front left and right speakers and subwoofer. • If multichannel signals are input, they are mixed down to 2-channel audio and are played.

Direct listening mode

Listening mode type	Description
DIRECT	Sound recorded in source is played as is.
PURE DIRECT	This mode is for playback in higher sound quality than in DIRECT mode. Turn the display of the amplifier off to stop the analogue video circuit. This suppresses the source of noise that affects sound quality.

Advanced version

Here, we explain functions and operations that let you make better use of this unit.

Installation/connection of speakers (Advanced)

Procedure for speaker settings

Speaker installation

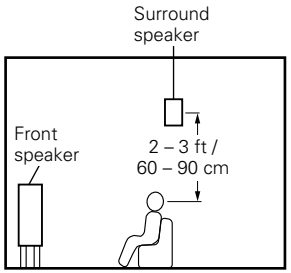
↓

Speaker connection (☞page 44)

Speaker installation

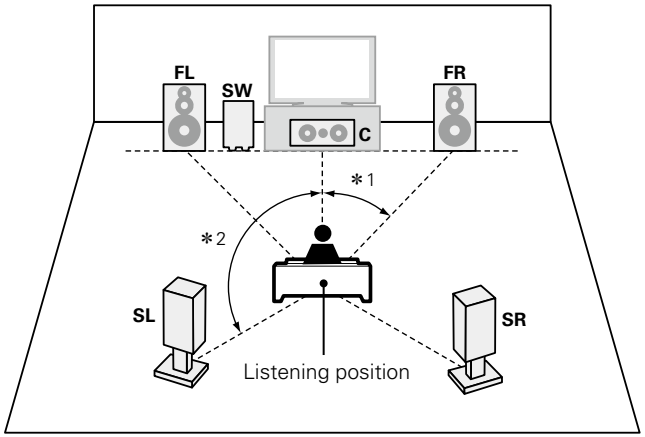
- Determine the speaker system depending on the number of speakers you are using and install each speaker and subwoofer in the room. Here, we explain how to install the speakers using a typical example.
- The speaker impedance should be from 6 to 8 Ω.

Use the illustration below as a guide for how high each speaker should be installed. The height does not need to be exactly the same.



【Viewed from the side】

When 5.1ch speakers are installed



∗1 22˚ – 30˚ ∗2 120˚

【Speaker abbreviations】

FL	Front speaker (L)	**SW**	Subwoofer
FR	Front speaker (R)	**SL**	Surround speaker (L)
C	Center speaker	**SR**	Surround speaker (R)

Speaker connection

Here, we connect the speakers in the room to this unit.
This section explains how to connect them using a typical example.

NOTE

- **Disconnect this unit's power plug from the power outlet before connecting the speakers. Also, turn off the subwoofer.**
- **Connect so that the speaker cable core wires do not protrude from the speaker terminal. The protection circuit may be activated if the core wires touch the rear panel or if the + and – sides touch each other (☞page 90 "Protection circuit").**
- **Never touch the speaker terminals while the power supply is connected. Doing so could result in electric shock. When the "Setup Assistant" is running, follow the instructions in the "Setup Assistant" screen for making connections. (Power is not supplied to the speaker terminals while the "Setup Assistant" is running.)**
- **Use speakers with the speaker impedances shown below.**

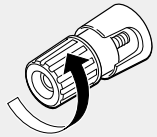
Speaker terminals	Speaker impedance
FRONT	6 – 8 Ω
CENTER	
SURROUND	

Connecting the speaker cables

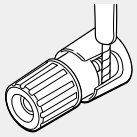
Carefully check the left (L) and right (R) channels and + (red) and – (black) polarities on the speakers being connected to this unit, and be sure to interconnect the channels and polarities correctly.

1 **Peel off about 0.03 ft/10 mm of sheathing from the tip of the speaker cable, then either twist the core wire tightly or terminate it.**

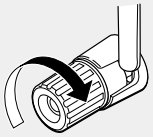
2 **Turn the speaker terminal counterclockwise to loosen it.**



3 **Insert the speaker cable's core wire to the hilt into the speaker terminal.**

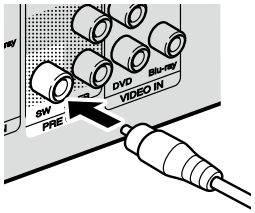


4 **Turn the speaker terminal clockwise to tighten it.**



Connecting the subwoofer

Use a subwoofer cable to connect the subwoofer.



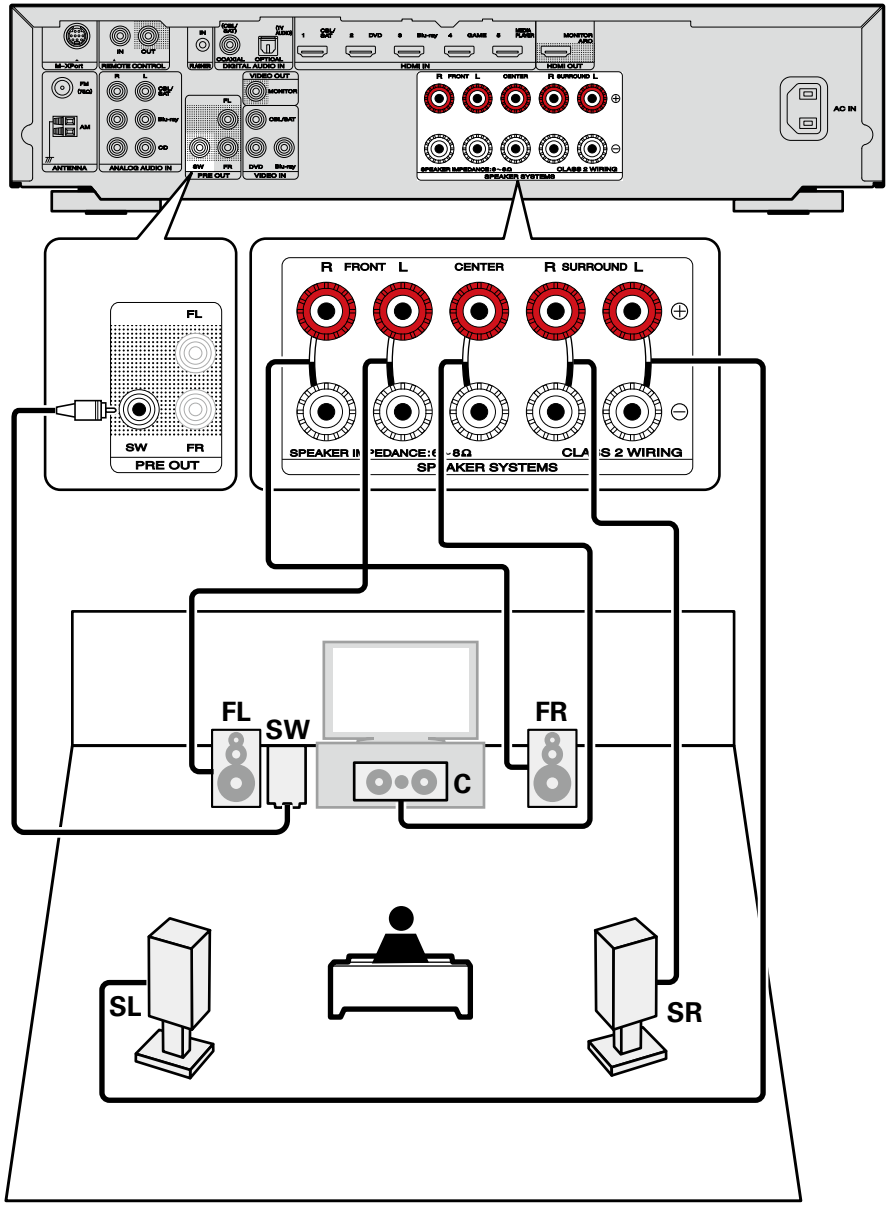
Connecting 5.1-channel speakers

Cables used for connections

Audio cable (sold separately)	
Speaker cable	
Subwoofer cable	

NOTE

- **For speaker cable connections, see page 44.**
- **For speaker impedance , see page 44.**



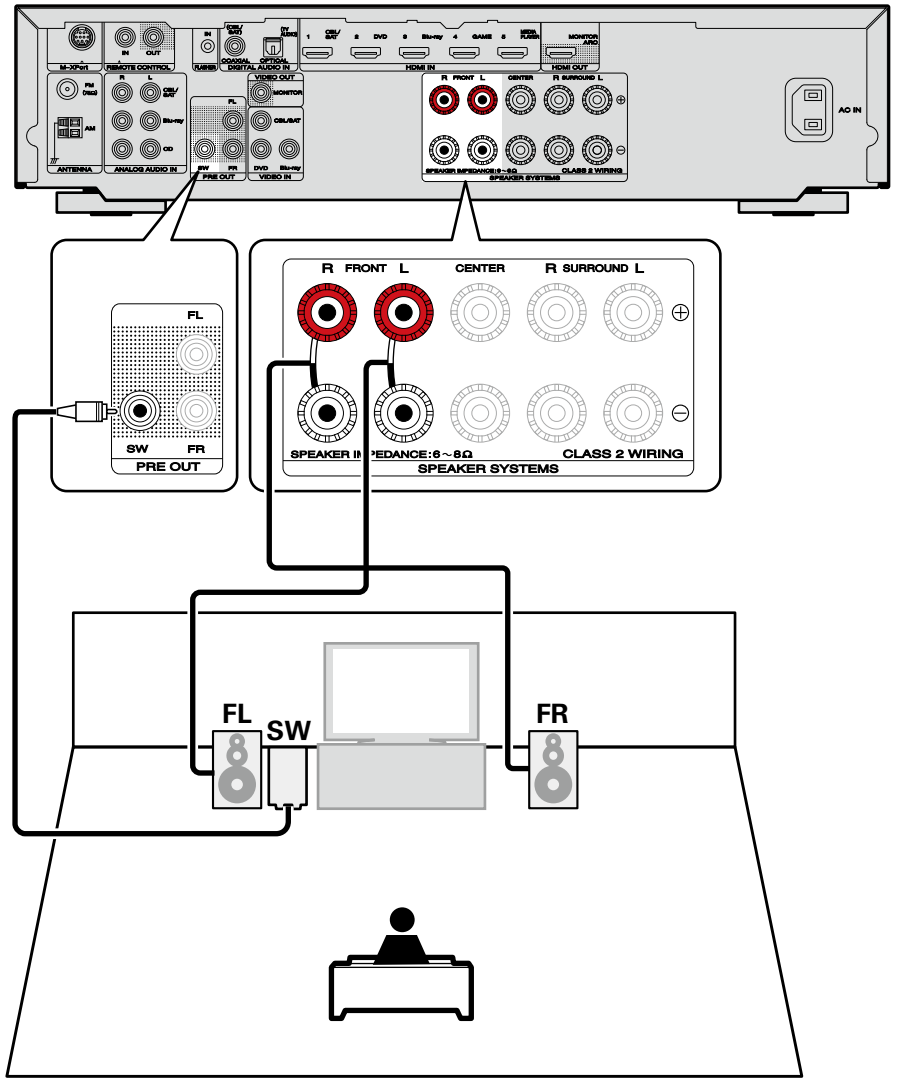
Connecting 2.1-channel speakers

Cables used for connections

Audio cable (sold separately)	
Speaker cable	
Subwoofer cable	

NOTE

- **For speaker cable connections, see page 44.**
- **For speaker impedance , see page 44.**



Connecting a front speaker that uses a power amplifier

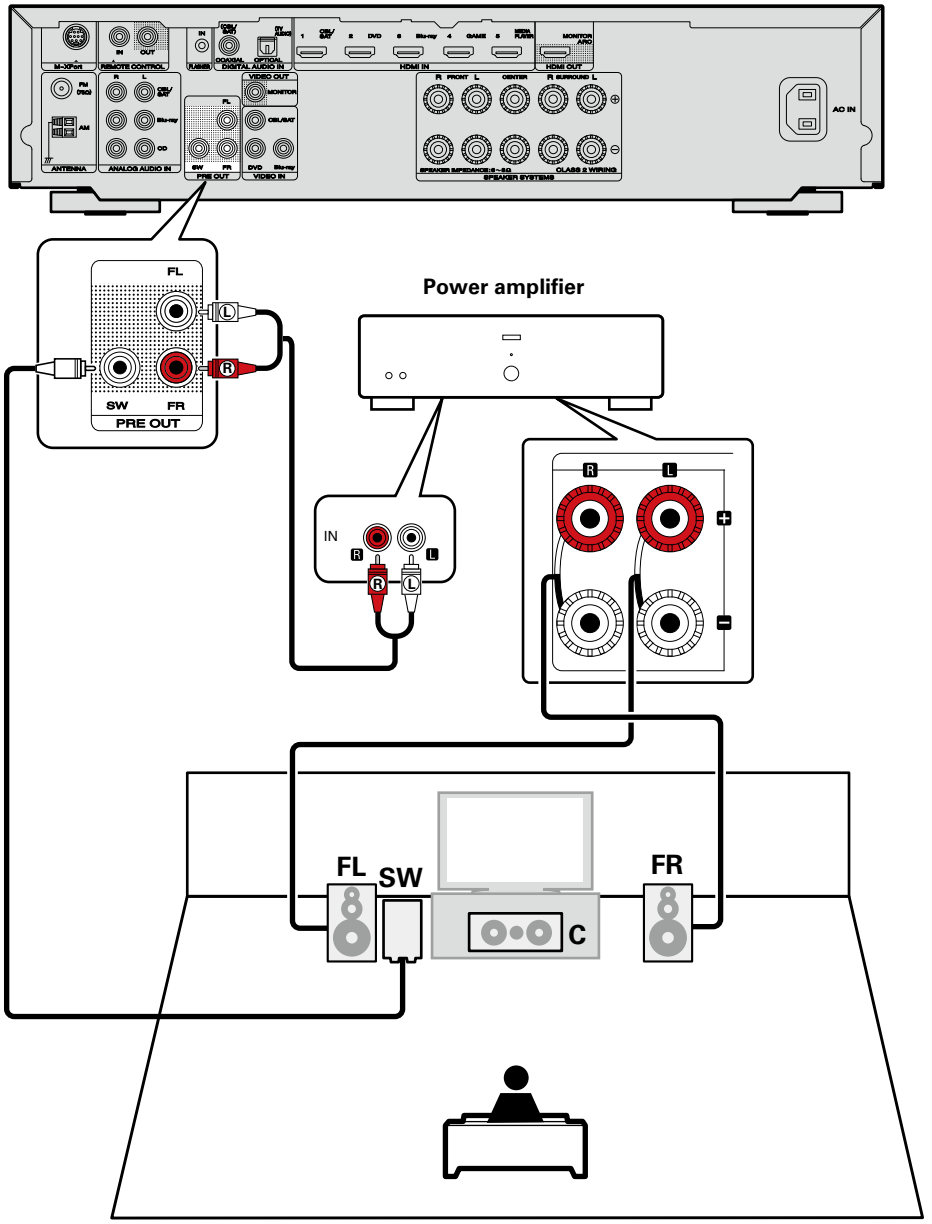
This unit supports connection of a front speaker that uses an external power amplifier to increase its output. Connect a separately sold power amplifier to the PRE OUT (FL/FR) connector of this unit.

