Thank you for buying this Onkyo product. Please read through these operating instructions so you will know how to operate your model properly.

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Before you start

Checking what’s in the box
Please check that you’ve received the following supplied accessories:
• Remote control
• AAA size IEC R03 dry cell batteries (to confirm system operation) x2
• AM loop antenna
• FM wire antenna
• Speaker cables (3 m/10 ft.) x4
• Speaker cables (8 m/26 ft.) x2
• Non-Skid Pads x20
• Quick start guide
• Safety Brochure

Installing the receiver
• When installing this unit, make sure to put it on a level and stable surface.
Don’t install it on the following places:
– on a color TV (the screen may distort)
– near a cassette deck (or close to a device that gives off a magnetic field). This may interfere with the sound.
– in direct sunlight
– in damp or wet areas
– in extremely hot or cold areas
– in places where there is vibration or other movement
– in places that are very dusty
– in places that have hot fumes or oils (such as a kitchen)

Flow of settings on the receiver

The unit is a full-fledged AV receiver equipped with an abundance of functions and terminals. It can be used easily after following the procedure below to make the connections and settings.
The colors of the steps indicate the following:

Required setting item
Setting to be made as necessary

1 Connecting the speakers
Where you place the speakers will have a big effect on the sound.
• Placing the speakers (page 8)
• Connecting the speakers (page 9)

2 Connecting the components
For surround sound, you’ll want to hook up using a digital connection from the Blu-ray Disc/DVD player to the receiver.
• About video outputs connection (page 11)
• Connecting a TV and playback components (page 12)
• Connecting antennas (page 14)
• Plugging in the receiver (page 15)

3 Power On
Make sure you’ve set the video input on your TV to this receiver. Check the manual that came with the TV if you don’t know how to do this.

4 Making the initial settings according to the region and environment in which you live
• Changing the TV format setting of Graphical User Interface (Except for the U.S.A., Canada and Latin America models) (page 26)
• Changing the frequency step of AM Radio (Except for the U.S.A., Canada and Latin America models) (page 27)

5 Specify the size and number of speakers you’ve connected
• Speaker Setting (page 28)

6 The Input Assign menu (page 30)
(When using connections other than the recommended connections.)
The HDMI Setup menu (page 31)
(When the connected TV supports the HDMI Audio Return Channel function.)

7 Basic playback (page 16)
• Selecting the audio input signal (page 16)
• Playing a USB device (page 18)
• Choosing the listening mode (page 23)

8 Adjusting the sound as desired
• Using the Music Optimizer (page 24)
• Setting the Audio options (page 24)
• Manual speaker setup (page 28)
1: Controls and displays

Front panel

1. ON/STANDBY
2. BLUETOOTH
   Switches to the BT Audio input
3. Remote sensor
   Receives the signals from the remote control (see Operating range of remote control on page 7).
4. Listening mode buttons
   STEREO – Switches to the STEREO mode (page 23).
   SURROUND – Press for standard decoding and to switch between the modes of Pro Logic II and NEO:6.
   DSP – Switches between the various surround modes (page 23).
5. Character display
   See Display on page 5.
6. HOME/ENTER/RETURN buttons
   HOME – Use to access the Setup.
   ENTER – Press to confirm the specified settings.
   RETURN – Use to return to the display immediately previous when making settings
7. Tuner control/Cursor buttons
   ▲ TUNING ▲ – Used to find radio frequencies (page 20).
   ◀ PRESET ◀ – Use to select preset radio stations (page 21).
   These are also used to move the cursors when displaying the Setup, for example.
8. MASTER VOLUME dial
9. PHONES jack
   Use to connect headphones. When the headphones are connected, there is no sound output from the speakers.
10. TONE
    Switches the display between Bass settings and Treble settings.
11. TONE +/-
    Press to change the settings while the Bass or Treble settings are displayed.
12. INPUT SELECTOR buttons
    Selects an input source (page 16).
13. USB terminal
    Use to connect your USB mass storage device as an audio source (page 16).
Controls and displays

Display

14 Tuner indicators
RDS – Lights when an RDS broadcast is received (page 21). (For Europe)
ST – Lights when a stereo FM broadcast is being received in auto stereo mode (page 20).
TUNE – Lights when a normal broadcast channel.
PRESET – Shows when a preset radio station is registered or called.
MEM – Blinks when a radio station is registered.
kHz/MHz – Lights when the character display is showing the currently received AM/FM broadcast frequency.

15 Speaker indicators
Shows if the speaker system is on or not.
SP means the speaker system is on.
SP means the speaker system is off.

16 Sleep timer indicator
Lights when the receiver is in sleep mode (page 6).

17 PRESET information or input signal indicator
Shows the preset number of the tuner or the input signal type, etc.

18 Character display
Displays various system information.

19 DTS indicators
DTS – Lights when a source with DTS encoded audio signals is detected.
HD – Lights when a source with DTS-EXPRESS or DTS-HD encoded audio signals is detected.
96/24 – Lights when a source with DTS 96/24 encoded audio signals is detected.
NEO:6 – When one of the NEO:6 modes of the receiver is on, this lights to indicate NEO:6 processing (page 22).

20 Dolby Digital indicators
D – Lights when a Dolby Digital encoded signal is detected.
D+ – Lights when a source with Dolby Digital Plus encoded audio signals is detected.
BD – Lights when a source with Dolby TrueHD encoded audio signals is detected.
PLII – Lights to indicate Pro Logic II decoding (see Listening in surround sound on page 23 for more on this).

21 SIGNAL SELECT indicators
DIGITAL – Lights when a digital audio signal is selected. Blinks when a digital audio signal is selected and selected audio input is not provided.
HDMI – Lights when an HDMI signal is selected. Blinks when an HDMI signal is selected and selected HDMI input is not provided.

22 DIR.
Lights when the DIRECT mode is switched on (page 23).
As for operating other devices, the remote control codes for the Onkyo products are preset. The settings cannot be changed.

1 **RECEIVER**

   Switches the receiver between standby and on.

2 **Input function buttons**

   Use to select the input source to this receiver (page 16). This will enable you to control other Onkyo components with the remote control.

3 **USB control buttons**

   Use to control the USB source. Operations other than USB are not possible.

4 **Receiver control buttons**

   - **Q** (QUICK MENU) – Use to access the Audio options (page 24).
   - **–** – Press to access the Setup (page 28).
   - **––** – Use to return to the display immediately previous when making settings

5 **/ / / / , ENTER**

   Use the arrow buttons when setting up your surround sound system (page 29).

6 **Listening mode and component control buttons**

   - **DIRECT** – Press to select Direct playback (page 23).
   - **STEREO** – Press to select stereo playback (page 23).
   - **SURR** – Press for standard decoding and to switch between the modes of Pro Logic II and NEO:6 (page 23).
   - **DSP** – Switches between the various surround modes (page 23).

7 **BASS +/- , TREBLE +/-**

   Use to adjust Bass or Treble.
   - These controls are disabled when the listening mode is set to DIRECT.
   - When the front speaker is set at SMALL in the Speaker Setting and the X.Over is set above 150 Hz, the subwoofer channel level will be adjusted by pressing BASS +/- (page 29).

8 **TUNER control buttons**

   See Listening to the radio on page 20.

9 **AUDIO SEL**

   Press to select the audio input signal of the component to play back (page 16).

10 **LATE NIGHT**

   Turns ON and OFF the LATE NIGHT function (page 24).

11 **M.OPT**

   Press to restore CD quality sound to compressed audio sources (page 24).

12 **VOL +/-**

   Mutes/unmutes the sound.

13 **VOL +/-**

   Use to set the listening volume.

14 **SLEEP**

   Press to change the amount of time before the receiver switches into standby (30 min – 60 min – 90 min – Off). You can check the remaining sleep time at any time by pressing SLEEP once.

15 **DIMMER**

   Dims or brightens the display. The brightness can be controlled in four steps.

16 **Switches the display of this unit. The listening mode, sound volume or input name can be checked by selecting an input source.**
Loading the batteries

The batteries included with the unit are to check initial operations; they may not last over a long period. We recommend using alkaline batteries that have a longer life.

**WARNING**
- Do not use or store batteries in direct sunlight or other excessively hot place, such as inside a car or near a heater. This can cause batteries to leak, overheat, explode or catch fire. It can also reduce the life or performance of batteries.

**CAUTION**
- Incorrect use of batteries may result in such hazards as leakage and bursting. Observe the following precautions:
  - Never use new and old batteries together.
  - Insert the plus and minus sides of the batteries properly according to the marks in the battery case.
  - Batteries with the same shape may have different voltages. Do not use different batteries together.
  - When disposing of used batteries, please comply with governmental regulations or environmental public institution's rules that apply in your country/area.
  - When inserting the batteries, make sure not to damage the springs on the battery’s (—) terminals. This can cause batteries to leak or overheat.

Operating range of remote control

The remote control may not work properly if:
- There are obstacles between the remote control and the receiver’s remote sensor.
- Direct sunlight or fluorescent light is shining onto the remote sensor.
- The receiver is located near a device that is emitting infrared rays.
- The receiver is operated simultaneously with another infrared remote control unit.

7 m (23 ft.)
2: Connecting your equipment

Placing the speakers
By connecting the left and right front speakers (L/R), the center speaker (C), the left and right surround speakers (SL/SR), and the subwoofer (SW), a 5.1 ch surround system can be enjoyed.
To achieve the best possible surround sound, install your speakers as shown below.

