YAMAHA

VIDEO CONFERENCE SYSTEM

CS-500

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Introduction

Thank you for purchasing the Yamaha CS-500. This product is a video conferencing device equipped with a camera and microphones. It can be set up for use in huddle spaces and meeting rooms. Combine it with a TV, speakers and video conferencing software (computer) for comfortable teleconferencing.

Features/functions

● Yamaha's own high-quality audio processing

This device features audio processing functions required for video conferencing, including adaptive echo canceller (AEC), noise reduction (NR) and automatic gain control (AGC). Camera framing area settings and beamforming microphones focus on the speaker's voice and suppress ambient sounds.

● "SoundCap Eye™" achieves more comfortable remote communication

"SoundCap Eye" is a function that allows for comfortable remote communication, even in noisy environments. By using the camera to automatically identify the surrounding conditions and conference participants, more optimal sound pickup and output can be achieved.

- **Face focus beamforming**:
  This technology picks up only the voice of the participant whose face is detected by the camera.
- **Self-silence**:
  This technology automatically mutes the microphone when there is no human voice in the captured sound. This prevents unwanted noise from reaching the remote party.
- **Self-volume balancer**:
  This feature constantly adjusts the speaker volume to an appropriate volume depending on the surrounding noise.

● Smart framing

With this function, the camera follows the subject according to the mode. The angle of view and zoom are automatically adjusted onto the face detected by the camera. (Smart framing → Page 11)

- **Group**: Mode that frames all conference participants
- **Speaker tracking**: Mode that frames the person who is speaking
- **Individual**: Mode that frames the designated person

● Easy connections via USB

This device and the computer can be connected with one USB cable. This makes it easy to set up and prepare for meetings. (Sample setup → Page 18)

● Automatically turning on/off the TV

The TV connected to this device is automatically turned on/off based on whether the built-in camera detects a person. (Auto wakeup)

This applies when the CS-500 is not connected to a computer as shown in "Sample setups" (page 18).

● Easy setup using the remote control and a display

You can display the menu on a TV and specify device settings by using the remote control. (On-screen display menu → Page 26)

With the application software on the computer, more detailed settings can be specified. (Yamaha CS Manager → Page 27)

Available manuals

The manuals for this product can be downloaded in the PDF format from the following website.

▼ **CS-500 Product site**
   https://www.yamaha.com/2/cs-500/

☐	**Read This First (included)**	This describes what to do first after purchasing the product.
☐	**CS-500 Safety Guide (included)**	This contains the precautions for using this product safely.
☑	**CS-500 User Guide (this manual/PDF)**	This provides details on using this device. It also explains how to use the Yamaha CS Manager application on your computer to configure and operate the device.
☐	**On-Screen Display Menu Operation Guide**	This explains how to use the on-screen display menu (shown on a TV screen) to configure this device.
☐	**Yamaha CS Manager Operation Guide**	This explains how to use the Yamaha CS Manager utility software on your computer to configure and operate this device.
☐	**CS Remote Configurator Operation Guide**	This explains how to use the CS Remote Configurator utility software to batch-configure multiple devices on the network.

About this manual

This manual uses the following signal words for important information.

⚠ *WARNING*	This content indicates "risk of serious injury or death."
⚠ *CAUTION*	This content indicates "risk of injury."
NOTICE	Indicates content that you must observe in order to prevent the product from malfunctioning, being damaged, or operating incorrectly, and to avoid data loss.
IMPORTANT	Indicates content that you must know in order to operate and use the product correctly.
NOTE	Indicates information that is related to operation and use. Read this for your reference.

- The illustrations as shown in this manual are for instructional purposes only.
- The company names and product names in this manual are the trademarks or registered trademarks of their respective companies.
- Yamaha continuously makes improvements and updates to the software included in this product. You can download the latest software from the Yamaha website.
- The contents of this manual apply to the latest specifications as of the publishing date. To obtain the latest manual, access the Yamaha website then download the manual file.

Included items

- CS-500 device
- Read This First
- Safety Guide
- USB 2.0 cable (Type-C to Type-A, 5 m)
- HDMI cable (2 m)
- Lens cap
- Remote control
- Coin battery (CR2032) × 2
- AC adaptor with power cord (CW2002100)
- Cable tie

Separately sold items

- **Wall mounting bracket (mounting accessory) BRK-WL1**

  This is required for installing the device onto a wall. It is also used in combination with monitor mounting bracket BRK-TV1 or BRK-TV2 when installing the device onto a TV.

- **Monitor mounting bracket (mounting accessory) BRK-TV1/BRK-TV2**

  This is used in combination with wall mounting bracket BRK-WL1 when installing the device onto the VESA mount of a TV.

  * This manual provides installation instructions for BRK-TV1. For installation instructions for BRK-TV2, refer to the BRK-TV2 Installation Guide.

- **USB cables: CBL-L10AC (10 meters), CBL-L25AC (25 meters)**

  These are fiber optic USB cables. They are used when the device and computer are far apart. These support USB 3.2 Gen2 (Super Speed Plus) and can communicate at high speeds up to 10 Gbps.

NOTE

The VESA standards are international and define the spacing between screw holes used when attaching video equipment, such as TVs, to wall mounts and TV stands.

Available utility software

This utility software can be used to set up the device according to its use and environment. The software can be downloaded from the following website.

▼ **CS-500 Product site**

https://www.yamaha.com/2/cs-500/

■ **Yamaha CS Manager** This is software that allows you to configure and operate the device from your computer.

■ **CS Remote Configurator** This is software that batch-configures multiple CS-800 and CS-500 devices connected via a network.

Related links

Using software to configure and manage devices (Page 27)

Updating the device firmware

This product is designed to allow the firmware of the device to be updated in order to improve operability, add functions and fix problems. We recommend updating the device firmware to the latest version.

For one device:
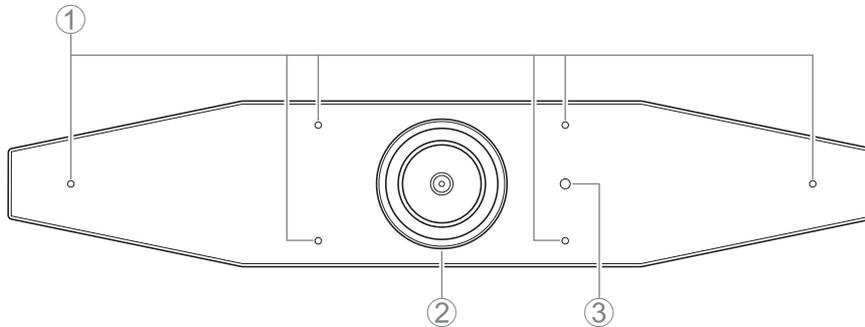Use Yamaha CS Manager to update the device.

