



# LifeSize<sup>®</sup> Icon 600<sup>™</sup> Installation Guide

# Preparing for Installation

As you prepare to install your LifeSize video system, consider the physical conditions of the room, compatibility with displays and your network configuration.

Related documentation is available from [lifesize.com/support](https://lifesize.com/support).

## Before You Install

If you are not using DHCP, a network administrator must manually set an IP address, subnet mask, and default gateway for your LifeSize video system.

### Network Bandwidth

Poor audio and video quality might result from insufficient bandwidth on your network. LifeSize recommends that your network be capable of at least 1 Mb/s (incoming and outgoing) for a high definition video call. During video calls with lower bandwidths, LifeSize video systems automatically select the best resolution that can be achieved with the available bandwidth.

### Domain Name Service Server

If you intend to use domain addresses for placing calls, either configure a DNS server or use a DHCP server that automatically sets a DNS server. By default, LifeSize provides a DNS server at 8 . 8 . 8 . 8.

## Room Configuration

The size, shape, layout, and occupancy of the room dictate where you place your video conferencing components. For example, in a conference room, place a LifeSize Digital MicPod at the center of the group of participants.

You can lock the LifeSize codec with a secure loop to prevent physical removal of the device. For assistance, contact your LifeSize Partner or LifeSize Technical Services.

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**WARNING** Avoid routing cables from the codec across foot-traffic areas. Tripping on the cables can cause personal injury as well as permanent damage to the connectors in the cables and the codec itself.

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The lighting in your environment affects image quality. The optimal lighting for LifeSize video systems is 350-500 LUX. If light levels are set too low, consider adding artificial light. Indirect light from shaded sources or reflected light from pale walls often produces excellent results.

Avoid the following:

- direct sunlight on the subject matter, background, or camera lens
- direct illumination of the subject matter and camera lens

- colored lighting
- harsh side lighting or strong light from above

## System Components

Your package contains the following components:

- LifeSize codec and power supply unit (PSU)
- LifeSize remote control, including two AAA batteries
- Standard cable kit

Read more at [Cables](#).

- Depending on the package that was purchased, one or both of the following audio devices is included:
  - LifeSize Phone
  - One or more LifeSize Digital MicPods with a 4-meter (13.1 foot) LifeSize Link cable
- Depending on the package that was purchased, one of the following cameras is included with a power supply and a high speed 3-meter (9.8 foot) HDMI cable:
  - LifeSize Camera 10x
  - LifeSize Camera 200
- Quick reference card (QRC)

## Installing Your System

Before you install your system, read the *LifeSize Safety and Regulatory Notices* for important safety information.

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**WARNING** Exercise care when connecting cables to the codec. Face the back of the codec or ensure that all connectors are visible when connecting a cable to the codec.

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To install your LifeSize system, remove all components from the product packaging and place them in the appropriate positions in your conference room or office.

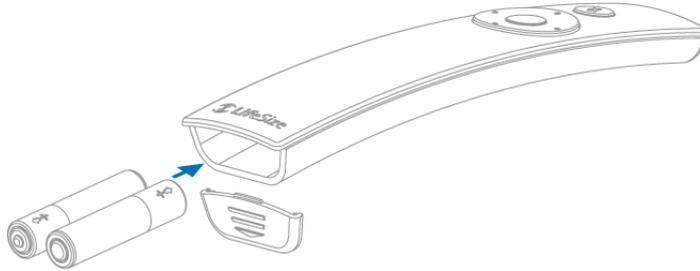
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**WARNING** Do not place anything on top of or adjacent to the codec that can obstruct air flow around the unit or generate heat. Doing so can cause the system to overheat and restart. Prolonged overheating can damage the codec. Ensure the room that houses the codec is properly ventilated and temperature controlled.

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Refer to the QRC that is included with your system for a visual depiction of the appropriate setup. The numbers that appear on the QRC correspond to the following steps:

1. Open the battery compartment on the remote control by sliding the bottom end toward the back side of the remote. Insert two AAA batteries:



To close the battery compartment, align the cover with the rails on the remote and slide in place.

2. To connect your camera to the codec, insert the HDMI cable into the HD port on the camera and plug the opposite end into the  port on the codec.

Insert the power adapter cable into the power port on the back of the camera, and plug the power adapter into a power outlet.

*Optional:* Install the glare visor, using the notches on the lens barrel to guide the visor into its correct position. Use the visor only if it improves the image in your environment.

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**CAUTION** Do not attempt to pick up the camera by the glare visor, as it might pull loose and subject the camera to damage.