5.1 channel surround system:

Subwoofer
- Orient the subwoofer’s front face pointing toward the listening position.
- When moving the subwoofer, avoid touching the bottom surface, since the speaker unit is located there.
- The subwoofer plays back the bass in monaural, making use of the fact that the human ear is not very sensitive to the direction of low-pitched sound. Because of this, the subwoofer can be installed almost anywhere. If it is installed too far away, however, the sound from the other speakers may become unnatural. The degree of bass effect can be adjusted by moving the unit farther from or closer to the wall.

Front/Center/Surround speakers
- Labels located on the rear of each speaker indicate whether they are designed for front or surround use.
- Optional speaker stands can be purchased to facilitate optimal mounting of the surround speakers at or slightly above the listener’s ear height.
- The surround effect will be diminished if the surround speakers are mounted at extreme distances from the listener’s position.

Affixing Non-Skid Pads
Apply the accessory non-skid pads to the bottom surfaces of the front/center/surround speakers

Hints on the speaker placement
Where you put your speakers in the room has a big effect on the quality of the sound. The following guidelines should help you to get the best sound from your system.
- The subwoofer can be placed on the floor. Ideally, the other speakers should be at about ear-level when you’re listening to them. Putting the speakers on the floor (except the subwoofer), or mounting them very high on a wall is not recommended.
- For the best stereo effect, place the front speakers 2 m to 3 m (6 ft. to 9 ft.) apart, at equal distance from the TV.
- If you’re going to place speakers around your CRT TV, place the speakers at a sufficient distance from your CRT TV. Any other device liable to be influenced by magnetism (floppy disk drive, cassette tape recorder, video tape player, etc.) should also be kept at a distance from the subwoofer and other speakers.
- If you’re using a center speaker, place the front speakers at a wider angle. If not, place them at a narrower angle.
- It is best to angle the speakers towards the listening position. The angle depends on the size of the room. Use less of an angle for bigger rooms.
- The optimal positioning for surround speakers is just above ear height. Make sure the speakers don’t face each other. For DVD-Audio, the speakers should be more directly behind the listener than for home theater playback.
- Try not to place the surround speakers farther away from the listening position than the front and center speakers. Doing so can weaken the surround sound effect.

CAUTION
- Make sure that all speakers are securely installed. This not only improves sound quality, but also reduces the risk of damage or injury resulting from speakers being knocked over or falling in the event of external shocks such as earthquakes.
- Install the center speaker below the TV so that the sound of the center channel is localized at the TV screen.
- Do not place the center speaker on top of the TV, the speaker may fall from the TV due to external shocks such as earthquakes, endangering those nearby or damaging the speaker.
Connecting the speakers

The receiver will work with just two stereo speakers (the front speakers in the diagram) but using at least three speakers is recommended, and a complete setup is best for surround sound.

Make sure you connect the speaker on the right to the right (R) terminal and the speaker on the left to the left (L) terminal. Also make sure the positive and negative (+/-) terminals on the receiver match those on the speakers.

You can use speakers with a nominal impedance between 6 Ω and 16 Ω.

Be sure to complete all connections before connecting this unit to the AC power source.

Bare wire connections

1. Twist exposed wire strands together.
2. Push open the tabs and insert exposed wire.
3. Release the tabs.

Note
- Connect the wire with the colored marker to the red (+) terminal; the plain wire to the black (–) terminal.

CAUTION
- These speaker terminals carry HAZARDOUS LIVE voltage. To prevent the risk of electric shock when connecting or disconnecting the speaker cables, disconnect the power cord before touching any uninsulated parts.
- Make sure that all the bare speaker wire is twisted together and inserted fully into the speaker terminal. If any of the bare speaker wire touches the back panel it may cause the power to cut off as a safety measure.
- After connecting the plugs, pull lightly on the cables to make sure that the ends of the cables are securely connected to the terminals. Poor connections can create noise and interruptions in the sound.
- If the cables’ wires happen to be pushed out of the terminals, allowing the wires to come into contact with each other, it places an excessive additional load on the receiver. This may cause the amp to stop functioning, and may even damage the receiver.
- When using a set of speakers connected to an receiver, you won’t be able to obtain the normal stereo effect if the polarity (+, –) of one of the speakers (left or right) is reversed.
Making cable connections
Make sure not to bend the cables over the top of this unit (as shown in the illustration). If this happens, the magnetic field produced by the transformers in this unit may cause a humming noise from the speakers.

Important
• Before making or changing connections, switch off the power and disconnect the power cord from the AC outlet.
• Before unplugging the power cord, switch the power into standby.

HDMI cables
Both video and sound signals can be transmitted simultaneously with one cable. If connecting the player and the TV via this receiver, for both connections, use HDMI cables.

Be careful to connect the terminal in the proper direction.

Note
• Set the HDMI parameter in Setting the Audio options on page 24 to THRU (THROUGH) and set the input signal in Selecting the audio input signal on page 18 to HDMI, if you want to hear HDMI audio output from your TV (no sound will be heard from this receiver).

• If the video signal does not appear on your TV, try adjusting the resolution settings on your component or display. Note that some components (such as video game units) have resolutions that may not be displayed. In this case, use a (analog) composite connection.
• When the video signal from the HDMI is 480i, 480p, 576i or 576p, Multi Ch PCM sound and HD sound cannot be received.

About HDMI
The HDMI connection transfers uncompressed digital video, as well as almost every kind of digital audio that the connected component is compatible with, including DVD-Video, DVD-Audio, SACD, Dolby Digital Plus, Dolby TrueHD, DTS-HD Master Audio (see below for limitations), Video CD/Super VCD and CD.

This receiver incorporates High-Definition Multimedia Interface (HDMI®) technology.
This receiver supports the functions described below through HDMI connections.
• Digital transfer of uncompressed video (contents protected by HDCP (1080p/24, 1080p/60, etc.))
• 3D signal transfer
• Deep Color signal transfer
• x.v.Color signal transfer
• Audio Return Channel (see The HDMI Setup menu on page 31)
• Input of multi-channel linear PCM digital audio signals (192 kHz or less) for up to 8 channels
• Input of the following digital audio formats:
  - Dolby Digital, Dolby Digital Plus, DTS, High bitrate audio (Dolby TrueHD, DTS-HD Master Audio), DVD-Audio, CD, SACD (DSD 2 ch only), Video CD, Super VCD
• 4K signal transfer
  - This may not operate properly, depending on the connected equipment.
  - 4K 24p, 4K 25p, 4K 30p, 4K 50p and 4K 60p signals are supported.
• HDCP 2.2 compatible terminal

Note
• Use a High Speed HDMI® Cable. If HDMI cable other than a High Speed HDMI® Cable is used, it may not work properly.
• When an HDMI cable with a built-in equalizer is connected, it may not operate properly.
• 3D, Deep Color, x.v.Color, 4K signal transfer and Audio Return Channel are only possible when connected to a compatible component.
• HDMI format digital audio transmissions require a longer time to be recognized. Due to this, interruption in the audio may occur when switching between audio formats or beginning playback.
• Turning on/off the device connected to this unit’s HDMI OUT terminal during playback, or disconnecting/connecting the HDMI cable during playback, may cause noise or interrupted audio.

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

"x.v.Color® and x.v.Color are trademarks of Sony Corporation."
Analog audio cables
Use stereo RCA phono cables to connect analog audio components. These cables are typically red and white, and you should connect the red plugs to R (right) terminals and white plugs to L (left) terminals.

Digital audio cables
Commercially available coaxial digital audio cables or optical cables should be used to connect digital components to this receiver.

Note
- When connecting optical cables, be careful when inserting the plug not to damage the shutter protecting the optical socket.
- When storing optical cable, coil loosely. The cable may be damaged if bent around sharp corners.
- You can also use a standard RCA video cable for coaxial digital connections.

Standard RCA video cables
These cables are the most common type of video connection and are used to connect to the composite video terminals. The yellow plugs distinguish them from cables for audio.

About video outputs connection
This receiver is not loaded with a video converter. When you use HDMI cables for connecting to the input device, the same cables should be used for connecting to the TV. The signals input from the analog (composite) video inputs of this unit will not be output from the HDMI OUT.

- Video signals can be output.
Connecting a TV and playback components

Connecting using HDMI
If you have an HDMI or DVI (with HDCP) equipped component (Blu-ray Disc player, etc.), you can connect it to this receiver using a commercially available HDMI cable.

- The following connection/setting is required to listen to the sound of the TV over this receiver.
  - If the TV does not support the HDMI Audio Return Channel function, connect the receiver and TV with audio cables (as shown).
  - If the TV supports the HDMI Audio Return Channel function, the sound of the TV is input to the receiver via the HDMI terminal, so there is no need to connect an audio cable. In this case, set **ARC** at **HDMI Setup** to **ON** (see *The HDMI Setup menu* on page 31).
  - Please refer to the TV’s operation manual for directions on connections and setup for the TV.

### Important

- When the **ARC** function is **ON** and the receiver is connected to a compatible TV with an HDMI cable, and you switch the input of the TV to composite, the input of the receiver may automatically switch to **TV**. If this happens, switch the receiver’s input back to the original input, or turn **OFF** the **ARC** function (see *The HDMI Setup menu* on page 31).

### Note

- In order to listen to the audio from the TV that is connected to this receiver using an analog audio cables, set-up for analog audio input is required (see *The Input Assign menu* on page 30).
Connecting your equipment

Connecting your component with no HDMI terminal

This diagram shows connections of a TV and Blu-ray Disc/DVD player (or other playback component) with no HDMI terminal to the receiver.

Important

- When the receiver and TV are connected by composite cable, the OSD function allowing display of the receiver’s settings, operations, etc., on the TV’s screen cannot be used. In this case, watch the receiver’s front panel display while performing the various operations and making settings.

Note

- You can only connect one component to the optical input terminal. If connecting other devices, please use a different method to connect the audio.