For multiple devices:
Use CS Remote Configurator to batch-update multiple CS-500 devices connected to a network.

For details on the updating procedure, refer to the Yamaha CS Manager Operation Guide or the CS Remote Configurator Operation Guide.

Controls and connectors

Front panel

① **Microphone**

The audio captured by this microphone is delivered to the remote party of the connection.

② **Camera**

The video captured by this camera is delivered to the remote party of the connection.

③ **Status indicator**

Indicates the status of the device. The lower the item in the following list, the higher the priority for indication.

Indicator state		Device status
White (lit)		Standby
Light blue (lit)		Camera operating
Green (lit)		During a call
Red (lit)		Microphone muted
White (flashing)	0.361 time/sec	Starting
Unlit		Power-saving standby; Turned off (no power supplied)
White (flashing)	0.3 time/sec	Displaying off
Orange (flashing)	1 time/sec	Factory reset; activation of HDMI connection/DisplayLink function/ Bluetooth/USB audio
Blue (flashing)	1 time/sec	Pairing with the remote control or smart device
Blue (lit)	3 seconds	Completion notification of remote control pairing
Green (flashing)	2 times/sec	Receiving a call
Red (flashing)	2.5 times/sec	Hardware error
Orange (flashing)	2 times/sec	Receiving firmware data
Orange (flashing)	10 times/sec	Updating firmware
Orange↔Red (flashing alternately)		Firmware update failed

Rear panel
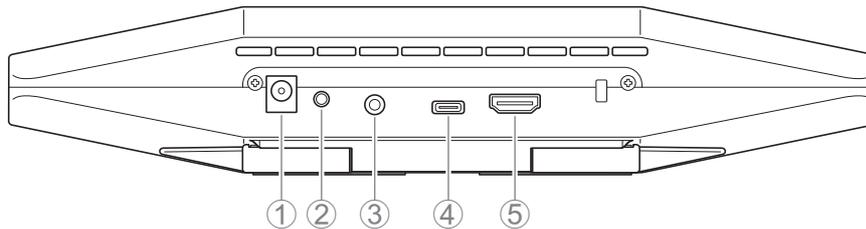
① [DC-IN] jack

This jack is for connecting the AC adaptor. After connecting the AC adaptor to the [DC-IN] jack on the rear panel, insert the power plug into an electrical outlet. Connecting the AC adaptor automatically turns on the device. (Page 20)

② [FUNCTION] button

Can be used to pair the device with the remote control (Page 22) or to return the device to its factory default settings (Page 28).

③ 3.5 mm audio output jack

This jack is for connecting this device to speakers, headphones, etc. (Page 18)

④ [USB] port (Type-C)

This port is for connecting the device to a computer.

This enables displaying the computer screen and configuring the device. Use the included USB 2.0 cable (Type-C to Type-A) or the separately sold USB cables CBL-L10AC (10 meters) or CBL-L25AC (25 meters) for this connection. For details on connecting this device, refer to "Connecting devices" (page 18) in this manual.
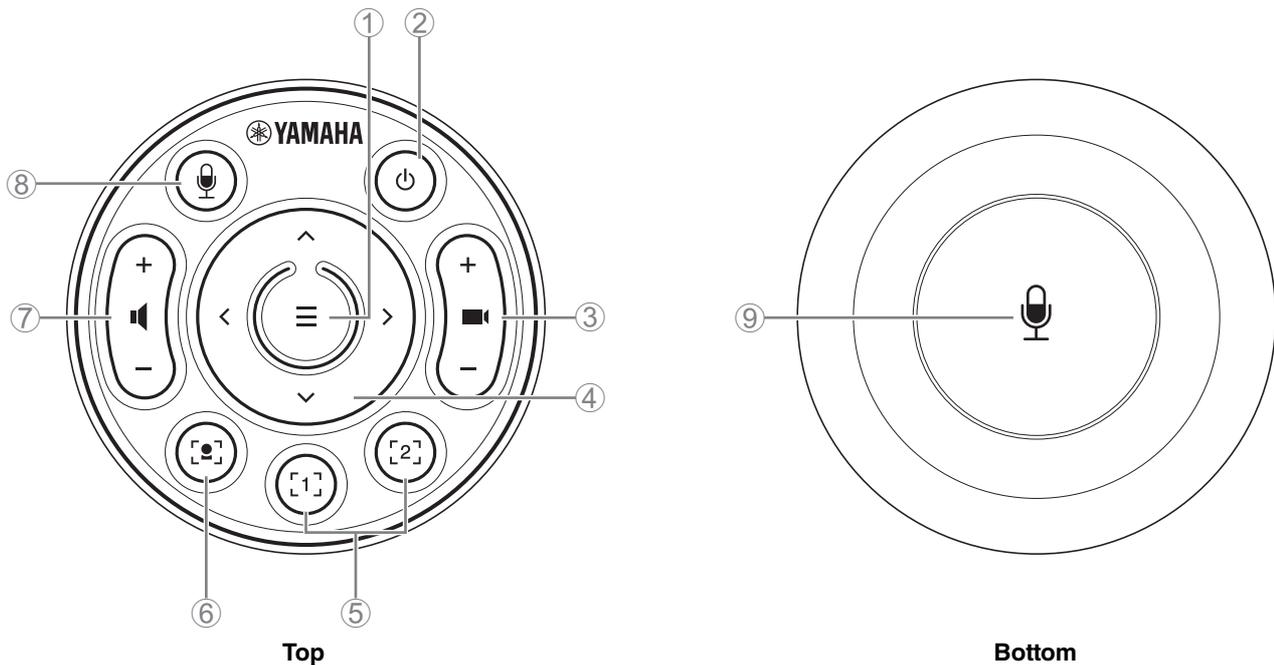
⑤ [HDMI] port

This port is for connecting the device to a TV. This allows the TV to display the screen of the computer connected to the [USB] port and the device's on-screen display menu (Page 26).

Related links

• Returning to factory default settings (factory reset) (Page 28)
• Connecting devices (Page 18)

Remote control

Top   **Bottom**

① **Menu button**

Can be used to display the on-screen display menu (Page 26) on the TV or pair/unpair the device with the remote control (Page 22).

② **Power button**

Can be used when the CS-500 is not connected to a computer.

In the configuration shown in "Sample setups" (page 18), this is used to turn on/off the TV connected to the CS-500. In addition, long-pressing the button for at least two seconds turns off the TV and puts the CS-500 in power-saving standby.

③ **Camera zoom button**

Used to enlarge/reduce (zoom in/out) the video being captured.