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3. Insert the appropriate end of the display cable (HDMI or DVI-I to HDMI) into the port on the back of your display and the opposite end into the  port on the back of the codec. Insert the display power cord into a power outlet.

To connect a second display, insert the video display cable into the HDMI connector on the back of your display and the DVI connector into the  port on the codec. Attach the display power cord to a power outlet. LifeSize Icon automatically configures the second display.

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**NOTE** Connecting a second display requires a license key.

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4. Insert the network cable into the network port marked with the LAN symbol  on the back of the codec. Insert the opposite end of the network cable into a network port on the wall.

Insert one end of the LifeSize Link cable into the  port on the back of the codec and the other into a LifeSize Digital MicPod (a) or LifeSize Phone (b), as appropriate. Up to two LifeSize Digital MicPods can be deployed in conjunction with LifeSize Phone (c). For a dual LifeSize Digital MicPod configuration, use the second LifeSize Link cable to connect the first LifeSize Digital MicPod to the second one.

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**WARNING** LifeSize recommends that you use a cable tie to secure the cable to the back of the codec at the location marked .

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5. Insert the cord from the power adapter into the power outlet marked  on the back of the codec. Insert one end of the power cord into the power adapter and the opposite end into a power outlet on the wall. See [System Health](#) for more information about the state of the system as it boots or as conditions change.

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**NOTE** Verify that the cable inserted into the back of the codec is the larger power adapter and not the smaller camera cable.

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The LifeSize system starts and illuminates an LED on the front of the codec. When the video system completes the startup process, an initial configuration dialog directs you to configure your system from a web browser.

If no IP address is assigned to your system, configure the IP address using a directly connected Ethernet cable between your computer and the system. Read more at [Using a Directly Connected Ethernet Cable](#).

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**WARNING** To avoid damaging the system, do not disturb or disconnect any of the connected devices while the system is starting.

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6. Configure the system from a web browser: enter the video system's IP address, and log in with administrator credentials. The default username and password are *admin*.

LifeSize recommends changing your password at this time.

For troubleshooting topics, refer to [Troubleshooting Installation Issues](#).

## Initial Configuration

Refer to the *LifeSize Icon 600 Video System Guide* and the browser-based online help to complete the initial configuration and for additional configuration steps if your environment uses any of the following:

- Network Address Translation (NAT)
- firewall
- automatic configuration of LifeSize devices
- H.323 gatekeepers

- SIP registrars
- other network security systems

## Supported Resolutions

LifeSize video systems connect to HD displays (720p minimum) with the following supported display resolutions:

- 1280 x 720p60
- 1920 x 1080p30
- 1920 x 1080p60

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**NOTE** If a display does not support a resolution, that resolution does not appear.

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The primary output defaults to 1920 x 1080p60. To change the display resolution, access your video system from a browser and navigate to **Preferences > Video > HD Display Resolution**. A license key is required for 1080p calls.

The transmitted resolution during presentation mode defaults to 1920 x 1080p30. If recording is enabled during a presentation, the resolution defaults to 1920 x 1080p15.

## Optional Peripherals

You can connect the following optional peripherals to enhance your LifeSize video system:

Peripheral	Usage
Audio In (Line In)	<p>For use with an external line level audio input. The following audio input devices are supported:</p> <ul style="list-style-type: none"> <li>• Headphone microphones</li> <li>• Mic Level microphones</li> <li>• Line Level microphones</li> </ul> <p>To set the appropriate analog gain for your input device, access your video system from a browser and navigate to <b>Preferences &gt; Audio &gt; Analog Mic Gain</b>.</p>
Audio Out (Line Out)	<p>For use with external line level output speakers that are not built into the HD display or with a headset (left plus right).</p> <p><b>Warning:</b> Excessive sound pressure from earphones and headphones can cause hearing loss.</p>
DVI In	<p>For use with devices and laptops for presentations or to share PC data; accepts both digital video and VGA analog signals with the proper adapter cable. For devices and PCs with VGA output, LifeSize includes a VGA to DVI-A cable. An HD source can be used with an adapter.</p> <p>With a second LifeSize camera.</p> <p><b>NOTE:</b> If you connect a second camera, you cannot initiate a presentation.</p>

Peripheral	Usage
USB	For use with serial shells and VISCA controlled cameras. To specify shell type, speed, flow control settings, access your video system from a web browser and navigate to <b>Preferences &gt; USB</b> .

## Troubleshooting Installation Issues

Installation issues that you might encounter with your LifeSize video system typically involve network bandwidth or connectivity, improperly configured IP addresses, or improperly connected cables. For more information about troubleshooting issues that you might encounter with LifeSize video systems, refer to the *LifeSize Icon 600 Video System Guide*.

