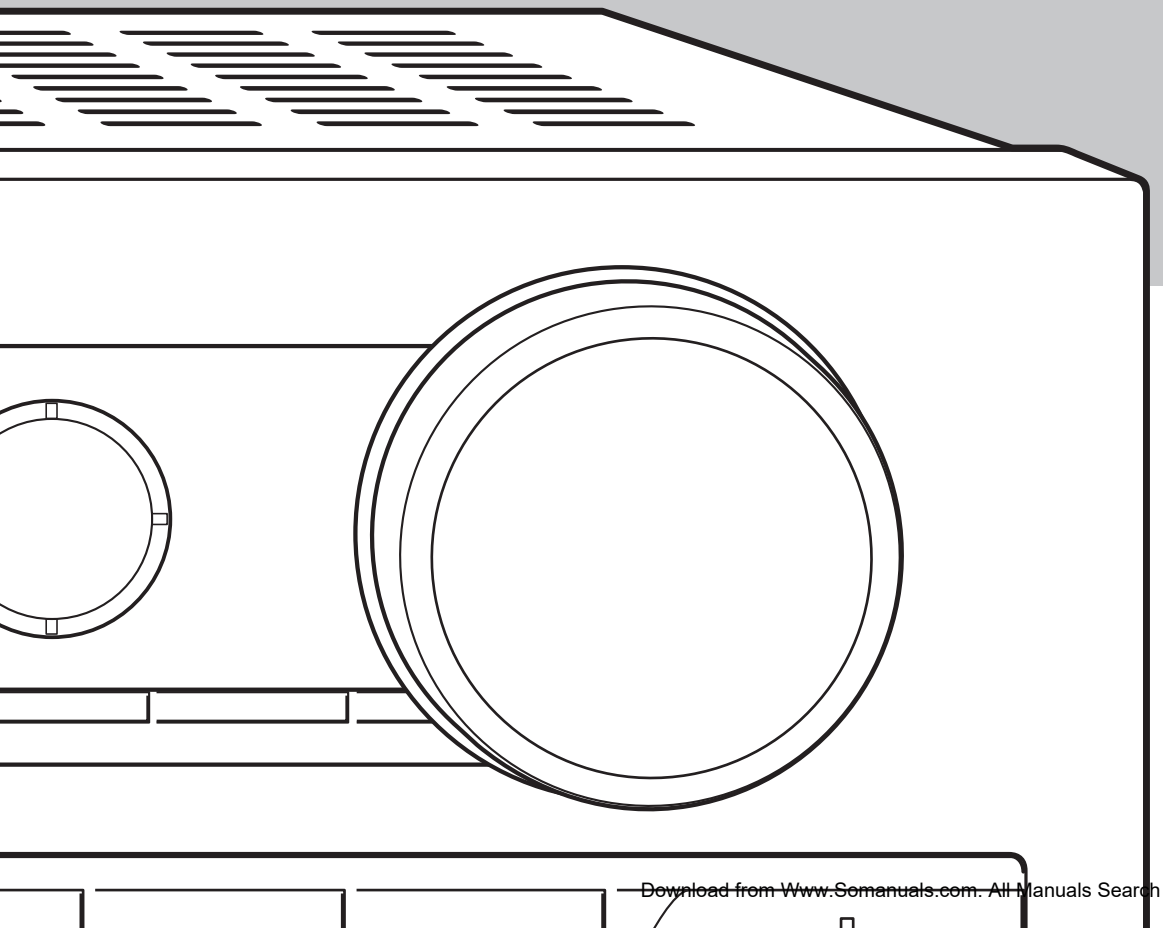
ONKYO

TX-NR646

AV RECEIVER

Basic Manual



This manual includes information needed when starting up and also instructions for frequently used operations. The Advanced Manual is published on the web for ecological reasons and has more detailed information and advanced settings.

Advanced Manual
found here

http://www.onkyo.com/manual/txnr646/adv/en.html

En

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Features

- Equipped with 7 ch amplifier
- Supports playback in Dolby Atmos format which provides 360-degree placement and movement of sounds including overhead sound
- Supports playback in DTS:X, which is DTS's next-generation object-based surround sound technology that includes height to deliver a fully-immersive listening experience to your living room
- Dolby Surround listening mode expands 2 ch, 5.1 ch or 7.1 ch source to available speaker configurations
- Equipped with 4K compatible HDMI IN/OUT jacks
- Equipped with 2 HDMI output jacks
- Supports the HDMI Standby Through function which allows signal transmission from players to the TV in standby state
- Supports HDCP2.2, a strict copy-protection for providing high quality content (HDMI IN1 to IN3/HDMI OUT MAIN/SUB)
- Supports ARC (Audio Return Channel)
- Supports USB storage playback
- Supports variety of network functions such as Internet Radio, DLNA, AirPlay etc.
- Supports Wi-Fi and Bluetooth®
- Equipped with a PHONO jack enabling connection with a turntable
- Bi-Amping capability
- A/V Sync Function to correct deviation of audio and video
- Multi-zone function which allows you to play a different source in another room from the main room
- 32 bit DSP (Digital Signal Processor) with excellent calculation performance
- Music Optimizer™ for compressed digital music files
- Phase Matching Bass System
- Automatic speaker setup available using supplied calibrated microphone (AccuEQ Room Calibration)
- Supports playback of MP3, WMA, WMA Lossless, FLAC, WAV, Ogg Vorbis, Apple Lossless, DSD, Dolby TrueHD via network and USB storage device (the supported formats will differ depending on the use environment)

Refer to the back cover for supplied accessories.

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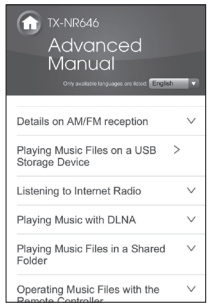
Advanced Manual (on the web)

The Advanced Manual, published as an e-manual on the web, has more detailed information and advanced settings. The Advanced Manual is created in a format that makes it easy to read on a PC or Smartphone. The Advanced Manual has the following content:



- Details on AM/FM reception
- Playing Music Files on a USB Storage Device
- Listening to Internet Radio
- Playing Music with DLNA
- Playing Music Files in a Shared Folder
- Operating Music Files with the Remote Controller
- Listening Mode
- Advanced Settings
- Operating Other Components with the Remote Controller
- Advanced speaker connections
- Connecting and Operating Onkyo RI Components
- Firmware Update
- Troubleshooting
- Reference Information

Advanced Manual found here
http://www.onkyo.com/manual/txnr646/adv/en.html

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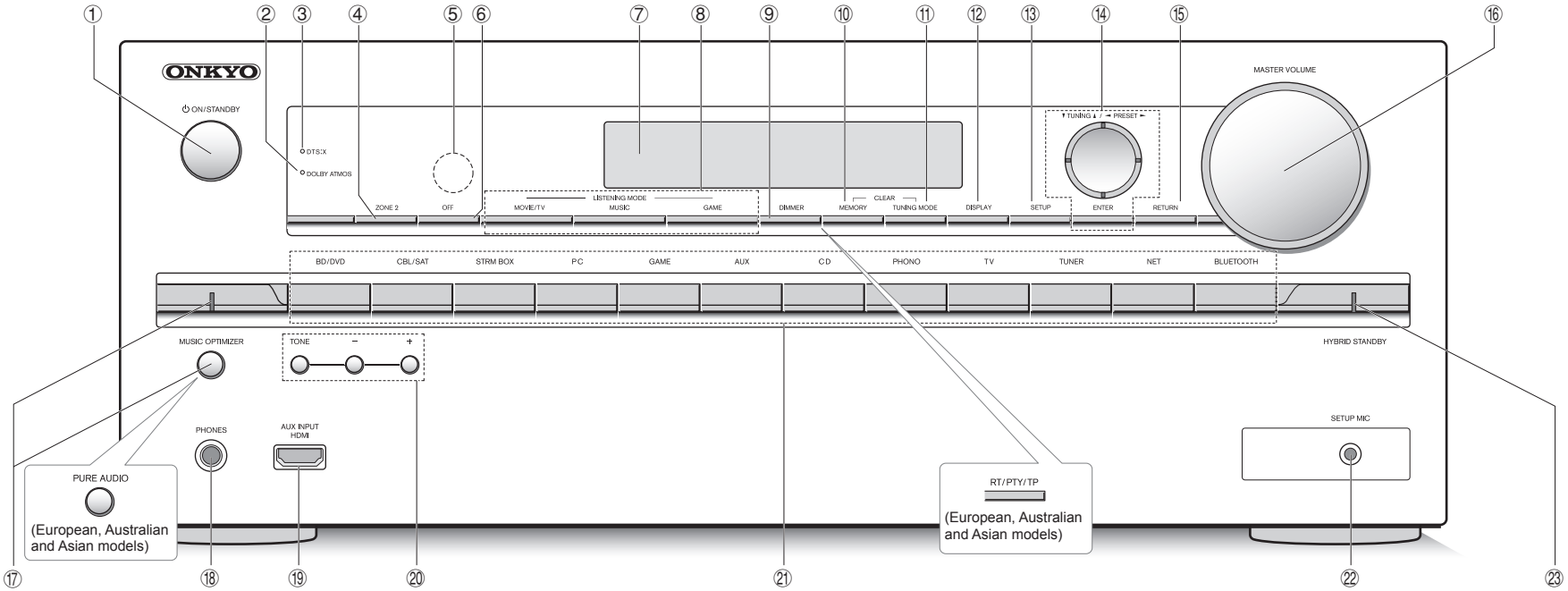

Front Panel

① **⏻ON/STANDBY button**: Turns the unit on or into standby mode.
② **DOLBY ATMOS indicator**: Lights when playing Dolby Atmos.
③ **DTS:X indicator**: Lights when playing DTS:X.
④ **ZONE2 button**: Controls the multi-zone function.
⑤ **Remote control sensor**: Receives signals from the remote controller.
⑥ **OFF button**: Switches the multi-zone function off.
⑦ **Display**
⑧ **LISTENING MODE buttons**: Allow you to select the listening mode.
⑨ **DIMMER button (North American and Taiwanese models)**: Switches the brightness of the display.
RT/PTY/TP button (European, Australian and Asian models): Can be used when receiving the station transmitting text information.
⑩ **MEMORY button**: Registers a station.
⑪ **TUNING MODE button**: Switches the tuning mode.
⑫ **DISPLAY button**: Switches the information on the display.
⑬ **SETUP button**: Used when making settings.
⑭ **Cursor buttons, ▼TUNING▲ button, ◄PRESET► button and ENTER button**: Move the cursor and confirms the selection. When listening to AM/FM broadcasting, tune in to the station with ▼TUNING▲ or select the registered station with ◄PRESET►.
⑮ **RETURN button**: Returns the display to the previous state.
⑯ **MASTER VOLUME**: Allows you to adjust the volume.
⑰ **MUSIC OPTIMIZER button/indicator (North American and Taiwanese models)**: Turns on/off the MUSIC OPTIMIZER function that improves the quality of the compressed audio.
PURE AUDIO button/indicator (European, Australian and Asian models): The display and analog video circuits are turned off to switch the unit to Pure Audio mode and provide purer sound.
⑱ **PHONES jack**: Stereo headphones with a standard plug are connected.
⑲ **AUX INPUT HDMI jack**: A HD camera or such other device is connected.
⑳ **TONE and Tone Level buttons**: Adjust the high tone and low tone.
㉑ **Input selector buttons**: Switch the input to be played.
㉒ **SETUP MIC jack**: The supplied speaker setup microphone is connected.
㉓ **HYBRID STANDBY indicator**: Lights if the unit enters standby mode when the HDMI Standby Through, USB Power Out at Standby, Network Standby or Wakeup from Bluetooth function is enabled.