Cables used for connections

Audio cable (sold separately)	
Audio cable	
Subwoofer cable	

NOTE

- **For speaker cable connections, see page 44.**
- **For speaker impedance , see page 44.**

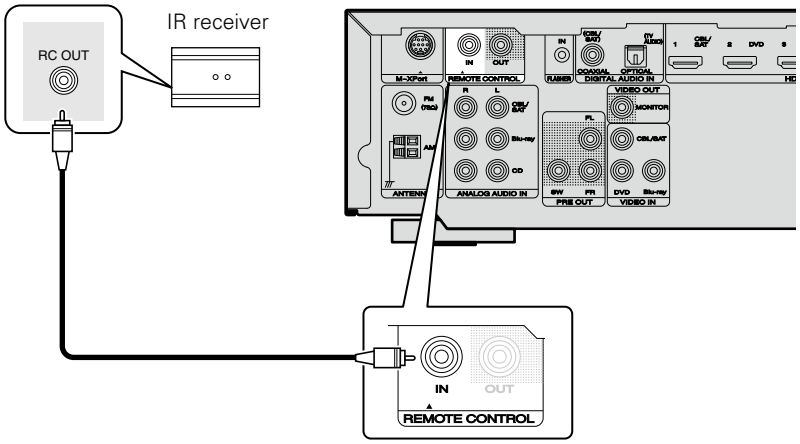


Connections (Advanced connection)

Connecting the REMOTE CONTROL connectors

Performing operations on this unit and external devices

- You can connect an IR receiver to this unit to perform operations on this unit and external devices with the supplied remote control unit.
- To do this, disable the remote control signal receiving function (page 52 "Remote lock function").

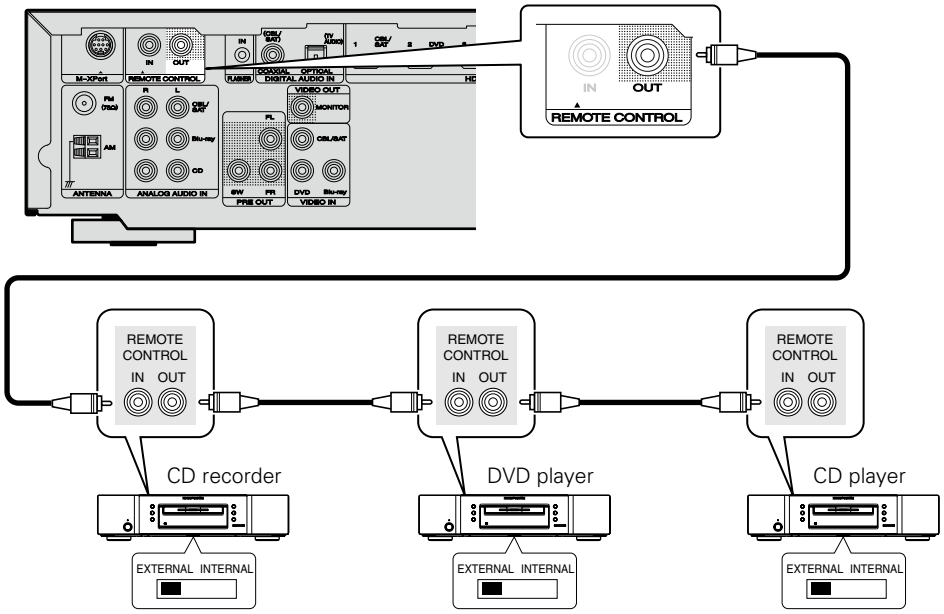


NOTE

When not connecting an IR receiver, make sure to enable the remote control signal receiving function. When the function is disabled, you can not perform operations with the remote control unit.

Remotely connecting marantz devices

- When you are using a marantz device other than this unit that supports remote connection, an IR receiver is not necessary.
- You can transmit remote control signals just by connecting the device to the REMOTE CONTROL IN/OUT connector with a monaural cable.
- Set the remote control switch located on the rear panel of the connected audio component to "EXTERNAL" or "EXT." to use this feature.
- If a marantz power amplifier (excluding certain models is connected to any of these connectors, the power of the power amplifier switches to on/standby in conjunction with the ⏻ **ON/STANDBY** button of the this unit.



HDMI control function

If you connect the unit and an HDMI control function compatible TV or player with an HDMI cable and then enable the HDMI control function setting on each device, the devices will be able to control each other.

❑ Operations possible by HDMI control

- **This unit power off can be linked to the TV power off step.**
- **You can switch audio output devices with a TV operation.**
  When you set "Output audio from amp" in the TV audio output setup operation, you can switch the amp power on.
- **You can adjust this unit volume in the TV volume adjustment operation.**
- **You can switch this unit input sources through linkage to TV input switching.**
- **When playing the player, this unit input source switches to the source for that player.**
- **If you switch the input source of the unit to "TV AUDIO", you can play TV audio with this unit (☞page 8 "About ARC (Audio Return Channel) function").**
- **When "HDMI Control" (☞page 65) in the menu is set to "On", signals input to the HDMI input connector are output to the television or other device connected to the HDMI output connector, even if the power of this unit is in standby (pass-through function).**

- To use this unit to play the audio of a TV that does not support the ARC function, connect the TV with an optical-digital or analog connection (☞page 8).
- To use the pass-through function, connect an HDMI connection device that is compatible with HDMI control.

❑ Setting procedure

1 **Set the HDMI output connector corresponding with the HDMI control function.**
Set "HDMI Control" (☞page 65) to "On".

2 **Turn the power on for all the devices connected by HDMI cable.**

3 **Set the HDMI control function for all devices connected by HDMI cable.**
- Please consult the operating instructions for the connected devices to check the settings.
- Carry out steps 2 and 3 should any of the devices be unplugged.

4 **Switch the television input to the HDMI input connected to this unit.**

5 **Switch this unit input to the HDMI input source and check if the picture from the player is ok.**

6 **When you turn the TV's power to standby, check that the power of this unit also goes to standby.**

If the HDMI control function does not operate properly, check the following points.
- Is the TV or player compatible with the HDMI control function?
- Is "HDMI Control" (☞page 65) set to "On"?
- Is "P.Off Control" (☞page 65) set to "All" or "Video"?
- Are the HDMI control function settings of all devices correct?

☞ See overleaf

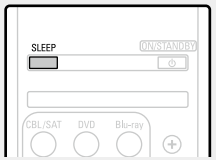
NOTE

- **When "HDMI Control" is set to "On", it consumes more standby power.**
- The HDMI control function controls operations of a TV that is compatible with the HDMI control function. Make sure that the TV and HDMI are connected when you perform HDMI control.
- Some functions may not operate depending on the connected TV or player. Check the owner's manual of each device for details beforehand.
- When "P.Off Control" on the menu is set to "Off" (☞page 65), this unit is not set to standby even if the connected device is in the standby mode.
- When connection changes are implemented, such as adding connections to HDMI devices, linked operations may be initialized. In this case, you will need to reconfigure the settings.
- Should any of the operations below be performed, the interlocking function may be reset, in which case, repeat steps 2 and 3.
  - There is a change to the connection between the devices and the HDMI, or an increase in devices.

Sleep timer function

You can have the power automatically switched to standby once a set time has elapsed. This is convenient for viewing and listening while going to sleep.

Press SLEEP and display the time you want to set.



The **SLEEP** indicator on the display lights.

- The time switches as shown below each time **SLEEP** is pressed.

Off → 10 min → 20 → 30 → 40 → 50 → 60 → 70 → 80 → 90 → 100 → 110 → 120 → Off

- This can also be set by pressing **SLEEP** on the main unit.

To confirm the countdown time before putting the unit to sleep

Press **SLEEP**.
"Sleep : ✻min" appears on the display.
✻ Countdown time

To cancel the sleep timer

Press **SLEEP** to set "Off".
The **SLEEP** indicator on the display turns off.

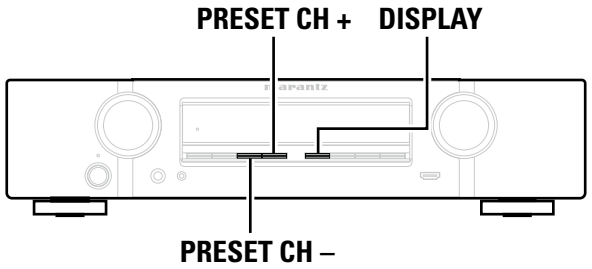
The sleep timer setting is canceled if this unit's power is set to standby.

NOTE

The sleep timer function cannot turn off the power of devices connected to this unit. To turn of the power of those connected devices, set up sleep timers on the connected devices themselves.

Dual backup memory function

The unit stores settings information in nonvolatile memory even when the main power supply is turned off. Using the Dual Backup Memory function, you can write settings information to another memory area to back up saved settings for recovery anytime as needed. Remembering set details (Backup).



❑ Remembering set details (Backup)

Set the unit in the state you want remembering, and press and hold PRESET CH – and PRESET CH + for at least 3 seconds.
"MEMORY SAVING" is shown in the display, and the setting details are remembered.

NOTE

- The volume is not remembered.
- If remembered details are overwritten, the previously remembered contents are deleted.

❑ Recalling remembered details (Recovery)

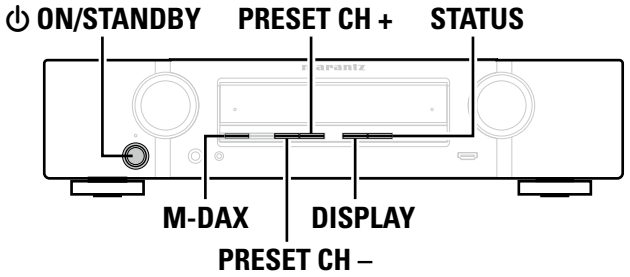
Press and hold PRESET CH + and DISPLAY together for at least 3 seconds.
"MEMORY LOAD" is shown in the display, and the remembered details are recalled.

NOTE

- If there is no remembered data, "NO BACKUP" is shown in the display, and no remembered details are recalled.
- As the volume cannot be recalled, it returns to the factory setting volume.

Panel lock function

To prevent accidental operation of this unit, you can disable operation of the buttons on the front panel.



❑ Disabling all key button operations

1 **Press ⏻ ON/STANDBY while you press and hold DISPLAY and M-DAX with the unit in standby mode.**

2 **Press PRESET CH + or PRESET CH – to select "FP/VOL LOCK On".**

3 **Press STATUS to enter the setting.**
All button operations except ⏻ **ON/STANDBY** are disabled.

❑ Disabling all button operations except VOLUME

1 **Press ⏻ ON/STANDBY while you press and hold DISPLAY and M-DAX with the unit in standby mode.**

2 **Press PRESET CH + or PRESET CH – to select "FP LOCK On".**

3 **Press STATUS to enter the setting.**
All button operations except ⏻ **ON/STANDBY** and **VOLUME** are disabled.

☞ See overleaf

❑ Canceling the Panel lock function

1 Press ⏻ **ON/STANDBY** while you press and hold **DISPLAY** and **M-DAX** with the unit in standby mode.

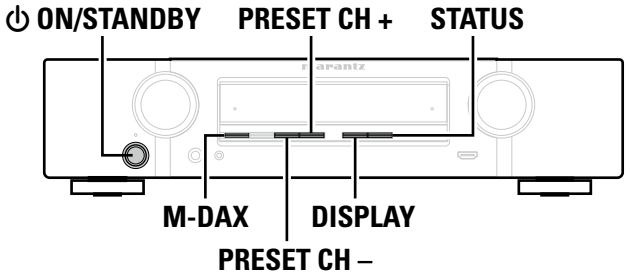
2 Press **PRESET CH +** or **PRESET CH –** to select "FP LOCK ＊Off".
(＊ The currently set mode.)

3 Press **STATUS** to enter the setting.
The Panel lock function is canceled.

Even when the Panel lock function is set, you can operate the unit using the remote control unit.

Remote lock function

- When not connecting an IR receiver, disable the Remote lock function. When the function is enabled, you can not perform operations with the remote control unit.
- By default, this function is disabled.



❑ Disabling the sensor function of the remote control unit

1 When the main unit is in standby mode, press ⏻ **ON/STANDBY** while holding down **DISPLAY** and **M-DAX** on the main unit.

2 Press **PRESET CH +** or **PRESET CH –** to select "RC LOCK On".
(＊ The currently set mode.)

3 Press **STATUS** to enter the setting.
The infrared light receiving function is disabled.

❑ Enabling the remote sensor function

1 When the main unit is in standby mode, press ⏻ **ON/STANDBY** while holding down **DISPLAY** and **M-DAX** on the main unit.

2 Press **PRESET CH +** or **PRESET CH –** to select "RC LOCK ＊Off".
(＊ The currently set mode.)

3 Press **STATUS** to enter the setting.
The infrared light receiving function on the main unit is enabled.

Various memory functions

Personal memory plus function

This function sets the settings (input mode, sound mode, HDMI output mode, MultEQ®, Dynamic EQ®, audio delay etc.) last selected for the individual input sources.

The surround parameters, tone settings and the volumes of the different speakers are stored for the individual sound modes.

Last function memory

This function stores the settings which were made before going into the standby mode.
When the power is turned back on, the settings are restored.

How to make detailed settings

Menu map

For menu operation, connect a TV to this unit and display the menu on the TV screen. For menu operations, see the following page.
By default, this unit has recommended settings defined. You can customize this unit based on your existing system and your preferences.

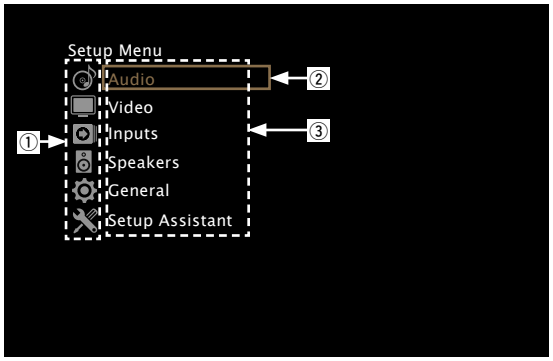
Setting items	Detailed items	Description	Page
Audio	**Surr.Parameter**	Adjusts surround sound parameters.	59
	Tone	Adjusts the tonal quality of the sound.	60
	Dialogue Level	Sets the output level to clarify the dialogue output from the center channel.	60
	Subwoofer Level	Sets the subwoofer on/off and its output level.	60
	M-DAX	Expands the low and high frequency components of compressed audio to enable richer audio playback.	60
	Audio Delay	Compensates for incorrect timing between video and audio.	61
	Volume	Set the volume setting.	61
	Audyssey	Makes Audyssey MultEQ®, Audyssey Dynamic EQ® and Audyssey Dynamic Volume® settings.	61
	Manual EQ	Uses the graphic equalizer to adjust the tone of each speaker.	63
Video	**HDMI Setup**	Makes settings for HDMI video/audio output.	65
	Volume Display	Sets where to display the master volume level.	65
	Info.Display	Displays status of operation temporarily when the sound mode is changed or input source is switched. You can set whether or not to show each of these status displays.	66
	Audio Display	Sets how long each menu is displayed when the input source is "TUNER".	66
	TV Format	Set the video signal format to be output for the TV you are using.	66
Inputs	**Digital Assign**	Changes input connector assignment.	68
	Source Rename	Changes the display name for this source.	69
	Hide Source	Remove from the display input sources that are not used.	69
	Source Level	Adjusts the playback level of the audio input.	69
	Input Select	Sets the audio input mode and decode mode.	69
	Video Source	Video of another input source is played back combined with the playing audio.	70

Setting items	Detailed items	Description	Page
Speakers	**Audyssey® Setup**	The acoustic characteristics of the connected speakers and listening room are measured and the optimum settings are made automatically.	21
	Manual Setup	Perform when setting the speakers manually or when changing settings made in Audyssey® Setup.	72
General	**Language**	Sets the language for display the menu on the TV screen.	76
	Auto Standby	When you do not perform any operation on this unit with no audio or video input for a specified time, this unit automatically enters the standby mode. Before it enters the standby mode, "Auto Standby" is displayed on the display of this unit and the menu screen.	76
	Front Display	Set the display on/off setting.	76
	Information	Show information about receiver settings, input signals, etc.	77
	Setup Lock	Protect settings from inadvertent change.	77
Setup Assistant	Perform the installation, connection, and setup procedures to prepare the unit for operation following guidance.		7

Examples of menu screen displays

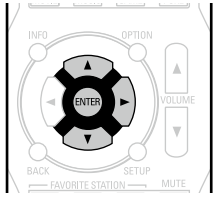
Typical examples are described below.