In order to listen to the audio from the source component that is connected to this receiver using an optical cable, first, switch to the BD/DVD (Blu-ray Disc/DVD player) or CBL/SAT (set-top box), then press AUDIO SEL to choose the audio signal O1 (OPTICAL1) (see Selecting the audio input signal on page 16).

- You can only connect one component to the coaxial input terminal. If connecting other devices, please use a different method to connect the audio.

In order to listen to the audio from the source component that is connected to this receiver using a coaxial cable, first, switch to the BD/DVD (Blu-ray Disc/DVD player) or CBL/SAT (set-top box), then press AUDIO SEL to choose the audio signal C1 (COAXIAL1) (see Selecting the audio input signal on page 16).

OSD cannot be output.
Connecting antennas

Connect the AM loop antenna and the FM wire antenna as shown below. To improve reception and sound quality, connect external antennas (see Using external antennas below).

1. Push open the tabs, then insert one wire fully into each terminal, then release the tabs to secure the AM antenna wires.
2. Fix the AM loop antenna to the attached stand.
   To fix the stand to the antenna, bend in the direction indicated by the arrow (fig. a) then clip the loop onto the stand (fig. b).
3. Place the AM antenna on a flat surface and in a direction giving the best reception.
4. Connect the FM wire antenna into the FM antenna socket.
   For best results, extend the FM antenna fully and fix to a wall or door frame. Don’t drape loosely or leave coiled up.

Using external antennas

To improve FM reception
(For the U.S.A., Canada and Latin America models)
Use an F connector (no screw type) (not supplied) to connect an external FM antenna.
(For the other models)
Use a PAL connector (not supplied) to connect an external FM antenna.

To improve AM reception
Connect a 5 m to 6 m (16 ft. to 20 ft.) length of vinyl-coated wire to the AM antenna terminal without disconnecting the supplied AM loop antenna.
For the best possible reception, suspend horizontally outdoors.

Outdoor antenna
Indoor antenna
(5 m to 6 m)
(16 ft. to 20 ft.)

75 Ω coaxial cable

fig. a
fig. b
## Connecting a USB device

It is possible to listen to two-channel audio using the USB interface on the front of this receiver.

- Switch the receiver into standby then connect your USB device to the USB terminal on the front panel of this receiver.
- It is not possible to connect an iPod/iPhone or a similar device to this receiver and play back music files.
- This receiver does not support a USB hub.
- For instructions on playing the USB device, see Playing a USB device on page 18.

## Plugging in the receiver

Only plug in after you have connected all your components to this receiver, including the speakers.

- Plug the AC power cord into a convenient AC power outlet.

**CAUTION**

- Handle the power cord by the plug. Do not pull out the plug by tugging the cord and never touch the power cord when your hands are wet as this could cause a short circuit or electric shock. Do not place the unit, a piece of furniture, etc., on the power cord, or pinch the cord. Never make a knot in the cord or tie it with other cords. The power cords should be routed such that they are not likely to be stepped on. A damaged power cord can cause a fire or give you an electrical shock. Check the power cord once in a while. When you find it damaged, ask your nearest Onkyo authorized service center or your dealer for a replacement.
- The receiver should be disconnected by removing the mains plug from the wall socket when not in regular use, e.g., when on vacation.
Playing a source
Here are the basic instructions for playing a source (such as a DVD disc) with your home theater system.

1. Switch on your system components and receiver.
   Start by switching on the playback component (for example a DVD player) and your TV, then the receiver (press \textit{RECEIVER}).

2. Switch the TV input to the input that connects this receiver.
   For example, if you connected this receiver to the VIDEO jacks on your TV, make sure that the VIDEO input is now selected.

3. Press input function buttons to select the input function you want to play.
   If you selected the proper input source and there is still no sound, select the audio input signal for playback (see \textit{Selecting the audio input signal} below).

4. Press the \textit{DIRECT} button.
   Change the listening mode as necessary.
   It is possible to check on the front panel display whether or not surround sound playback is being performed properly.
   If the display does not correspond to the input signal and listening mode, check the connections and settings.

5. Use \textit{VOL +/-} to adjust the volume level.
   Turn down the volume of your TV so that all sound is coming from the speakers connected to this receiver.

\textbf{Note}
- You may need to check the digital audio output settings on your DVD player or digital satellite receiver. It should be set to output Dolby Digital, DTS and 88.2 kHz/96 kHz PCM (2 channel) audio, and if there is an MPEG audio option, set this to convert the MPEG audio to PCM.
- Depending on your DVD player or source discs, you may only get digital 2 channel stereo and analog sound. In this case, the receiver must be set to a multichannel listening mode if you want multichannel surround sound.

\textbf{Selecting the audio input signal}
The audio input signal can be selected for each input source. Once it is set, the audio input that was selected will be applied whenever you select the input source using the input function buttons.

- Press \textit{AUDIO SEL} to select the audio input signal corresponding to the source component.
  Each press cycles through the following:
  - \textbf{H} – Selects an HDMI signal. H can be selected for BD/DVD, CBL/SAT, STRM BOX or GAME input. For other inputs, H cannot be selected.
  - When the HDMI option in Setting the Audio options on page 24 is set to THRU, the sound will be heard through your TV, not from this receiver.
  - \textbf{A} – Selects the analog inputs.
  - \textbf{C1}/\textbf{O1} – Selects the digital input. The coaxial 1 input is selected for \textbf{C1}, and the optical 1 audio input is selected for \textbf{O1}.
  - When H (HDMI) or C1/O1 (digital) is selected and the selected audio input is not provided, A (analog) is automatically selected.

\textbf{Note}
- STRM BOX and GAME inputs are fixed to H (HDMI). It cannot be changed.
- For the TV input, only A (analog) or C1/O1 (digital) can be selected. However, if the ARC at HDMI Setup is set to ON, the input is fixed to H (HDMI) and cannot be changed.
- When set to H (HDMI) or C1/O1 (digital), \textit{DTS} lights when a Dolby Digital signal is input, and \textit{DTS} lights when a DTS signal is input.
- When the H (HDMI) is selected, the A and DIGITAL indicators are off (see page 5).
When digital input (optical or coaxial) is selected, this receiver can only play back Dolby Digital, PCM (32 kHz to 96 kHz) and DTS (including DTS 96 kHz/24 bit) digital signal formats. The compatible signals via the HDMI terminals are: Dolby Digital, DTS, SACD (DSD 2 ch only), PCM (32 kHz to 192 kHz sampling frequencies), Dolby TrueHD, Dolby Digital Plus, DTS-EXPRESS, DTS-HD Master Audio and DVD Audio (including 192 kHz). With other digital signal formats, set to A (analog).

You may get digital noise when a LD or CD player compatible with DTS is playing an analog signal. To prevent noise, make the proper digital connections (page 11) and set the signal input to C1/O1 (digital).

Some DVD players don’t output DTS signals. For more details, refer to the instruction manual supplied with your DVD player.

<table>
<thead>
<tr>
<th>Input function</th>
<th>HDMI</th>
<th>COAXIAL</th>
<th>OPTICAL</th>
<th>ANALOG</th>
</tr>
</thead>
<tbody>
<tr>
<td>BD/DVD</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>TV</td>
<td>✓</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>CBL/SAT</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>x</td>
</tr>
<tr>
<td>CD</td>
<td>x</td>
<td>x</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>STRM BOX</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>GAME</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

- The HDMI terminals can be used for the TV input by turning ON the ARC function in the HDMI setting (page 31).
- In order to listen to the audio from the TV that is connected to this receiver using an analog audio cables, set-up for analog audio input is required (see The Input Assign menu on page 30).

**Tip**

- In order to enjoy the picture and/or sound from devices connected to each terminal, select the input by doing the following.

**(CD) audio input terminal is assigned to CD under factory settings. If you want to change this to TV input, please change the settings in the Input Assign menu (page 30).**
Basic playback controls
This receiver’s remote control buttons can be used for basic playback of files stored on USB devices.

• Press USB to switch the remote control to the USB operation mode.

Important
If a USB Error message lights in the display, try following the points below:
• Switch the receiver off, then on again.
• Reconnect the USB device with the receiver switched off.
• Select another input source (like BD/DVD), then switch back to USB.
• Use a dedicated AC adapter (supplied with the device) for USB power.

About MPEG-4 AAC
Advanced Audio Coding (AAC) is at the core of the MPEG-4 AAC standard, which incorporates MPEG-2 AAC, forming the basis of the MPEG-4 audio compression technology. The file format and extension used depend on the application used to encode the AAC file. This receiver plays back AAC files encoded by iTunes® bearing the extension ‘.m4a’. DRM-protected files will not play, and files encoded with some versions of iTunes® may not play.

About WMA
WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation. This receiver plays back WMA files encoded using Windows Media® Player bearing the extension ‘.wma’. Note that DRM-protected files will not play, and files encoded with some versions of Windows Media® Player may not play.
Music playback using BLUETOOTH® wireless technology

You can wirelessly enjoy music files stored in a smartphone or other BLUETOOTH capable device. The coverage area is about 33 feet (10 meters).

**Note**

- The BLUETOOTH® word mark and logos are registered trademarks owned by Bluetooth SIG, Inc. and any use of such marks by Onkyo & Pioneer Corporation is under license. Other trademarks and trade names are those of their respective owners.
- The BLUETOOTH wireless technology enabled device must support A2DP profiles.
- We do not guarantee proper connection and operation of this unit with all BLUETOOTH wireless technology enabled devices.

**Pairing with the unit (Initial registration)**

Pairing should be performed when first using the unit with the BLUETOOTH capable device, or when the pairing data on the device has been erased for any reason.