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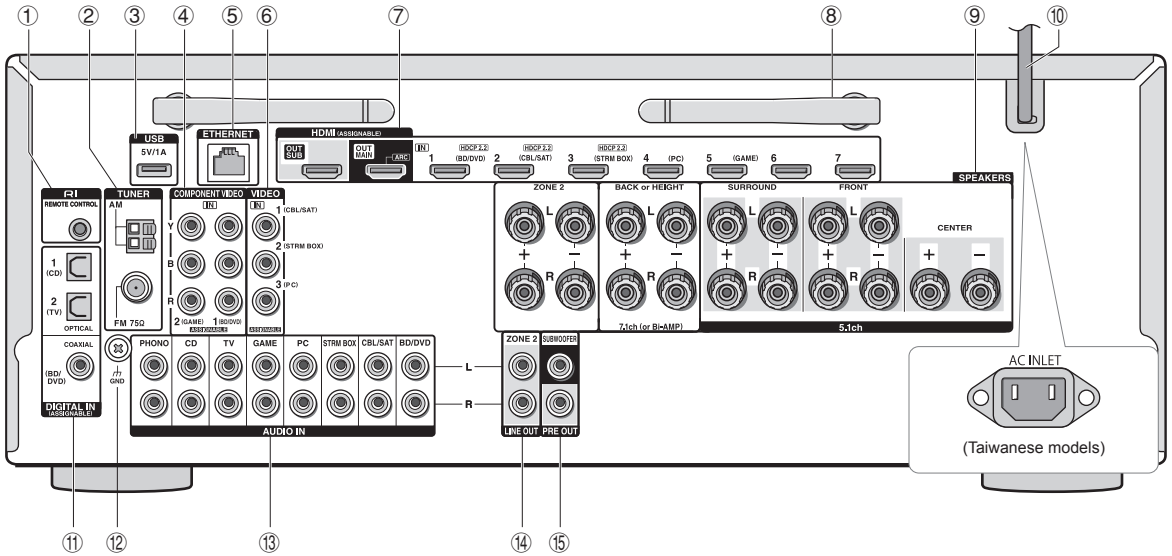
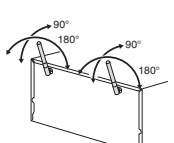
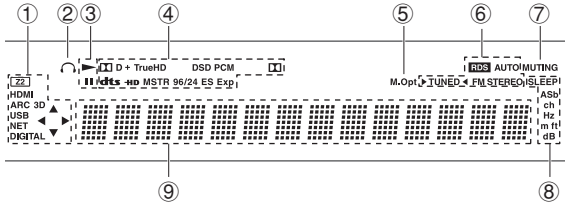


Rear Panel

① **RI REMOTE CONTROL jack**: An Onkyo product with RI jack can be connected and synchronized with this unit.
② **TUNER AM/FM (75Ω) terminal**: The supplied antennas are connected.
③ **USB port**: A USB storage device is connected so that music files stored in it can be played. USB devices can be supplied with power when connected with a USB cable.
④ **COMPONENT VIDEO IN jack**: Component video input jack
⑤ **ETHERNET port**: Used for LAN connection
⑥ **COMPOSITE VIDEO IN jacks**: Analog video signals are input.
⑦ **HDMI IN/OUT jacks**: Digital video signals and audio signals are transmitted between the unit and the connected devices.
⑧ **Wireless antenna**: Used for Wi-Fi connection or when using a Bluetooth-enabled device. Adjust their angles according to the connection status.



⑨ **SPEAKERS terminals**: Speakers are connected. To use the Multi-zone function, connect the speakers in the separate room to the ZONE2 speaker terminals.
⑩ **Power cord (North American, European, Australian and Asian models)**
AC INLET (Taiwanese models): The supplied power cord is connected.
⑪ **DIGITAL IN COAXIAL/OPTICAL jacks**: Digital audio signals are input.
⑫ **GND terminal**: The ground wire of the turntable is connected.
⑬ **COMPOSITE AUDIO IN jacks**: Analog audio signals are input.
⑭ **LINE OUT ZONE 2 jack**: Audio output jack connected to the pre-main amplifier for multi-zone playback in a separate room.
⑮ **PRE OUT SUBWOOFER jack**: A subwoofer with built-in amplifier is connected.



Display

① Lights in the following conditions. "Z2": Zone 2 output is on. / "HDMI": HDMI signals are input and HDMI input selector is selected. / "ARC": Audio signals are input from ARC compatible TV and TV input selector is selected. / "3D": Input signals are 3D. / "USB" (∗): "NET" input is selected and USB storage device is connected. / "NET" (∗): "NET" input is selected and the unit is connected to the network. / "DIGITAL": Digital signals are input and the digital input selector is selected. / Cursor indicators: NET or USB is controlled.
∗ "USB" and "NET" will flash if the connection is not correct.
② Stays lit when headphones are connected.
③ Lights when NET or USB is controlled.
④ Lights according to the type of input digital signals and the listening mode.
⑤ Stays lit when Music Optimizer is enabled.
⑥ Lights in the following conditions. "AUTO": Tuning mode is auto. / "►TUNED◄": Receiving AM/FM radio. ►◄ flashes while tuning is automatically performed. / "FM STEREO": Receiving FM stereo. / "RDS" (European, Australian and Asian models): Receiving RDS broadcasting.
⑦ "MUTING": Flashes when muting is on.
⑧ Lights in the following conditions. "SLEEP": Sleep timer has been set. / "ASb" (Auto Standby): Auto Standby is on. / "ch": Channel is being set. / "Hz": Crossover frequencies are being set. / "m/ft": Speaker distances are being set. / "dB": Speaker volume is being set.
⑨ Displays various information of the input signals. Pressing DISPLAY displays the type of input digital signals and the listening mode.

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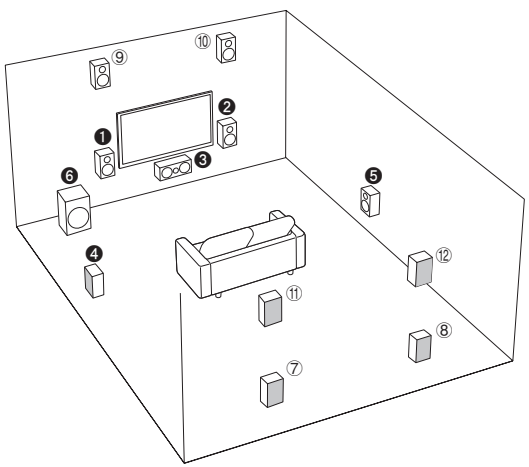
Step 1: Connections

1 Connecting speakers

Speaker layout



Important: The power cord must be connected only after all other connections are completed.

❶ ❷ Front speakers
❸ Center speaker
❹ ❺ Surround speakers
❻ Subwoofer
⑦ ⑧ Back speakers
⑨ ⑩ Height speakers (Front High)
⑪ ⑫ Height speakers (Rear High)

- 5.1 ch: ❶❷❸❹❺❻
- 7.1 ch: ❶❷❸❹❺❻+⑦⑧ or ❶❷❸❹❺❻+⑨⑩ or ❶❷❸❹❺❻+⑪⑫
  ⑦⑧ speakers, ⑨⑩ speakers and ⑪⑫ speakers share the same speaker terminals. Select either of the groups.

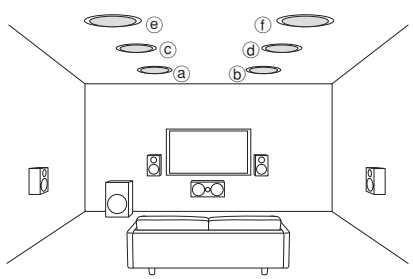
- To enjoy the Dolby Atmos listening mode, height speakers or back speakers need to be installed. There are a variety of height speakers apart from this type. see the next section for details.
- To use the multi-zone function, see "Multi-zone" in "Step 3: Playing Back".

Characteristics of speaker types

❶❷ output front stereo sound and ❸ output center sound such as dialogs and vocals. ❹❺ create back sound field. ❻ reproduces bass sounds and creates rich sound field.
Connecting ⑦⑧ speakers, ⑨⑩ speakers or ⑪⑫ speakers enables playback in 7.1 ch configuration. ⑦⑧ (back) speakers improve sense of envelopment created by back sound field as well as seamlessness of back sounds, providing more natural sound experiences in the sound field. ⑨⑩ or ⑪⑫ (height) speakers produce surround effects on a height plane. This unit can perform optimal sound field processing for the type of height speakers actually installed and registered in "Initial Setup".

Height speaker types

Installing speakers in ceiling

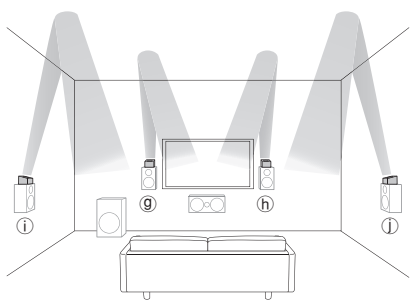


ⓐ ⓑ Top Front
ⓒ ⓓ Top Middle
ⓔ ⓕ Top Rear

Ceiling speakers, etc. are used for maximizing effects in Dolby Atmos or Dolby Surround listening mode. Install Top Front speakers so that they are positioned at a point between directly above the listening position and directly above the front speakers. Install Top Middle speakers so they are directly above the listening position. Install Top Rear speakers so they are positioned at a point between directly above the listening position and directly above the back speakers. You can select (ⓐ)(ⓑ), (ⓒ)(ⓓ) or (ⓔ)(ⓕ) on the unit. For connection with the unit, use the SPEAKERS BACK or HEIGHT terminals.

- Dolby Laboratories recommends placing the speakers as described in "Installing speakers in ceiling" to obtain the best Dolby Atmos effect.

Using Dolby Enabled Speakers



ⓖ ⓗ Dolby Enabled Speakers (Front)
ⓘ ⓙ Dolby Enabled Speakers (Surround)

A Dolby Enabled Speaker is specially designed to be used as a height speaker. There are two types of Dolby Enabled Speakers; one type is designed to be placed on top of other speakers such as front speakers and surround speakers,

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and the other type is designed to be integrated with normal speakers. Dolby Enabled Speakers placed with their diaphragms facing toward the ceiling create higher effect in the Dolby Atmos and Dolby Surround listening modes by providing sounds echoing off the ceiling. You can select (ⓖ)(ⓗ) or (ⓘ)(ⓙ) on the unit. For connection with the unit, use the SPEAKERS BACK or HEIGHT terminals.

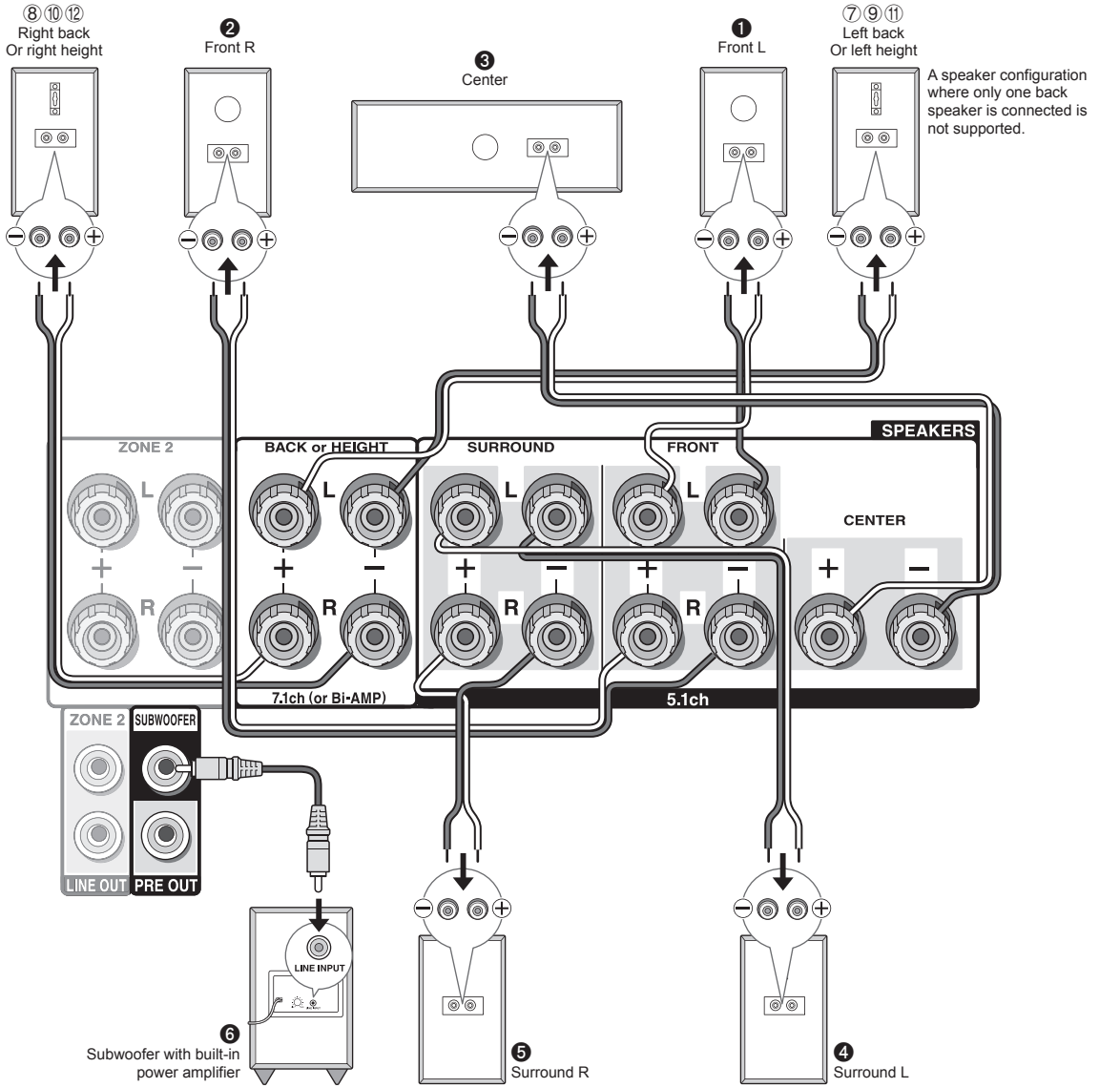
When playing Dolby Atmos, the speakers required depend on how you have setup your back speakers or height speakers. The following shows combinations of speakers for reproducing Dolby Atmos.