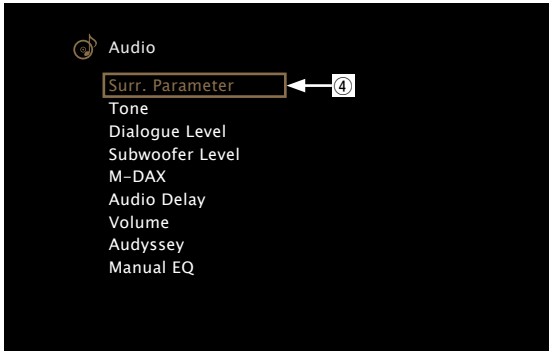
[Example 1]
Menu selection screen (Top menu)



① List of GUI menu setup icons
② Currently selected setup item
③ List of GUI menu setup items

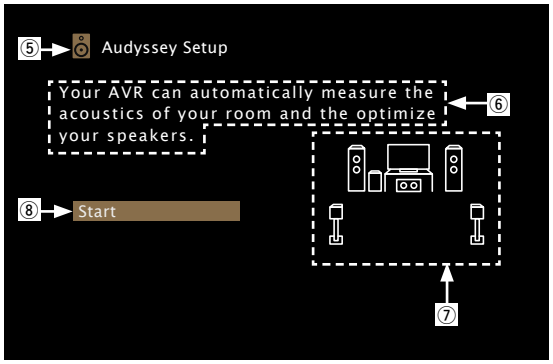
Press △▽ to select "Audio" and then press ▷. (Or press ENTER.)





④ Selected setup item

[Example 2]
Audyssey® Setup screen (with illustration)



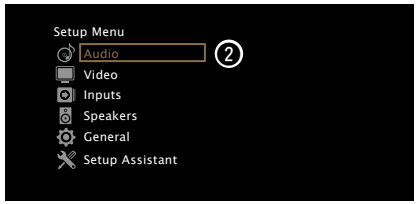
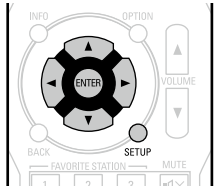
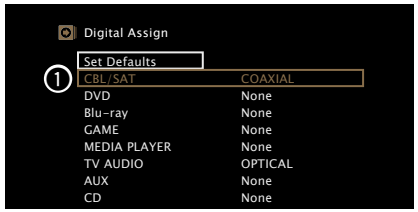
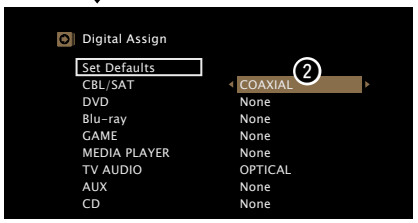
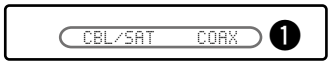
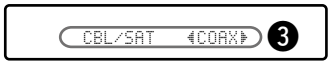
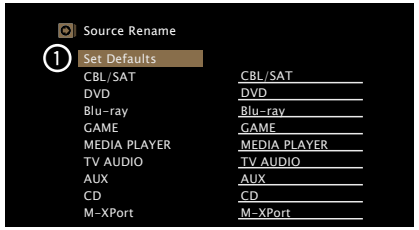
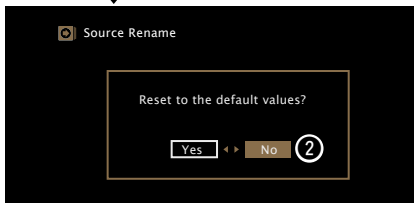
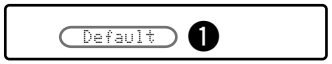
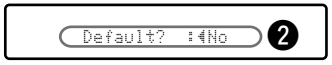
⑤ Currently selected setup icon
⑥ Operation guidance text
⑦ Illustration
⑧ Selected setup item

NOTE

When the menu is operated on a computer's resolution (e.g. VGA) or during playback of certain 3D video content, the playback image switches to the menu screen image.

Examples of menu and front display

Below we describe typical examples of displays on the TV screen and on the set's display window.

	Menu display	Front display	Description
Top menu display			❶ Press **SETUP** to display the menu screen. ❷ TV screen: Displays the selected line. Display: Displays the selected item. • Use △▽ to move to the item you want to set. 
Display when changing settings	 Press **ENTER**. 	 Press **ENTER**. 	❶ TV screen: Displays the selected line. Display: Displays the selected item. • Use △▽ to move to the item you want to set. ❷ Press **ENTER** to set to the mode in which the setting can be made. ❸ ◀ ▶ is displayed at the sides of items whose setting can be changed. Use ◁ ▷ to change to the desired setting.
Display when returning to the settings in effect at time of purchase	 Press **ENTER**. 	 Press **ENTER**. 	❶ Press △ to select "Set Defaults", then press **ENTER**. ❷ Press ◁ to select "Yes", then press **ENTER**.

Inputting characters

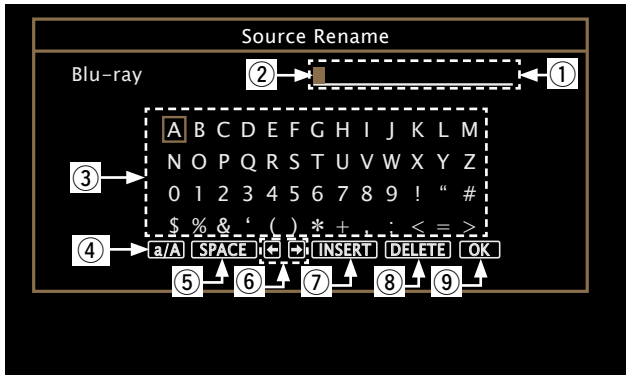
On this unit, you can change the name displayed on the following screens to the names that you prefer.

- Preset Name (☞page 35)
- Source Rename (☞page 69)

Keyboard screen

Select a character on the TV screen to input characters.

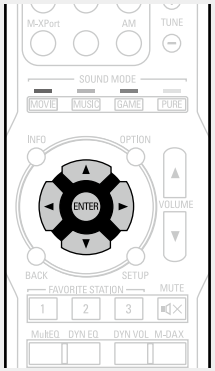
❑ Display of a keyboard input screen



① Character input section
② Cursor
③ Keyboard section
④ Uppercase and lowercase switch key
⑤ Space key
⑥ Cursor keys
⑦ Insert key
⑧ Delete key
⑨ OK key

❑ Input method

1 **Display the screen for inputting characters (☞page 54 "Menu map").**



2 **Select a character to be changed.**

①Use △▽◁ ▷ to select ← or →.

②**Press ENTER to place the cursor at the character to be changed.**

Each time **ENTER** is pressed, the cursor moves by one character.

3 **Select a character to be input with △▽◁ ▷ then press ENTER.**

- The types of characters that can be input are as shown below.

[Upper case characters/Numbers/Symbols]
ABCDEFGHIJKLMNOPQRSTUVWXYZ
0123456789
! " # $ % & ' ( ) * + , ; < = >
[Lower case characters/Numbers/Symbols]
abcdefghijklmnopqrstuvwxyz
0123456789
. @ - _ / : ~ ? [\ ] ^ ' { | }

- When you use △▽ while you type in, you can change uppercase characters to lowercase and vice versa.

4 **Repeat steps 2 and 3 to change the name.**

5 **Use △▽◁ ▷ to select OK, then press ENTER.**

Audio

GUI

Make audio-related settings.

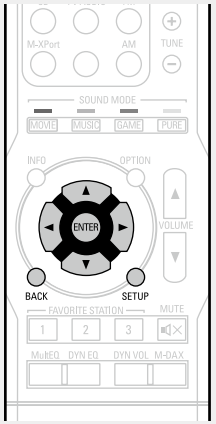
Menu operation

1 **Press SETUP.**
The menu is displayed on the TV screen.

2 **Use △▽ to select the menu to be set or operated.**

3 **Press ENTER or ▷ to enter the setting.**

- To return to the previous item, press ◁ or **BACK**.
- Exiting the Menu, press **SETUP** while the menu is displayed. The menu display disappears.



Items that can be set with the "Audio" procedure

- **Surr.Parameter** (☞page 59)
- **Tone** (☞page 60)
- **Dialogue Level** (☞page 60)
- **Subwoofer Level** (☞page 60)
- **M-DAX** (☞page 60)
- **Audio Delay** (☞page 61)
- **Volume** (☞page 61)
- **Audyssey** (☞page 61)
- **Manual EQ** (☞page 63)

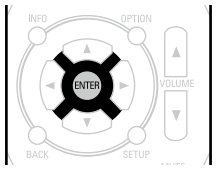
Surr.Parameter

Default settings are underlined.

You can adjust the surround audio sound field effects to match your preferences.
The items (parameters) that can be adjusted depend on the signal being input and the currently set sound mode. For details on the adjustable parameters, see "Sound modes and surround parameters" (☞page 85).

NOTE

- Some setting items cannot be set while playback is stopped. Make the settings during playback.
- When the sound mode is "PURE DIRECT", you cannot set the surround parameters.

Setting items	Setting details
Home Theater EQ Soften the treble range of movie soundtracks for better understanding.	**On** : "Home Theater EQ" is used. **Off** : "Home Theater EQ" is not used.
Loudness Mngmt This can be set in the Dolby TrueHD mode. This sets whether to output as specified in "Dynamic Comp." or output directly without compressing the dynamic range of audio recorded in the disc.	**On** : Outputs using the settings made in "Dynamic Comp.". **Off** : "Dynamic Comp." settings and "Dialogue normalization" (☞page 77) are disabled, and the signals on the disk are output as is.
Dynamic Comp. Compress dynamic range (difference between loud and soft sounds).	**Auto** : Automatic dynamic range compression on/off control according to source. **Low** / **Medium** / **High** : These set the compression level. **Off** : Dynamic range compression always off. You can set "Auto" only for the Dolby TrueHD source.
Low Frequency Adjust the low-frequency effects level (LFE).	**–10dB – 0dB** For proper playback of the different sources, we recommend setting to the values below. • Dolby Digital sources : "0dB" • DTS movie sources : "0dB" • DTS music sources : "–10dB"
Center Image Distributes the dialogue output from the center channel to the front left and right channels and widens the sound image in the front. You can set this when the sound mode is set to DTS NEO:6 in the "Music" mode.	**0.0 – 1.0 (0.3)** The smaller the value, the more dialogue is concentrated on the center channel. The larger the value, the more dialogue is distributed to front left and right channels, and the more the sound image widens in the front.
Panorama Assign front L/R signal also to surround channels for wider sound. You can set this when the sound mode is Dolby PLII in the "Music" mode.	**On** : Set. **Off** : Do not set.
Dimension Shift sound image center to front or rear to adjust playback balance. You can set this when the sound mode is Dolby PLII in the "Music" mode.	**0 – 6 (3)** As you set a smaller number, the surround sound field shifts backward; as you set a larger number, the surround sound field shifts forward.
Center Width Distributes the dialogue output from the center channel to left and right channels and widens the sound image in the front. You can set this when the sound mode is Dolby PLII in the "Music" mode.	**0 – 7 (3)** The smaller the value, the more dialogue is concentrated on the center channel. The larger the value, the more dialogue is distributed to front left and right channels, and the more the sound image widens in the front.
Set Defaults The "Surr.Parameter" settings are returned to the default settings.	**Yes** : Reset to the defaults. **No** : Do not reset to the defaults. When you select "Set Defaults" and press **ENTER**, the "Reset to the default values?" prompt is displayed. Select either "Yes" or "No", and press **ENTER**. 

Tone

Adjust the tonal quality of the sound.

Setting items	Setting details
Tone Control Set the tone control function to "On" and "Off".	**On** : Allow tone adjustment (bass, treble). **Off** : Playback without tone adjustment. "Tone Control" can be set when "Dynamic EQ®" (☞page 62) is set to "Off". **NOTE** The tone cannot be adjusted in the "DIRECT" or "PURE DIRECT" mode.
Bass Adjust bass.	**–6dB – +6dB (0dB)** "Bass" can be set when the menu "Tone Control" setting is "On".
Treble Adjust treble.	**–6dB – +6dB (0dB)** "Treble" can be set when the menu "Tone Control" setting is "On".

Dialogue Level

Default settings are underlined.

Sets the output level to clarify the dialogue output from the center channel.

Setting items	Setting details
Dialogue	**–12dB – +12dB (0dB)**

Subwoofer Level

Default settings are underlined.

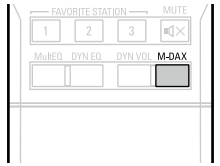
Sets the subwoofer on/off and its output level.

Setting items	Setting details
Subwoofer Turn subwoofer output on and off.	**On** : The subwoofer is used. **Off** : The subwoofer is not used. **NOTE** This can be set when the sound mode is "DIRECT" or "PURE DIRECT" (☞page 38) and the "Subwoofer Mode" (☞page 72) is "LFE+Main".
Subwoofer Level Set the subwoofer output level.	**–12dB – +12dB (0dB)**

M-DAX

Default settings are underlined.

Compressed audio formats such as MP3, WMA (Windows Media Audio) and MPEG-4 AAC reduce the amount of data by eliminating signal components that are hard for the human ear to hear. The M-DAX function generates the signals eliminated upon compression, restoring the sound to conditions near those of the original sound before compression. It also corrects the sense of volume of the bass to obtain richer sound with compressed audio signals.

Setting items	Setting details
M-DAX Set the mode for M-DAX.	**Off** : Do not use M-DAX. **Low** : Optimized mode for compressed sources with normal highs. **Middle** : Apply suitable bass and treble boost for all compressed sources. **High** : Optimized mode for compressed sources with very weak highs. • This item can be set with analog signals or PCM signal (Sample rate = 44.1/48 kHz) is input. • "M-DAX" settings are stored for each input source. • When set to "Off", the M-DAX indicator on the front panel switches off. • This cannot be set when the surround mode is set to "DIRECT" or "PURE DIRECT". • This can also be set by pressing **M-DAX**. Each time **M-DAX** is pressed, the setting is changed as shown below. Off → Low → Middle → High → Off 

Audio Delay

Default settings are underlined.

While viewing video, manually adjust the time to delay audio output.