- After pressing the BLUETOOTH and switching to BT Audio function, perform the pairing procedure on the BLUETOOTH capable device. If pairing has been performed correctly, you will not need to perform the pairing procedures for the unit as shown below.

**Listen to music on the unit from a BLUETOOTH capable device**

1. Press the BLUETOOTH.
2. Turn on the power to the BLUETOOTH capable device that you wish to pair with, and perform pairing procedure on it.
   - This unit will be displayed as "Onkyo AV Receiver" on all BLUETOOTH capable devices that you have. Pairing will start.
   - Place the BLUETOOTH capable device close to the unit.
   - Please refer to the user’s manual for your BLUETOOTH capable device for details on when pairing can be performed and the procedures required for pairing.
   - When PIN code entry is requested, enter ‘0000’. (This unit does not accept any PIN code setting other than ‘0000’.)
3. Confirm on the BLUETOOTH capable device that pairing has been completed. If pairing with the BLUETOOTH capable device has been completed correctly “CONNECT” will be displayed.
4. Playback music from the BLUETOOTH capable device.

**Radio wave caution**

This unit uses a 2.4 GHz radio wave frequency, which is a band used by other wireless systems (see list below). To prevent noise or interrupted communication, do not use this unit nearby such devices, or make sure these devices are switched off during use.

- Cordless phones
- Cordless facsimiles
- Microwave ovens
- Wireless LAN devices (IEEE802 11b/g)
- Wireless AV equipment
- Wireless controllers for game systems
- Microwave-based health aids
- Some baby monitors
- Other, less common, equipment that may operate on the same frequency:
  - Anti-theft systems
  - Amateur radio stations (HAM)
  - Warehouse logistic management systems
  - Discrimination systems for train or emergency vehicles

**Note**

- In the event noise appears in your television image, there is the possibility that a BLUETOOTH wireless technology enabled device or this unit (including products supported by this unit) are causing signal interference with the antenna input connector of your television, video, satellite tuner, etc. In this event, increase the distance between the antenna input connector and the BLUETOOTH wireless technology enabled device or this unit (including products supported by this unit).
- If there is something obstructing the path between this unit (including devices supported by this unit) and the device equipped with BLUETOOTH wireless technology (such as a metal door, concrete wall, or insulation containing tinfoil), you may need to change the location of your system to prevent signal noise and interruptions.

**Scope of operation**

Use of this unit is limited to home use. (Transmission distances may be reduced depending on communication environment).
In the following locations, poor condition or inability to receive radio waves may cause the audio to be interrupted or stopped:

- In reinforced concrete buildings or steel framed or iron-framed buildings.
- In a crowd of people or near a building or obstacle.
- In a location exposed to the magnetic field, static electricity or radio wave interference from radio communication equipment using the same frequency band (2.4 GHz) as this unit, such as a 2.4 GHz wireless LAN device (IEEE802.11b/g) or microwave oven.
- If you live in a heavily populated residential area (apartment, townhouse, etc.) and if your neighbor’s microwave is placed near your system, you may experience radio wave interference. If this occurs, move your unit to a different place. When the microwave is not in use, there will be no radio wave interference.

Radio wave reflections

The radio waves received by this unit include the radio wave coming directly from the device equipped with BLUETOOTH wireless technology (direct wave) and waves coming from various directions due to reflections by walls, furniture and building (reflected waves). The reflected waves (due to obstacles and reflecting objects) further produce a variety of reflected waves as well as variation in reception condition depending on locations. If the audio cannot be received properly due to this phenomenon, try moving the location of the device equipped with BLUETOOTH wireless technology a little. Also note that audio may be interrupted due to the reflected waves when a person crosses or approaches the space between this unit and the device equipped with BLUETOOTH wireless technology.

Precautions regarding connections to products supported by this unit

- Complete connections for all devices supported by this unit, including all audio cords and power cables before connecting them to this unit.
- After completing connections to this unit, check the audio and power cables to confirm that they not twisted together.
- When disconnecting this unit, confirm that you have sufficient working space in the surrounding area.

When changing connections of audio or other cables for products supported by this unit, confirm that you have sufficient working space in the surrounding area.

Listening to the radio

The following steps show you how to tune in to FM and AM radio broadcasts using the automatic (search) and manual (step) tuning functions. Once you are tuned to a station you can memorize the frequency for recall later—see Saving station presets below for more on how to do this.

1. Press TUNER to select the tuner.
2. Use BAND to change the band (FM or AM), if necessary. Each press switches the band between FM (stereo or mono) and AM.
3. Tune to a station. There are three ways to do this:
   - Automatic tuning
     To search for stations in the currently selected band, press and hold TUNING +/- for about a second. The receiver will start searching for the next station, stopping when it has found one. Repeat to search for other stations.
   - Manual tuning
     To change the frequency one step at a time, press TUNING +/-.
   - High speed tuning
     Press and hold TUNING +/- for high speed tuning.

Improving FM sound

If the TUNE or ST indicators don’t light when tuning to an FM station because the signal is weak, set the receiver to the mono reception mode.

- Press BAND to select FM MONO.
  This should improve the sound quality and allow you to enjoy the broadcast.

Saving station presets

If you often listen to a particular radio station, it’s convenient to have the receiver store the frequency for easy recall whenever you want to listen to that station. This saves the effort of manually tuning in each time. This unit can memorize up to 30 stations.

1. Tune to a station you want to memorize. See Listening to the radio above for more on this.
2. Press EDIT. The display shows PRESET, then a blinking MEM and station preset.
3. Press PRESET +/- to select the station preset you want.
4. Press ENTER. The preset number stop blinking and the receiver stores the station.

Note
- If the receiver is left disconnected from the AC power outlet for over a month, the station memories will be lost and will have to be reprogrammed.
- Stations are stored in stereo. When the station is stored in the FM MONO mode, it shows as ST when recalled.
Listening to station presets
You will need to have some presets stored to do this. See Saving station presets on page 20 if you haven’t done this already.

Press PRESET +/- to select the station preset you want.

Naming preset stations
For easier identification, you can name all of your preset stations.

1. Choose the station preset you want to name. See Listening to station presets above for how to do this.
2. Press EDIT twice. The cursor at the first character position is blinking on the display.
3. Input the name you want. Choose a name up to eight characters long.
   - Use PRESET +/- to select character position.
   - Use TUNING +/- to select characters.
   - The name is stored when ENTER is pressed.
4. Tip
   - To erase a station name, follow steps 1 and 2, and press ENTER while the display is blank. Press EDIT while the display is blank, to keep the previous name.
   - Once you have named a station preset, Press DISPLAY to show the name. When you want to return to the frequency display, press DISPLAY several times to show the frequency.

An introduction to RDS (For Europe)
Radio Data System (RDS) is a system used by most FM radio stations to provide listeners with various kinds of information—the name of the station and the kind of show they’re broadcasting, for example.

One feature of RDS is that you can search by type of program. For example, you can search for a station that’s broadcasting a show with the program type, JAZZ.

You can search the following program types:

- NEWS – News
- AFFAIRS – Current Affairs
- INFO – General Information
- SPORT – Sport
- EDUCATE – Educational
- DRAMA – Radio plays, etc.
- CULTURE – National or regional culture, theater, etc.
- SCIENCE – Science and technology
- VARIED – Usually talk-based material, such as quiz shows or interviews.
- POP M – Pop music
- ROCK M – Rock music
- EASY M – Easy listening
- LIGHT M – ‘Light’ classical music
- CLASSICS – ‘Serious’ classical music
- OTHER M – Music not fitting above categories
- WEATHER – Weather reports
- FINANCE – Stock market reports, commerce, trading, etc.
- CHILDREN – Programs for children
- SOCIAL – Social affairs
- RELIGION – Programs concerning religion
- PHONE IN – Public expressing their views by phone
- TRAVEL – Holiday-type travel rather than traffic announcements
- LEISURE – Leisure interests and hobbies
- JAZZ – Jazz
- COUNTRY – Country music
- NATION M – Popular music in a language other than English
- OLDIES – Popular music from the ’50s and ’60s
- FOLK M – Folk music
- DOCUMENT – Documentary

Note
- In addition, there are three other program types, ALARM, ALARMTST, and NO TYPE. ALARM and ALARMTST are used for emergency announcements. NO TYPE appears when a program type cannot be found.

Searching for RDS programs
You can search for a program type listed above.

1. Press TUNER then press BAND to select the FM band.
   - RDS is only possible in the FM band.
2. Press PTY.
3. SEARCH shows in the display.
4. Press PRESET +/- to select the program type you want to hear.
5. Press ENTER to search for the program type.

The system starts searching through the station presets for a match, stopping when it was found one. Repeat to search for other stations.

If NO PTY is displayed it means the tuner couldn’t find that program type at the time of the search.

RDS searches station presets only. If no stations have been preset, or if the program type could not be found among the station presets NO PTY is displayed.

FINISH means the search is complete.
Displaying RDS information

Use the DISPLAY button to display the different types of RDS information available.

Press DISPLAY for RDS information.

Each press changes the display as follows:

- Listening mode
- Master volume
- Radio Text (RT) – Messages sent by the radio station. For example, a talk radio station may provide a phone number as RT.
- Program Service Name (PS) – The name of the radio station.
- Program Type (PTY) – This indicates the kind of program currently being broadcast.
- Current tuner frequency (FREQ)

Note

- If any noise is picked up while displaying the RT scroll, some characters may be displayed incorrectly.
- If you see NO TEXT in the RT display, it means no RT data is sent from the broadcast station. The display will automatically switch to the PS data display (if no PS data, NO NAME is displayed).
- In the PTY display, NO PTY may be shown.
4: Listening to your system

Choosing the listening mode
This receiver offers a variety of listening modes to accommodate playback of various audio formats. Choose one according to your speaker environment or the source.