Connection pattern	Back or Height	Front	Center	Surround
1	Back	◎	○	◎
2	Front High	◎	○	○
3	Rear High	◎	○	○
4	Top Front	◎	○	○
5	Top Middle	◎	○	○
6	Top Rear	◎	○	○
7	Dolby Enabled Speaker (Front)	◎	○	○
8	Dolby Enabled Speaker (Surround)	◎	○	◎

◎: Required, ○: Optional
∗ Connection of a subwoofer is optional.

Important: (North American and Taiwanese models) Connect speakers with 6 Ω to 16 Ω impedance. Using a speaker with less impedance than the supported value may result in failure.

Important: (European, Australian and Asian models) Connect speakers with 4 Ω to 16 Ω impedance. You have to change the setting if any of the speakers have 4 Ω or more to less than 6 Ω impedance. Using a speaker with less impedance than the setting may result in failure. You can set up by viewing the guidance displayed on the TV screen. Select the item with the cursor buttons of the remote controller and press ENTER to confirm your selection. To return to the previous screen, press RECEIVER. Press RECEIVER and then SETUP on the remote controller. Select "2. Speaker" - "Configuration" - "Speaker Impedance" and change the default value from "6ohms" to "4ohms".



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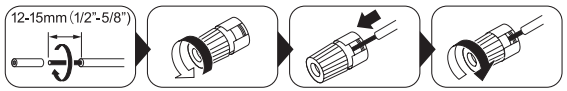
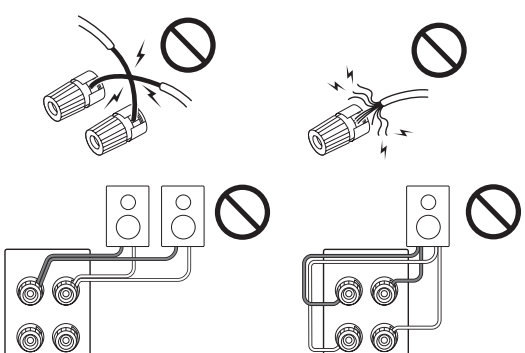
Instructions on how to connect speakers

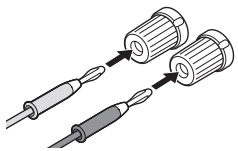


Cut and remove the plastic coating from the end of the speaker cable, twist the core and connect it to the terminal. Be sure to make correct connection between the unit's jacks and speaker's jacks (+ to + and - to -) for each channel. If connection is wrong, a bass sound may become poor due to reverse phase. Up to two subwoofers with built-in power amplifier can be connected to the subwoofer jacks. Set the cut-off filter selection switch of the subwoofer to DIRECT. If the subwoofer does not have a cut-off filter selection switch but has a cut-off frequency adjusting dial, turn it to the maximum frequency. If your subwoofer does not have built-in power amplifier, you can connect a power amplifier between the unit and the subwoofer.

- The speaker setting is 7.1 channels at the time of purchase. You can change it manually or by using automatic speaker setting.
- Short-circuiting the + cable and - cable or contacting the cable core to the rear panel of the unit may cause failure. Also do not connect two or more cables to one speaker terminal or one speaker to several terminals.



When using commercially available banana plugs: tighten the speaker terminals to the end and then insert the banana plugs. Do not insert the core of speaker cable directly into the hole for banana plug of speaker terminal. (North American models)



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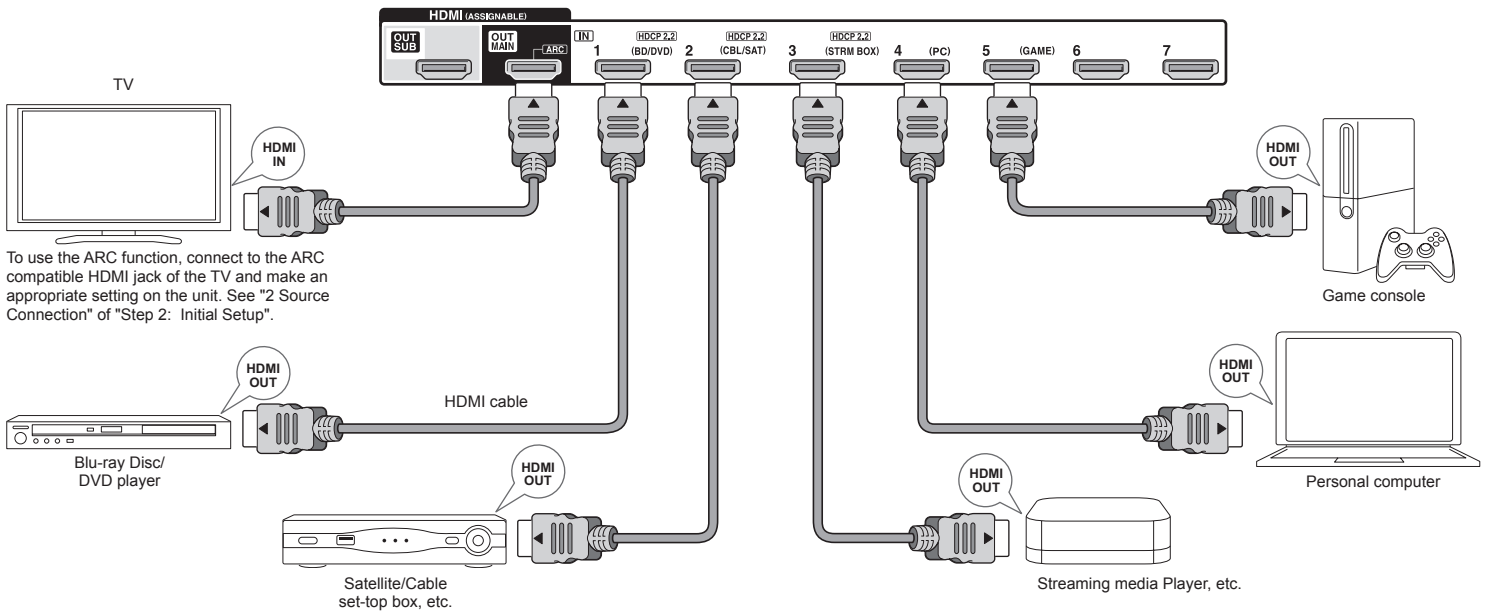
2 Connecting the TV and players



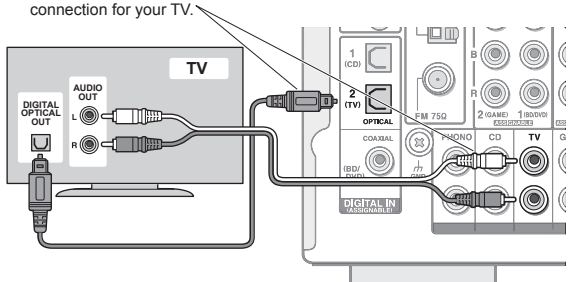
HDMI cable connection

The unit has many HDMI jacks on its rear panel and each of them corresponds to an input selector button of the same name on the front panel. For example, a Blu-ray Disc player will be connected to the HDMI IN1 jack and the BD/DVD button on the front panel will be used to listen to the playback sound (if the player is CEC compliant, input will be switched automatically when play is started). If you add another Blu-ray Disc player, you can use any other jack than HDMI IN1. It is possible to change assignment of the input jacks and input selector buttons. For how to make settings, see the Advanced Manual.

To connect the TV and the unit, connect the HDMI OUT MAIN jack of the unit and the HDMI IN jack of the TV using a HDMI cable. With this connection, it becomes possible to display the setting screen of the unit on the TV or transmit video/audio signals from the player to the TV. If your TV supports ARC (Audio Return Channel), it is possible to play the TV sound with the AV receiver's speakers with this connection only. If your TV does not support ARC, you need, in addition to the HDMI OUT MAIN jack connection, a digital optical cable connection between the digital audio out optical jack of the TV and the DIGITAL IN OPTICAL jack of the unit or an analog audio cable connection between the audio output jack of the TV and the AUDIO IN TV jack of the unit.

● Audio connection with a TV not supporting ARC

∗ Select an appropriate connection for your TV.



The unit supports the HDMI Standby Through function that allows video and audio signal transmission from players to the TV even if the unit is in standby. You have to

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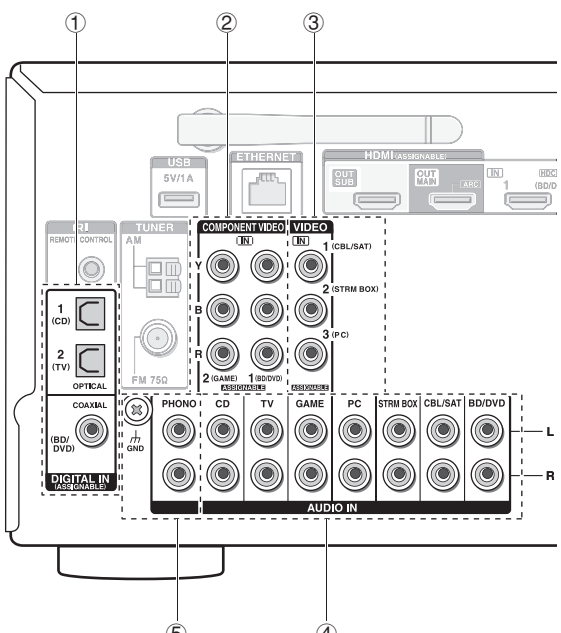
modify the settings to enable the input selection link with CEC (Consumer Electronics Control) compliant device, connection with ARC compatible TV, and HDMI Standby Through function. See "2 Source Connection" of "Step 2: Initial Setup".

- Another TV can be connected to the HDMI OUT SUB jack.
- To enjoy HDCP2.2 protected video, connect the player to one of the HDMI IN1 to IN3 jacks and connect the unit and the TV via HDMI. You will be unable to view images protected by HDCP2.2 if your TV does not have a HDCP2.2 compatible input jack.
- To play 4K or 1080p video, use a high speed HDMI cable or high speed HDMI with Ethernet cable.

Connecting Components without HDMI

If your AV component does not have HDMI jack, use an available jack of your component for cable connection with this unit.



① A player with a digital audio out jack can be connected.

Digital optical cable (OPTICAL)

∗ As the digital in optical jack of the unit has a cover, push in the cable against the cover as it is turned inside.

Digital coaxial cable (COAXIAL)

② A player with component video output jacks can be connected.

Component video cable

∗ Its transmitted video has higher quality than that of composite video cable.

③ A player with a composite video output jack can be connected.

Composite video cable

④ A player with analog audio out jacks can be connected. When using jacks ② and ③ for video input, connect to the audio input jacks corresponding to the jacks connected at ② and ③. (For example, when video input connection is to the ② BD/DVD jack, the audio input connection should also be to the ④ BD/DVD jacks.)

∗ It is possible to change assignment of the input jacks and input selector buttons. For how to make settings, see the Advanced Manual.

∗ To enjoy multi-zone playback with a player, connect player to either ① or ④ jacks.

Analog audio (RCA) cable

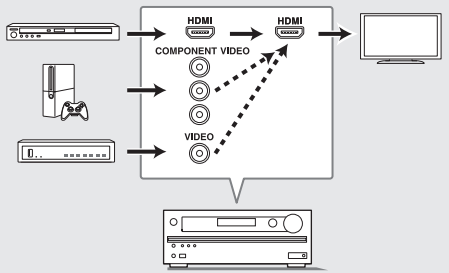
⑤ Connect a turntable that uses an MM type cartridge and does not have a built-in audio equalizer. If the connected turntable has a built-in audio equalizer, connect it to the ④ CD jack.

∗ If it uses an MC type cartridge, install an audio equalizer compatible with MC type cartridge between the unit and the turntable by connecting it to the ④ CD jack. For details, refer to the turntable's instruction manual.

∗ If the turntable has a ground wire, connect it to the GND terminal of this unit. If connecting the ground wire increases noise, disconnect it.

Video upconversion function

Video signals input to the composite video input jack or the COMPONENT VIDEO IN jacks will be upconverted to HDMI signals and then output from the HDMI output jack.



∗ When you upconvert video signals input to the COMPONENT VIDEO IN jacks and output them from the HDMI OUT jack, set the output resolution of the player to 480i or 576i. If the input has 480p/576p or higher resolution, a message prompting you to change the resolution setting will appear. If your player does not support 480i or 576i output, use the composite video jack.