Setting details

0ms – 200ms

- This item can be set within the range of 0 to 100 ms when "Auto Lip Sync" (☞page 65) is set to "On" and when a TV compatible with Auto Lip Sync is connected.
- Store "Audio Delay" for each input source.

Volume

Default settings are underlined.

Set the volume setting.

Setting items	Setting details
Scale Set how volume is displayed.	**0 – 98** : Display in the range 0.5 (Min) to 98. **–79.5dB – 18.0dB** : Display —dB (Min), in the range –79.5 dB to 18.0 dB. The "Scale" setting is applied also to the "Limit" and "Power On Level" display method.
Limit Make a setting for maximum volume.	**Off** : Do not set a maximum volume. **60 (–20dB) / 70 (–10dB) / 80 (0dB)**
Power On Level Define the volume setting that is active when the power is turned on.	**Last** : Use the memorized setting from the last session. **Mute** : Always use the muting on condition when power is turned on. **1 – 98 (–79dB – 18dB)** : The volume is adjusted to the set level.
Mute Level Set the amount of attenuation when muting is on.	**Full** : The sound is muted entirely. **–40dB** : The sound is attenuated by 40 dB down. **–20dB** : The sound is attenuated by 20 dB down.

Audyssey

Default settings are underlined.

Set Audyssey MultEQ®, Audyssey Dynamic EQ® and Audyssey Dynamic Volume®. These can be selected after Audyssey® Setup has been performed. For additional information on Audyssey technology, please see page 89.

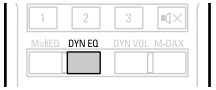
NOTE

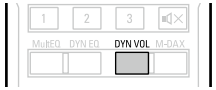
- If you have not performed Audyssey® Setup, or if you change the speaker settings after performing Audyssey® Setup, you may not be able to select Dynamic EQ®/Dynamic Volume®.
  In this case, either perform Audyssey® Setup over again or perform "Restore..." (☞page 27) to return to the settings after Audyssey® Setup was run.
- When HD Audio for which the sampling frequency exceeds 96 kHz is played back, the "Audyssey" cannot be set.

Setting items	Setting details
MultEQ® MultEQ® compensates for both time and frequency characteristics of the listening area based on Audyssey® Setup measurement results. Selection is done from three types of compensation curves. We recommend the "Audyssey" setting. MultEQ® is the prerequisite function for Dynamic EQ® and Dynamic Volume®.	**Audyssey** : Optimize the frequency response of all speakers. **Audyssey Byp.L/R** : Optimize frequency response of speakers except front L and R speakers. **Audyssey Flat** : Optimize frequency response of all speakers to flat response. **Manual EQ** : Apply frequency response set with "Manual EQ" (☞page 63). **Off** : Turn "MultEQ®" equalizer off. • "Audyssey", "Audyssey Byp. L/R" and "Audyssey Flat" can be selected after Audyssey® Setup has been performed. "Audyssey" is automatically selected after performing Audyssey® Setup. When "Audyssey", "Audyssey Byp. L/R" or "Audyssey Flat" is selected, AUDYSSEY illuminates. • After running Audyssey® Setup, if the Speaker Configuration, Distance, Channel Level, and Crossover Frequency have changed without increasing the number of speakers measured, only AUDYSSEY illuminates. • This can also be set by pressing **MultEQ**. Each time **MultEQ** is pressed, the setting is changed as shown below.  Audyssey → Audyssey Byp.L/R → Audyssey Flat → Manual EQ → Off **NOTE** When using headphones, "MultEQ®" is automatically set to "Off".

"MultEQ®", "Dynamic EQ®" and "Dynamic Volume®" settings are stored for each input source.

☞ See overleaf

Setting items	Setting details
Dynamic EQ® Solve the problem of deteriorating sound quality as volume is decreased by taking into account human perception and room acoustics. Works with MultEQ®.	**On** : Use Dynamic EQ®. **Off** : Do not use Dynamic EQ®. • AUDYSSEY is displayed when set to "On". • This can also be set by pressing **DYN EQ**. Each time **DYN EQ** is pressed, the setting is changed as shown below. On ⟷ Off  **NOTE** When the menu "Dynamic EQ®" setting is "On", it is not possible to do "Tone Control" (☞page 60) adjustment.
Reference Offset Audyssey Dynamic EQ® is referenced to the standard film mix level. It makes adjustments to maintain the reference response and surround envelopment when the volume is turned down from 0 dB. However, film reference level is not always used in music or other non-film content. Dynamic EQ® Reference Level Offset provides three offsets from the film level reference (5 dB, 10 dB, and 15 dB) that can be selected when the mix level of the content is not within the standard. Recommended setting levels are shown at right.	**0dB** (Film Ref) : This is the default setting and should be used when listening to movies. **5dB** : Select this setting for content that has a very wide dynamic range, such as classical music. **10dB** : Select this setting for jazz or other music that has a wider dynamic range. This setting should also be selected for TV content as that is usually mixed at 10 dB below film reference. **15dB** : Select this setting for pop/rock music or other program material that is mixed at very high listening levels and has a compressed dynamic range. Setting is enabled when "Dynamic EQ®" is "On" (☞page 62).

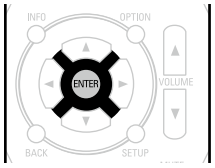
Setting items	Setting details
Dynamic Volume® Solve the problem of large variations in volume level between TV, movies and other content (between quiet passages and loud passages, etc.) by automatically adjusting to the user's preferred volume setting.	**Heavy** : Most adjustment to softest and loudest sounds. **Medium** : Medium adjustment to loudest and softest sound. **Light** : Least adjustment to loudest and softest sounds. **Off** : Do not use "Dynamic Volume®". • AUDYSSEY is displayed when set to "Heavy", "Medium" or "Light". • If "Dynamic Volume®" is set to "Yes" in "Audyssey® Setup" (☞page 25), the setting is automatically changed to "Medium". • This can also be set by pressing **DYN VOL**. Each time **DYN VOL** is pressed, the setting is changed as shown below. Off ⟶ Heavy Light ⟵ Medium 

Manual EQ

Default settings are underlined.

Use the graphic equalizer to adjust the tone of each speaker.
"Manual EQ" can be set when "MultEQ®" setting (☞page 61) is "Manual EQ".

Setting items	Setting details
Speaker Select Select whether to adjust tones for individual speakers or for all speakers.	**All** : Adjust the tone of all speakers together. **Left/Right** : Adjust the tone of left and right speakers together. **Each** : Adjust the tone of each speaker.
Adjust EQ Adjust tones for each frequency band. Adjust the speaker selected in "Speaker Select".	① Select the speaker. ② Select the adjustment frequency band. **63Hz / 125Hz / 250Hz / 500Hz / 1kHz / 2kHz / 4kHz / 8kHz / 16kHz** • Select the speakers you want to adjust when "Left/Right" or "Each" is selected. ③ Adjust the level. **–20.0dB – +6.0dB** (**0.0dB**)
Curve Copy Copy "Audyssey Flat" (☞page 61) curve from MultEQ®.	**Yes** : Copy. **No** : Do not copy. • "Curve Copy" is displayed after Audyssey® Setup has been performed. • When you select "Curve Copy" and press **ENTER**, the "Copy "Audyssey Flat"?" prompt is displayed. Select either "Yes" or "No", and press **ENTER**.
Set Defaults The "Manual EQ" settings are returned to the default settings.	**Yes** : Reset to the defaults. **No** : Do not reset to the defaults. When you select "Set Defaults" and press **ENTER**, the "Reset to the default values?" prompt is displayed. Select either "Yes" or "No", and press **ENTER**.



Video

GUI

Make video-related settings.

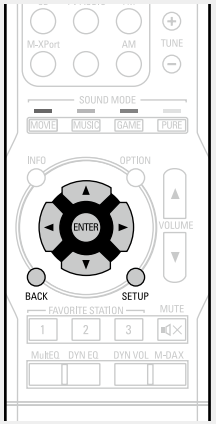
Menu operation

1 **Press SETUP.**
The menu is displayed on the TV screen.

2 **Use △▽ to select the menu to be set or operated.**

3 **Press ENTER or ▷ to enter the setting.**

- To return to the previous item, press ◁ or **BACK**.
- Exiting the Menu, press **SETUP** while the menu is displayed. The menu display disappears.



Items that can be set with the "Video" procedure

HDMI Setup

Default settings are underlined.

Make settings for HDMI video/audio output.

Setting items	Setting details
Auto Lip Sync Make automatic compensation for timing shift in audio and video output.	**On** : Compensated. **Off** : Not compensated.
HDMI Audio Out Select HDMI audio output device.	**AVR** : Play back through speakers connected to the unit. **TV** : Play back through TV connected to the unit. • The audio signal input from the HDMI input connector can be output as an output signal from the HDMI output connector by setting the HDMI audio output destination to TV. Audio signals input via the Analog/Coaxial/Optical input connectors cannot be output from the HDMI output connector. • When the HDMI control function is activated, priority is given to the TV audio setting (☞page 49 "HDMI control function").
HDMI Control You can link operations with devices connected to HDMI and compatible with HDMI Control.	**On** : Use HDMI control function. **Off** : Do not use HDMI control function. • When a device that is not compatible with the HDMI control function is connected, set "HDMI Control" to "Off". • Please consult the operating instructions for each connected device to check the settings. • Refer to "HDMI control function" (☞page 49) for more information about the HDMI control function. NOTE • **When "HDMI Control" is set to "On", it consumes more standby power.** If you are not using this unit for an extended period, it is recommended that you unplug the power cord from the power outlet. • The HDMI control function controls operations of a TV that is compatible with the HDMI control function. Make sure that the TV and HDMI are connected when you perform HDMI control. • If the "HDMI Control" settings have been changed, always reset the power to connected devices after the change.
Standby Source Sets the HDMI input source to put into standby when the power is on.	**Last** : Enters standby with the previously used input source. **CBL/SAT** / **DVD** / **Blu-ray** / **GAME** / **MEDIA PLAYER** / **AUX** : Enters standby with each of the input sources assigned to each input terminal. "Standby Source" can be set when "HDMI Control" is set to "On".
P.Off Control Links the power standby of this unit to external devices.	**All** : If power to a connected TV is turned off independently of the input source, power to this unit is automatically set to standby. **Video** : If power to a connected TV is turned off when the input source is CBL/SAT, DVD, Blu-ray, GAME, MEDIA PLAYER, AUX, power to this unit is automatically set to standby. **Off** : This unit does not link with power to a TV. "P.Off Control" can be set when "HDMI Control" is set to "On".

Volume Display

Default settings are underlined.

Sets where to display the master volume level.

Setting items	Setting details
Volume	**Bottom** : Display at the bottom. **Top** : Display at the top. **Off** : Turn display off. When the master volume display is hard to see when superimposed on movie subtitles, set to "Top".

Info.Display

Default settings are underlined.

Displays status of operation temporarily when the sound mode is changed or input source is switched. You can set whether or not to show each of these status displays.

Setting items	Setting details
On-Screen Info	**On** : Turn display on. **Off** : Turn display off.

Audio Display

Default settings are underlined.

Sets how long each menu is displayed when the input source is "TUNER".

Setting items	Setting details
Audio	**Always** : Show display continuously. **30s** : Show display for 30 seconds after operation. **10s** : Show display for 10 seconds after operation. **Off** : Turn display off.

TV Format

Default settings are underlined.

Set the video signal format to be output for the TV you are using.

Setting items	Setting details
Format	**NTSC** : Select NTSC output. **PAL** : Select PAL output. "Format" can also be set by the following procedure. However, the menu screen is not displayed. **1.** Press and hold the main unit's **PRESET CH –** and **STATUS** for at least 3 seconds. "V.Format : <NTSC>" appears on the display. **2.** Use the main unit's **PRESET CH +** or **PRESET CH –** and set the video signal format. **3.** Press the main unit's **STATUS** to complete the setting. **NOTE** When a format other than the video format of the connected TV is set, the picture will not be displayed properly.

Inputs

GUI

Perform settings related to input source playback.
• You do not have to change the settings to use the unit. Make settings when needed.

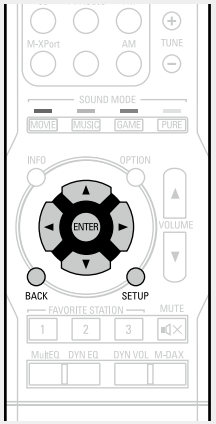
Menu operation

1 **Press SETUP.**
The menu is displayed on the TV screen.

2 **Use △▽ to select the menu to be set or operated.**

3 **Press ENTER or ▷ to enter the setting.**

• To return to the previous item, press ◁ or **BACK**.
• Exiting the Menu, press **SETUP** while the menu is displayed.
The menu display disappears.



Items that can be set with the "Inputs" procedure

- **Digital Assign** (☞page 68)
- **Source Rename** (☞page 69)
- **Hide Source** (☞page 69)
- **Source Level** (☞page 69)
- **Input Select** (☞page 69)
- **Video Source** (☞page 70)

Important information

❑ About the display of input sources

In this section, the configurable input sources for each item are shown as follows.

CBL/SAT	DVD	Blu-ray	GAME	MEDIA PLAYER	TV AUDIO	AUX	CD	TUNER	M-XPort

NOTE

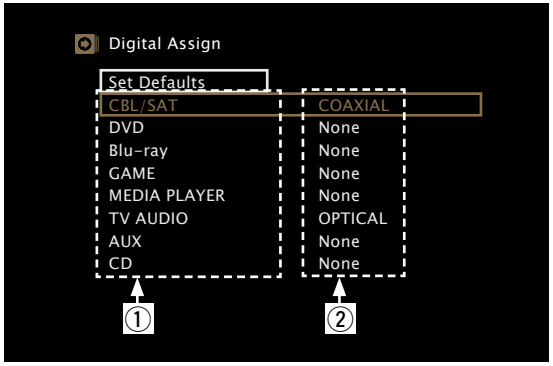
Input sources that have been set to "Hide" at "Hide Source" (☞page 69) cannot be selected.

Digital Assign

This unit has certain input sources such as "CBL/SAT" assigned to audio and video connectors by default. By making the default connections, you can simply press an input source select button to play back audio or video from the connected device with ease.
When making connections other than the default settings, you must change settings in this section.

Examples of "Digital Assign" menu screen displays

This screen appears when the "Inputs" – "each input source" – "Digital Assign" menu is selected. Use the "Digital Assign" menu to change the ② Digital input connectors that are assigned to the ① input sources in default settings.

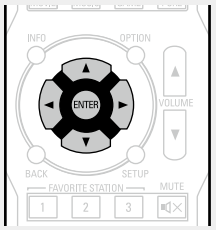


Input assignments menu operations

1 Use △▽◁▷ to move the cursor to the item you want to set, and then press **ENTER**.

2 Use ◁ ▷ to select the input connector to be assigned.

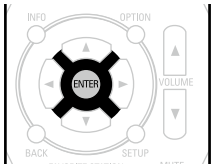
3 Press **ENTER** to register the setting.



Setting items	Setting details
DIGITAL Set this to change the digital input connectors assigned to the input sources. CBL/SAT / DVD Blu-ray / GAME MEDIA PLAYER / AUX TV AUDIO / CD	**COAXIAL** / **OPTICAL** : Assign a digital input connector to the selected input source. **None** : Do not assign a digital input connector to the selected input source. • At time of purchase, the settings of the different input sources are as shown below.
Set Defaults The input source name is returned to the default setting.	**Yes** : Reset to the defaults. **No** : Do not reset to the defaults. If you select "Set Defaults" and press **ENTER**, the message "Reset to the default values?" is displayed. Select "Yes" or "No", and then press **ENTER**.