### Loose Cables

Improperly connected or loose cables are common causes of problems with hardware units. When investigating a system problem, inspect the external controls and cable connections. Ensure that connections are correct and secure and that nothing is obstructing the cables.

### Blank or Distorted Display

If your screen image is distorted and unusable, or if the display is blank, select a lower resolution or frame rate for your HD display. To configure the display resolution, access your video system from a browser and navigate to **Preferences > Video > HD Display Resolution**.

### No Power

Follow these steps to troubleshoot a power problem:

1. Disconnect the PSU from the LifeSize codec and the AC source.
2. Plug a working appliance into the AC source to determine whether the source is functioning.
3. If the AC source works, disconnect the appliance from the AC source.
4. Connect the PSU to the LifeSize codec, and then reconnect the PSU to the AC source. If the LifeSize codec fails to boot, the codec might be the source of the problem.

### Audio Issues

A LifeSize system automatically selects the best audio algorithm for the call rate and the remote system's capabilities. The issues in this section relate to the audio quality.

## Absent Dial Tone

If you do not receive a dial tone after attempting to initiate a call with the LifeSize phone, verify that the line out is securely connected. An absent dial tone might also result from an unavailable analog phone line connection. If you are connecting with PSTN, ensure that the analog phone connection is secure and that it is connected to an active phone line jack.

## Problematic Sound Quality

If the far side is hearing an echo or distortion, the microphone connected to your LifeSize system might be too close to the speakers. Repositioning the microphone might solve this problem.

The LEDs on the LifeSize phone flash blue to indicate an incoming call. If you are unable to hear the phone ring when an incoming call arrives, adjust the volume using the up and down volume key. If you still experience audio problems, access your video system from a browser and navigate to **Preferences > Audio** to make any necessary adjustments to the audio output or microphone gain.

Muffled audio reception from the far side might result from highly reverberant rooms. If you are experiencing poor audio reception, add more sound absorbency to the room and speak in close proximity to the phone or microphone.

Degradation in the audio quality can also be caused by faulty microphones or dust and debris on the microphones. Do not use any kind of liquid or aerosol cleaner on LifeSize devices that include microphones. Instead, use a soft, slightly damp cloth to clean the top surface of the units.

## Distorted Audio

Ensure that speakers are not obscured or damaged at either end of the call. Do not stack items on top of the phone. Ensure both ends are not muted. Verify that the audio out cables are connected to the display and that external speaker systems are powered and configured correctly. If an external speaker system features its own volume control, adjust the volume on the LifeSize audio output to near maximum (in the range from 7-10) and adjust the volume control on the external speaker system for the best results.

## IP Address Shows an Invalid Value

If the IP address that appears in  on the main screen shows an invalid value after you complete the initial configuration, one of the following conditions might exist:

Condition	Resolution
The unit is configured to obtain an address using DHCP, but no DHCP server is available. NOTE: The DHCP client self-assigns an address in the 169.254 class B network.	Verify that the unit is plugged into a network that has a DHCP server present.
Faulty Ethernet cable connection.	Replace the Ethernet cable with a high quality cable.
The unit is configured to use a static IP address, but no IP address has been entered.	Identify and enter the necessary IP information. If you are unable to access a video system by entering its IP address in a web browser, press and hold the red button for between 10 and 15 seconds to reset the video system to its default settings.
Network connection is unavailable. NOTE: Status appears in  >  .	Inspect your network connection.

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NOTE If you change the default gateway, ensure that you reboot the system.

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### Using a Directly Connected Ethernet Cable

If no IP address is assigned to your system, configure the IP address using a directly connected Ethernet cable between your computer and the system.

1. Ensure there is no other Ethernet cable plugged into the system.
2. Attach an Ethernet cable between your computer and the system.
3. Allow the DHCP address acquisition to time out, approximately 30 seconds.

Your system is then configured with the IP address of 169.254.x.x.

4. From a web browser, enter 169.254.1.1 and log in with administrator credentials. The default username and password are *admin*.

Refer to the *LifeSize Icon 600 Video System Guide* and the browser-based online help to complete the initial configuration.

## Camera Issues

Video from the camera appears on the main screen. If no video from the camera appears, follow these steps:

1. Ensure that the camera is properly connected to the LifeSize codec, as described in [Installing Your System](#).
2. Verify that the blue LED on the front of the camera is lit and not blinking.
3. From the main screen, select  >  to access system information. Ensure that the status of the camera is **Connected**.

### Improving a Dim Image

Access your video system from a browser to adjust the **HD Camera Brightness** preference in **Diagnostics > Camera**. You can also add a light source to improve the subject's illumination. Read more at [Room Configuration](#).