④ **Pan/tilt button**

Used to adjust the camera angle horizontally/vertically. It can also be used for Smart framing operations or moving the cursor in the on-screen display menu displayed on the TV.

⑤ **Camera preset[i] 1 & 2 buttons**

Two sets of PTZ (pan, tilt and zoom) settings can be saved and recalled. Long-press (for 2 seconds) this button to save the settings adjusted with buttons ③ and ④. To recall, simply press the button.

⑥ **Smart framing button**

Used to turn on/off Smart framing[ii].

⑦ **Speaker volume buttons**

Used to turn up/down the volume of the speakers.

⑧ ⑨ **Microphone mute button**

Used to turn on/off the microphone.

ⁱ Camera preset

PTZ (pan, tilt and zoom) camera presets can be saved for this device.

To save/change the PTZ settings, use the remote control, on-screen display menu or Yamaha CS Manager.

Specifying settings using the remote control

Refer to Page 10.

Specifying settings using the on-screen display menu or Yamaha CS Manager

Refer to the corresponding Operation Guide.

ⁱⁱ Smart framing

Depending on the mode, the angle of view is automatically adjusted and the selected subject framed.

[Group]: Mode where all persons in the group are framed

[Speaker tracking]: Mode where the person who is speaking is framed

[Individual]: Mode where a specific person is framed

*The target area for framing can be specified with the meeting area settings.

Specifying settings using the remote control

① Use the [⬤] (smart framing) button on the remote control to turn on smart framing.

② Use the tilt (up/down) buttons to change the smart framing mode.

  The currently selected framing mode appears in the notification badge on the screen.

  -With the [Individual] mode, use the pan (left/right) buttons to select the person to be focused on.

  -With the [Group] mode, the ◼◀ (camera zoom) button is deactivated.

Specifying settings using the on-screen display menu or Yamaha CS Manager

Refer to the corresponding Operation Guide.

Camera preset/smart framing operability table

Operation	Remote control	On-screen display menu	Yamaha CS Manager
Specifying meeting area settings	—	✓	✓
Turning on/off smart framing	✓	—	✓
Selecting smart framing mode	✓	✓	✓
Saving/recalling camera presets	2 sets	2 sets	5 sets*

* [PTZ preset 1] and [PTZ preset 2] can be saved and recalled as camera presets 1 and 2 by using the remote control and on-screen display menu.

Procedures preparing for use

Procedure from connection to installation

Installers of this device should read this.

Before starting work, determine the installation method for this device.

1. **Connecting the power supply and turning on the device. (Page 20)**

2. **Inserting the batteries into the remote control. (Page 21)**

3. **Pairing the device and remote control. (Page 22)**

4. **Connecting the device. (Page 18)**

> When used as a webcam. (Page 19)

5. **Making necessary initial settings. (Page 23 to 25)**

6. **The computer screen will be displayed on the TV.**

> If the computer screen does not appear on the TV, confirm the operations on page 23 to 24 again.

7. **Installing the device.**

> When installing on a TV. (Page 13)
> When mounting to a TV. (Page 14)
> When mounting on a wall. (Page 17)

Procedure for holding a meeting

Users of this device should read this.

Before the first time a computer connected to this device is used to hold a meeting, follow the steps below to check that the computer screen is displayed on the TV and the audio is output.

* When this device is used as a webcam (Page 19), steps *2* and *4* are not necessary.

1. **Turning on the computer.**

2. **The stand-by screen appears on the TV.**

3. **Connecting the computer to this device with a USB cable.**

4. **The computer screen will be displayed on the TV.**

> If the computer screen does not appear on the TV. (Page 23)

5. **Holding a meeting by using the video conferencing software.**

> If sound is not output, select this device on the computer. (Page 24)

Specifying device settings

- **On-screen display menu**: (For all users) Specify device settings on a TV by using the remote control. (Page 26)
- **Yamaha CS Manager**: (For installers/administrators) Specify detailed settings for the device by using the application software. (Page 27)
- **CS Remote Configurator**: (For installers/administrators) Batch-configure multiple devices (connected to a network) by using the application software. (Page 27)
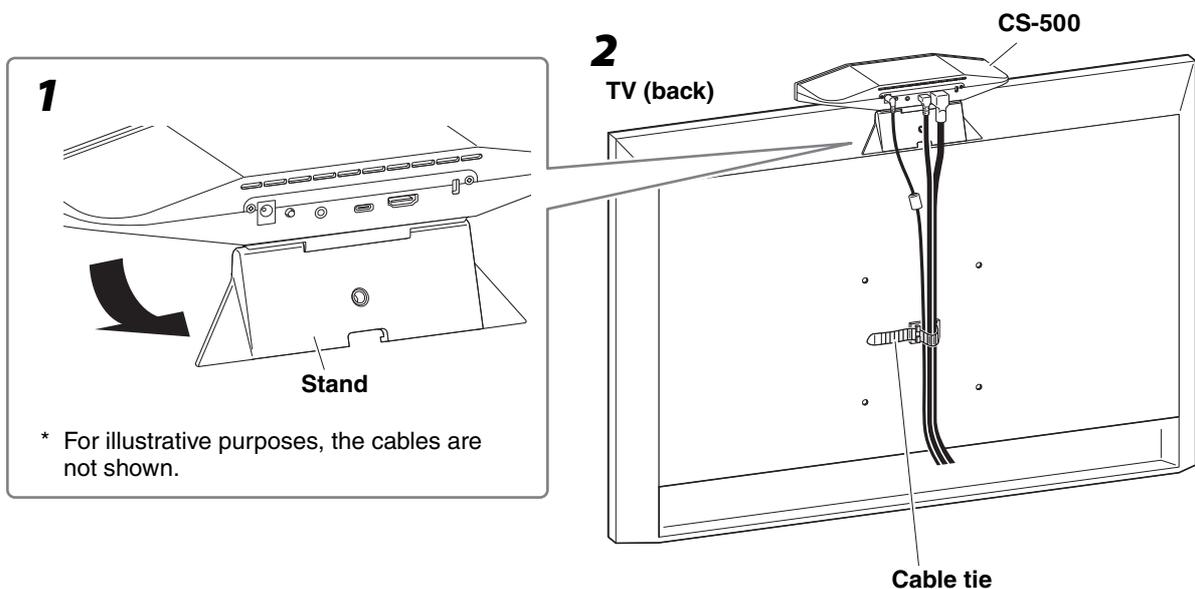
Setup and connections

Installing the device

■ When installing on a TV

This device can be placed directly on top of a TV.