∗ If multiple video signal inputs are put into one input system, the output will be made in the order of HDMI, COMPONENT VIDEO/composite video.

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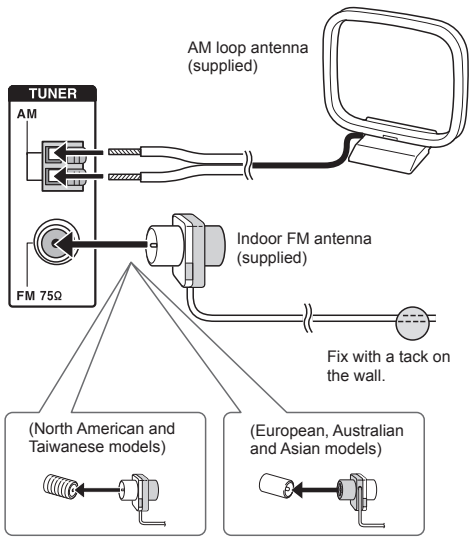
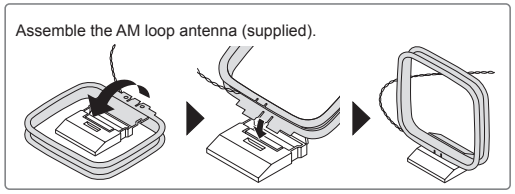
3 Other connections

AM/FM antenna connections

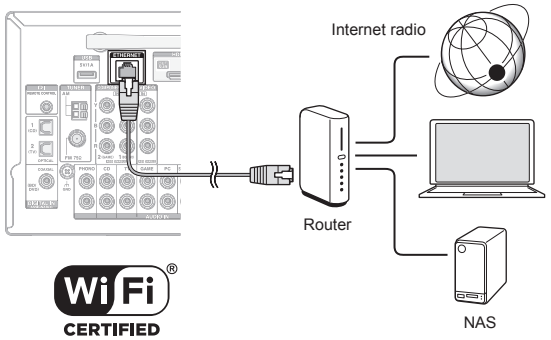
Connect the antennas to listen to AM/FM broadcast. When listening to the broadcast for the first time, adjust the antenna position and orientation to get the best reception.





Network connection

You can enjoy Internet radio, DLNA and AirPlay by connecting the unit to LAN. The unit can be connected to the router with an Ethernet cable or to the wireless LAN router with Wi-Fi connection. In case of wired connection, connect the Ethernet cable to the Ethernet port. See "4 Network Connection" of "Step 2: Initial Setup" for Wi-Fi settings.



Headphones connection

Connect stereo headphones with a standard plug (1/4 inch or ø 6.3 mm) to the PHONES jack on the front panel. Sound from the speakers will be off while you are using the headphones.

- If you selected any other listening mode than Pure Audio (European, Australian and Asian models), Stereo, Mono and Direct, connecting headphones will switch the listening mode to Stereo.

Power cord

Taiwanese models include removable power cords. Connect the power cord to AC INLET of the unit and then connect to the outlet. Always disconnect the outlet side first when disconnecting the power cord. When the unit is turned on, a large instantaneous current may flow affecting functionality of the computer and other devices, so it is recommended to use a separate outlet.

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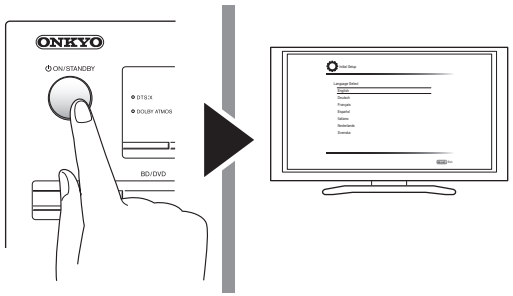
Step 2: Initial Setup

"Initial Setup" automatically starts on the TV when you first turn the unit on.



Settings proceed in the following order:

1 AccuEQ Room Calibration

- Automatic calibration for optimum speaker settings

2 Source Connection

- Checking that each input source is connected correctly
- HDMI link function settings

3 Remote Mode Setup

- Settings required to operate other AV Components with the Remote Controller

4 Network Connection

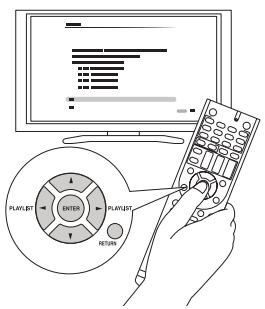
- Checking network connections
- Wi-Fi settings

✳ **Firmware update notification**: If the unit is connected via LAN and there is firmware update available, the "Firmware Update Available" message will appear. To execute updating, select "Update Now" with the cursor buttons of the remote controller and press ENTER.
The unit automatically turns itself into standby mode about 3 minutes after "Completed!" appears on the display, and updating will be complete.

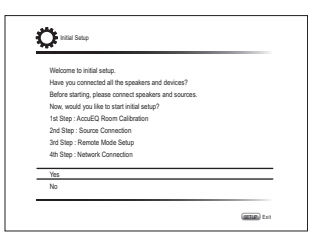
Before Start

Setup is performed as a series of responses to questions asked by the unit. Select the item with the cursors of the remote controller and press ENTER to confirm your selection. To return to the previous screen, press RETURN.

- You need to use HDMI connection between the unit and TV.
- Switch the input on the TV to that assigned to the unit.



Select the language first. Next, a summary of the initial settings is displayed. Select "Yes" in this screen and press ENTER on the remote controller.



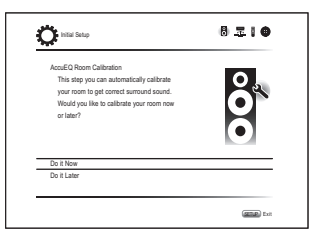
Re-doing initial setup: If you terminate the procedure on the way or change the setting made in the initial setup and want to call up the setup wizard again, press RECEIVER and then SETUP on the remote controller, select "8. Miscellaneous" - "Initial Setup", and press ENTER.

1 AccuEQ Room Calibration

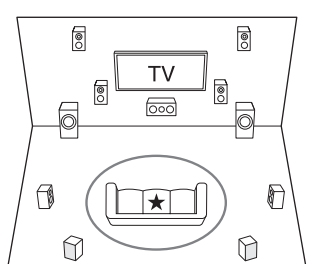
The test tone coming from each speaker will be measured to enable setting of the number of speakers, volume level, each speaker's optimum crossover frequencies, and distance from the primary listening position, and also enable correction of distortion caused by the room acoustic environment.

- You cannot return to the previous screen during speaker setup, even if you press RETURN.

1. Place the speaker setup microphone.



When the screen above is displayed, before starting the procedure, place the supplied speaker setup microphone at the measurement position ★ by referring to the following figure.



○ : Listening area ★ : Measurement position with microphone

✳ Correct measurement will not be possible if the microphone is held by hand. Measurement is not possible if headphones are being used.

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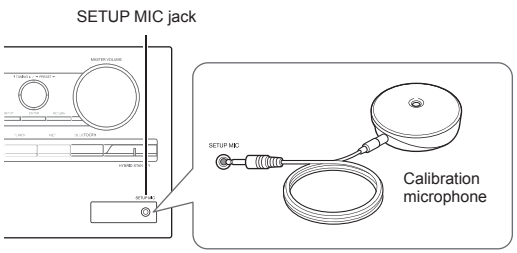
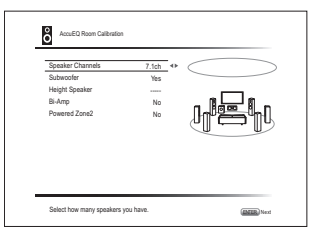
∗ The subwoofer sound may not be detected since it is extremely low frequencies. Set the subwoofer volume to around the half of its maximum volume and make its frequency to the maximum level.
∗ Measurement may be interrupted if there is ambient noise or radio frequency interference. Close the window and turn off the home appliance and fluorescent light.

2. **After placing the microphone at the measurement position, select "Do it Now" with the cursors and press ENTER.**
3. **When "Please plug microphone that came in a box with AV receiver" is displayed, connect the microphone to the SETUP MIC jack of the unit.**



4. **Select the settings for the connected speakers, the type of the height speakers, and other appropriate settings.**



When the screen above is displayed, set the items with the cursor buttons on the remote controller. Refer to the on-screen diagram for "Speaker Channels", which changes each time a different number of channels is selected. When all the items have been set, press ENTER on the remote controller. After that, follow the guidance displayed on the TV screen to operate the unit.

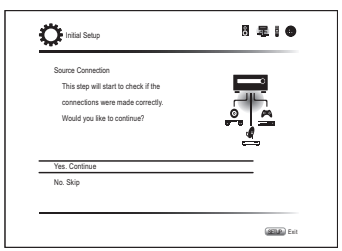
- Refer to the content of an item, which appears on the lower left of the screen when the cursor is on the item.

5. **The test tones sound from the connected speakers and automatic speaker setting starts.**
   Measurement will be made 3 times or more for each speaker. It takes several minutes to be completed. Keep the room as quiet as possible during measurement. If any of the speakers do not produce the test tone, check for disconnection.
   - During measurement, each speaker outputs the test tones at a high volume. Be careful of sound leak that may disturb your neighbors, or be careful not to frighten young children.
6. **When the measurement is completed, the measurement result is displayed.**
   Press ◄/► on the remote controller to check the settings. Press ENTER with "Save" selected. Select "On" in the next screen and press ENTER on the remote controller.
   - You should normally select "On (All Channels)", and to disable just the front speakers, you should select "On (Except Front Left/Right)".
   - If there is an error message, follow the on-screen instruction to remove the error cause.
7. **When "Please unplug setup microphone." is displayed, disconnect the microphone.**

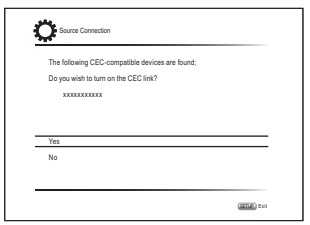
2 Source Connection

You can check the connections on the different inputs and make HDMI link function settings.

1. **When the Source Connection start screen is displayed, select "Yes, Continue" with the cursors and press ENTER.**



2. **Select the desired input to check the connection and press ENTER.**
   Start playback of the selected device. If connection is correct, video/audio of the input source selected on the unit will be played.
3. **After checking the connection, select "Yes" with the cursors and press ENTER.**
   - If you select "No" and press ENTER, the error cause will be displayed. Follow the guidance to remove the error cause and check the connection again.
4. **Select "Yes" with the cursors and press ENTER on the remote controller to check the connection of other inputs or select "No, Done Checking" and press ENTER to skip.**
   If you select "Yes", you will return to the screen of step 2.
   If you select "No, Done Checking", you will proceed to step 5.
5. **Set the CEC link function.**
   Select "Yes" to enable the HDMI link function with CEC-compliant equipment, then select "Yes" again in the next screen.



If you select "Yes", the connection with ARC compatible TV and HDMI Standby Through function will be set to "On" and enabled.

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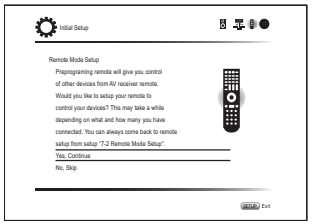
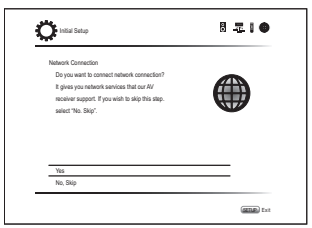
3 Remote Mode Setup



You can enable operation of the other components using the remote controller of the unit. When the Remote Mode Setup start screen is displayed, select "Yes, Continue" with the cursors and press ENTER on the remote controller. Follow the guidance to select the desired REMOTE MODE button and in the keyboard screen, enter the first three characters of the brand name of the device you are going to program and search for the remote control code. The guidance will also explain how to set the remote controller.

4 Network Connection



You can check the network connection and make the Wi-Fi setting. When the Network Connection start screen is displayed, select "Yes" with the cursors and press ENTER on the remote controller. If you select "Wired" in the next screen, you can view the LAN cable connection status. To make the Wi-Fi setting, select "Wireless", press ENTER on the remote controller and follow the sections below.

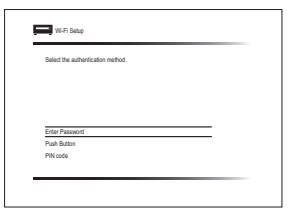
Make the following preparations.
Wi-Fi connection requires an access point such as wireless LAN router (∗). Write down the SSID and password (key) of the access point if they are shown in the label of the main body. If the access point has an automatic setting button (may be called differently according to the manufacturer), you can set up without inputting the password. For how to use the automatic setting button of the access point, refer to its instruction manual.