While listening to a source, press the listening mode button repeatedly to select a listening mode you want.

• The listening mode is shown on the display on the front panel.

Important
• The listening modes and many features described in this section may not be available depending on the current source, settings and status of the receiver.

Listening in surround sound
Using this receiver, you can listen to any source in surround sound. However, the options available will depend on your speaker setup and the type of source you’re listening to.

• If the source is Dolby Digital, DTS, or Dolby Surround encoded, the proper decoding format will automatically be selected and shown in the display.

The following modes provide basic surround sound for stereo and multichannel sources.

<table>
<thead>
<tr>
<th>Type of surround modes</th>
<th>Suitable sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Two channel sources</td>
<td></td>
</tr>
<tr>
<td>DOLBY PLII MOVIE</td>
<td>Movie</td>
</tr>
<tr>
<td>DOLBY PLII MUSIC</td>
<td>Music</td>
</tr>
<tr>
<td>DOLBY PLII GAME</td>
<td>Video games</td>
</tr>
<tr>
<td>NEO:6 CINEMA</td>
<td>Movie</td>
</tr>
<tr>
<td>NEO:6 MUSIC</td>
<td>Music</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Multi-channel sources</th>
<th>No additional effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>Straight Decode</td>
<td></td>
</tr>
</tbody>
</table>

a. You can also adjust the C.WIDTH, DIMEN., and PNRM. effect (see Setting the Audio options on page 24).
b. You can also adjust the C.IMG effect (see Setting the Audio options on page 25).

Playing back in the STEREO mode
When you select STEREO, you will hear the source through just the front left and right speakers (and possibly your subwoofer depending on your speaker settings). Dolby Digital and DTS multichannel sources are downmixed to stereo.

When the headphones are connected, STEREO can only be selected.

Using the DSP
The DSP feature creates a variety of surround effects. Try different modes with various soundtracks to see which you like.

| All Ch Stereo               | Gives multichannel sound to a stereo source, using all of your speakers. |
| TV Logic                    | Designed for movies with lots of dialog. |
| Game-Action                 | Designed for action movies with dynamic soundtracks. |
| Game-RPG                    | Suitable for video games. |
| Game-Sports                 | Suitable for sports programs. |
| Game-Rock                   | Creates a live concert sound for rock and pop music. |
| Orchestra                   | Gives a large concert hall-type sound. |

Using Direct
Use the Direct modes when you want to hear the truest possible reproduction of a source. All unnecessary signal processing is bypassed.

<table>
<thead>
<tr>
<th>DIRECT</th>
<th>Sources are heard according to the settings made in the Manual SP Setup (speaker setting, X.Over, channel level, speaker distance), as well as with dual mono settings. You will hear sources according to the number of channels in the signal.</th>
</tr>
</thead>
<tbody>
<tr>
<td>AV SYNC</td>
<td>Fixed PCM, HDMI Audio and Auto Delay functions are available.</td>
</tr>
</tbody>
</table>
**Listening to your system**

### Using the Music Optimizer

When audio data is removed during the compression process, sound quality often suffers from an uneven sound image. The Music Optimizer feature employs new DSP technology that helps bring CD quality sound back to compressed 2-channel audio by restoring sound pressure and smoothing jagged artifacts left over after compression.

Press M.OPT to switch the M.OPT (Music Optimizer) ON or OFF.

**Note**
- The Music Optimizer mode cannot be set to ON, when the DIRECT mode is switched on.

### Setting the Audio options

There are a number of additional sound settings you can make using the QUICK MENU menu. The defaults, if not stated, are listed in bold.

#### Important
- Note that if a setting doesn’t appear in the QUICK MENU menu, it is unavailable due to the current source, settings and status of the receiver.

Press QUICK MENU button.

1. Use `#/` to select the setting you want to adjust.
2. Depending on the current status/mode of the receiver, certain options may not be able to be selected. Check the table below for notes on this.
3. Use `←/→` to set it as necessary.
4. Press `▼` to confirm and exit the menu.

#### Setting/What it does | Option(s)
--- | ---
AV. SYN (A/V SYNC)  
Some monitors have a slight delay when showing video, so the soundtrack will be slightly out of sync with the picture. By adding a bit of delay, you can adjust the sound to match the presentation of the video.  
0 ms to 500 ms  
(1 step : 5 ms)  
Default: 0  
M.OPT (Music Optimizer)  
Switches on/off the effect of Music Optimizer.  
(see Using the Music Optimizer on page 24)  
ON

#### Setting/What it does | Option(s)
--- | ---
DUAL MONO  
Specifies how dual mono encoded Dolby Digital soundtracks should be played.  
CH1 – Channel 1 is heard only  
CH2 – Channel 2 is heard only  
CH1 CH2 – Both channels heard from front speakers  
OFF  
ON

#### Setting/What it does | Option(s)
--- | ---
F.PCM (Fixed PCM)  
This is useful if you find there is a slight delay before OFF recognizes the PCM signal on a CD, for instance.  
When ON is selected, noise may be output during playback of non-PCM sources. Please select another input signal if this is a problem.  
OFF  
ON

#### Setting/What it does | Option(s)
--- | ---
LATE NIGHT  
Adjusts the level of dynamic range for movie soundtracks optimized for Dolby Digital, DTS, Dolby TrueHD, DTS-HD and DTS-HD Master Audio (you may need to use this feature when listening to surround sound at low volumes).  
AUTO  
OFF  
MID  
MAX

#### Setting/What it does | Option(s)
--- | ---
HDMI (HDMI Audio)  
Specifies the routing of the HDMI audio signal out of this receiver (AMP) or through to a TV (THRU). When THRU is selected, no sound is output from this receiver.  
AMP  
THRU

#### Setting/What it does | Option(s)
--- | ---
A.DLY (Auto Delay)  
This feature automatically corrects the audio-to-video delay between components connected with an HDMI cable. The audio delay time is set depending on the operational status of the display connected with an HDMI cable. The video delay time is automatically adjusted according to the audio delay time.  
OFF  
ON
### Setting/What it does | Option(s)
--- | ---
C.WIDTH (Center Width) | 0 to 7
(Applicable only when using a center speaker)
Sends the center channel between the front right and left speakers, making it sound wider (higher settings) or narrower (lower settings).
Making the C.WIDTH setting “7” may cause no sound to be output from the center channel.
- Default: 3

DIMEN. (Dimension) | -3 to +3
Adjusts the surround sound balance from front to back, making the sound more distant (minus settings), or more forward (positive settings).
- Default: 0

PNRM. (Panorama) | OFF
Extends the front stereo image to include surround speakers for a ‘wraparound’ effect.

C.IMG (Center Image) | OFF
(Applicable only when using a center speaker)
Adjust the center image to create a wider stereo effect with vocals. Adjust the effect from 0 (all center channel sent to front right and left speakers) to 10 (center channel sent to the center speaker only).
- Default: 3 (NEO:6 MUSIC), 10 (NEO:6 CINEMA)

---

- **a.** You can change the Music Optimizer feature at any time by using M.OPT button.
- **b.** The default setting when the USB input is selected is ON.
- **c.** This setting works only with dual mono encoded Dolby Digital and DTS soundtracks.
- **d.** This is not displayed by default. You need to change some settings on this unit to display the menu. (see Displaying the Fixed PCM Setting menu on page 26).
- **e.** The initial set AUTO is only available for Dolby TrueHD signals. Select MAX or MID for signals other than Dolby TrueHD.
- **f.** This feature is only available when the connected display supports the automatic audio/video synchronizing capability (‘lip-sync’) for HDMI. If you find the automatically set delay time unsuitable, set A.DLY to OFF and adjust the delay time manually. For more details about the lip-sync feature of your display, contact the manufacturer directly.
- **g.** Only available with 2-channel sources in DOLBY PLII MUSIC mode.
- **h.** Only when listening to 2-channel sources in NEO:6 CINEMA and NEO:6 MUSIC mode.
4 Listening to your system

- The functions that can be set differ depending on the input signal or speaker settings.

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<td>✓</td>
<td>✓</td>
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<td>x</td>
<td>x</td>
<td>x</td>
<td>✓</td>
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</tbody>
</table>

Displaying the Fixed PCM Setting menu
The Fixed PCM Audio options are not displayed by default. Perform the following operations to display them.

1. Switch the receiver into standby.
2. While holding down AUTO SURROUND/STREAM DIRECT on the front panel, hold ON/STANDBY. The setting switches between display and hide each time you operate these steps.

Changing the TV format setting of Graphical User Interface (Except for the U.S.A., Canada and Latin America models)
If the Graphical User Interface screen is not displayed correctly, it may be that the TV system is set incorrectly for your country or region.

1. Switch the receiver into standby.
2. While holding down TUNING on the front panel, hold ON/STANDBY. Each press switches between PAL and NTSC.
   - Default: PAL
Changing the frequency step of AM Radio (Except for the U.S.A., Canada and Latin America models)

If you find that you can’t tune into stations successfully, the frequency step may not be suitable for your country/region. Here’s how to switch the setting:

1. Switch the receiver into standby.
2. While holding down ▼ TUNING on the front panel, hold ◎ ON/STANDBY.
   - Each press switches between 9K STEP and 10K STEP.
   - Default: 9K STEP

*Note*
- If the Standby Through is not set to OFF, you may not be able to set the switching of the Fixed PCM, NTSC/PAL or 9K STEP/10K STEP.
5: Setup

Using the Setup
The following section shows you how to make detailed settings to specify how you're using the receiver, and also explains how to fine-tune individual speaker system settings to your liking.