1. **Flip open the stand on the bottom of the device, and then hook it on the top of the TV.**

2. **Bundle the cables together with a cable tie, and then attach it to the back of the TV.**

3. **Adjust the camera orientation (up or down) by changing the camera's angle to the stand.**

NOTE

When installing this device in the following situations, use the brackets to mount it to a TV. (Page 14)
- When installing more than 2 meters from the ground.
- When the TV thickness is 51 mm or more.
- When the stand of this device must be opened more than 90 degrees to place it on a TV.
- When the bottom of this device and the rubber part of the stand are not in close contact with the TV.
- When a stable installation of this device is not possible.

⚠ **CAUTION**
- When installing on a TV, make sure that the device is no more than 2 meters from the ground. When installing the device at a location more than 2 meters from the ground, be sure to use a bracket to secure it to the TV. (Page 14)
- If the device falls, injuries or damage may result.

■ When mounting to a TV

This device can be mounted to a TV by using monitor mounting bracket BRK-TV1 and wall mounting bracket BRK-WL1 (both sold separately). When mounting this device to the top of the TV stand, prepare the following.

Items to prepare

① **Wall mounting bracket BRK-WL1 (sold separately)**
  • Wall mounting bracket
  • Device fixing screw (1/4 inch) for wall mounting bracket × 1

② **Monitor mounting bracket BRK-TV1 (sold separately)**
  Compatible TV sizes: 48 to 60 inches (When mounting below the display: 48 to 70 inches)
  • Monitor mounting brackets (for mounting onto wall mounting bracket, horizontal, and vertical)
  • Spacer (∅25 × t18 mm) × 4
  • Screw (M4 × 10 mm with washer) for bracket assembly × 12 (2 spare)
  • Screws for mounting TV (M6 × 12 mm) × 4 and (M6 × 30 mm) × 4
  • Spring washer and flat washer for screws (M6) for mounting TV × 4 each
  • Screws for mounting TV (M8 × 15 mm) × 4 and (M8 × 35 mm) × 4
  • Spring washer and flat washer for screws (M8) for mounting TV × 4 each
  * Use only four of the above-listed screws for mounting TV.

③ **TV stand (user provided)**

④ **Screwdriver (user provided)**

IMPORTANT	• For details on assembling the TV stand and mounting the TV to it, follow the instructions in the manual for the TV stand. • The TV should be mounted to the TV stand by two or more people.

⚠ *WARNING*	• Be sure to have the mounting bracket installed by the dealer where you purchased the product or a professional contractor. • After installation, make sure that the CS-500 is firmly secured. Also, regularly check that there is no possibility of the device falling or tipping over. We cannot be held responsible for accidents caused by incorrect installation. • After installation, do not lean against the CS-500 or apply a strong force to it from above. If the device falls, injuries or damage may result.

The following is an example of an installation that uses the screw holes in the TV and a standard TV stand.

*1.* **Attach the monitor mounting bracket (vertical), monitor mounting bracket (for mounting onto wall mounting bracket) and the wall mounting bracket using the screws included with them.**

[Included with monitor mounting bracket]
Screw for bracket assembly
(M4 × 10 mm with washer) × 6

Wall mounting bracket

Monitor mounting bracket

Monitor mounting bracket (vertical)
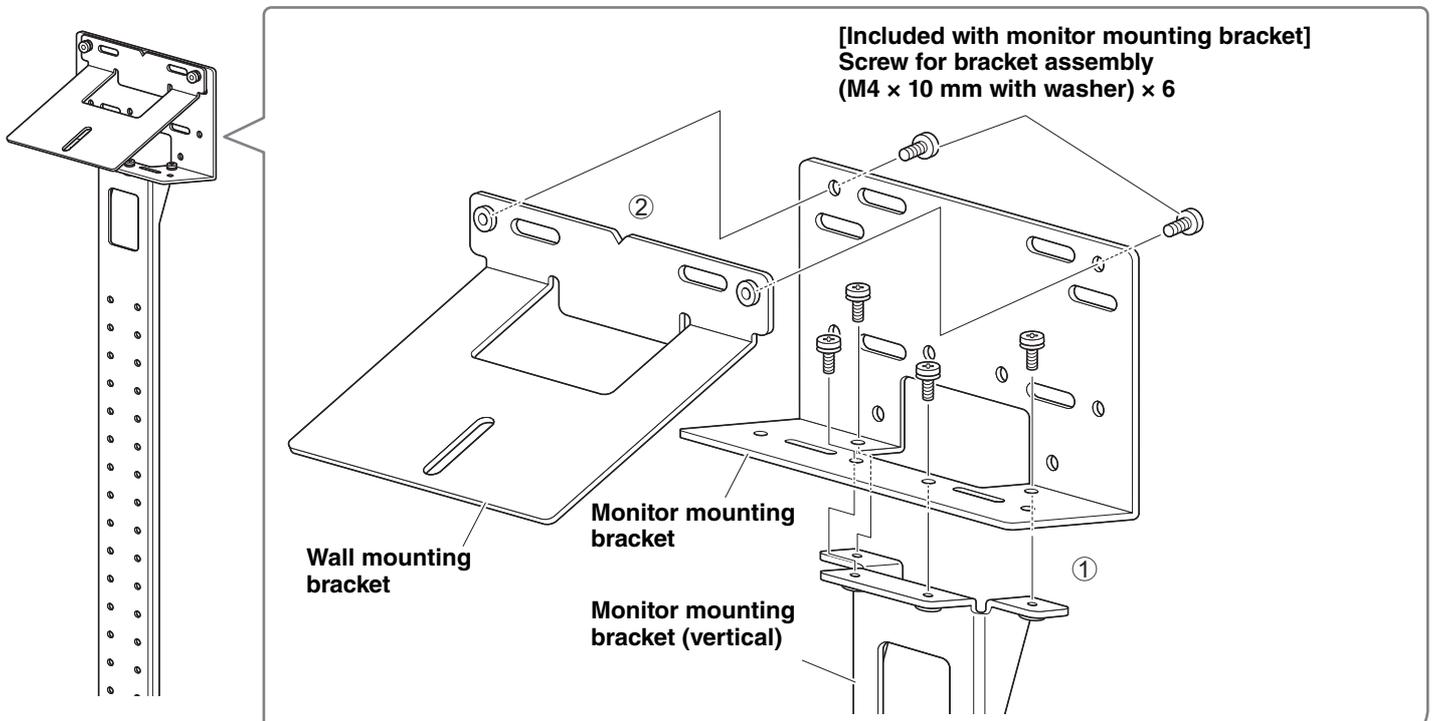
2. **Using the included screws, attach the monitor mounting brackets (horizontal) and the brackets assembled in step *1*.**