## System Health

The health icon  appears on the main screen when a system issue arises that requires your attention. The shading behind the icon reflects the severity of the issue. Select  >  for more information about the issue.

System issues can include the following:

- The system does not have an active microphone. Check the device's connections.
- The network is disconnected.
- Registration with the H.323 gatekeeper or the SIP registrar failed.
- The system is overheating.
  - The yellow indicator  warns you when the system temperature is above normal operating temperature. The codec adjusts fan speed automatically to cool itself.
  - The red indicator  warns that the system is overheated and approaching the maximum allowed operating temperature, at which point it will automatically restart.

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**WARNING** Temperatures that require the codec to restart can permanently damage codec components. Make sure the room that houses the codec features a controlled temperature and is well ventilated.

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For information about specific issues warnings, refer to *LifeSize Icon 600 Video System Guide*.

# Best Practices

This section recommends best practices for the planning, evaluation, and installation of a LifeSize video system. Consider the following topics when setting up a video system:

- [Video Conferencing Environment](#)
- [Component Placement](#)
- [Cables](#)
- [Acoustic Echoes](#)

## Video Conferencing Environment

The characteristics of the rooms in which you install your video systems influence the placement of your components. For example, the configuration of a room might affect how you answer the following questions:

- Will the environment include a single display or a dual display? Where is the most ideal location for your displays? Does the room include a projector?
- Will everyone be visible to the camera and have a clear view of the display?
- Consider potential cabling issues for audio, video, and network. Do you need lengths beyond the cables that were shipped with your LifeSize components? How do you intend to conceal the cables? Can they be run around furniture, through walls, or under carpet?
- Does the codec need to be concealed? Can it be rack mounted?

Consider the location of the following objects before performing your installation:

- windows and other light sources
- doors
- power outlets
- LAN outlets
- air vents
- overall dimensions of the room
- current seating arrangement

The following sections about [Audio](#) and [Lighting](#) issues describe the importance of most of these items. Read [Cables](#) for more information about power outlets and LAN outlets.

## Audio

### Sound Reflecting Surfaces

Windows and other hard surfaces, such as brick, wood paneling, and concrete, are highly reflective and can cause audio to sound tinny. Consequently, LifeSize recommends that you do not place audio input devices close to walls or windows. Instead, place such devices in the center of the room and arrange participants at least four feet away from the input. Clear a radius of 2 feet around the input to minimize reflectivity. Hang blinds, shades, or curtains from windows to absorb sound and further reduce reflectivity.

Standard office carpeting is also recommended to reduce reverberation, while sound reflective surfaces like tile and hardwood are not recommended.

### Noise Sources

Keep audio input devices away from sources of noise, such as air vents and any components that house fans or motors. On the HVAC, sound dampening registers and baffles are recommended to help reduce noise from the flow of air in the ventilation system.

### Speakers

Keep speakers and other audio output devices at least 4 feet away from audio input devices.

### Audio Coverage

- LifeSize Digital MicPod has an optimal coverage radius of 12 feet, making it ideal for a room in which all participants are located within 12 feet of the device (such as a 24 x 24 foot room).
- For a room that is longer than it is wide, a dual LifeSize Digital MicPod configuration can cover a 20 x 40 foot room. Read [Audio Input Device](#) for more information.

## Lighting

LifeSize recommends that you use only one quality of light. For best results, LifeSize recommends that participants be lit to 350-500 LUX. Overhead fluorescent lights might provide sufficient lighting if they are concentrated over the conference room table. However, such lights can cause unacceptable shadows if they are located behind or directly above the participants.

Avoid using natural light, which changes location and intensity throughout the day. It is also recommended that you avoid mixing daylight with artificial light or mixing different light temperatures.

## Component Placement

This section identifies ways to help you decide where to place the following components of your LifeSize video system:

- [Codec](#)
- [Audio Input Device](#)
- [Audio Output Device](#)
- [Camera](#)
- [Video Display](#)

## Codec

Most LifeSize codecs are designed to be set top devices that lie horizontally on a stand. Consider the minimum vent clearance, power consumption, and codec weight when you decide how and where to place a codec.

After you place a codec in an appropriate location, follow the guidelines in the rest of this section to ensure that it performs at an optimal level.

## Audio Input Device

Follow these guidelines to obtain the best possible performance from your audio input device:

- Place the audio input device in the center of the conference table.
- Position the audio input device at least three feet away from any active speakers.
- Keep objects that might block acoustical signals, such as plants, laptops, or lamps, more than two feet away from the audio input device.
- Keep noise sources, such as speakers and components that house fans or motors, at least four feet away from the audio input device.