∗ The unit supports Wi-Fi connection with 2.4 GHz access point.

1. **Select the method of Wi-Fi connection with the cursors and press ENTER.**
   Scan Networks: Use this unit to search for and connect to a wireless LAN router or other access point.
   Use iOS Device (iOS7 or later): Select this method to let this unit share the Wi-Fi settings with your iOS device and establish a Wi-Fi connection with ease. (The device must be compatible with iOS version 7 or later.)

■ If you selected "Scan Networks"

2. **Select the SSID of the access point to be connected with the cursor buttons and press ENTER.**
   When the SSID of the access point appears on the TV screen, select the desired access point.
   - If you changed the initial setting of the access point to skip password entry, step 3 is unnecessary.
   - If you changed the initial setting of the access point to hide the SSID, see "When the access point is not displayed".
3. **Select and set the authentication method.**
   The "Enter Password" screen may be displayed automatically if the wireless LAN router does not have an automatic setting button.



When this screen is displayed, select and set one of the three authentication methods: "Enter Password", "Push Button" and "PIN code". See below for details of and how to set each method.

Enter Password: Enter the password of the access point to establish connection.
① Select "Enter Password" with the cursor buttons and press ENTER.
② Enter the password (∗) on the keyboard screen, select "OK" with the cursor buttons and press ENTER.
∗ Select "A/a" and press ENTER to toggle between upper and lower case. Select "←" or "→" and press ENTER to move the cursor to the selected direction. Select ⌫ and press ENTER to delete the character at the left of the cursor position. To select whether to mask the password with "∗" or display it in plain text, press D on the remote control. Press +10 on the remote controller to switch between upper and lower case. Press CLR to delete all the input characters.
③ If the security method of the access point to be connected is WEP, select "Default Key ID", select "OK" and press ENTER.

Push Button: Use the automatic setting button of the access point to establish connection.
① Select "Push Button" with the cursor buttons and press ENTER.
② Hold down the automatic setting button of the access point for the necessary seconds, select "OK" with the cursor buttons and press ENTER.

PIN code: Select this method when the automatic setting button of the access point is beyond the reach. Select "PIN code" with the cursor buttons and press ENTER to display the 8-digit PIN code. Register the displayed PIN code to the access point, select "OK" with the cursor buttons and press ENTER. For how to register the PIN code to the access point, refer to its instruction manual.

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When the access point is not displayed
Select "Other..." with the ► cursor on the remote controller and press ENTER to display the keyboard screen. Input the SSID and password. Make the following settings according to the router setting.

■ **WPA/WPA2 method**
Select "WPA" or "WPA2" in "Security Method", select "OK" and press ENTER.

■ **WEP method**
Select "WEP" in "Security Method" and select "Default Key ID". Then select "OK" and press ENTER.

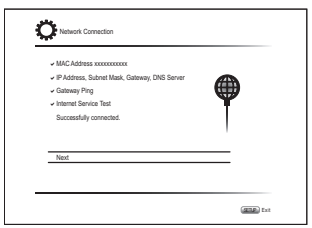
- If encryption setting has not been made on the wireless LAN router, select "None" in "Security Method", select "OK" and press ENTER.

■ If you selected "Use iOS Device (iOS7 or later)"

2. **On the iOS device, go to "Settings"-"Wi-Fi" and turn on the setting, then select this unit in "SETUP NEW AIRPLAY SPEAKER".**
3. **Tap "Next".**

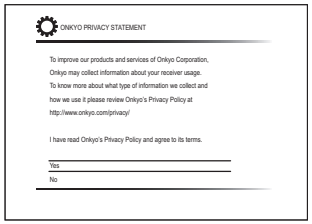
■ When connection is successful

"Successfully Connected" is displayed on the screen.



If the screen is not displayed, try doing the setting again. If "Push Button" connection with the wireless LAN router does not work, try "Enter Password".

- A confirmation screen asking you to agree to the privacy policy is displayed after connection. Select "Yes" and press ENTER to indicate agreement.



■ Terminating initial setup

After finishing the initial setup, keep "Finished" selected and press ENTER on the remote controller. Connection and setting of the unit is now complete.

Audio output of connected players
To enjoy digital surround sound including Dolby Digital and DTS, audio output should be set to "Bitstream output" on the connected Blu-ray Disc Player or other device.
Depending on the settings on the Blu-ray Disc Player, there may be cases when Dolby TrueHD, Dolby Atmos, and DTS-HD Master Audio is not output according to the format of the source.
In this case, in the Blu-ray Disc Player settings try setting "BD video supplementary sound" (or secondary sound) to "Off". Change the listening mode after changing the setting to confirm.

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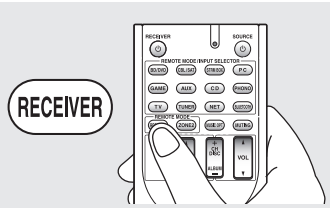
Step 3: Playing Back

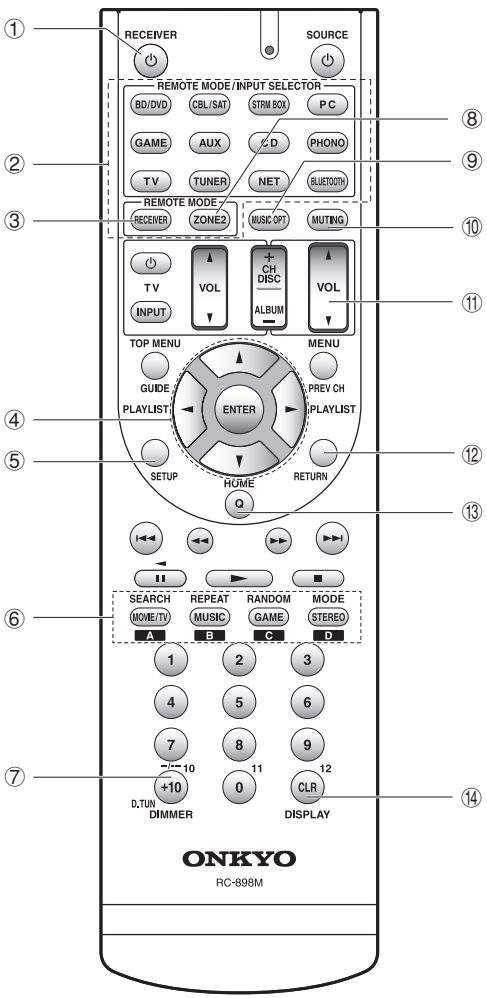
1 Basic Operations



● **When using the remote controller to operate the AV receiver**: The remote controller of this unit has the remote mode function for controlling other devices. You cannot control this unit when the remote controller is in the remote mode other than RECEIVER mode (for controlling this unit). Be sure to press ③ RECEIVER to select the RECEIVER mode before starting operation.

1. **Turning the power on.**
   Press ① ⏻ RECEIVER on the remote controller to turn the power on.
   - Switch the input on the TV to that assigned to the unit. Use the TV's remote controller.
2. **Select the input on the unit.**
   Press the ② INPUT SELECTOR button for the player you want to listen to. Press TV to listen to the TV's sound. You can also use the input selector buttons on the main unit.
   - Input will automatically be selected if the TV or player is CEC compliant and connected to the unit with HDMI cable.
3. **Select the desired listening mode.**
   After pressing ③ RECEIVER, press the ⑥ listening mode buttons to switch the mode so that you can enjoy different listening modes.
4. **Adjust the volume with ⑪ VOL.**

Part names and functions of the remote controller



① ⏻ **RECEIVER button**: Turns the unit on or into standby mode.
② **REMOTE MODE/INPUT SELECTOR buttons**: Switch the input to be played. Furthermore, by registering a particular remote control code to a button, you can switch the remote control mode to operate other equipment by pressing that button.
③ **RECEIVER button**: Switches the remote controller to the mode for operating this unit.
④ **Cursor buttons and ENTER button**: Move the cursor and confirms the selection.
⑤ **SETUP button**: Displays the screen for making various settings for this unit.
⑥ **Listening mode buttons**: Allow you to select the listening mode.
MOVIE/TV button: You can select a listening mode suitable for movies and TV programs.
MUSIC button: You can select a listening mode suitable for music.
GAME button: You can select a listening mode suitable for games.
STEREO button: You can select a listening mode for stereo and all channel stereo sources.
- For details on the listening modes, see the Advanced Manual.

⑦ **DIMMER button**: Switches the brightness of the display.
⑧ **ZONE2 button**: For use when the unit is connected with a pre-main amplifier or speakers in a separate room and sound is played there.
⑨ **MUSIC OPT button**: Turns on/off the MUSIC OPTIMIZER function that improves the quality of the compressed audio.
⑩ **MUTING button**: Temporarily mutes audio. Press again to cancel muting.
⑪ **VOLUME buttons**: Allow you to adjust the volume. This button also cancels the muting.
⑫ **RETURN button**: Returns the display to the previous state.
⑬ **Q button**: Displays the Quick Setup menu that allows you to quickly access the frequently used setting items including sound quality adjustment.
⑭ **DISPLAY button**: Switches the information on the display.

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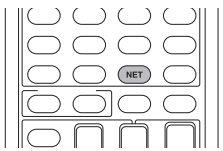
2 Network Functions

You can enjoy sources such as Internet radio by connecting the unit to a network. For details on the operation, see the Advanced Manual.

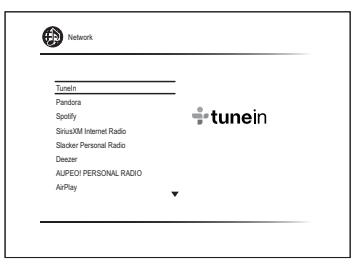
- The on-screen displays are not displayed when the OSD language is set to Chinese. Operate by confirming the display on the main unit. (European, Australian, Taiwanese and Asian models)



Press NET on the remote controller to display the NET TOP screen on the TV. Select the item with the cursors of the remote controller and press ENTER to confirm your selection.

∗ To return to the previous screen, press RETURN.

∗ Available services may vary depending on your area of residence.



Internet radio services

The unit comes preset with Internet radio services (*) such as TuneIn. After selecting the desired service, follow the on-screen instructions, using the cursors to select radio stations and programs, then press ENTER to play.

DLNA

You can play music files stored in the computer or NAS device connected to the network. Select the server with the cursors, select the desired music file and press ENTER to start playback.

- This unit needs to be connected to the same router as a computer or NAS device.

Home media

You can play music files in a shared folder on the computer or NAS device connected to the network. Select the server with the cursors, select the desired music file and press ENTER to start playback.

- This unit needs to be connected to the same router as a computer or NAS device.

USB

Connect the USB storage device to the USB port on the rear of the unit, select the desired folder or music file with the cursors, and press ENTER to confirm and start playback.

3 AirPlay®

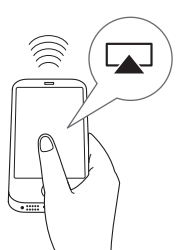
You can wirelessly enjoy music files stored on an iPhone®, iPod touch®, or iPad®. You can also play back music files on the computer with iTunes.

Important: This unit needs to be connected to the network through the same router as the iOS terminal or PC.

■ Playing music files from an iPhone, iPod touch, or iPad

Update the OS version on your iOS device to the latest version before connecting it to this unit.

1. **Press NET on the remote controller.**
2. **Tap the AirPlay icon, select this unit from the list of devices displayed, and click "Done".**



- The AirPlay icon is displayed in the control center if you are using iOS 7 and later. To display the control center, swipe from the bottom of the screen of the iOS device.
- If the AirPlay icon is not displayed, confirm that this unit and the iOS device are both connected to the router correctly.

3. **Play music files from an iPhone, iPod touch, or iPad.**

■ Playing music files from a computer

- AirPlay is compatible with iTunes 10.2 or later.

1. **Press NET on the remote controller.**
2. **Turn on your computer and start iTunes.**
3. **Click the AirPlay icon of iTunes and select this unit from the list of devices displayed.**
4. **Play iTunes music files.**

- If "6. Hardware"-"Power Management"-"Network Standby" is set to on in the Setup menu, then once AirPlay starts, this unit turns on automatically and the "NET" input source is selected. Even if this setting is "Off", if the unit is already on then the "NET" input source can be selected.
- Due to the characteristics of AirPlay wireless technology, the sound produced on this unit may slightly be behind the sound played on the AirPlay-enabled device.
- Information such as the name of the track is displayed on the unit's display during AirPlay playback.
- There may be some differences in how operations are performed depending on the iOS or iTunes version.
- The on-screen displays are not displayed when the OSD language is set to Chinese. Operate by confirming the display on the main unit. (European, Australian, Taiwanese and Asian models)

Volume: The volume of this unit and the AirPlay-enabled device are linked. Take care that the volume does not become too loud when you adjust the volume on the AirPlay-enabled device. You may damage the unit or the speakers. Stop play on the AirPlay-enabled device immediately if the volume becomes too loud at any point.