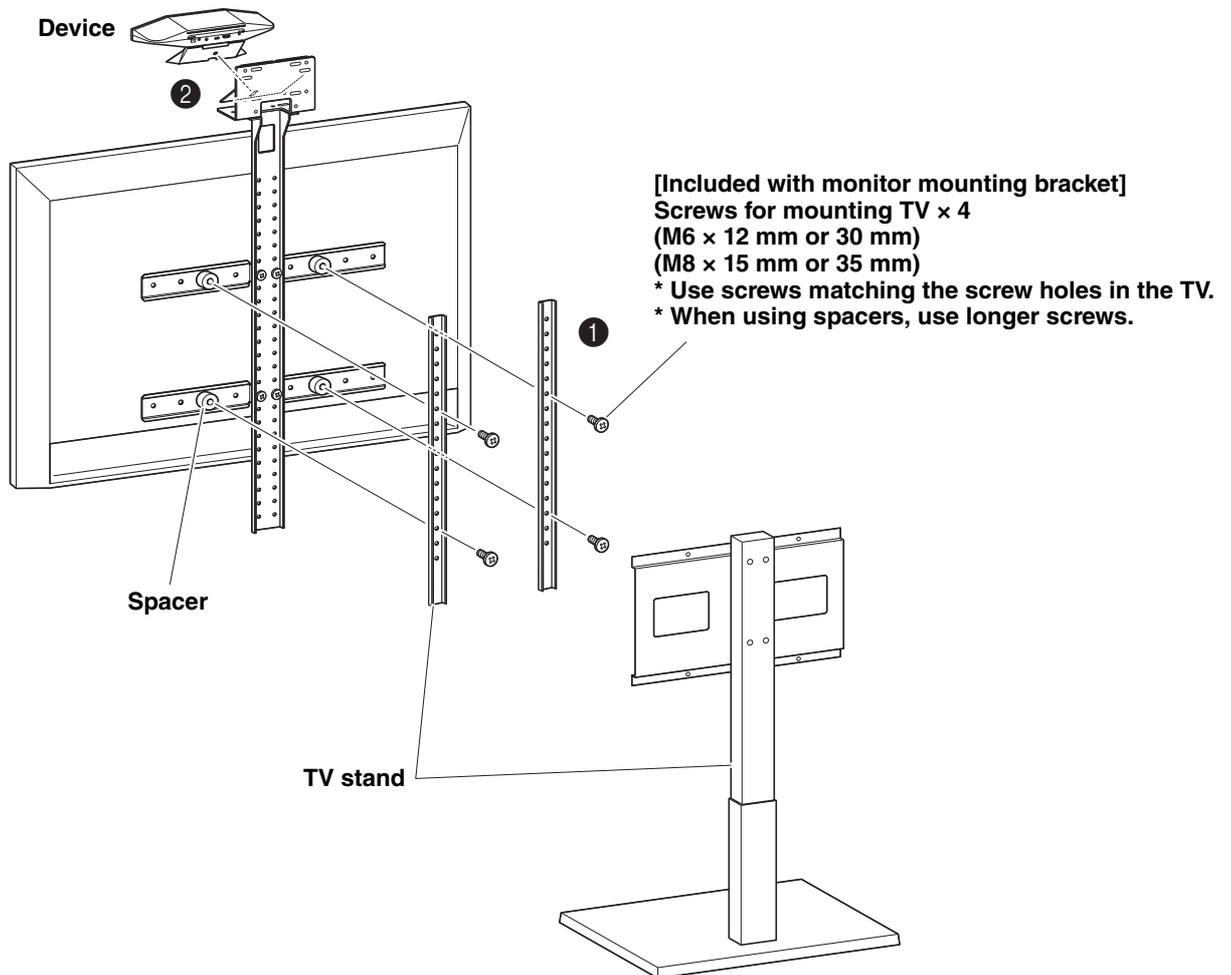Align the monitor mounting brackets (horizontal) with the screw holes in the TV to determine the mounting position. After determining the mounting position, mount the brackets from step *1* at the appropriate height.

TV (back)

[Included with monitor mounting bracket]
Screw for bracket assembly
(M4 × 10 mm with washer) × 4

Monitor mounting bracket (horizontal)
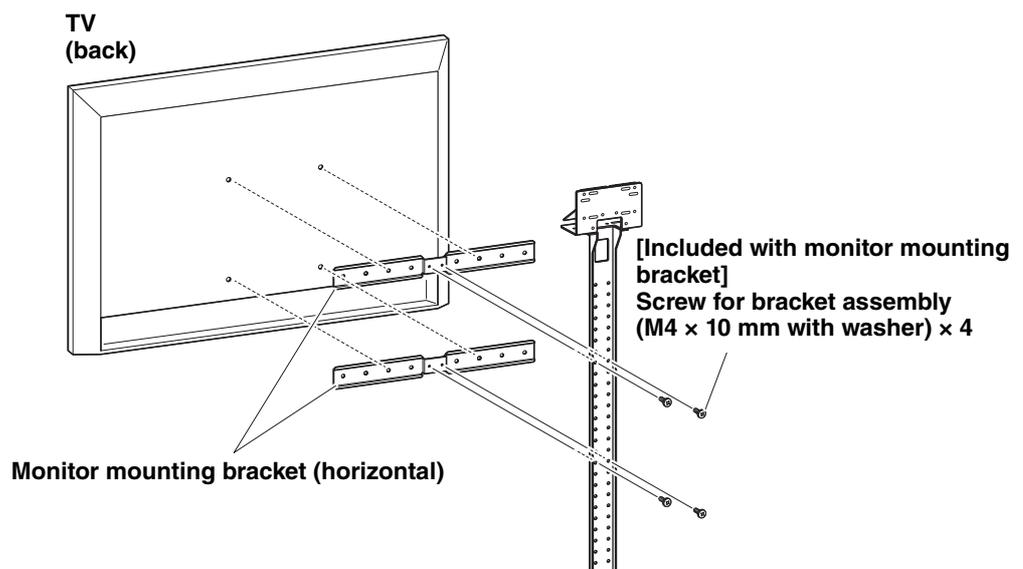
**IMPORTANT** At this point, do not install the TV yet.

3. **Attach the brackets assembled in step *2* to the TV stand, TV and device.**

❶ Attach the brackets from step *2* to the TV stand.

❷ From the underside of the wall mounting bracket, secure the device by using the included screw.

Device

[Included with monitor mounting bracket]
Screws for mounting TV × 4
(M6 × 12 mm or 30 mm)
(M8 × 15 mm or 35 mm)
* Use screws matching the screw holes in the TV.
* When using spacers, use longer screws.

❶

Spacer

TV stand

IMPORTANT	• Depending on the configuration of the TV stand, also tightly secure the spacers included with monitor mounting bracket BRK-TV1.
	• For details on assembling the TV stand and mounting the TV to it, follow the instructions in the manual for the TV stand.