Input source	CBL/SAT	DVD	Blu-ray	GAME
Default setting	COAXIAL	None	None	None

Input source	MEDIA PLAYER	TV AUDIO	AUX	CD
Default setting	None	OPTICAL	None	None



Source Rename

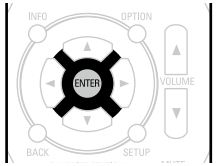
Change the display name of the selected input source.
This is convenient when the input source name of your device and the input source name of this unit are different. You can change the name to suit your needs. When the renaming is completed, the name is displayed on this unit's display and on the menu screen.

Setting details

CBL/SAT / **DVD** / **Blu-ray** / **GAME** / **MEDIA PLAYER** / **TV AUDIO** / **AUX** / **CD** / **M-XPort** : Change the display name of the selected input source.
- Up to 12 characters can be input.
- For character input, see page 57.

Set Defaults : The input source name is returned to the default setting.
- **Yes** : Reset to the defaults.
- **No** : Do not reset to the defaults.

If you select "Set Defaults" and press **ENTER**, the message "Reset to the default values?" is displayed. Select "Yes" or "No", and then press **ENTER**.



Hide Source

Default settings are underlined.

Remove from the display input sources that are not used.

Setting details

CBL/SAT / **DVD** / **Blu-ray** / **GAME** / **MEDIA PLAYER** / **TV AUDIO** / **AUX** / **CD** / **TUNER** / **M-XPort** : Select input source that is not used.
- **Show** : Use this source.
- **Hide** : Do not use this source.

NOTE

Input sources set to "Hide" cannot be selected using the input source select button.

Source Level

Default settings are underlined.

- This function corrects the playback level of the selected input source's audio input.
- Make this setting if there are differences in the input volume levels between the different sources.

Setting details

–12dB – +12dB (0dB)

The analog input level and digital input level can be adjusted independently for input sources for which "DIGITAL" is assigned at "Digital Assign" (page 68).

Input Select

Default settings are underlined.

Set the audio input mode and decode mode of each input source.
The input modes available for selection may vary depending on the input source.

Setting items	Setting details
Input Mode Set the audio input modes for the different input sources. It is normally recommended to set the audio input mode to "Auto".	**Auto** : Automatically detect input signal and perform playback. **HDMI** : Play only signals from HDMI input. **Digital** : Play only signals from digital input. **Analog** : Play only signals from analog input. • "Digital" can be set for input sources for which "DIGITAL" is assigned at "Digital Assign" (page 68). • If the input source is set to "CBL/SAT", "Blu-ray" or "CD", it can be set to "Analog". • When digital signals are properly input, the DIG. indicator lights on the display. If the DIG. indicator does not light, check "Digital Assign" (page 68) and the connections. • If "HDMI Control" is set to "On" and a TV compatible with the ARC is connected via the HDMI MONITOR connectors, the input mode whose input source is "TV" is fixed to ARC.

See overleaf

Setting items	Setting details
Decode Mode Set the audio decode mode for input source. CBL/SAT / DVD Blu-ray / GAME MEDIA PLAYER / AUX TV AUDIO / CD	**Auto** : Detect type of digital input signal and decode and play automatically. **PCM** : Decode and play only PCM input signals. **DTS** : Decode and play only DTS input signals. • This item can be set for input sources for which "DIGITAL" is assigned at "Digital Assign" (☞page 68). • Normally set this mode to "Auto". Set "PCM" and "DTS" when inputting the corresponding input signal.

Video Source

Default settings are underlined.

Video of another input source is played back combined with the playing audio.

Setting items	Setting details
Video Select	**Default** : Play the picture and sound of the input source. **CBL/SAT** / **DVD** : Select video input source to view. The video of the selected input source is played along with the audio currently being played. This can be set for individual input sources. NOTE • It is not possible to select HDMI input signals. • Input sources for which "Hide" is selected at "Hide Source" (☞page 69) cannot be selected.

Speakers

GUI

Set when changing Audyssey® Setup settings.

- **If you change the speaker settings after performing Audyssey® Setup, it will not be possible to set Audyssey MultEQ®, Audyssey Dynamic EQ® and Audyssey Dynamic Volume® (☞page 61).**
- **Can be used without changing the settings. Please set if necessary.**

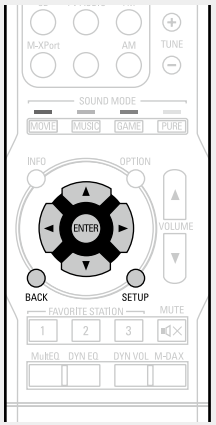
Menu operation

1 Press SETUP.
The menu is displayed on the TV screen.

2 Use △▽ to select the menu to be set or operated.

3 Press ENTER or ▷ to enter the setting.

- To return to the previous item, press ◁ or **BACK**.
- Exiting the Menu, press **SETUP** while the menu is displayed. The menu display disappears.



Items that can be set with the "Speakers" procedure

Audyssey® Setup (☞page 21)

Manual Setup (☞page 72)

Manual Setup

Default settings are underlined.

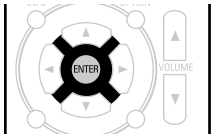
Perform when setting the speakers manually or when changing settings made in Audyssey® Setup.

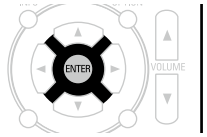
- If you change the speaker settings after performing Audyssey® Setup, it will not be possible to select Audyssey MultEQ®, Audyssey Dynamic EQ® and Audyssey Dynamic Volume® (☞page 61).
- "Manual Setup" can be used without changing the settings. Please set if necessary.

Setting items	Setting details
Speaker Config. Indicate speaker presence and select speaker size categories based on bass reproduction capability. **NOTE** Do not use the outward shape of the speaker to determine selection of a "Large" or "Small" speaker. Instead, use the frequencies set in "Crossovers" (☞page 74) as the standard for determining bass reproduction capability.	**Front** : Set the front speaker size. • **Large** : Use a large speaker that can adequately play back low frequencies. • **Small** : Use a small speaker that has inadequate playback capacity for low frequencies. • When "Subwoofer" is set to "No", "Front" is automatically set to "Large". • When "Front" is set to "Small", "Center" and "Surround" can not be set to "Large".
	Center : Set the presence and size of the center speaker. • **Large** : Use a large speaker that can adequately play back low frequencies. • **Small** : Use a small speaker that has inadequate playback capacity for low frequencies. • **None** : Select when a center speaker is not connected. "Large" is not displayed when "Front" is set to "Small".
	Subwoofer : Set the presence of a subwoofer. • **Yes** : Use a subwoofer. • **No** : Select when a subwoofer is not connected. When "Front" is set to "Small", "Subwoofer" is automatically set to "Yes".
	Surround : Set the presence and size of the surround speakers. • **Large** : Use a large speaker that can adequately play back low frequencies. • **Small** : Use a small speaker that has inadequate playback capacity for low frequencies. • **None** : Select when the surround speakers are not connected.

Setting items	Setting details
Bass Set subwoofer and LFE signal range playback.	**Subwoofer Mode** : Select low range signals to be reproduced by subwoofer. • **LFE** : The low range signal of the channel set to "Small" speaker size is added to the LFE signal output from the subwoofer. • **LFE+Main** : The low range signal of all channels is added to the LFE signal output from the subwoofer. • "Subwoofer Mode" can be set when "Speaker Config." – "Subwoofer" (☞page 72) is set to "Yes". • Play music or a movie source and select the mode offering the strongest bass. • Select "LFE+Main" if you want the bass signals to always be produced from the subwoofer. **NOTE** If "Front" and "Center" for "Speaker Config." are set to "Large", and "Subwoofer Mode" is set to "LFE", no sound may be output from the subwoofers, depending on the input signal or selected sound mode.
	LPF for LFE : Set LFE signal playback range. Set this when you want to change the playback frequency of the subwoofer. • **80Hz / 90Hz / 100Hz / 110Hz / 120Hz / 150Hz / 200Hz / 250Hz**

☞See overleaf

Setting items	Setting details
Distances Set distance from listening position to speakers. Measure beforehand the distance from the listening position to each speaker.	**Unit** : Set the unit of distance. • **Feet** / **Meters** **Step** : Set the minimum variable width of the distance. • **1ft** / **0.1ft** • **0.1m** / **0.01m** **Set Defaults** : The "Distances" settings are returned to the default settings. • **Yes** : Reset to the defaults. • **No** : Do not reset to the defaults. When you select "Set Defaults" and press **ENTER**, the "Reset to the default values?" prompt is displayed. Select either "Yes" or "No", and press **ENTER**.  **Front L** / **Front R** / **Center** / **Subwoofer** / **Surround L** / **Surround R** : Select speaker for distance setting. • **0.0ft** – **60.0ft** / **0.00m** – **18.00m** : Set the distance. • Default settings : Front L / Front R / Center / Subwoofer : 12.0 ft (3.60 m) Surround L / Surround R : 10.0 ft (3.00 m) • Set the difference in the distance between the speakers to less than 20.0 ft (6.00 m). **NOTE** Speakers set to "None" in "Speaker Config." (☞page 72) are not displayed.

Setting items	Setting details
Levels Set the volume of the test tone to be the same when it is output from each speaker.	**Test Tone Start** : Output test tone. • **Front L** / **Center** / **Front R** / **Surround R** / **Surround L** / **Subwoofer** : Select speaker to output test tone. • **–12.0dB – +12.0dB (0.0dB)** : Adjust the volume. When "Levels" is adjusted, the adjusted values are set for all the sound modes. **NOTE** • Speakers set to "None" in the "Speaker Config." (☞page 72) settings are not displayed. • When a headphones jack is inserted in the PHONES jack of this unit, the "Levels" is not displayed. **Set Defaults** : The "Levels" settings are returned to the default settings. • **Yes** : Reset to the defaults. • **No** : Do not reset to the defaults. When you select "Set Defaults" and press **ENTER**, the "Reset to the default values?" prompt is displayed. Select either "Yes" or "No", and press **ENTER**. 

☞ See overleaf

Setting items	Setting details

Crossovers
Set the maximum frequency of the bass signal output from each channel to the subwoofer. Set the Crossover Frequency to suit the bass reproduction capability of the speaker being used.
	Crossover : Set the crossover frequency.
	• **40Hz** / **60Hz** / **80Hz** / **90Hz** / **100Hz** / **110Hz** / **120Hz** / **150Hz** / **200Hz** / **250Hz** / **Individual** : Set the crossover frequency for all speakers. See the speaker manual for information concerning speaker crossover frequency.
	
	The following settings can be set when the "Crossover" setting is set to "Individual".
	• **Front** / **Center** / **Surround** : Select speaker for setting of crossover frequency.
	• **40Hz** / **60Hz** / **80Hz** / **90Hz** / **100Hz** / **110Hz** / **120Hz** / **150Hz** / **200Hz** / **250Hz** : Set the crossover frequency.
	
	• "Crossovers" can be set when the "Bass" – "Subwoofer Mode" (☞page 72) setting is "LFE+Main", or when you have a speaker that is set to "Small".
	• Always set the crossover frequency to "80Hz". When using small speakers, however, we recommend setting the crossover frequency to a higher frequency.
	• For speakers set to "Small", sound below the crossover frequency is cut from the sound output. The cut bass sound is output from the subwoofer or front speakers.
	• The speakers that can be set when "Individual" is selected differ depending on to the "Subwoofer Mode" setting (☞page 72).
	  • When "LFE" is selected, speakers set to "Small" at "Speaker Config." can be set. If the speakers are set to "Large", "Full Band" is displayed and the setting cannot be made.
	  • If set to "LFE+Main", this setting can be made regardless of the speaker size.

General

GUI

Make various other settings.

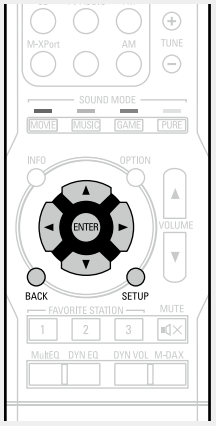
Menu operation

1 **Press SETUP.**
The menu is displayed on the TV screen.

2 **Use △▽ to select the menu to be set or operated.**

3 **Press ENTER or ▷ to enter the setting.**

- To return to the previous item, press ◁ or **BACK**.
- Exiting the Menu, press **SETUP** while the menu is displayed. The menu display disappears.



Items that can be set with the "General" procedure

Language

Default settings are underlined.

Set the language for display on the menu screen.

Setting details
English / **Español**

"Language" can also be set by the following procedure. However, the menu screen is not displayed. Following the display content to make the setting.

1. Press and hold the main unit's **PRESET CH –** and **STATUS** for at least 3 seconds.
   "V.Format : <NTSC>" appears on the display.
2. Press the main unit's **DISPLAY** and set "Lang. :<ENGLISH>".
3. Use the main unit's **PRESET CH +** or **PRESET CH –** and set the language.
4. Press the main unit's **STATUS** to complete the setting.

Auto Standby

Default settings are underlined.

When you do not perform any operation on this unit with no audio or video input for a specified time, this unit automatically enters the standby mode. Before it enters the standby mode, "Auto Standby" is displayed on the display of this unit and the menu screen.

Setting details
30min : The unit goes into standby after 30 minutes. **60min** : The unit goes into standby after 60 minutes. **Off** : The unit does not go into standby automatically.

Front Display

Default settings are underlined.

Set the display on/off setting.

Setting items	Setting details
Display	**On** : Display is always on. **Auto OFF** : Display is off except when showing the status display. **Off** : Display is always off. This can also be set by pressing **DISPLAY** on the main unit. Each time **DISPLAY** is pressed, the setting is changed as shown below. On → Auto Off → Off **NOTE** When "Display" is set to "Off", the display turns off and appears as if there is no electricity.

Information

Show information about receiver settings, input signals, etc.

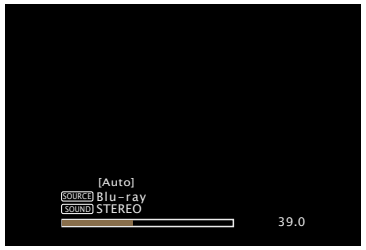
Items	Setting details
Audio Show information about audio input signals.	**Sound Mode** : The currently set surround mode. **Signal** : The input signal type. **Format** : The number of input signal channels (presence of front, surround, LFE). **Sample rate** : The input signal's sampling frequency. **Offset** : The dialogue normalization correction value. **Dialogue normalization function** This function is automatically activated when playing Dolby Digital sources. It automatically corrects the standard signal level for individual program sources. The correction value can be checked using the **STATUS** on the main unit. Offset: - 4dB The figure is the corrected value. This cannot be changed.
Video Show information about HDMI input/output signals and monitor.	**Signal** • **Resolution** / **Color Space** / **Pixel Depth** **Monitor** • **Interface** / **Resolutions**
Status Show information about current settings.	The information displayed differs according to the input source. • **Select Source** / **Name** / **Sound Mode** / **Input Mode** / **Decode Mode** / **Digital Assign** / **Video Select**

Press **INFO** to display current source name, volume and sound mode name at the bottom of the screen.