Important
- The OSD will not appear if you have connected using the composite output to your TV. Use HDMI connections for Setup.
- If headphones are connected to the receiver, disconnect them.
- You can't use the Setup when the USB input is selected.

1 Switch on the receiver and your TV.

2 Press RECEIVER to switch on.

3 Switch the TV input to the input that connects this receiver to the TV through the corresponding HDMI cable.

4 Press ©. The Setup appears on your TV. Use # / $ / £ and ENTER on the remote control to navigate through the screens and select menu items. Press © to exit the current menu.

- Manual SP Setup
  - Speaker Setting – Specify the size and number of speakers you've connected (see below).
  - X.Over – Specify which frequencies will be sent to the subwoofer (page 29).
  - Channel Level – Adjust the overall balance of your speaker system (page 29).
  - Speaker Distance – Specify the distance of your speakers from the listening position (page 30).
  - Input Assign – Specify what you've connected to the (CD) audio input (see The Input Assign menu on page 30).
  - Auto Power Down – Sets to automatically turn off the power when the receiver has not operated for several hours (see The Auto Power Down menu on page 31).
  - HDMI Setup – Set the audio return channel function and set the HDMI input signal to Standby Through output or not during standby (see The HDMI Setup menu on page 31).

Manual speaker setup
This receiver allows you to make detailed settings to optimize the surround sound performance. You only need to make these settings once (unless you change the placement of your current speaker system or add new speakers).

Speaker Setting
Use this setting to specify your speaker configuration (size, number of speakers).

1 Select ‘Manual SP Setup’ from the Setup.

2 Select ‘Speaker Setting’ from the Manual SP Setup menu.

3 Choose the set of speakers that you want to set then select a speaker size.

- Front – Select LARGE if your front speakers reproduce bass frequencies effectively, or if you didn’t connect a subwoofer. Select SMALL to send the bass frequencies to the subwoofer.
- Center – Select LARGE if your center speaker reproduces bass frequencies effectively, or select SMALL to send bass frequencies to the other speakers or subwoofer. If you didn’t connect a center speaker, choose NO (the center channel is sent to the other speakers).
- Surr – Select LARGE if your surround speakers reproduce bass frequencies effectively. Select SMALL to send bass frequencies to the other speakers or subwoofer. If you didn’t connect surround speakers choose NO (the sound of the surround channels is sent to the other speakers).
• **Subwoofer** – LFE signals and bass frequencies of channels set to SMALL are output from the subwoofer when YES is selected (see notes below). Choose the PLUS setting if you want the subwoofer to output bass sound continuously or you want deeper bass (the bass frequencies that would normally come out the front and center speakers are also routed to the subwoofer). If you did not connect a subwoofer choose NO (the bass frequencies are output from other speakers).

4 When you’re finished, press .
   You return to the Manual SP Setup menu.

   Note
   • If you select SMALL for the front speakers, the subwoofer will automatically be fixed to YES. Also, the center, surround can’t be set to LARGE if the front speakers are set to SMALL. In this case, all bass frequencies are sent to the subwoofer.
   • If you have a subwoofer and like lots of bass, it may seem logical to select LARGE for your front speakers and PLUS for the subwoofer. This may not, however, yield the best bass results. Depending on the speaker placement of your room you may actually experience a decrease in the amount of bass due to low frequency cancellations. In this case, try changing the position or direction of speakers. If you can’t get good results, listen to the bass response with it set to PLUS and YES or the front speakers set to LARGE and SMALL alternatively and let your ears judge which sounds best. If you’re having problems, the easiest option is to route all the bass sounds to the subwoofer by selecting SMALL for the front speakers.

**X.Over**
• Default setting: 200Hz
  This setting decides the cutoff between bass sounds playing back from the speakers selected as LARGE, or the subwoofer, and bass sounds playing back from those selected as SMALL. It also decides where the cutoff will be for bass sounds in the LFE channel.
  • For more on selecting the speaker sizes, see [Speaker Setting on page 28](#).

1 Select ‘Manual SP Setup’ from the Setup.
2 Select ‘X.Over’ from the Manual SP Setup menu.
3 Choose the frequency cutoff point.
   Frequencies below the cutoff point will be sent to the subwoofer (or LARGE speakers).
4 When you’re finished, press .
   You return to the Manual SP Setup menu.

**Channel Level**
Using the channel level settings, you can adjust the overall balance of your speaker system, an important factor when setting up a home theater system.

**CAUTION**
• The test tones used in the Channel Level settings are output at high volume.

1 Select ‘Manual SP Setup’ from the Setup.
2 Select ‘Channel Level’ from the Manual SP Setup menu.
3 Select a setup option.
   • Manual – Move the test tone manually from speaker to speaker and adjust individual channel levels.
   • Auto – Adjust channel levels as the test tone moves from speaker to speaker automatically.
4 Confirm your selected setup option.
   The test tones will start after you press ENTER. After the volume increases to the reference level, test tones will be output.

---

**Setup**

1.Manual SP Setup
2.X.Over
3.Channel Level
4.Speaker Distance
5 Adjust the level of each channel using \( \pm / \pm \). If you selected Manual, use \( \pm / \pm \) to switch speakers. The Auto setup will output test tones in the order shown on-screen:

Adjust the level of each speaker as the test tone is emitted.

- **Note**
  - If you are using a Sound Pressure Level (SPL) meter, take the readings from your main listening position and adjust the level of each speaker to 75 dB SPL (C-weighting/slow reading).
  - The subwoofer test tone is output at low volumes. You may need to adjust the level after testing with an actual soundtrack.

6 When you’re finished, press \( \downarrow \) .
You return to the Channel Level menu.

**Speaker Distance**
For good sound depth from your system, you need to specify the distance of your speakers from the listening position. The receiver can then add the proper delay needed for effective surround sound.

- For the assignment of the digital signal inputs, see Selecting the audio input signal on page 16.

1 Select ‘Manual SP Setup’ from the Setup.

2 Select ‘Speaker Distance’ from the Manual SP Setup menu.

3 Adjust the distance of each speaker using \( \pm / \pm \).
(For the U.S.A., Canada and Latin America models)

You can adjust the distance of each speaker in 0.1 ft. increments.

(For the other models)

You can adjust the distance of each speaker in 0.1 m increments.

4 When you’re finished, press \( \downarrow \).
You return to the Manual SP Setup menu.
**The Auto Power Down menu**
Set to automatically turn off the receiver after a specified time has passed (when the power has been on with no operation for several hours).
*(For the U.S.A., Canada and Latin America models)*
- Default setting: OFF
*(For the other models)*
- Default setting: 6H

1. Select 'Auto Power Down' from the Setup.
2. Specify the amount of time to allow before the power is turned off (when there has been no operation).
   - You can select 2, 4 or 6 hours, or OFF (if no automatic shutoff is desired).
3. When you're finished, press \(\Rightarrow\).
   You return to the Setup.

**The HDMI Setup menu**
If your TV supports an audio return channel (ARC) function, connect your TV and this unit with an HDMI cable and the TV audio will be inputted into this unit via the HDMI terminal without the need for an audio cable to be connected. It is possible to transfer signals from an HDMI connected player to the TV even when this receiver's power is on standby.

*(For the U.S.A., Canada and Latin America models)*
- Default setting: OFF
*(For the other models)*
- Default setting: 6H

1. Select 'Auto Power Down' from the Setup.
2. Specify the amount of time to allow before the power is turned off (when there has been no operation).
   - You can select 2, 4 or 6 hours, or OFF (if no automatic shutoff is desired).
3. When you're finished, press \(\Rightarrow\).
   You return to the Setup.

**Important**
- Use a High Speed HDMI\(^{\text{TM}}\) Cable when using the ARC function. The ARC function may not operate properly with other HDMI cables.

1. Select 'HDMI Setup' from the Setup.
2. Choose the 'ARC' setting you want.
   - **ON** – The TV's sound is input via the HDMI terminal.
   - **OFF** – The TV's sound is input from the audio input terminals other than HDMI inputs.

3. Choose the 'Standby Through' setting you want.
   When the receiver is in standby, the HDMI input signal selected here will be output to the TV by HDMI.
   - **LAST** – The HDMI input signal selected previously will be output.
   - **BD/DVD, CBL/SAT, STRM BOX, GAME** – The HDMI input signal selected here will be output.
   - **OFF** – Signal will not be output during standby.
   - If the Standby Through setting is not set to OFF, the power consumption during standby will increase.

**Before starting ARC operation**
When starting ARC operation, put the TV and this unit in STANDBY mode after connecting this unit with the TV. Next, turn ON the power of this unit and then the TV, in this order. In order to start ARC operation, after connecting this unit to a TV with an HDMI cable, you need to switch the input on the TV to the input mode required to connect to this unit. Then, you can select a TV program.

4. Choose the '4k60p Setting' setting you want.
   If the TV to be connected using HDMI supports 4K/60p, you can switch the 4k60p setting in accordance with TV performance.
   1. Select an input terminal that you wish to change settings for using \(\uparrow\)/\(\downarrow\).
   2. Use \(\uparrow\)/\(\downarrow\) to select '4k60p'.
   3. Use \(\uparrow\)/\(\downarrow\) to select the signal to set.
      - **4:4:4** – Select this setting when connecting to a 4K/60p 4:4:4 24 bit compatible TV using HDMI. More high quality video images can be enjoyed.
      - When the HDMI cable does not support 4K/60p 4:4:4 24 bit (18 Gbps transmission), video image may not be output properly.
      In that case, select 4:2:0 to watch a 4K/60p 4:2:0 24 bit video image.
      - **4:2:0** – Select this setting when connecting to a 4K/60p 4:2:0 24 bit compatible TV using HDMI.