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4 Bluetooth®

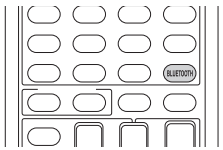
You can wirelessly enjoy music files stored in a smartphone or other Bluetooth-enabled device. The coverage area is 48 feet (15 meters).

- The Bluetooth-enabled device needs to support the A2DP profile.
- Note that connection is not always guaranteed with all Bluetooth-enabled devices.

■ Pairing

Pairing is necessary when connecting the Bluetooth-enabled device for the first time. Before starting the procedure, learn how to enable the Bluetooth setting function and to connect with other devices on the Bluetooth-enabled device.

1. **Press BLUETOOTH on the remote controller.**
   The unit begins pairing and "Now Pairing..." is displayed.



2. **While "Now Pairing..." is on the display, complete connection on the Bluetooth-enabled device in the nearby area within about 2 minutes.**
   If the name of this unit is displayed on the Bluetooth-enabled device's display, select this unit. Paring will end after a short time.
   - If a password is requested, enter "0000".
   - You can pair with another Bluetooth-enabled device by pressing and holding the BLUETOOTH button until "Now Pairing..." is on the display. This unit can store the data of up to 8 paired devices.

■ Playing Bluetooth-enabled devices

If the unit is on and the Bluetooth-enabled device is connected, the input will be automatically switched to BLUETOOTH. Play music in this state.
For details on using the remote controller for these operations, see the Advanced Manual.

- It may take about a minute until connection is established when the unit is on since the Bluetooth function takes some time to start up.
- If the volume setting on the Bluetooth-enabled device is low, the sound will not be output from this unit.
- Due to the characteristics of Bluetooth wireless technology, the sound produced on this unit may slightly be behind the sound played on the Bluetooth-enabled device.
- The on-screen displays are not displayed when the OSD language is set to Chinese. Operate by confirming the display on the main unit. (European, Australian, Taiwanese and Asian models)

5 AM/FM Radio

The Basic Manual explains the method using automatic tuning. For manual tuning, see the Advanced Manual.

1. **Press TUNER on the main unit several times to select either "AM" or "FM".**
2. **Press TUNING MODE on the unit, so that the "AUTO" indicator on the display lights.**
3. **Press ▼TUNING▲ on the unit.**
   The automatic tuning to a radio station starts. Searching stops when one is tuned. When tuned into a radio station, the "►TUNED◄" indicator on the display lights. The "FM STEREO" indicator lights if the radio station is an FM radio station.

Actual display varies depending on the country or the region

Registering a radio station: You can register up to 40 of your favorite AM/FM radio stations.

1. Tune into the AM/FM radio station you want to register.
2. Press MEMORY on the unit so that the preset number on the display flashes.
3. Press ◄PRESET► on the unit several times to select a number between 1 and 40 while the preset number is flashing (about 8 seconds).
4. Press MEMORY again on the main unit to register the station.
   When registered, the preset number stops flashing. To select a preset radio station, press ◄PRESET► on the main unit or CH +/− on the remote controller.

- To delete a preset station, after selecting the preset number you want to delete with ◄PRESET► on the main unit, press TUNING MODE while holding down MEMORY on the main unit. When the preset number is deleted, it disappears from the display.

AM/FM frequency step setting
It may be necessary for you to change the frequency step to tune the radio in your area. Change the step with the following procedure. Note that when this setting is changed, all radio presets are deleted.

1 After pressing RECEIVER/RECEIVER on the remote controller, press SETUP.
2. Use the cursor buttons to select "6. Hardware" and press ENTER.
3. Select "Tuner" with the cursor and press ENTER.
4. Select "AM / FM Frequency Step" (North American and Taiwanese models) or "AM Frequency Step" (European, Australian and Asian models) with the cursor and select the frequency step for your area.
   (For Taiwanese models only)
   The setting is "10 kHz / 0.2 MHz" at the time of purchase. Please change it to "9 kHz / 0.05 MHz".

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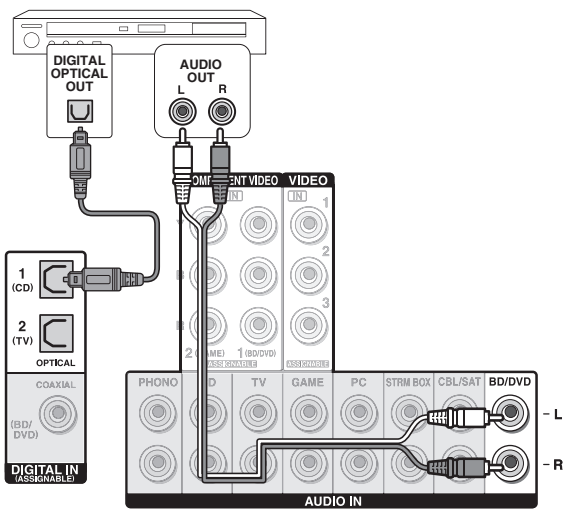
6 Multi-zone

You can listen to audio in a room (called Zone 2) other than the one where this unit is located (called the main room).

■ Sources you can playback

- External players
- NET
- Bluetooth
- AM/FM Radio

Important: Connection with external players
To listen to a player in Zone 2, you must connect using an RCA cable, a digital optical cable (OPTICAL), or a digital coaxial cable (COAXIAL). Some players may require audio output setting.

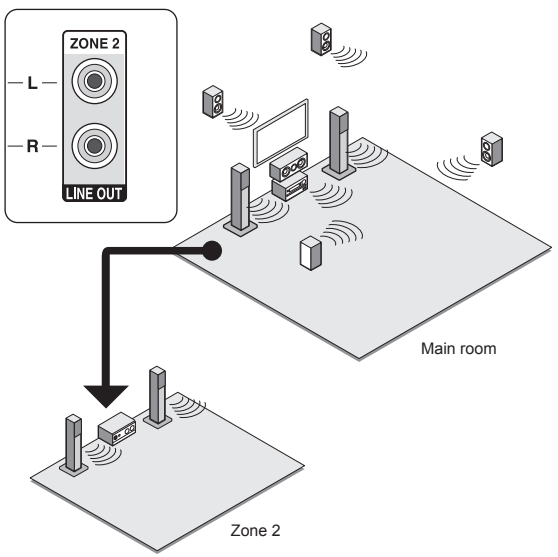


Making Multi-zone Connection

There are the following two methods of connection:
a. Connecting with a pre-main amplifier in a separate room
b. Connecting with speakers in a separate room

■ a. Connecting with a pre-main amplifier in a separate room

It is possible to play 2 ch source in a separate room while 7.1 ch source is being played in the main room.
Connect the LINE OUT ZONE2 jacks of the unit and the line-in jacks of the pre-main amplifier in a separate room with an RCA cable.

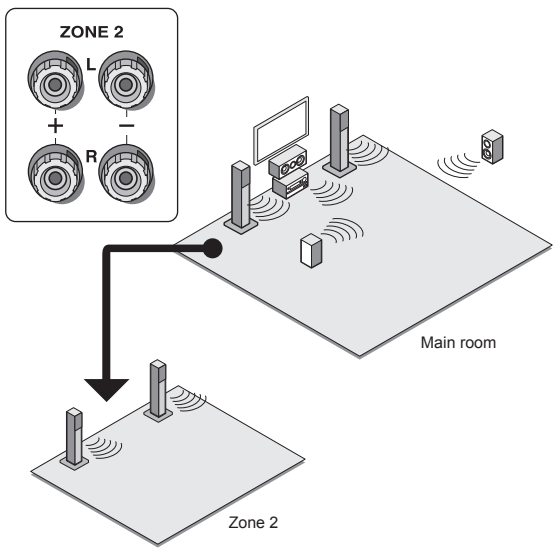


- The volume should be adjusted with the pre-main amplifier used in the separate room.

■ b. Connecting with speakers in a separate room

Connect the speakers in another room to the SPEAKERS ZONE2 jacks of the unit using speaker cables. Note that 5.1 ch will be the maximum (∗) in the main room during Zone 2 playback. No sound will be output from the back speakers and height speakers.

∗ In this case, the Dolby Atmos listening mode cannot be selected.



These settings are required: After connecting the speakers, press (RECEIVER)RECEIVER and then SETUP on the remote controller, select "2. Speaker" - "Configuration" and set "Powered Zone2" to "Yes".

- Adjust the volume on this unit. To adjust the volume, press ZONE2 on the remote controller and then adjust with VOL▲/▼. To control on the main unit, press ZONE 2 and within 8 seconds, adjust with the MASTER VOLUME control. You can mute the sound by pressing MUTING on the remote controller.

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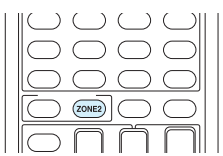
Performing Multi-zone Playback

It is possible to perform playback in the main room and a separate room at the same time, for example by playing the Blu-ray Disc player in the main room where the unit is placed while playing Internet radio in a separate room. It is also possible to perform playback only in a separate room.

- With external players, it is possible to play the same source or different sources in the main room and separate room.
- With "NET" and "BLUETOOTH", you cannot select different inputs for the main room and separate room. For example, if "NET" has been selected in the main room and then "BLUETOOTH" is selected as playback source in the separate room, the input in the main room will change to "BLUETOOTH" accordingly.
- When listening to AM/FM broadcasting, you cannot select different stations for the main room and separate room. Therefore broadcasting of the same station will be heard in the both rooms.

Playing Back

1. **Press ZONE2 on the remote controller, point the remote controller at the main unit and press ⏻RECEIVER.**
   "Z2" lights on the main unit display and the multi-zone function is enabled. (Zone 2 is now on.)



2. **Press ZONE2 again on the remote controller and press INPUT SELECTOR of the input to be played in a separate room.**
   - If you turn the unit to standby during multi-zone playback, the Z2 indicator is dimmed and the playback mode is switched to playback in a separate room only. Performing steps 1 and 2 while the unit is in standby also switches the playback mode to playback in a separate room only. To play the same source in the main room and separate room, hold down ZONE2 for approximately 3 seconds.

To control on the main unit: press ZONE2 and within 8 seconds, press the input selector button of the source to be played in the other room. (To play the same source in the main room and separate room, press ZONE2 twice.)

To turn off the function

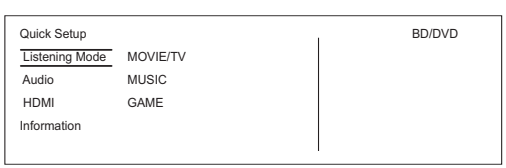
After pressing ZONE2 on the remote controller, press ⏻RECEIVER. Alternatively press OFF on the main unit.

- If ZONE 2 is on, power consumption during standby becomes larger than normal.
- If ZONE 2 is turned on when the listening mode of the main room is Pure Audio, it will automatically switch to the Direct listening mode. (European, Australian and Asian models)
- While ZONE 2 is on, the RI linked system function (interlink between Onkyo components) is disabled.
- Pressing INPUT SELECTOR on the remote controller while you are using the remote controller for Zone 2 will switch the controlled target to the main room. To control Zone 2 again, press the ZONE2 button to enter the Zone control mode.

7 Quick Setup Menu

You can perform common settings on the TV screen while playing.

1. **Press Q on the remote controller.**
   The Quick Setup menu is displayed on the connected TV's screen.



2. **Select the item with the cursors of the remote controller and press ENTER to confirm your selection.**
   - To return to the previous screen, press RETURN.

3. **Select the setting with the cursors buttons of the remote controller.**

■ **Listening Mode**: Select the listening mode from the categories of "MOVIE/TV", "MUSIC" and "GAME". After selecting the Listening Mode, press ENTER button to confirm.

- It cannot be set when audio is played from the TV's speakers.

■ **Audio**: You can perform various audio settings including audio quality and speaker level adjustment.

- You cannot select this item when audio is output from the TV's speakers.

Bass, Treble: Adjust volume of the front speaker.

- It cannot be set if the listening mode is Pure Audio (European, Australian and Asian models) or Direct.

Phase Matching Bass: Suppress phase shift in the midrange to enhance bass sound. Thus smooth and powerful bass sound can be obtained.

- It cannot be set if the listening mode is Pure Audio (European, Australian and Asian models) or Direct.

Center Level, Subwoofer Level: Adjust the speaker level while listening to the sound. The adjustment you made will be reset to the previous status when you turn the unit to standby mode.

- Changes may not be possible depending on the settings in speakers.
- This setting is not possible during MUTING or when using headphones.

A/V Sync: If the video is behind the audio, you can delay the audio to offset the gap. Different settings can be set for each input selector.

- It cannot be set if the listening mode is Pure Audio (European, Australian and Asian models) or Direct.