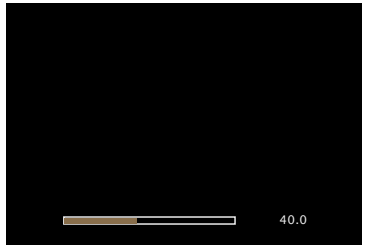
Examples of screen display

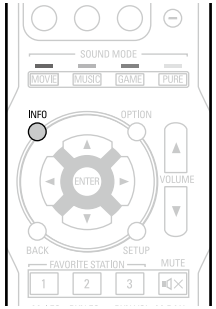
• Status display screen

When the input source is switched.



When the volume is adjusted.





Status display: The operating status appears briefly on the screen when the input source is switched or the volume is changed.

NOTE

The status display screen cannot be displayed at a computer's resolution (e.g. VGA) or while certain 3D video contents is being played.

Setup Lock

Default settings are underlined.

Protect settings from inadvertent change.

Setting items	Setting details
Lock	**On** : Turn protection on. **Off** : Turn protection off. When canceling the setting, set "Lock" to "Off". **NOTE** When "Lock" is set to "On", the settings listed below can no longer be changed. Also, "Setup Lock!" is displayed if you attempt to operate related settings. • Setup menu operations

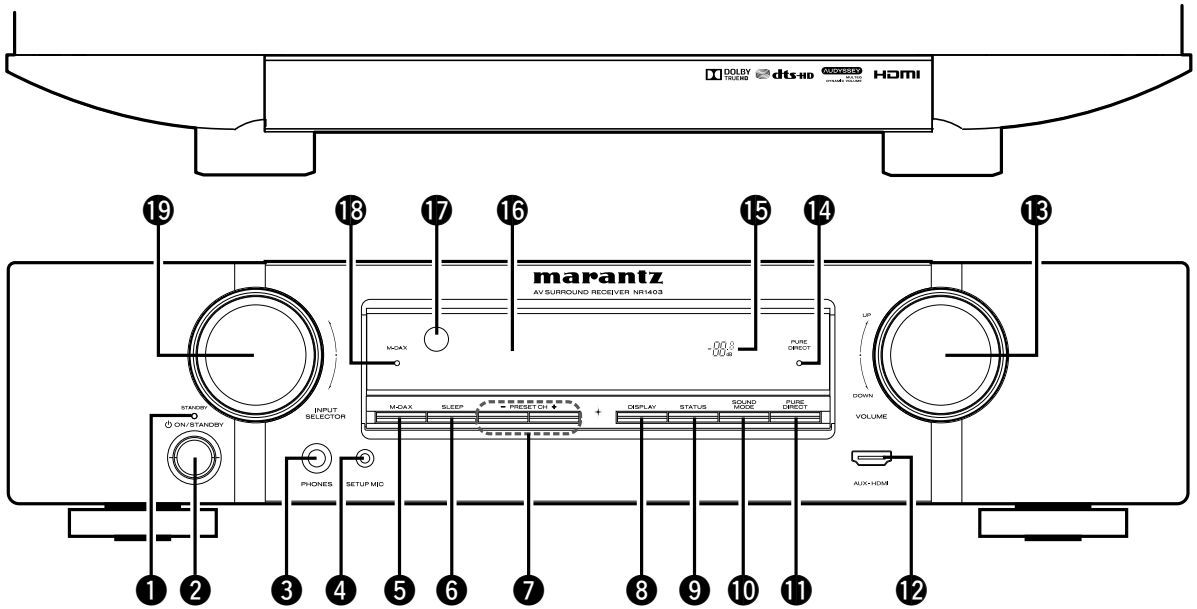
Informations

Here, we list various information related to this unit.
Please refer to this information as needed.

Part names and functions

Front panel

For buttons not explained here, see the page indicated in parentheses ( ).



❶ **STANDBY indicator** ..... (28)
[STANDBY indicator status]
- Power on : Off
- Normal standby : Red
- When "HDMI Control" (☞page 65) is set to "On" : Orange

❷ **Power operation button (⏻ ON/STANDBY)** ..... (28)
Turns power to this unit on and off (standby).

❸ **Headphones jack (PHONES)**
When the headphones are plugged into this jack, audio will no longer be output from the connected speakers.

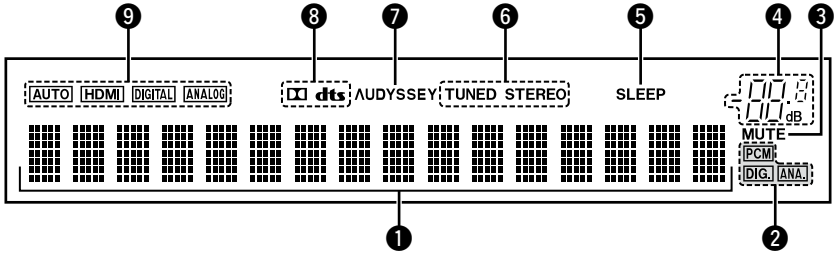
NOTE

To prevent hearing loss, do not raise the volume level excessively when using headphones.

❹ **SETUP MIC jack** ..... (22)
❺ **M-DAX button** ..... (60)
❻ **SLEEP button** ..... (50)
❼ **Tuner preset channel buttons (PRESET CH +, –)** ..... (34)
❽ **DISPLAY button** ..... (76)
❾ **STATUS button** ..... (77)
❿ **SOUND MODE button** ..... (38)
⓫ **PURE DIRECT button** ..... (38)
⓬ **AUX-HDMI connector** ..... (10)

⓭ **VOLUME knob** ..... (29)
⓮ **PURE DIRECT indicator** ..... (38)
⓯ **Master volume indicator**
⓰ **Display** ..... (80)
⓱ **Remote control sensor** ..... (83)
⓲ **M-DAX indicator** ..... (60)
⓳ **INPUT SELECTOR knob** ..... (28)

Display



❶ Information display
The input source name, sound mode, setting values and other information are displayed here.

❷ Input signal indicators

❸ MUTE indicator
This lights when the mute mode is selected (☞page 29).

❹ Master volume indicator

❺ Sleep timer indicator
This lights when the sleep mode is selected (☞page 50).

❻ Tuner reception mode indicators
These light according to the reception conditions when the input source is set to "TUNER".
STEREO : In FM mode, this lights up when receiving analog stereo broadcasts.
TUNED : Lights up when the broadcast is properly tuned in.

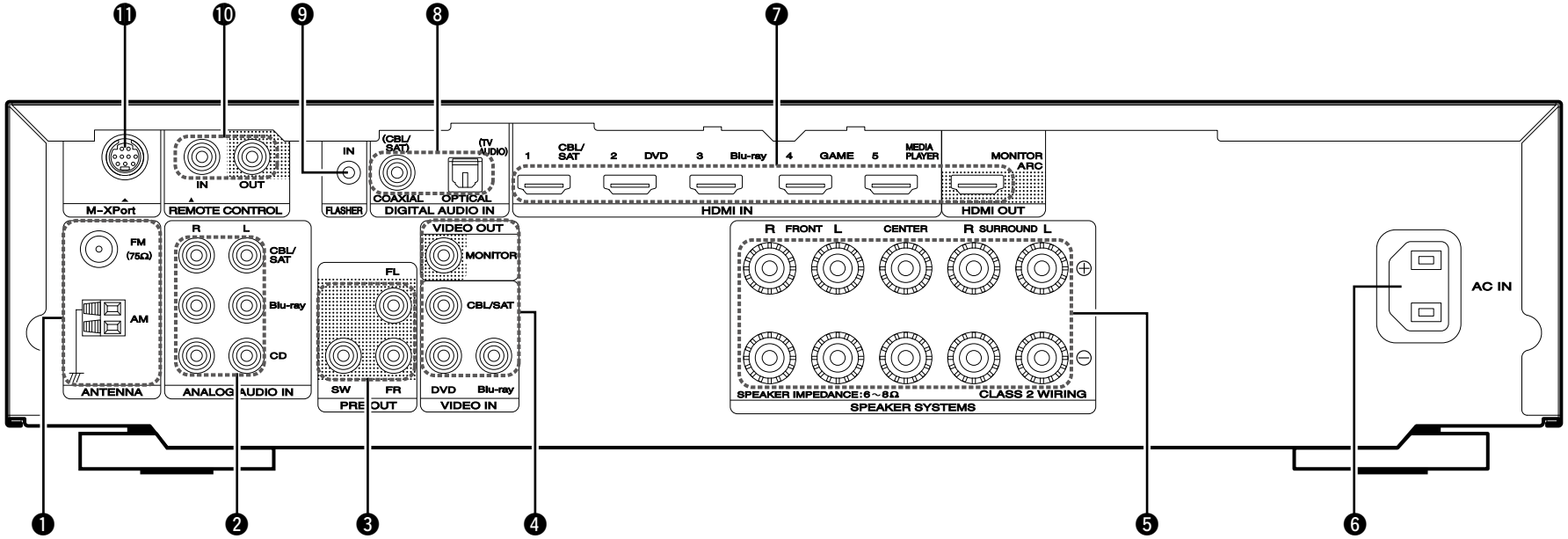
❼ Audyssey® indicator
This indicator lights when the "MultEQ®" (☞page 61), "Dynamic EQ®" (☞page 62), or "Dynamic Volume®" (☞page 62) setting is set to "On".

❽ Decoder indicators
These light when Dolby or DTS signals are input or when the Dolby or DTS decoder is running.

❾ Input mode indicators
Set the audio input modes for the different input sources (☞page 69).

Rear panel

See the page indicated in parentheses ( ).



❶ FM/AM antenna terminals (ANTENNA) ····· (18)

❷ Analog audio connectors (ANALOG AUDIO IN) ····· (14, 16, 17)

❸ PRE OUT connectors ····· (45, 46, 47)

❹ Video connectors (VIDEO IN/VIDEO OUT) ····· (13, 14, 15, 16)

❺ Speaker terminals (SPEAKER SYSTEMS) ····· (45, 46)

❻ AC inlet (AC IN) ····· (20)

❼ HDMI connectors ····· (9, 10)

❽ Digital audio connectors (DIGITAL AUDIO IN) ····· (13, 14, 15, 16, 17)

❾ FLASHER IN jack
Used when using a control BOX or other such control devices to control this unit.

❿ REMOTE CONTROL connectors ····· (48)

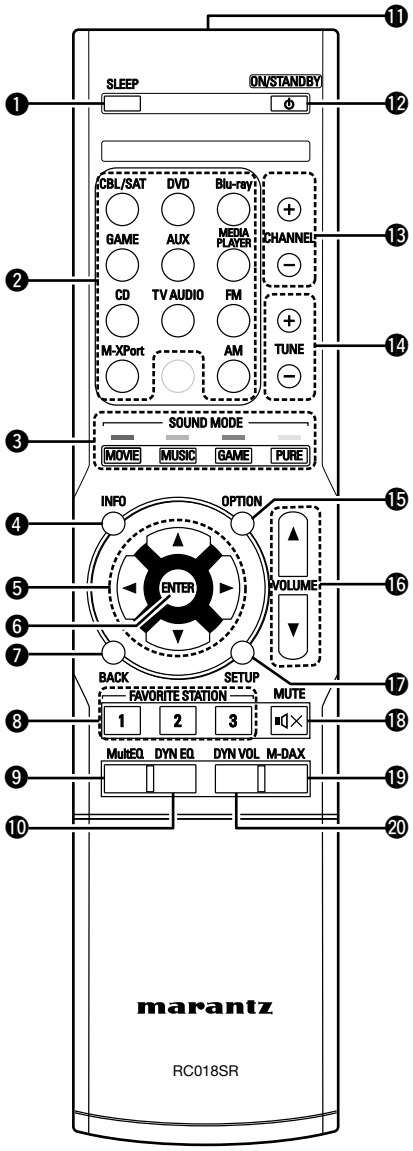
⓫ M-XPort connector ····· (19)

NOTE

Do not touch the inner pins of the connectors on the rear panel. Electrostatic discharge may cause permanent damage to the unit.

Remote control unit

For buttons not explained here, see the page indicated in parentheses ( ).



❶ **SLEEP button** ..... (50)

❷ **Input source select buttons** ..... (28)

❸ **SOUND MODE buttons** ..... (38)
- MOVIE button
- MUSIC button
- GAME button
- PURE button

❹ **Information button (INFO)** ..... (77)

❺ **Cursor buttons (△▽◁ ▷)** ..... (56, 58, 64, 67, 71, 75)

❻ **ENTER button** ..... (56, 58, 64, 67, 71, 75)

❼ **BACK button** ..... (58, 64, 67, 71, 75)

❽ **FAVORITE STATION buttons (1 – 3)** ..... (30)

❾ **MultEQ button** ..... (61)

❿ **Dynamic EQ button (DYN EQ)** ..... (62)

⓫ **Remote control signal transmitter** ..... (83)

⓬ **ON/STANDBY button (⏻)** ..... (28)

⓭ **CHANNEL buttons (+, –)** ..... (34)

⓮ **Tuning up / Tuning down buttons (TUNE +, –)** ..... (30, 31)

⓯ **OPTION button** ..... (31)

⓰ **VOLUME buttons (+, –)** ..... (29)

⓱ **SETUP button** ..... (58, 64, 67, 71, 75)

⓲ **MUTE button (🔇×)** ..... (29)

⓳ **M-DAX button** ..... (60)

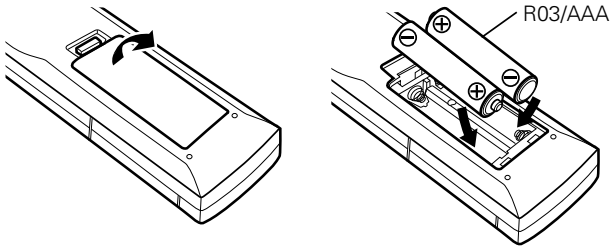
⓴ **Dynamic Volume button (DYN VOL)** ..... (62)

☞ See overleaf

Inserting the batteries

① Remove the rear lid in the direction of the arrow and remove it.

② Load the two batteries properly as indicated by the marks in the battery compartment.



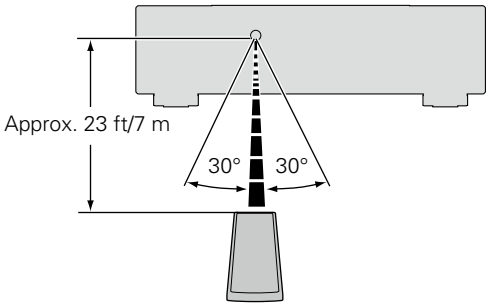
③ Put the rear cover back on.

NOTE

- Insert the specified batteries in the remote control unit.
- Replace the batteries with new ones if the set does not operate even when the remote control unit is operated close to the unit. (The supplied batteries are only for verifying operation. Replace them with new batteries at an early date.)
- When inserting the batteries, be sure to do so in the proper direction, following the ⊕ and ⊖ marks in the battery compartment.
- To prevent damage or leakage of battery fluid:
  - Do not use a new battery together with an old one.
  - Do not use two different types of batteries.
  - Do not attempt to charge dry batteries.
  - Do not short-circuit, disassemble, heat or dispose of batteries in flames.
  - Do not keep the battery in a place exposed to direct sunlight or in places with extremely high temperatures, such as near a heater.
- If the battery fluid should leak, carefully wipe the fluid off the inside of the battery compartment and insert new batteries.
- Remove the batteries from the remote control unit if it will not be in use for long periods.
- Used batteries should be disposed of in accordance with the local regulations regarding battery disposal.
- The remote control unit may function improperly if rechargeable batteries are used.