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**NOTE** LifeSize Digital MicPod detects noise in all directions equally.

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- Place the audio input device at least two feet away from the closest participant.
- Avoid movement within two feet of the audio input device.
- Do not place the audio input device directly underneath or beside acoustically reflective surfaces, such as walls, glass tables, or windows.
- Position the audio input device so that participants are within 0-45 degrees of the table surface.
- Avoid moving the audio input device during a call.
- Speak at normal conversation levels and direct your voice toward the audio input device.
- Avoid speaking directly above the audio input device.

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**NOTE** To obtain the best possible performance from a dual LifeSize Digital MicPod configuration, place the two devices at least 10 feet apart on a table surface.

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## Audio Output Device

Use any of the following speaker types to listen to audio output:

- internal speakers that are built in to a display
- external speakers

Follow these guidelines to obtain the best possible performance from your audio output devices:

- Use only speakers that provide a flat frequency response and a linear output signal.
- Position all speakers at least five feet from the microphones, regardless of the type of device that you use.
- Adjust the speaker volume to 40-50% of its maximum value. Speakers often produce distorted output when the volume is set to a value that is greater than 60% of the maximum, and distorted output can cause acoustic echo. Read [Acoustic Echoes](#) for more information.
- Avoid Dolby or surround sound speakers, which can change their speaker signal and generate echoes.

## Camera

In most cases, LifeSize recommends that you mount the camera in coordination with the display to provide as close to an eye-to-eye experience as possible. Follow these positioning guidelines:

- Position the camera in the center of the primary display.
- Place the camera immediately below or above the primary display. In most cases, the position immediately below the display is preferable.
- Place the camera far enough from the participants so that everyone is captured within the camera's field of view (70 degrees for LifeSize cameras).

## Video Display

The video display that you choose for a conference room depends on many factors. One important criterion, though, involves making certain that the display's input matches the video system's output.

Consider whether a display provides participants with a comfortable experience. The following factors influence the optimal size of a display:

- size of the room
- participants' distance from the display
- level of required detail
- budget

If the camera is centered on the top or bottom of the display, LifeSize recommends that you position the display so that its top is as high as the forehead of a typical participant.

## Cables

The LifeSize video system is shipped with the following cables:

- Power cable – Your LifeSize video system ships with a 2-meter power cable. Use an extension cord for longer runs.
- Ethernet or LAN cable – The video system ships with a 3-meter RJ45 Ethernet/LAN cable. You can substitute a longer Ethernet cable (Category 5e, at a minimum): up to 100 meters (328 feet).

- LifeSize Digital MicPod cable – The LifeSize Digital MicPod ships with a 4-meter LifeSize Link cable.
- Display cables – The video system ships with a 3-meter HDMI to HDMI cable and a 3-meter HDMI to DVI-D cable. Both are high speed HDMI cables that support 1080p60.
- VGA/DVI-A cable – The video system ships with a 3-meter VGA to DVI-A video input cable with green connectors to connect the codec to PCs, Macs, and other video input devices.
- Use a high speed HDMI cable to support 1080p60 resolutions on the LifeSize camera.

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**NOTE** Contact your LifeSize Partner or LifeSize Technical Services for assistance in extending an HDMI cable.

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Avoid routing cables through areas that experience heavy foot traffic. If possible, use a cable management system to encase the cables and make them difficult to move when someone comes into contact with them. These measures can mitigate the damage that might be caused by people tripping on cables and straining the connectors on the codec.

LifeSize cables are not plenum rated. Do not route them through a plenum.

## Acoustic Echoes

Acoustic echoes are caused when a microphone detects sound from a speaker and sends it back to the far end. LifeSize audio software attempts to attenuate echoes by using Acoustic Echo Cancellation.

Perform the following steps to further reduce acoustic echoing:

1. Identify the source of an echo:
  - Identify conference participants who are not hearing the echo. Typically, the party that is not hearing the echo is also causing it.
  - Mute each of the conference participants, one at a time. Typically, the echo stops when the source of the echo is muted.
2. Address the source of the echo:
  - Move the microphone away from any active speakers, moving objects, or acoustically reflective surfaces.
  - Decrease the volume setting of the active speaker to the minimum required for use in the conference.
3. Ensure that the quality of your speakers is sufficient:
  - If you are using analog (Line Out) speakers, ensure that the speakers do not provide bass boost or perform other DSP processing. Also verify that the speakers do not distort the speech when the far end is speaking.
  - If you are using HD speakers, ensure the HD monitor does not use Dolby, SRS, Surround Sound, or perform any other audio processing. Avoid using HD monitor speakers, as they can cause speaker distortion and echoes.

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