AccuEQ Room Calibration: Enable or disable the settings made by automatic speaker setting. To enable them, you should normally select "On (All Ch)", and to disable just the front speakers, you should select "On (ex. L/R)". The setting can be separately set to each input selector.

- This setting cannot be selected if the automatic speaker setting has not been performed.
- It cannot be set if headphones are connected or the listening mode is Pure Audio (European, Australian and Asian models) or Direct.

Equalizer: Assign the equalizer settings adjusted in "Setup"-"2. Speaker"-"Equalizer Settings" to "Preset1" to "Preset3". The same sound field setting is applied to all

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ranges when set to "Off".
- It cannot be set if the listening mode is Pure Audio (European, Australian and Asian models) or Direct.

Music Optimizer: Improve the quality of the compressed audio. Playback sound of lossy compressed files such as MP3 will be improved. The setting can be separately set to each input selector.
- The setting is effective in the signals of 48 kHz or less. The setting is not effective in the bitstream signals.
- It cannot be set if the listening mode is Pure Audio (European, Australian and Asian models) or Direct.

Late Night: Make small sounds to be easily heard. It is useful when you need to reduce the volume while watching a movie late night. You can enjoy the effect only with Dolby Digital, Dolby Digital Plus, Dolby TrueHD, and DTS sources.
- Turning the unit to standby mode will set the setting to "Off". In case of Dolby TrueHD, the setting will be set to "Auto".
- The setting cannot be used in the following cases.
  - If "Loudness Management" is set to "Off" when playing Dolby Digital Plus or Dolby TrueHD.
  - When the input signal is DTS and "Dialog Control" is other than 0 dB.

Cinema Filter: Adjust the soundtrack that was processed to enhance its treble, in order to make it suitable for home theater.
- This function can be used in the following listening modes: Dolby Digital, Dolby Digital Plus, Dolby TrueHD, Multichannel, DTS, DTS-ES, DTS 96/24, DTS-HD High Resolution Audio, DTS-HD Master Audio, DTS Express, DSD.

Center Spread: Adjust the width of the sound field of the front channel when playing in the Dolby Surround listening mode.
To spread the width of the sound field to the left and right, set to "On". To concentrate sound in the center, set to "Off".
- This setting may be "Off" depending on the settings in speakers.

Dialog Control: You can increase the dialog portion of the audio in 1 dB steps up to 6 dB so that you can make dialog easier to hear over background noise.
- This setting is unavailable for content other than DTS:X.
- This setting may not be available for selection with some content.

■ **HDMI**: Select the HDMI OUT jack to be used for output.

■ **Information**:

Audio: Displays the audio input source, format, number of channels, sampling frequency, listening mode, and number of output channels.

Video: Displays information such as the video input source, resolution, color space, color depth, 3D information, Aspect and output.

Tuner: Displays information such as the band, frequency, and preset number. This is displayed only when "TUNER" is selected as the input source.

8 Other useful functions

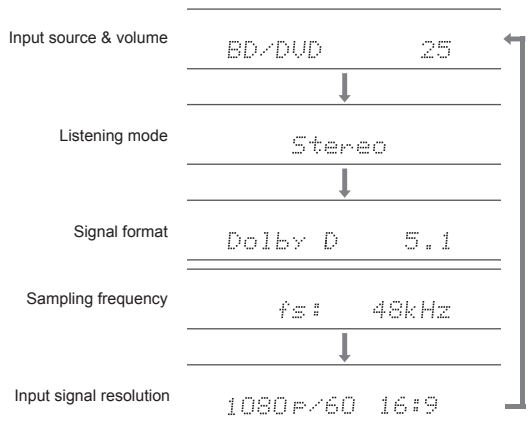
To adjust the sound quality

It is possible to enhance or moderate the bass and treble of front speakers. Press TONE on the main unit several times to select the desired setting from "Bass", "Treble" and "Phase Matching Bass", and adjust with +/-.
- It cannot be set if the listening mode is Pure Audio (European, Australian and Asian models) or Direct.

"Bass": Allows you to enhance or moderate the bass.
"Treble": Allows you to enhance or moderate the treble.
"Phase Matching Bass": Allows you to keep the clear midrange and effectively enhance the bass.

Checking the Input Format

Press DISPLAY on the remote controller several times to switch the display of the main unit in order of:



- If "Dolby D 5.1" is displayed in Signal format, the Dolby Digital 5.1 ch signals are being input. When listening to AM/FM radio, the band, frequency and preset number are displayed.

Playing Audio and Video from Separate Sources

It is possible to play audio and video from different sources. For example, you can play audio from the CD player and video from the BD/DVD player. In this case, press BD/DVD and then CD. Then start playback on the BD/DVD player and CD player. This function is effective when an input with audio only has been selected (CD, NET, BLUETOOTH, TUNER or PHONO in the initial setting).(∗)

∗ When NET or BLUETOOTH is selected, press MODE on the remote controller after pressing NET or BLUETOOTH on the remote controller.

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Troubleshooting

Before starting the procedure
Problems may be solved by simply turning the power on/off or disconnecting/connecting the power cord, which is easier than working on the connection, setting and operating procedure. Try the simple measures on both the unit and the connected device. If the problem is that the video or audio is not output or the HDMI linked operation does not work, disconnecting/connecting the HDMI cable may solve it. When reconnecting, be careful not to wind the HDMI cable since if wound the HDMI cable may not fit well. After reconnecting, turn off and on the unit and the connected device.

The AV receiver turns off unexpectedly.

- The AV receiver will automatically enter standby mode when Auto Standby or Sleep Timer is set and launched.
- The protection circuit may have been activated. If this is the case, when you turn the unit on again, "AMP Diag Mode" will appear on the main unit's display. The unit will then enter a mode that detects abnormal conditions. If no problems are detected, "AMP Diag Mode" will disappear and the unit will return to a normal state. If "CHECK SP WIRE" appears on the display, the speaker cables may be short-circuited. Turn the unit off, and check to see if the cable core of any of the speaker cables is in contact with that of another speaker cable or with the rear panel. After that, turn the unit on again. If "NG" appears, unplug the power cord immediately and contact your Onkyo dealer.

There's no sound, or it's very quiet.

- A wrong input selector button has been selected. Select a correct input for the player. Also check that muting is not on.
- Not all listening modes use all speakers.

There's no picture.

- A wrong input selector button has been selected.
- Video from the analog input is not displayed if the listening mode is Pure Audio. (European, Australian and Asian models)
- To display video from the connected player on the TV screen while the unit is in standby, you need to enable HDMI Standby Through function.
- When the TV image is blurry or unclear, power cord or connection cables of the unit may have interfered. In that case, keep distance between TV antenna cable and cables of the unit.
- If you connect a player supporting HDCP2.2, be sure to connect it to one of the HDMI IN1 to IN3 jacks of the unit.

Video and audio are out of synch.

- Video may be delayed relative to audio depending on the settings and connections with your TV. Adjust in "Step 3: Playing Back", "7 Quick Setup Menu", "A/V Sync".

Cannot play digital surround.

- To enjoy digital surround sound including Dolby Digital and DTS, audio output should be set to "Bitstream output" on the connected Blu-ray Disc Player or other device.

Cannot output audio such as Dolby Atmos according to the format of the source.

- If you cannot output audio according to the format of the source (Dolby TrueHD, Dolby Atmos, DTS-HD Master Audio, etc.), in the Blu-ray Disc Player settings try setting "BD video supplementary sound" (or secondary sound) to "Off". Change the listening mode for each source after changing the setting to confirm.

HDMI control does not function correctly.

- Set the CEC link function of the unit to on. It is also necessary to make the HDMI linked system setting on the TV. See the TV's instruction manual for details.

Cannot access to network.

- Try plugging/unplugging the unit or the wireless LAN router or check their power-on status. This will work well in many cases.
- If the desired wireless LAN router is not in the access point list, it may be set to hide SSID or the ANY connection may be off. Change the setting and try again.

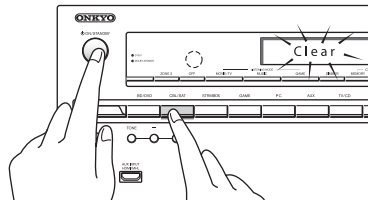
■ Resetting the unit

Resetting the unit to the status at the time of shipment may solve the problem. If the measures above do not solve the problem, reset the unit with the following procedure. If you reset the unit status, your preferences will be reset to the defaults. Note them down before starting reset.

● **How to reset**:

1. **While holding down CBL/SAT on the main unit (note that step 2 must be performed with this button pressed down)**
2. **Press ⏻ON/STANDBY on the main unit ("Clear" appears on the display and the unit returns to standby).**

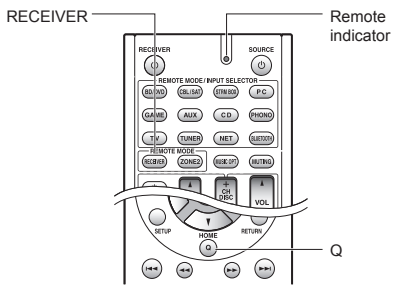
- Do not unplug the power cord until "Clear" disappears from the display.



2. **Press ⏻ON/ STANDBY.** 1. **While holding down CBL/SAT,**

● **How to reset the remote controller**:

1. **While holding down RECEIVER on the remote controller, press Q until the remote indicator stays lit (about 3 seconds).**
2. **Within 30 seconds, press RECEIVER again.**



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Specifications

Amplifier Section

Rated Output Power (North American)
With 8 ohm loads, both channels driven, from 20-20,000 Hz; rated 100 watts per channel minimum RMS power, with no more than 0.08% total harmonic distortion from 250 milliwatts to rated output.
Surround Mode Output Power (∗)
(6 ohms, 1 kHz THD 0.9%) 170 W per channel
∗ Reference output for each speakers.
Depending on the source and the listening mode settings, there may be no sound output.
Rated Output Power (Others)
7 ch × 160 W at 6 ohms, 1 kHz, 1 ch driven of 1% (IEC)
Maximum Effective Output Power
7 ch × 175 W at 6 ohms, 1 kHz, 1 ch driven (JEITA) (Asian)
Dynamic Power (∗)
∗ IEC60268-Short-term maximum output power
240 W (3 Ω, Front)
210 W (4 Ω, Front)
120 W (8 Ω, Front)
THD+N (Total Harmonic Distortion+Noise)
0.08% (20 Hz - 20 kHz, half power)
Input Sensitivity and Impedance
200 mV/47 kΩ (LINE, 1 kHz 100 W/8 Ω)
3.5 mV/47 kΩ (PHONO MM)
Rated RCA Output Level and Impedance
100 mV/2.3 kΩ (ZONE2 LINE OUT)
1 V/470 Ω (SUBWOOFER PRE OUT)
Phono Overload
70 mV (MM 1 kHz 0.5% Direct)
Frequency Response
10 Hz - 100 kHz/+1 dB, –3 dB (Direct mode)
Tone Control Characteristics
±10 dB, 20 Hz (BASS)
±10 dB, 20 kHz (TREBLE)
Signal to Noise Ratio
100 dB (LINE, IHF-A)
80 dB (PHONO MM, IHF-A)
Speaker Impedance
6 Ω - 16 Ω (North American and Taiwanese)
4 Ω - 16 Ω/6 Ω - 16 Ω (Others)

Video Section

Signal level
1.0 Vp-p/75 Ω (Component Y)
0.7 Vp-p/75 Ω (Component Pb/Cb, Pr/Cr)
1.0 Vp-p/75 Ω (Composite)
Maximum resolution supported by component video
480i/576i

Tuner Section

FM Tuning Frequency Range
87.5 MHz - 107.9 MHz
(North American and Taiwanese)
87.5 MHz - 108.0 MHz, RDS (Others)
AM Tuning Frequency Range
522/530 kHz - 1611/1710 kHz
Preset Channel
40

Network Section

Ethernet LAN
10BASE-T/100BASE-TX
Wireless LAN
IEEE 802.11 b/g/n standard
(Wi-Fi® standard)
2.4 GHz band:
1 - 11 ch (North American)
10 - 11 ch (Spain)
10 - 13 ch (France)
1 - 13 ch (Others)
(Wi-Fi® standard)

Bluetooth Section

Communication system
Bluetooth Specification version 2.1 +EDR (Enhanced Data Rate)
Maximum communication range
Line of sight approx. 15 m (∗)
Frequency band
2.4 GHz band
Modulation method
FHSS (Freq Hopping Spread Spectrum)
Compatible Bluetooth profiles
A2DP 1.2 (Advanced Audio Distribution Profile)
AVRCP 1.3 (Audio Video Remote Control Profile)
Supported Codecs
SBC
Transmission range (A2DP)
20 Hz - 20,000 Hz (Sampling frequency 44.1 kHz)
∗ The actual range will vary depending on factors such as obstacles between devices, magnetic fields around a microwave oven, static electricity, cordless phone, reception sensitivity, antenna's performance, operating system, software application, etc.