Operating range of the remote control unit

Point the remote control unit at the remote sensor when operating it.



NOTE

- The set may function improperly or the remote control unit may not operate if the remote control sensor is exposed to direct sunlight, strong artificial light from an inverter type fluorescent lamp or infrared light.
- When using 3D video devices that transmit radio communication signals (such as infrared signals etc) between the various units (such as the monitor, 3D glasses, 3D transmitter unit etc), the remote control unit may not operate due to interference from those radio communication signals. If this occurs, adjust the direction and distance of the 3D communication for each unit, and check that the remote control unit operation is not affected by these signals.

Trademark information

This product uses the following technologies (Random order):

AUDYSSEY MULTEQ DYNAMIC VOLUME

Manufactured under license from Audyssey Laboratories™. U.S. and foreign patents pending. Audyssey MultEQ®, Audyssey Dynamic EQ® and Audyssey Dynamic Volume® are registered trademarks of Audyssey Laboratories.

DOLBY TRUEHD

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

dts-HD

Manufactured under license under U.S. Patent Nos: 5,956,674; 5,974,380; 6,226,616; 6,487,535; 7,212,872; 7,333,929; 7,392,195; 7,272,567 & other U.S. and worldwide patents issued & pending. DTS-HD, the Symbol, & DTS-HD and the Symbol together are registered trademarks of DTS, Inc. Product includes software.
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HDMI

HDMI, the HDMI Logo and High-Definition Multimedia Interface are trademarks or registered trademarks of HDMI Licensing LLC in the United States and other countries.

Surround

This unit is equipped with a digital signal processing circuit that lets you play program sources in the sound mode to achieve the same sense of presence as in a movie theater.

Sound modes and surround parameters

This table shows the speakers that can be used in each sound mode and the surround parameters adjustable in each sound mode.

Symbols in the table

○ This indicates the audio output channels or surround parameters that can be set.
◎ This indicates the audio output channels. The output channels depend on the settings of "Speaker Config." (☞page 72).

Sound Mode (☞page 38)	Channel output				Surr.Parameter (☞page 59)							
	Front L/R	Center	Surround L/R	Subwoofer	Home Theater EQ (☞page 59)	Loudness Mngmt *2 (☞page 59)	Dynamic Comp. *3 (☞page 59)	Low Frequency *4 (☞page 59)	PRO LOGIC II Music mode only			NEO:6 Music mode only
									Panorama (☞page 59)	Dimension (☞page 59)	Center Width (☞page 59)	Center Image (☞page 59)
DIRECT/PURE DIRECT (2channel)*1	○			◎*5		○	○					
DIRECT/PURE DIRECT (Multi-channel)*1	○	◎	◎	◎		○	○	○				
STEREO	○			◎		○	○	○				
MULTI CH IN	○	◎	◎	◎				○				
DOLBY PRO LOGIC II	○	◎	◎	◎	○*6	○	○		○	○	○	
DOLBY PRO LOGIC	○	◎	◎	◎	○	○	○		○	○	○	
DOLBY DIGITAL	○	◎	◎	◎			○	○				
DOLBY DIGITAL Plus	○	◎	◎	◎			○	○				
DOLBY TrueHD	○	◎	◎	◎		○	○	○				
DTS NEO:6	○	◎	◎	◎	○*7	○	○					○
DTS SURROUND	○	◎	◎	◎			○	○				
DTS 96/24	○	◎	◎	◎			○	○				
DTS-HD	○	◎	◎	◎			○	○				
DTS Express	○	◎	◎	◎			○	○				
MULTI CH STEREO	○	◎	◎	◎		○	○	○				
VIRTUAL	○			◎		○	○	○				

*1 During playback in PURE DIRECT mode, the surround parameters are the same as in DIRECT mode.
*2 This item can be selected when a Dolby TrueHD signal is played.
*3 This item can be selected when a Dolby Digital or DTS signal is played.
*4 This item can be selected when a Dolby Digital or DTS signal or DVD-Audio is played.
*5 Only when "Subwoofer Mode" is set to "LFE+Main" (☞page 72), sound is output from the subwoofer.
*6 This setting is possible when the sound mode is "PLII Movie".
*7 This setting is possible when the sound mode is "DTS NEO:6 Cinema".

☞ See overleaf

Sound Mode (☞page 38)	Tone ∗8 (☞page 60)	Audyssey ∗9 (☞page 61)			M-DAX ∗11 (☞page 60)
		MultEQ® (☞page 61)	Dynamic EQ® ∗10 (☞page 62)	Dynamic Volume® ∗10 (☞page 62)	
DIRECT/PURE DIRECT (2channel)∗1					
DIRECT/PURE DIRECT (Multi-channel)∗1					
STEREO	○	○	○	○	○
MULTI CH IN	○	○	○	○	
DOLBY PRO LOGIC II	○	○	○	○	○
DOLBY PRO LOGIC	○	○	○	○	○
DOLBY DIGITAL	○	○	○	○	
DOLBY DIGITAL Plus	○	○	○	○	
DOLBY TrueHD	○	○	○	○	
DTS NEO:6	○	○	○	○	○
DTS SURROUND	○	○	○	○	
DTS 96/24	○	○	○	○	
DTS-HD	○	○	○	○	
DTS Express	○	○	○	○	
MULTI CH STEREO	○	○	○	○	○
VIRTUAL	○	○	○	○	○

∗1 During playback in PURE DIRECT mode, the surround parameters are the same as in DIRECT mode.
∗8 This item cannot be set when "Dynamic EQ®" (☞page 62) is set to "On".
∗9 For HD Audio whose sampling frequency of an input signal is more than 96 kHz, this sound parameter cannot be set.
∗10 This item cannot be set when "MultEQ®" (☞page 61) is set to "Off" or "Manual EQ".
∗11 This item can be set when the input signal is analog, PCM 48 kHz or 44.1 kHz.

❑ Types of input signals, and corresponding sound modes

This table shows the input signal that can be played in each sound mode. Check the audio signal of the input source then select the sound mode.

Symbols in the table

● This indicates the default sound mode.
○ This indicates the selectable sound mode.

Sound Mode (☞page 38)	NOTE	Input signal types and formats															
		ANALOG	PCM		DTS-HD		DTS					DOLBY		DOLBY DIGITAL			
			PCM (multi ch)	PCM (2ch)	DTS-HD Master Audio	DTS-HD High Resolution Audio	DTS EXPRESS	DTS ES DSCRT (With Flag)	DTS ES MTRX (With Flag)	DTS (5.1ch)	DTS 96/24	DOLBY TrueHD	DOLBY DIGITAL Plus	DOLBY DIGITAL EX (With Flag)	DOLBY DIGITAL EX (With no Flag)	DOLBY DIGITAL (5.1ch)	DOLBY DIGITAL (2ch)
DTS SURROUND																	
DTS-HD MSTR					●												
DTS-HD HI RES						●											
DTS SURROUND								○	○	●							
DTS 96/24											●						
DTS EXPRESS							●										
DTS NEO:6 CINEMA		○		○													○
DTS NEO:6 MUSIC		○		○													○
DOLBY SURROUND																	
DOLBY TrueHD												●					
DOLBY DIGITAL+													●				
DOLBY DIGITAL														○	●	●	
DOLBY PRO LOGIC II MOVIE		○		○													○
DOLBY PRO LOGIC II MUSIC		○		○													○
DOLBY PRO LOGIC II GAME		○		○													○
DOLBY PRO LOGIC		○		○													○
MULTI CH IN																	
MULTI CH IN			●														
DIRECT																	
DIRECT		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
PURE DIRECT																	
PURE DIRECT		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
DSP SIMULATION																	
MULTI CH STEREO		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
VIRTUAL		○	○	○	○	○	○	○	○	○	○	○	○	○	○	○	○
STEREO																	
STEREO		●	○	●	○	○	○	○	○	○	○	○	○	○	○	○	○

Relationship between video signals and monitor output

Input \ Output	HDMI output		Video output	
HDMI	**VIDEO**	**Video**	**Menu**	**Video**	**Menu**
×	×	×	Only the menu is displayed	×	×
×	○			○ <VIDEO>	
○	×	○ <HDMI>	○ (HDMI)	×	
○	○			○ <VIDEO>	

○ : Video signal input present
× : No video signal input

○ <> : The input signal between the < > marks is output.
× : No video signal output
○ ( ) : Superimposed on the picture indicated in ( ).
× ( ) : Only the picture in ( ) is output.

NOTE

- If you operate the menu while playing back 3D video content or computer's resolution (e.g. VGA), the playback video is replaced by the menu screen. The playback video is not displayed behind the menu screen.
- This unit does not show the status display while playing back 3D video content or computer's resolution (e.g. VGA).

Explanation of terms

A

A2DP
A2DP is one profile of Bluetooth defined for in-car devices or AV devices that use wireless communication instead of a cable.

Adobe RGB color, Adobe YCC601 color
The color space defined by Adobe Systems Inc. Because it is a wider color space than RGB, it can produce more vivid and natural images.

Audyssey Dynamic EQ®
Dynamic EQ® solves the problem of deteriorating sound quality as volume is decreased by taking into account human perception and room acoustics. Audyssey Dynamic EQ® works in tandem with Audyssey MultEQ® to provide well-balanced sound for every listener at any volume level.

Audyssey Dynamic Volume®
Dynamic Volume® solves the problem of large variations in volume level between television programs, commercials, and between the soft and loud passages of movies. Audyssey Dynamic EQ® is integrated into Dynamic Volume® so that as the playback volume is adjusted automatically, the perceived bass response, tonal balance, surround impression, and dialog clarity remain the same.

Audyssey MultEQ®
MultEQ® is a room equalization solution that calibrates any audio system so that it can achieve optimum performance for every listener in a large listening area. Based on several room measurements, MultEQ® calculates an equalization solution that corrects for both time and frequency response problems in the listening area and also performs a fully automated surround system setup.

Auto Lip Sync
If you connect the unit to a TV that supports the Auto Lip Sync function, it can automatically correct delay between the audio and video.

B

Bluetooth
Bluetooth is a short-distance wireless communication technology used for connecting handheld devices several meters apart. This enables notebook computers, PDA s, mobile phones, etc. to connect without a cable for transmitting audio and data.

D

Deep Color
An imaging technology supported by HDMI. Unlike RGB, which uses 8 bits (256 shades) per color, it can use 10 bits (1024 shades), 12 bits (4096 shades), or 16 bits (65536 shades) to produce colors in higher definition.
Both devices linked via HDMI must support Deep Color.

Dolby Digital
Dolby Digital is a multi-channel digital signal format developed by Dolby Laboratories.
A total of 5.1 channels are played: 3 front channels ("FL", "FR" and "C"), 2 surround channels ("SL" and "SR") and the "LFE" channel for low frequencies.
Because of this, there is no crosstalk between channels and a realistic sound field with a "three-dimensional" feeling (sense of distance, movement and positioning) is achieved.
A realistic, powerful sense of presence is achieved when playing movie sources in AV rooms as well.

Dolby Digital Plus
Dolby Digital Plus is an improved Dolby Digital signal format that is compatible with up to 7.1 channels of discrete digital sound and also improves sound quality thanks to extra data bit rate performance. It is upwardly compatible with conventional Dolby Digital, so it offers greater flexibility in response to the source signal and the conditions of the playback device.

Dolby Pro Logic Ⅱ
Dolby Pro Logic Ⅱ is a matrix decoding technology developed by Dolby Laboratories.
Regular music such as that on CDs is encoded into 5 channels to achieve an excellent surround effect. The surround channel signals are converted into stereo and full band signals (with a frequency response of 20 Hz to 20 kHz or greater) to create a "three-dimensional" sound image offering a rich sense of presence for all stereo sources.

Dolby TrueHD
Dolby TrueHD is a high definition audio technology developed by Dolby Laboratories, using lossless coding technology to faithfully reproduce the sound of the studio master.
This format provides the facility to support up to 8 audio channels with a sampling frequency of 96 kHz/24 bit resolution and up to 6 audio channels with a sampling frequency of 192 kHz/24 bit resolution. Dolby TrueHD is adopted for applications that put very high importance on sound quality.

Downmix
This function converts the number of channels of surround audio to less number of channels and plays back.

DTS
This is an abbreviation of Digital Theater System, which is a digital audio system developed by DTS. When playing back audio by connecting this system with a device such as DTS amplifier, accurate sound field position and realistic sound effect as if you are in a movie theater can be obtained.

DTS 96/24
DTS 96/24 is a digital audio format enabling high sound quality playback in 5.1 channels with a sampling frequency of 96 kHz and 24 bit quantization on DVD-Video.

DTS Digital Surround
DTS Digital Surround is the standard digital surround format of DTS, Inc., compatible with a sampling frequency of 44.1 or 48 kHz and up to 5.1 channels of digital discrete surround sound.

DTS Express
DTS Express is an audio format supporting low bit rates (max. 5.1 channels, 24 to 256 kbps).

DTS-HD
This audio technology provides higher sound quality and enhanced functionality than the conventional DTS and is adopted as an optional audio for Blu-ray Disc. This technology supports multi-channel, high data transfer speed, high sampling frequency, and lossless audio playback. Maximum 7.1-channels are supported in Blu-ray Disc.

DTS-HD High Resolution Audio
DTS-HD High Resolution Audio is an improved version of the conventional DTS, DTS-ES and DTS 96/24 signals formats, compatible with sampling frequencies of 96 or 48 kHz and up to 7.1 channels of discrete digital sound. High data bit rate performance provides high quality sound. This format is fully compatible with conventional products, including conventional DTS digital surround 5.1-channel data.

DTS-HD Master Audio
DTS-HD Master Audio is a lossless audio format created by Digital Theater System (DTS). This format provides the facility to support up to 8 audio channels with a sampling frequency of 96 kHz/24 bit resolution and up to 6 audio channels with a sampling frequency of 192 kHz/24 bit resolution. It is fully compatible with conventional products, including conventional DTS digital surround 5.1-channel data.

DTS NEO:6™ Surround
DTS NEO:6™ is a matrix decoding technology for achieving 6.1-channel surround playback with 2-channel sources. It includes "DTS NEO:6 Cinema" suited for playing movies and "DTS NEO:6 Music" suited for playing music.

Dynamic range
The difference between the maximum undistorted sound level and the minimum discernible level above the noise emitted by the device.

H

HDCP
When transmitting digital signals between devices, this copyright protection technology encrypts the signals to prevent content from being copied without authorization.

HDMI
This is an abbreviation of High-Definition Multimedia Interface, which is an AV digital interface that can be connected to a TV or amplifier. Video signal and audio signal can be connected using 1 cable.

L

LFE
This is an abbreviation of Low Frequency Effect, which is an output channel that emphasizes low frequency effect sound. Surround audio is intensified by outputting 20 Hz to 120 Hz deep bass.

M

MP3 (MPEG Audio Layer-3)
This is an internationally standardized audio data compression scheme, using the "MPEG-1" video compression standard. It compresses the data volume to about one eleventh its original size while maintaining sound quality equivalent to a music CD.