❷ **Device**

Wall mounting bracket

[Included with wall mounting bracket]
Device fixing screw (1/4 inch) for wall mounting bracket
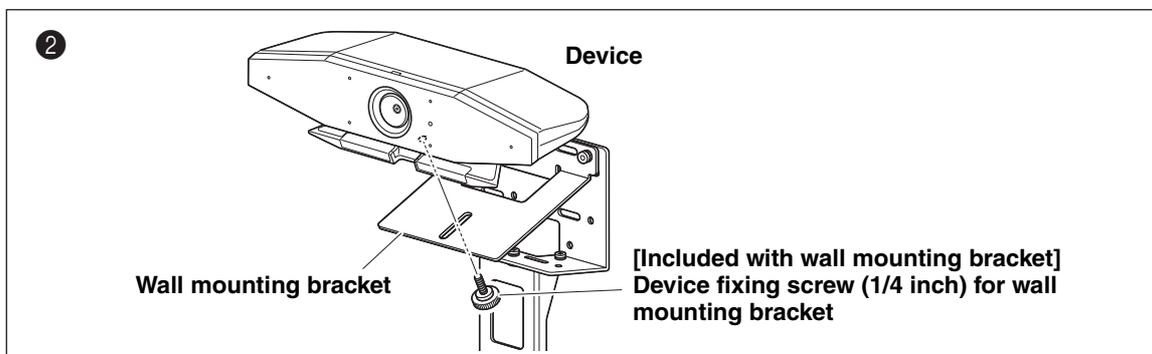
4. **Adjust the camera orientation (up or down) by changing the camera's angle to the stand.**

■ When mounting on a wall

This device can be mounted to a wall by using the wall mounting bracket (sold separately).

When mounting the device to a wall, prepare the following.

① **Wall mounting bracket BRK-WL1 (sold separately)**
- Wall mounting bracket
- Device fixing screw (1/4 inch) for wall mounting bracket

② **Wall-mounting screws (user provided)**

③ **Screwdriver (user provided)**

⚠ *WARNING*

- Be sure to have the mounting bracket installed by the dealer where you purchased the product or a professional contractor.
- After installation, make sure that the CS-500 is firmly secured. Also, regularly check that there is no possibility of the device falling or tipping over. We cannot be held responsible for accidents caused by incorrect installation.
- After installation, do not lean against the CS-500 or apply a strong force to it from above. If the device falls, injuries or damage may result.

1. Attach the wall mounting bracket to the wall.


Wall mounting bracket
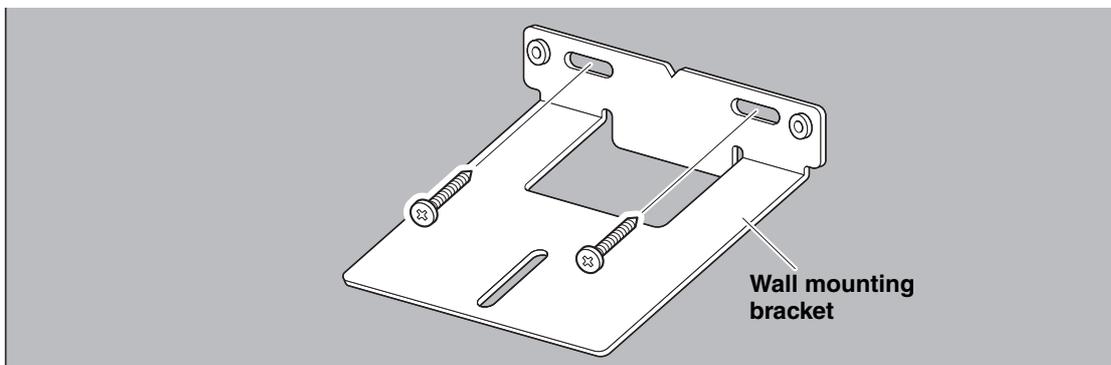
IMPORTANT
- Screws for attaching the wall mounting bracket to the wall are not included. Prepare screws that are strong enough.
- For details on screws and the installation, be sure to contact the dealer where you purchased the product or a professional contractor.

2. Secure the device to the bracket from step *1.*

Place the device on the bracket from step *1*. From the underside, secure the device to the wall mounting bracket by using the included screw.


[Included with wall mounting bracket]
Device fixing screw (1/4 inch) for wall mounting bracket
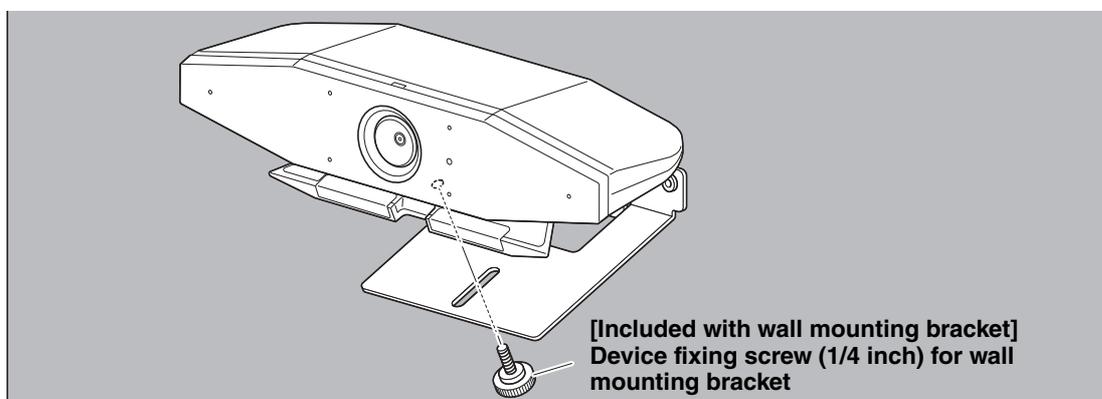
3. Adjust the camera orientation (up or down) by changing the camera's angle to the stand.