General

Power Supply
AC 120 V, 60 Hz (North American and Taiwanese)
AC 220 - 240 V, 50/60 Hz (Others)
Power Consumption
6.4 A (North American and Taiwanese)
630 W (Others)
0.1 W (Stand-by, North American and Taiwanese)
0.15 W (Stand-by, Others)
2.6 W (Network Standby)
70 W (No-sound)
Dimensions (W × H × D)
435 mm × 173.5 mm × 329 mm
17-1/8" × 6-13/16" × 12-15/16"
Weight
9.4 kg (20.7 lbs.) (North American and Taiwanese)
9.8 kg (21.6 lbs.) (Others)

● HDMI

Input
IN1 (BD/DVD, HDCP2.2), IN2 (CBL/SAT, HDCP2.2), IN3 (STRM BOX, HDCP2.2), IN4 (PC), IN5 (GAME), IN6, IN7, AUX INPUT HDMI (front)
Output
OUT MAIN (ARC), OUT SUB
Video Resolution
4K 60 Hz (RGB/YCbCr4:4:4/YCbCr4:2:2, 24 bit)
Audio Format
Dolby Atmos, Dolby TrueHD, Dolby Digital Plus, Dolby Digital, DTS:X, DTS-HD Master Audio, DTS-HD High Resolution Audio, DTS 96/24, DTS-ES, DTS, DTS Express, DSD, Multichannel PCM (up to 8ch)
Supported
3D, Audio Return Channel, Deep Color, x.v.Color™, LipSync, CEC, 4K, Extended Colorimetry (sYCC601, Adobe RGB, Adobe YCC601), Content Type, 3D Dual View, 21:9 Aspect Ratio Video Format

● Video Inputs

Component
IN1 (BD/DVD), IN2 (GAME)
Composite
IN1 (CBL/SAT), IN2 (STRM BOX), IN3 (PC)

● Audio Inputs

Digital
OPTICAL 1 (CD), 2 (TV)
COAXIAL (BD/DVD)
Analog
BD/DVD, CBL/SAT, STRM BOX, PC, GAME, TV, CD, PHONO

● Audio Outputs

Analog
ZONE2 LINE OUT
2 SUBWOOFER PRE OUT
Speaker Outputs
FRONT L/R, CENTER, SURROUND L/R, BACK or HEIGHT L/R, ZONE2 L/R
Phones
PHONES (Front, ø 6.3)

● Others

Setup Mic	1 (Front)
RI REMOTE CONTROL	1
USB	1 (1.1, 5 V/1 A)
Ethernet	1

Supports multi-language on-screen display
(North American) English, German, French, Spanish, Italian, Dutch, Swedish
(Taiwanese) English, German, French, Spanish, Italian, Dutch, Swedish, Chinese (∗)
(Others) English, German, French, Spanish, Italian, Dutch, Swedish, Russian, Chinese (∗)
∗ OSD is not displayed when the input selector is "NET" or "BLUETOOTH". Use the display on the main unit when operating the unit.

Specifications and features are subject to change without notice.

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Table of image resolutions

Refer to the following table for information about the image formats and resolutions output by this unit in response to input signals

Input \ Output		HDMI						
		4K	1080p/24	1080p	1080i	720p	480p/576p	480i/576i
HDMI	4K	✔						
	1080p/24		✔					
	1080p			✔				
	1080i				✔			
	720p					✔		
	480p/576p						✔	
	480i/576i							✔
Component	1080p							
	1080i							
	720p							
	480p/576p							
	480i/576i							✔
Composite	480i/576i							✔

Resolutions supported by HDMI

Input support	Content protection technology	Display resolution	Frame rate	Color space	Color Depth	Remarks
HDMI input IN1 to IN3	HDCP1.4 HDCP2.2	720×480i	60 Hz	RGB/YCbCr4:4:4/ YCbCr4:2:2	8/10/12/16 bit	✳
		720×576i	50 Hz			
		720×480p	60 Hz			
		720×576p	50 Hz			
		1920×1080p	50/60 Hz			
		1280×720p	24/25/30/50/60 Hz			
		1680×720p	24/25/30/50/60 Hz			
		1920×1080p	24/25/30/50/60 Hz			
		2560×1080p	24/25/30 Hz			
			50/60 Hz			
		4K (3840×2160p)	24/25/30 Hz	RGB/YCbCr4:4:4/ YCbCr4:2:2	8/10/12/16 bit	✳
			50/60 Hz	RGB/YCbCr4:4:4	8 bit	
				YCbCr4:2:2	12 bit	
				YCbCr4:2:0	8/10/12/16 bit	
		4K SMPTE (4096×2160p)	24/25/30 Hz	RGB/YCbCr4:4:4/ YCbCr4:2:2	8/10/12/16 bit	✳
				RGB/YCbCr4:4:4	8 bit	
			50/60 Hz	YCbCr4:2:2	12 bit	
				YCbCr4:2:0	8/10/12/16 bit	
HDMI input IN4 to IN7 Front	HDCP1.4	720×480i	60 Hz	RGB/YCbCr4:4:4/ YCbCr4:2:2	8/10/12/16 bit	✳
		720×576i	50 Hz			
		720×480p	60 Hz			
		720×576p	50 Hz			
		1920×1080i	50/60 Hz			
		1280×720p	24/25/30/50/60 Hz			
		1680×720p	24/25/30/50/60 Hz			
		1920×1080p	24/25/30/50/60 Hz			
		2560×1080p	24/25/30 Hz			
			50/60 Hz	RGB/YCbCr4:4:4/ YCbCr4:2:2	8/10/12 bit	✳
		4K (3840×2160p)	24/25/30 Hz	RGB/YCbCr4:4:4	8 bit	
				YCbCr4:2:2	12 bit	
			50/60 Hz	YCbCr4:2:0	8 bit	
		4K SMPTE (4096×2160p)	24/25/30 Hz	RGB/YCbCr4:4:4	8 bit	
				YCbCr4:2:2	12 bit	
			50/60 Hz	YCbCr4:2:0	8 bit	

✳ With YCbCr4:2:2, Color Depth supported is 12 bit only.

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Precautions

For European Models

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We declare, under our sole responsibility, that this product complies with the standards:

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- Limits for harmonic current emissions
- Limitation of voltage changes, voltage fluctuations and flicker
- RoHS Directive, 2011/65/EU

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Package List

linux	uClibc	busybox
libgcc	libstdc++	libmms
compat-wireless	wpa_supplicant	dnsmasq
libiconv	bluez	dbus
iperf	faad	

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Version 2.1, February 1999

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[6]Jean-Francois Boudreault <Jean-Francois.Boudreault@viagenie.qc.ca>IPv6 support

[7]Karl Berry <karl@owl.HQ.ileaf.com> syslog to file option

[8]Greg Brackley <greg.brackley@bigfoot.com> Major rework of WINNT port. Clean up recvbuf and iosignal code into separate modules.

[9]Marc Brett <Marc.Brett@westgeo.com> Magnavox GPS clock driver

[10]Piete Brooks <Piete.Brooks@cl.cam.ac.uk> MSF clock driver, Trimble PARSE support

[11]Reg Clemens <reg@dwf.com> Oncore driver (Current maintainer)

[12]Steve Clift <clift@ml.csiro.au> OMEGA clock driver

[13]Casey Crellin <casey@csc.co.za> vxWorks (Tornado) port and help with target configuration

[14]Sven Dietrich <sven_dietrich@trimble.com> Palisade reference clock driver, NT adj. residuals, integrated Greg's Winnt port.

[15]John A. Dundas III <dundas@salt.jpl.nasa.gov> Apple A/UX port

[16]Torsten Duwe <duwe@immd4.informatik.uni-erlangen.de> Linux port

[17]Dennis Ferguson <dennis@mrbill.canet.ca> foundation code for NTP Version 2 as specified in RFC-1119

[18]John Hay <jhay@icomtek.csir.co.za> IPv6 support and testing

[19]Glenn Hollinger <glenn@herald.usask.ca> GOES clock driver

[20]Mike Iglesias <iglesias@uci.edu> DEC Alpha port

[21]Jim Jagielski <jim@jagubox.gsfc.nasa.gov> A/UX port

[22]Jeff Johnson <jbj@chatham.usdesign.com> massive prototyping overhaul

[23]Hans Lambermont <Hans.Lambermont@nl.origin-it.com> or [24]<H.Lambermont@chello.nl> ntpsweep

[25]Poul-Henning Kamp <phk@FreeBSD.ORG> Oncore driver (Original author)

[26]Frank Kardel [27]<kardel (at) ntp (dot) org> PARSE <GENERIC> driver (>14 reference clocks), STREAMS modules for PARSE, support scripts, syslog cleanup, dynamic interface handling

[28]William L. Jones <jones@hermes.chpc.utexas.edu> RS/6000 AIX modifications, HPUX modifications

[29]Dave Katz <dkatz@cisco.com> RS/6000 AIX port

[30]Craig Leres <leres@ee.lbl.gov> 4.4BSD port, ppsclock, MagnavoxGPS clock driver

[31]George Lindholm <lindholm@ucs.ubc.ca> SunOS 5.1 port

[32]Louis A. Mamakos <louie@ni.umd.edu> MD5-based authentication

[33]Lars H. Mathiesen <thorinn@diku.dk> adaptation of foundation code for Version 3 as specified in RFC-1305

[34]Danny Mayer <mayer@ntp.org>Network I/O, Windows Port, Code Maintenance

[35]David L. Mills <mills@udel.edu> Version 4 foundation: clock discipline, authentication, precision kernel; clock drivers: Spectracom, Austron, Arbiter, Heath, ATOM, ACTS, KSI/Odetics; audio clock drivers: CHU, WWV/H, IRIG

[36]Wolfgang Moeller <moeller@gwdgv1.dnet.gwdg.de> VMS port

[37]Jeffrey Mogul <mogul@pa.dec.com> ntptrace utility

[38]Tom Moore <tmoore@fievel.daytonoh.ncr.com> i386 svr4 port

[39]Kamal A Mostafa <kamal@whence.com> SCO OpenServer port

[40]Derek Mulcahy <derek@toybox.demon.co.uk> and [41]Damon Hart-Davis <d@hd.org> ARCRON MSF clock driver

[42]Rainer Pruy <Rainer.Pruy@informatik.uni-erlangen.de> monitoring/trap scripts, statistics file handling

[43]Dirce Richards <dirce@zk3.dec.com> Digital UNIX V4.0 port

[44]Wilfredo Sanchez <wsanchez@apple.com> added support for NetInfo

[45]Nick Sayer <mrapple@quack.kfu.com> SunOS streams modules

[46]Jack Sasportas <jack@innovativeinternet.com> Saved a Lot of space on the stuff in the html/pic/ subdirectory

[47]Ray Schnitzler <schnitz@unipress.com> Unixware1 port

[48]Michael Shields <shields@tembel.org> USNO clock driver

[49]Jeff Steinman <jss@pebbles.jpl.nasa.gov> Datum PTS clock driver

[50]Harlan Stenn <harlan@pfcs.com> GNU automake/autoconfigure makeover, various other bits (see the ChangeLog)

[51]Kenneth Stone <ken@sdd.hp.com> HP-UX port

[52]Ajit Thyagarajan <ajit@ee.udel.edu>IP multicast/anycast support

[53]Tomoaki TSURUOKA <tsuruoka@nc.fukuoka-u.ac.jp>TRAK clock driver

[54]Paul A Vixie <vixie@vix.com> TrueTime GPS driver, generic TrueTime clock driver

[55]Ulrich Windl <Ulrich.Windl@rz.uni-regensburg.de> corrected and validated HTML documents according to the HTML DTD

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Supplied Accessories

Indoor FM antenna --- (1)

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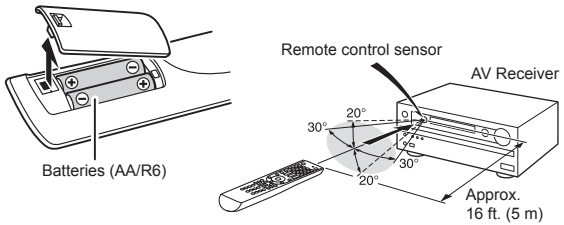
Remote controller (RC-898M) --- (1)
Batteries (AA/R6) --- (2)

Power cord (Taiwanese models) --- (1)

Speaker setup microphone --- (1)

∗ The number in parenthesis indicates the quantity. On packaging, the letter at the end of the product name indicates the color.

How to use the remote controller



∗ If you do not use the remote controller for a long time, remove the batteries to prevent leakage.
∗ Note that keeping consumed batteries inside may cause corrosion resulting in damage of the remote controller.

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