MPEG (Moving Picture Experts Group), MPEG-2, MPEG-4
These are the names for digital compression format standards used for the encoding of video and audio. Video standards include "MPEG-1 Video", "MPEG-2 Video", "MPEG-4 Visual", "MPEG-4 AVC". Audio standards include "MPEG-1 Audio", "MPEG-2 Audio", "MPEG-4 AAC".

P

Pairing
Pairing is an operation required for settings to connect two Bluetooth devices. Pairing enables Bluetooth devices to access each other.

Progressive (sequential scanning)
This is a scanning system of video signal that displays 1 frame of video as one image. Compared to the interlace system, this system provides images with less flickering and bleeding.

Protection circuit
This is a function to prevent damage to devices within the power supply when an abnormality such as an overload, excess voltage occurs or temperature for any reason.
In this unit, the STANDBY indicator blinks and the unit enters standby mode when an abnormality occurs.

S

Sampling frequency
Sampling involves taking a reading of a sound wave (analog signal) at regular intervals and expressing the height of the wave at each reading in digitized format (producing a digital signal).
The number of readings taken in one second is called the "sampling frequency". The larger the value, the closer the reproduced sound is to the original.

Speaker impedance
This is an AC resistance value, indicated in Ω (ohms). Greater power can be obtained with this value smaller.

sYCC601 color
Like "x.v.Color", each of these color spaces defines a palette of available colors that is larger than the traditional RGB color model.

W

WMA (Windows Media Audio)
This is audio compression technology developed by Microsoft Corporation.
WMA data can be encoded using Windows Media® Player Ver.7, 7.1, Windows Media® Player for Windows® XP and Windows Media® Player 9 Series.
To encode WMA files, only use applications authorized by Microsoft Corporation. If you use an unauthorized application, the file may not work properly.

X

x.v.Color
This function lets HDTVs display colors more accurately. It enables display with natural, vivid colors. "x.v.Color" is a Sony registered trademark.

Troubleshooting

If a problem should arise, first check the following:
1. Are the connections correct?
2. Is the set being operated as described in the owner's manual?
3. Are the other devices operating properly?
If this unit does not operate properly, check the items listed in the table below. Should the problem persist, there may be a malfunction.
In this case, disconnect the power immediately and contact your store of purchase.

[General]

Symptom	Cause/Solution	Page
Power does not turn on.	• Check whether the power plug is correctly inserted into the power outlet. • The protection circuit is active. Disconnect the power plug from the electric outlet, wait 5 to 10 seconds and then insert it back into the outlet.	28 90
Power automatically switches to standby mode.	• The sleep timer is set. Turn on the power again, or change the sleep timer settings. • "Auto Standby" is triggered when no commands are received for a set amount of time. To disable "Auto Standby", set "Auto Standby" in the menu to "Off".	50 76
Display is off.	• Set "Display" on the menu to something other than "Off".	76
The STANDBY indicator is blinking red in intervals of approximately 2 seconds.	• Due to the temperature rise within this unit, the protection circuit is working. Please turn off power once, and re-apply the power after the temperature has fallen sufficiently. • Please re-install this unit in a place having good ventilation.	– –
The STANDBY indicator is blinking red in intervals of approximately 0.5 seconds.	• Please use speakers which have the specified impedance. • The protection circuit has been activated because the speaker cable core wires are touching, a core wire has come loose from the terminal, or a core wire is touching the rear panel of this unit. After unplugging the power cord, take corrective action such as firmly re-twisting the core wire or taking care of the terminal, and then reconnect the wire.	44 44
After turning on the power, the STANDBY indicator is blinking red in intervals of approximately 0.5 seconds.	• This unit amplifier circuit has failed. Turn off the power and please contact the marantz service adviser.	–
Set does not operate properly.	• Reset the microprocessor.	93

[HDMI]

Symptom	Cause/Solution	Page
No audio is output with HDMI connection.	• Check the connection of the HDMI connectors. • When outputting HDMI audio from the speakers, set "HDMI Audio Out" on the menu to "AVR". • When outputting HDMI audio from a TV, set "HDMI Audio Out" on the menu to "TV".	10 65 65
No video is output with HDMI connection.	• Check the connection of the HDMI connectors. • Set the input source to match the connected HDMI connector. • Check whether the TV is compatible with copyright protection (HDCP). If connected to a device not compatible with HDCP, video will not be output correctly.	10 10, 28 11
When the following operations are performed on devices compatible with HDMI control, the same operations occur on this unit. • Power ON/OFF • Switching audio output devices • Adjust volume • Switch input source	• Set "HDMI Control" in the menu to "Off". Furthermore, if you do not want to link the power off operation with devices compatible with HDMI control, set "P.Off Control" in the menu to "Off".	49, 65

[Video]

Symptom	Cause/Solution	Page
No picture appears.	• Check the connection between the video output terminal of this unit and the input terminal of the TV. • Match the input settings to the input terminal of the TV connected to this unit.	9, 13 –

【Audio】

Symptom	Cause/Solution	Page
Audio is not output.	• Check the connections for all devices.	9, 10, 13, 14, 15, 16, 17, 18, 19
	• Check the speaker connections and configurations.	45, 46, 47
	• Check whether the audio device power is turned on.	–
	• Adjust the master volume.	29
	• Cancel the mute mode.	29
	• Check the connection with the playback device and select the proper input source.	28
	• Match the input mode and the terminal assigned to be the digital input terminal.	69
	• Disconnect the headphones. No sound is output from the speakers when headphones are connected.	79
The volume does not increase.	• The maximum volume is set too low. Set the maximum volume under "Limit" in the menu.	61
	• Power for external devices connected to the output connectors of the unit may not be turned on. Check the power of connected external devices.	–
No sound is produced from surround speaker.	• Check if the surround speakers are connected to the SURROUND terminals.	–
No sound is produced from subwoofer.	• Check the subwoofer connections.	45, 46, 47
	• Turn on the subwoofer's power.	–
	• Set "Speaker Config." – "Subwoofer" on the menu to "Yes".	72
	• If "Front" and "Center" for "Speaker Config." are set to "Large", and "Subwoofer Mode" is set to "LFE", no sound may be output from the subwoofers, depending on the input signal or selected sound mode.	72
DTS sound is not output.	• Set "Decode Mode" on the menu to "Auto" or "DTS".	70
Dolby TrueHD, DTS-HD, Dolby Digital Plus audio is not output.	• Make HDMI connections.	10
Dolby PLⅡ mode or DTS NEO:6 mode cannot be selected.	• Check that "Speaker Config." – "Center" or "Surround" is set to other than "None". If the speaker system is 2.0/2.1ch, this sound mode cannot be selected.	72
	• When headphones are used, Dolby PLⅡ or DTS NEO:6 cannot be selected.	–
Audyssey MultEQ®, Audyssey Dynamic EQ® and Audyssey Dynamic Volume® cannot be selected.	• Switch the sound mode to other than "DIRECT" or "PURE DIRECT".	38
	• When headphones are used, Audyssey MultEQ®, Audyssey Dynamic EQ® and Audyssey Dynamic Volume® cannot be selected.	–
Audyssey Dynamic EQ® and Audyssey Dynamic Volume® cannot be selected.	• Run Audyssey® Setup.	21
M-DAX cannot be selected.	• Check that an analog signal or PCM signal (Sample rate=44.1/48 kHz) is input. For playback of multichannel signals such as Dolby Digital or DTS surround, M-DAX cannot be used.	60
	• Switch the sound mode to other than "DIRECT" or "PURE DIRECT".	38

【FM/AM tuner】

Symptom	Cause/Solution	Page
Reception fails, or there is a lot of noise or distortion.	• Change the antenna orientation or position.	18
	• Use an FM outdoor antenna.	18
	• Separate the antenna from other connection cables.	18

【M-XPort】

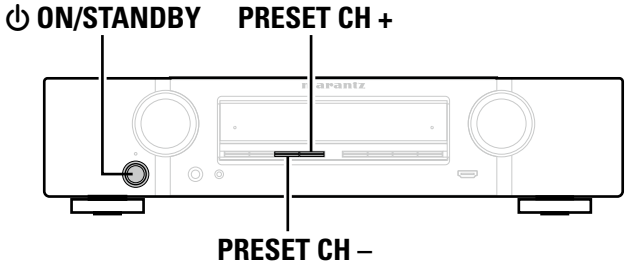
Symptom	Cause/Solution	Page
Audio is not output when a wireless receiver (RX101 is connected).	• Check that the Bluetooth device and Wireless receiver (RX101) are correctly paired.	19, 89, 90

【Remote control unit】

Symptom	Cause/Solution	Page
The set cannot be operated with the remote control unit.	• Batteries are worn out. Replace with new batteries. • Operate the remote control unit within a distance of about 23 ft/7 m from this unit and at an angle of within 30°. • Remove any obstacle between this unit and the remote control unit. • Insert the batteries in the proper direction, checking the ⊕ and ⊖ marks. • The set's remote control sensor is exposed to strong light (direct sunlight, inverter type fluorescent bulb light, etc.). Move the set to a place in which the remote control sensor will not be exposed to strong light.	83 83 83 83 83

Resetting the microprocessor

Perform this procedure if the display is abnormal or if operations cannot be performed.
When the microprocessor is reset, all the settings are reset to their default values.



1 Turn off the power using ⏻ ON/STANDBY.

2 Press ⏻ ON/STANDBY while simultaneously pressing PRESET CH + and PRESET CH –.

3 Once the display starts flashing at intervals of about 1 second, release the two buttons.

If in step 3 the display does not flash at intervals of about 1 second, start over from step 1.

Specifications

❑ Audio section

- **Power amplifier**

Rated output:
Front:
50 W + 50 W (8 Ω, 20 Hz – 20 kHz with 0.08 % T.H.D.)
Center:
50 W (8 Ω, 20 Hz – 20 kHz with 0.08 % T.H.D.)
Surround:
50 W + 50 W (8 Ω, 20 Hz – 20 kHz with 0.08 % T.H.D.)

Maximum effective output power:
Front:
80 W + 80 W (6 Ω, 1 kHz with 10 % T.H.D.)
Center:
80 W (6 Ω, 1 kHz with 10 % T.H.D.)
Surround:
80 W + 80 W (6 Ω, 1 kHz with 10 % T.H.D.)

Output connectors: 6 – 8 Ω

- **Analog**

Input sensitivity/Input impedance: 130 mV/47 kΩ
Frequency response: 10 Hz – 100 kHz — +1, –3 dB (DIRECT mode)
S/N: 98 dB (IHF–A weighted, DIRECT mode)

❑ Video section

- **Standard video connectors**

Input/output level and impedance: 1 Vp-p, 75 Ω
Frequency response: 5 Hz – 10 MHz — 0, –3 dB

❑ Tuner section

	[FM]	[AM]
	(Note: µV at 75 Ω, 0 dBf = 1 x 10^{-15} W)	
Receiving Range:	87.5 MHz – 107.9 MHz	520 kHz – 1710 kHz
Usable Sensitivity:	1.2 µV (12.8 dBf)	18 µV
50 dB Quieting Sensitivity:	MONO 2.8 µV (20.2 dBf)	
S/N :	MONO 70 dB (IHF–A weighted, DIRECT mode)	
	STEREO 67 dB (IHF–A weighted, DIRECT mode)	
Total harmonic Distortion:	MONO 0.7 % (1 kHz)	
	STEREO 1.0 % (1 kHz)	

❑ General

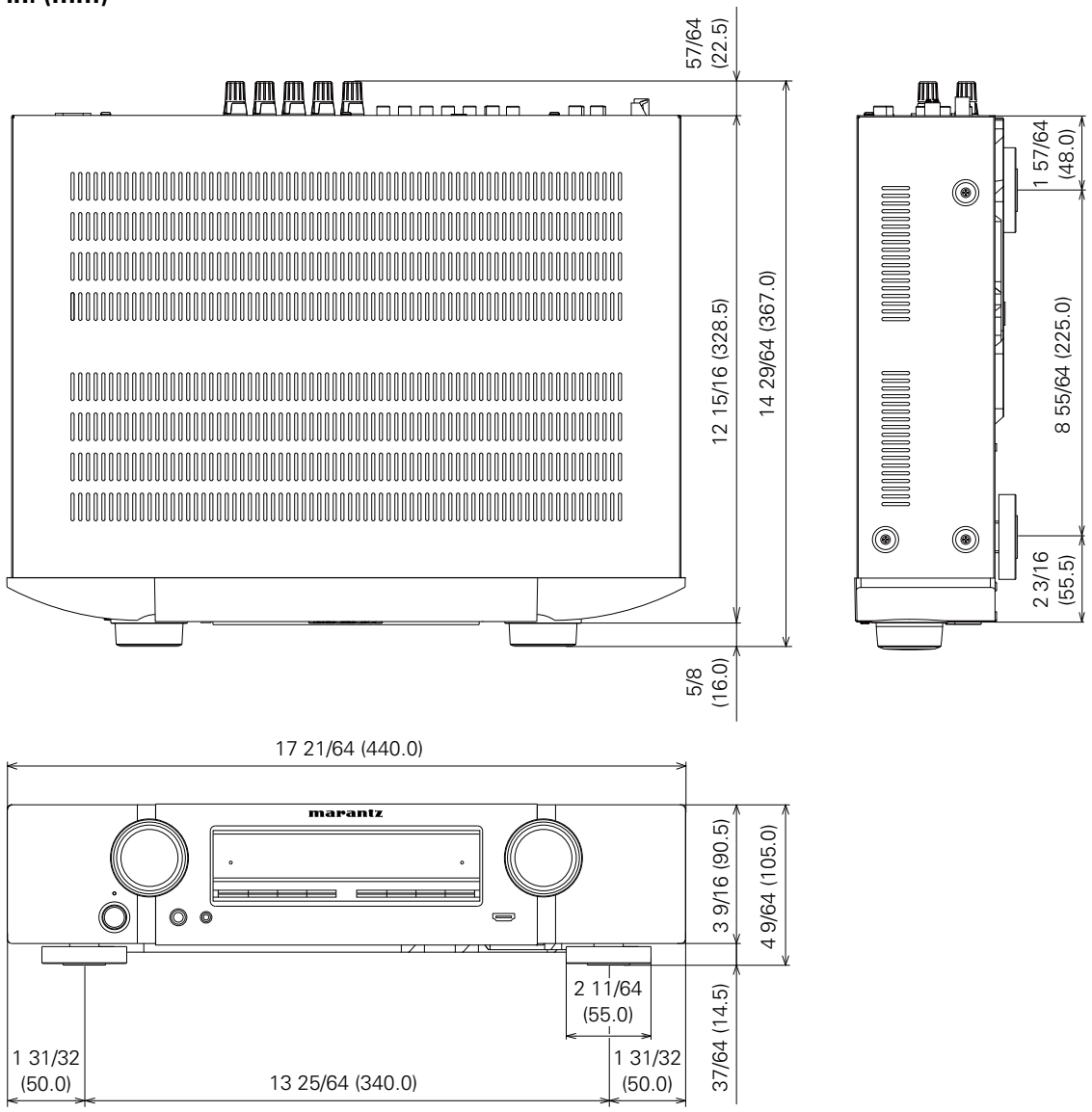
Power supply: AC 120 V, 60 Hz
Power consumption: 180 W
0.2 W (Standby)
0.5 W (CEC standby)

For purposes of improvement, specifications and design are subject to change without notice.

Index

Dimensions

Unit : in. (mm)



Weight : 18 lbs 5 oz (8.3 kg)

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V00

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