Connecting devices

■ Sample setups

Use this connection method to output audio from the TV speakers. For video conferences, a computer connected to the Internet can be used simply by connecting it to the device with a USB cable.
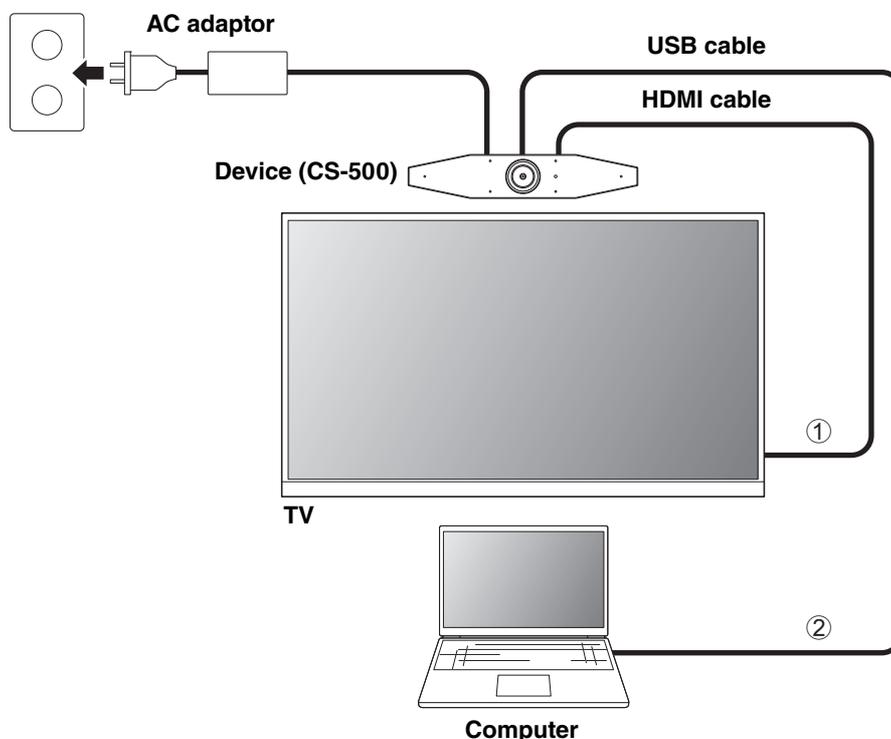
① Connect one end of the included HDMI cable to the [HDMI] port on the device, and connect the other end to the TV.
② Connect the Type-C plug of the included USB cable to the [USB] port on the device, and connect the Type-A plug to the computer.

NOTE

- Be sure to first follow the procedure in "Activating HDMI connection/DisplayLink function/Bluetooth/USB audio" (Page 23).
- In order to display the computer screen on a TV, it may be necessary to install the DisplayLink® driver (Page 23).

Outputting audio through analog audio speakers/headphones

This device is equipped with a 3.5 mm audio output jack. Connect either headphones or speakers with a built-in amplifier to output the audio of the remote party in a video conference.

NOTE

When connecting analog audio, select the [Enable 3.5mm analog audio connector] check box on the [Audio] screen in Yamaha CS Manager, and then select either speakers or headphones. For details, refer to the Yamaha CS Manager Operation Guide.

■ When used as webcam

In order to be used only as a webcam for a video conferencing system, this device can be connected as shown in the example below.
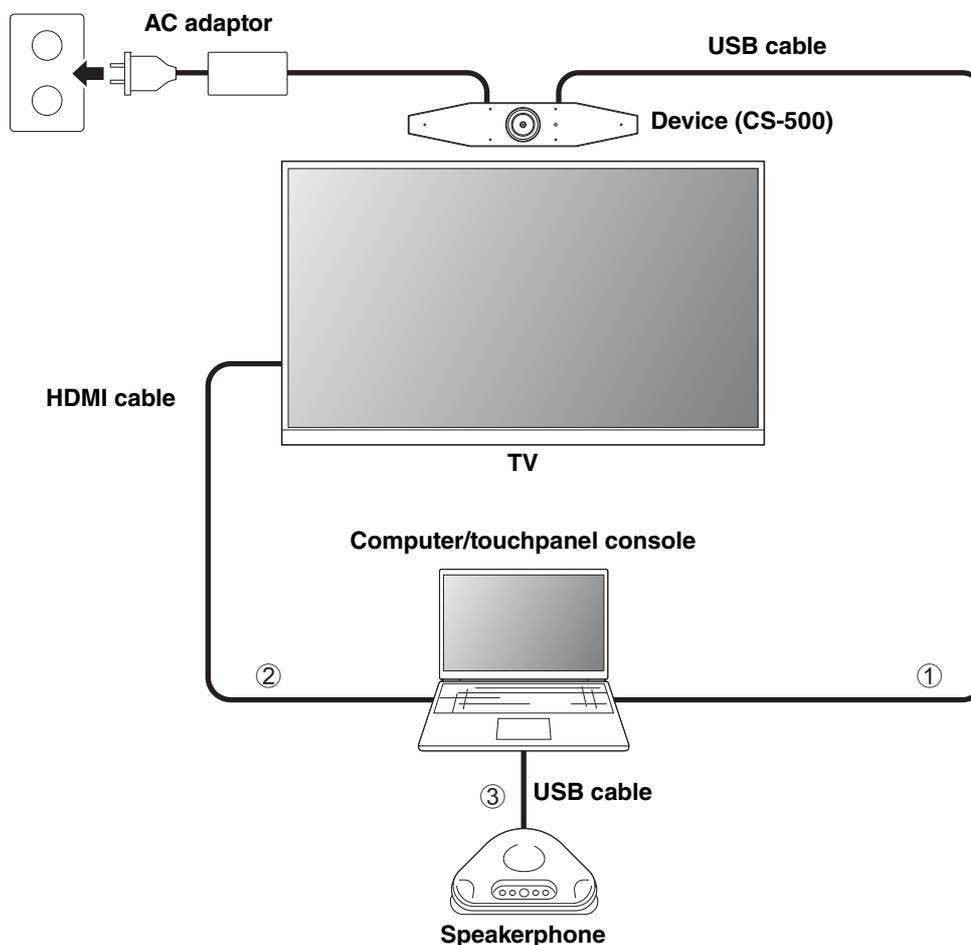
① Connect the Type-C plug of the included USB cable to the [USB] port on the device, and connect the Type-A plug to the computer.

② Connect one end of the included HDMI cable to the computer, and connect the other end to the TV.

③ Connect the speakerphone to the computer.

NOTE

When this device is used only as a webcam, the on-screen display menu (Page 26) cannot be used.

In addition, the following operations are not necessary.