5. Press \(\Rightarrow\).
   If certain source devices that do not support 4K/60p 4:4:4 24 bit are used and the HDMI terminal is set to 4:4:4, video output from the source device may turn red, no audio may be output by the source device, or a 3D signal may not be output by some of the devices. In these cases, set the HDMI terminal to 4:2:0.

5 When you're finished, press \(\Rightarrow\).
You return to the Setup.
Important

• The ARC function may not operate even if the above conditions are met. If this is the case, listen to the TV audio after connecting this unit and the TV with an audio cable.

• The CEC (Consumer Electronic Control) function may activate when the ARC function is turned ON, causing power to turn ON and OFF and the input to switch from one to another. Since this unit does not guarantee synchronized operation based on the CEC function, we recommend that you turn OFF the HDMI CONTROL setting on the connected player. This unit may not operate properly if the HDMI CONTROL on the player is ON. Refer to the relevant device’s instruction manual for details. If this does not work, turn OFF the ARC function.

In addition, this unit does not guarantee synchronized operation that allows the TV remote control to operate the volume (including mute). Use this unit to operate the volume (including mute).

• Turn OFF the power and remove the power cord from the wall socket when connecting other devices or making connection changes to this unit. After all connections are completed, insert the power cord into the wall socket.
Troubleshooting
Incorrect operations are often mistaken for trouble and malfunctions. If you think that there is something wrong with this component, check the points below. Take a look at the other components and electrical appliances being used, because sometimes the problem may lie there. If the trouble isn't sorted out even after going through the checks below, ask your nearest Onkyo authorized independent service company to carry out repair work.

If the unit does not operate normally due to external effects such as static electricity disconnect the power plug from the outlet and insert again to return to normal operating conditions.

General
- The power does not turn on.
  → Disconnect the power plug from the outlet, and insert again.
- The receiver suddenly switches off.
  → When the Auto Power Down function is working, the power will automatically turn off if the receiver has not operated for several hours. Check the setting for the Auto Power Down function (see The Auto Power Down menu on page 33).
  → Make sure there are no loose strands of speaker wire touching the rear panel. This could cause the receiver to shut off automatically.
  → After about a minute (you won’t be able to switch the unit on during this time), switch the receiver back on. If the message persists, call an Onkyo authorized independent service company.
  → If there is very little low frequency information in the source material, change your speaker settings to Front: SMALL / Subwoofer: YES, or Front: LARGE / Subwoofer: PLUS (page 29).
- The input of this unit switches from one to another. (When the ARC function is ON)
  → The CEC (Consumer Electronic Control) function may activate when the ARC function is turned ON, causing the input to switch from one to another. Since this unit does not guarantee synchronized operation based on the CEC function, turn OFF the HDMI CONTROL setting on the connected player. Refer to the relevant device’s instruction manual for details.
  → If this does not work, turn OFF the ARC function. If this is the case, listen to the TV audio after connecting this unit and the TV with an audio cable.
- OVERHEAT shows in the display and the power turns off.
  → The temperature within the unit has exceeded the allowable value. Try moving the unit for better ventilation.
  → Lower the volume level.
- TEMP shows in the display and the volume level drops.
  → The temperature within the unit has exceeded the allowable value. Try moving the unit for better ventilation.
  → Lower the volume level.
- No sound is output when an input function is selected.
  → Use VOL +/– to turn up the volume.
  → Press-home on the remote control to turn muting off.
  → Set the AUDIO SEL to H (HDMI), C1/O1 (digital) or A (analog) according to the type of connections made (page 18).
  → Make sure the component is connected correctly (see Connecting your equipment on page 8).
  → Check the audio output settings of the source component.
  → Refer to the instruction manual supplied with the source component.
- No image is output when an input function is selected.
  → Make sure the component is connected correctly (see Connecting your equipment on page 8).
  → Check the video output settings of the source component.
  → Use the same type of video cables for the source component and TV to connect to this receiver (see About video outputs connection on page 11).
  → The video input selected on the TV monitor is incorrect. Refer to the instruction manual supplied with the TV.
- There is no bass.
  → When the listening mode is set to DIRECT with analog audio or BT Audio input, there is no output from the subwoofer so bass will not be output. Select a different listening mode if this occurs.
- No sound from subwoofer.
  → The Dolby Digital or DTS source you are listening to may not have an LFE channel.
  → Switch the subwoofer setting in Speaker Setting on page 28 to YES or PLUS.
- No sound from surround or center speakers.
  → Connect the speakers properly (page 9).
  → Refer to Speaker Setting on page 28 to check the speaker settings.
  → Refer to Channel Level on page 29 to check the speaker levels.
- No sound from a specific speaker.
  → Make sure the speaker cable is connected correctly. (Ensure that the connection terminal is correct, that the speaker wire is firmly inserted, and that no speaker wire is touching the rear panel.)
- Considerable noise in radio broadcasts.
  → Connect the antenna (page 14) and adjust the position for best reception.
  → Route any loose cables away from the antenna terminals and wires.
  → Fully extend the FM wire antenna, position for best reception, and secure to a wall (or connect an outdoor FM antenna).
  → Connect an additional internal or external AM antenna (page 14).
  → Turn off equipment causing interference or move it away from the receiver (or move antennas farther away from equipment causing noise).
- Broadcast stations cannot be selected automatically.
  → Connect an outdoor antenna (page 14).
- Noise during playback of a cassette deck.
  → Move the cassette deck away from your receiver, until the noise disappears.
- No sound is output or a noise is output when software with DTS is played back.
  → Make sure the player’s settings are correct and/or the DTS signal out is on. Refer to the instruction manual supplied with the DVD player.
- Can't operate the remote control.
  → Replace the batteries (page 7).
  → Operate within 7 m (23 ft.), 30° of the remote sensor (page 7).
  → Remove the obstacle or operate from another position.
  → Avoid exposing the remote sensor on the front panel to direct light.
- The display is dark.
  → Press DIMMER on the remote control repeatedly to return to the default.
- Display flashes and cannot be operated.
  → Depending on the input signal or listening mode, there may be functions that cannot be selected.
- The BLUETOOTH wireless technology device cannot be connected or operated. Sound from the BLUETOOTH...
wireless technology device is not emitted or the sound is interrupted.

- Check that no object that emits electromagnetic waves in the 2.4 GHz band (microwave oven, wireless LAN device or BLUETOOTH wireless technology apparatus) is near the receiver. If such an object is near the receiver, set the receiver far from it. Or, stop using the object emitting the electromagnetic waves.

- Check that the BLUETOOTH wireless technology device is not too far from the receiver and that obstacles are not set between the BLUETOOTH wireless technology device and the receiver. Set the BLUETOOTH wireless technology device and the receiver so that the distance between them is less than about 10 m (33 ft.)* and no obstacles exist between them.

* The line-of-sight transmission distance is an estimate. Actual transmission distances supported may differ depending on surrounding conditions.

- The BLUETOOTH wireless technology device may not be set to the communication mode supporting the BLUETOOTH wireless technology. Check the setting of the BLUETOOTH wireless technology device.

- Check that pairing is correct. The pairing setting was deleted from this receiver or the BLUETOOTH wireless technology device. Reset the pairing.

- Check that the profile is correct. Use a BLUETOOTH wireless technology device that supports A2DP profile.

**HDMI**

- **No picture or sound.**
  - If the problem still persists when connecting your HDMI component directly to your monitor, please consult the component or monitor manual or contact the manufacturer for support.

- **No picture.**
  - Video signals that are input from the analog video terminal will not output from the HDMI terminal. Signals that are input from the HDMI terminal will not output from the analog video terminal. Be consistent with the type of cable between input and output.

- Depending in the output settings of the source component, it may be outputting a video format that can’t be displayed. Change the output settings of the source, or connect using the composite video jacks.

- This receiver is HDCP-compatible. Check that the components you are connecting are also HDCP-compatible. If they are not, please connect them using the composite video jacks.

- Depending on the connected source component, it’s possible that it will not work with this receiver (even if it is HDCP-compatible). In this case, connect using the composite video jacks between source and receiver.

- If video images do not appear on your TV, try adjusting the resolution, Deep Color or other setting for your component.

- To output signals in Deep Color, use an HDMI cable (High Speed HDMI® Cable) to connect this receiver to a component or TV with the Deep Color feature.

- **The OSD screen (Setup, etc.) isn’t displayed.**
  - The OSD will not appear if you have connected using the composite output to your TV. Use HDMI connections when setting up the system.

- **No sound, or sound suddenly ceases.**
  - Check that the HDMI setting is set to AMP (page 24).
  - If the component is a DVI device, use a separate connection for the audio.

- HDMI format digital audio transmissions require a longer time to be recognized. Due to this, interruption in the audio may occur when switching between audio formats or beginning playback.

- Turning on/off the device connected to this unit’s HDMI OUT terminal during playback, or disconnecting/connecting the HDMI cable during playback, may cause noise or interrupted audio.

**Important information regarding the HDMI connection**

There are cases where you may not be able to route HDMI signals through this receiver (this depends on the HDMI equipped component you are connecting-check the HDMI compatibility information). If you aren’t receiving HDMI signals properly through this receiver (from your component), please try the following configuration when connecting up.

**Configuration**

Connect your HDMI-equipped component directly to the display using an HDMI cable. Then use the most convenient connection (digital is recommended) for sending audio to the receiver. See the operating instructions for more on audio connections. Set the display volume to minimum when using this configuration.

**Note**

- Depending on the component, audio output may be limited to the number of channels available from the connected display unit (for example audio output is reduced to 2 channels for a monitor with stereo audio limitations).

- If you want to switch the input source, you’ll have to switch functions on both the receiver and your display unit.

- Since the sound is muted on the display when using the HDMI connection, you must adjust the volume on the display every time you switch input sources.

**USB messages**

- **‘USB Error 4 (I/U ERR4)’**
  - The power requirements of the USB device are too high for this receiver. Switch off the receiver and reconnect the USB to the receiver.
About the Speaker System

Precautions
• Do not place heavy or large objects on top of the speaker. Doing so could provoke the speaker to fall, causing damages or bodily injury.
• Do not place the speaker on an unstable surface, as doing so may cause the speaker to fall and cause damage or bodily injury.
• Switch off and unplug your AV equipment and consult the instructions when connecting up components. Make sure you use the correct connecting cables.
• Do not sit or stand on the speaker, or let children play on the speaker. Doing so could provoke the speaker to fall, causing damages or bodily injury.
• Be careful to make sure children not to put their hands or any objects into the speaker duct*.
  *Speaker duct: A hole for plentiful bass sound on speaker cabinet (enclosure).
• Place the center speaker at a safe distance from the child’s reach. Otherwise it may result in the speaker falling down and causing personal injury and/or property damage.
• Install the subwoofer in a well-ventilated location where it will not be exposed to high temperatures and high humidity.
• Do not place the subwoofer near stoves or other heating equipment or at locations exposed to direct sunlight, as these can have an adverse effect on the cabinet and internal components. Also, do not install the unit where there is too much dust or high humidity, as these can cause malfunctioning or breakdowns. (Avoid cooking tables and other locations where the unit would be exposed to heat, steam and soot.)
• Keep the subwoofer away from devices such as cassette decks which are sensitive to magnetic fields.
• Do not place cups, glasses, or other containers with fluids on top of the units, since the units may be damaged if the liquid spills.
• The installation location selected should have a sturdy floor surface. Mounting the subwoofer on a long-pile carpet should be avoided, since the carpet may touch the driver’s diaphragm, causing distorted sound.
• Please install the subwoofer away from the antenna cable of the receiver, as noise can be caused with installation close to the antenna cable. In such a case, use the subwoofer at a position away from the antenna and the antenna cable.
• The front grilles on front/center/surround speakers cannot be removed. Do not try to forcibly remove them since doing so may damage the grille.
• When mounting front speakers or surround speakers on a wall surface, make sure that the wall you intend to mount the speakers on is strong enough to support them.
• Do not attach center speaker and subwoofer to the wall or ceiling, as they may cause injury in the event of a fall.
• Do not connect the supplied subwoofer to any amplifier other than the one supplied with this system. Connection to any other amplifier may result in malfunction or fire.
• Front/Center/Surround speakers incorporate autoregression technology to protect the speakers. If the speakers stop emitting noise when receiving too large a signal, turn the volume down on the receiver and wait a few seconds. The protection feature disables itself automatically.

Effective Combination of Subwoofer and Front/Center/Surround speakers
• When the subwoofer is combined with Front/Center/Surround speakers in a total system, the sound characteristics produced are like those shown in the accompanying graph, depicting the enhancement of the bass frequencies. This is particularly effective for reproducing ground rumbles and other deep sound effects found in movies.

Operation
• Set the receiver’s cross-over frequency at 200 Hz. (see X.Over on page 29).

Making amplifier settings
Select the speaker setting of the receiver. (see Speaker Setting on page 28).
• Front / Center / Surround speakers: SMALL
Wall-mounting the Front/Center/Surround speaker system

**CAUTION**
- Use the M5 metric thread screw. Do not use inch thread screw.

**Before mounting**
- Remember that the speaker system is heavy and that its weight could cause the wood screws to work loose, or the wall material to fail to support it, resulting in the speaker falling. Make sure that the wall on which you intend to mount the speakers is strong enough to support them. Do not mount on plywood or soft surface walls.
- Mounting screws are not supplied. Use screws suitable for the wall material and support the weight of the speaker. If you are unsure of the qualities and strength of the walls, consult a professional for advice.

- To mount the center speaker horizontally, use the two keyhole slots shown to hang the speaker on two screws that are securely screwed into the wall.

**Resetting the main unit**
Use this procedure to reset all the receiver’s settings to the factory default. Use the front panel controls to do this.

1. Switch the receiver into standby.
2. While holding down STEREO, press and hold ON/STANDBY for about two seconds.
4. Press DSP to confirm. OK appears in the display to indicate that the receiver has been reset to the factory default settings.

**Important**
- If the Standby Through is not set to OFF, you may not be able to initialize the unit.

**Cleaning the unit**
- Use a polishing cloth or dry cloth to wipe off dust and dirt.
- When the surface is dirty, wipe with a soft cloth dipped in some neutral cleanser diluted five or six times with water, and wrung out well, and then wipe again with a dry cloth.
- Do not use furniture wax or cleansers.
- Never use thinners, benzine, insecticide sprays or other chemicals on or near this unit, since these will corrode the surface.
Specifications

Audio section
For the U.S.A., Canada and Latin America models
Continuous average power output of 60 watts* per channel, min., at 8 ohms, from 20 Hz to 20 kHz with no more than 0.7 %** total harmonic distortion.

| Front (stereo) | 60 W + 60 W |
| Power output (1 kHz, 6 Ω, 0.7 %) | 100 W per channel |

* Measured pursuant to the Federal Trade Commission’s Trade Regulation rule on Power Output Claims for Amplifiers
** Measured by Audio Spectrum Analyzer

For the other models
Rated power output
Front, Center, Surround
100 W per channel (1 kHz, 6 Ω, 0.7 %)

Total Harmonic Distortion
0.06 % (20 Hz to 20 kHz, 8 Ω, 50 Wch)

Frequency response (LINE Pure Direct mode)
10 Hz to 100 kHz ±3 dB

Guaranteed speaker impedance
6 Ω to 16 Ω

Input (Sensitivity/Impedance)
LINE: 250 mV/47 kΩ
Signal-to-Noise Ratio (IHF, short circuited, A network)
LINE: 98 dB

Video Section
Signal level
Composite: 1 Vp-p (75 Ω)

Tuner Section
Frequency Range (FM) .................................. 87.5 MHz to 108 MHz
Antenna Input (FM) .................................. 75 Ω unbalanced

For the U.S.A., Canada and Latin America models
Frequency Range (AM) .................................. 530 kHz to 1700 kHz

For the other models
Frequency Range (AM) ................................. 530 kHz to 1700 kHz
Antenna (AM) .................................. Loop antenna

BLUETOOTH section
Version: BLUETOOTH Specification Ver. 3.0
Output: BLUETOOTH Specification Class 2
Estimated line-of-sight transmission distance* .................................. About 10 m (33 ft.)
Supported Codec: Subband Codec, AAC
Additional information
System: 7.7 cm 1-way system
Guaranteed speaker impedance: 6 Ω to 16 Ω
Nominal impedance: 6 Ω
Dimensions: 100 mm (W) x 140 mm (H) x 95 mm (D)
Weight: 0.87 kg (1 lb 15 oz)

Signal-to-Noise Ratio (IHF, short circuited, A network)
LINE: 98 dB

USB terminal: USB2.0 Full Speed (Type A) 5 V, 50 mA

Digital In/Out Section
HDMI terminal: Type A (19-pin)
HDMI output type: 5 V, 55 mA
USB terminal: 98 dB

Power Consumption
In standby: 0.45 W

Power Requirements
For the U.S.A., Canada and Latin America models
AC 120 V, 60 Hz
For the other models
AC 220 V to 240 V, 50/60 Hz

Dimensions
For the U.S.A., Canada and Latin America models
91/16 in. (W) x 33/4 in. (H) x 33/4 in. (D)
For the other models
331/16 in. (W) x 33/4 in. (H) x 33/4 in. (D)

Weight (without package)
For the U.S.A., Canada and Latin America models
7.7 kg (16 lb 15 oz)
For the other models
5.0 kg (11 lb)

Speaker section
Subwoofer
Cabinet: Bass-reflex, floor type
Speaker: 16 cm cone type
Nominal impedance: 6 Ω
Outline Dimension
230 mm (W) x 418 mm (H) x 388 mm (D)
Dimensions: 91/16 in. (W) x 167/16 in. (H) x 143/32 in. (D)
Weight (without package): 5.0 kg (11 lb)

Front speakers / Surround speakers
Enclosure
Front speakers: Closed-box bookshelf type
Surround speakers: Closed-box bookshelf type
Dimensions: 100 mm (W) x 140 mm (H) x 95 mm (D)
Weight: 0.55 kg (1 lb 3 oz)

Surround speakers: 0.55 kg (1 lb 3 oz)

Center speaker
Dimensions: 100 mm (W) x 140 mm (H) x 95 mm (D)
Weight: 0.67 kg (1 lb 7 oz)

Miscellaneous
For the U.S.A., Canada and Latin America models
Power Requirements: AC 120 V, 60 Hz

For the other models
Power Requirements: AC 220 V to 240 V, 50/60 Hz
Power Consumption: 190 W
In standby: 0.45 W
Dimensions: 435 mm (W) x 168 mm (H) x 326.5 mm (D)
Weight (without package): 7.7 kg (16 lb 15 oz)
### Furnished Parts

- Remote control .................................................. 1
- Dry cell batteries (AAA size IEC R03) ...................... 2
- AM loop antenna .................................................. 1
- FM wire antenna .................................................. 1
- Speaker cables (3 m/10 ft.) .................................... 4
- Speaker cables (8 m/26 ft.) ..................................... 2
- Non-Skid Pads ..................................................... 20

- Quick start guide
- Safety Brochure

*Note*

- Specifications and the design are subject to possible modifications without notice, due to improvements.

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