• Activating HDMI connection/DisplayLink function/Bluetooth/USB audio (Page 23)

• Installing the DisplayLink driver (Page 23)

Connecting the power supply

Connect one end of the included AC adaptor to the [DC-IN] jack on the device, and connect the other end to an electrical outlet.
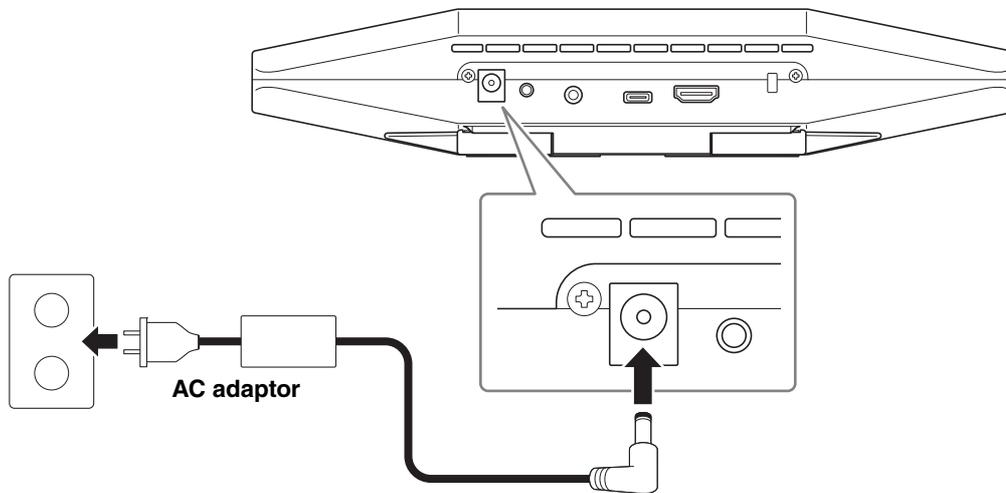
AC adaptor

Connecting the AC adaptor automatically turns on the device.

Inserting/replacing the remote control batteries

Remove the bottom panel and battery cover from the remote control, and then insert the included batteries (CR2032 × 2) correctly according to the polarity markings. To replace the batteries, remove all old ones and install new ones (sold separately). Do not mix old and new batteries.

Bottom panel

Battery cover
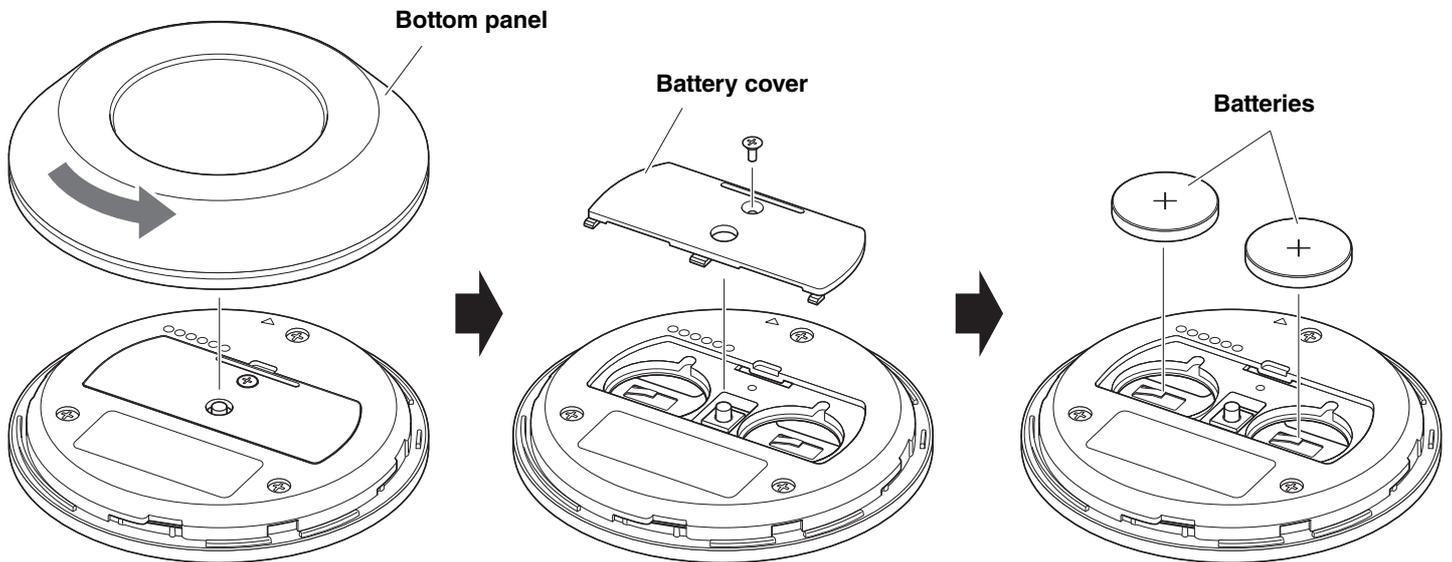
Batteries

IMPORTANT	• When replacing the batteries, be sure to use the specified type (CR-2032).
	• Dispose of used batteries according to the local regulations.

Pairing the device and remote control

In order to operate the device with the remote control, follow the procedure below to pair them.

1. Long-press the [FUNCTION] button (on the rear panel of the device) for at least 2 seconds.

Device (rear panel)
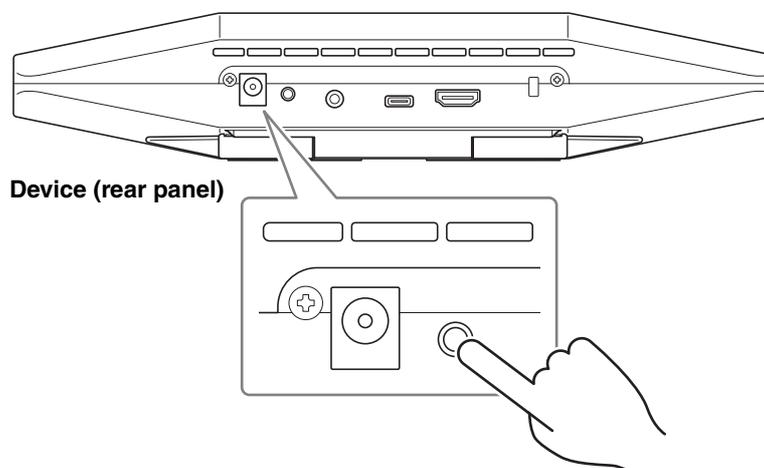
The status indicator on the front panel of the device flashes in blue.

2. Long-press the menu button on the remote control for at least 2 seconds.
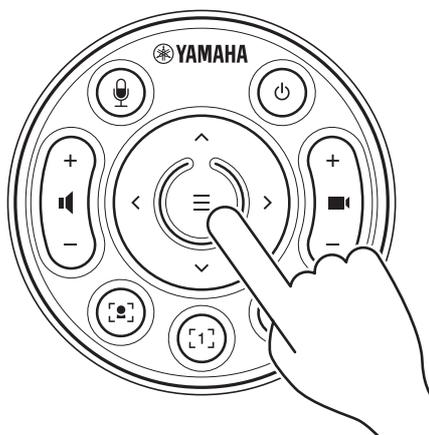
Pairing is finished after the status indicator on the front panel of the device lights up in blue for 3 seconds.

NOTE

Long-pressing the [FUNCTION] button on the rear panel of the device will unpair the paired remote control.

In addition, long-pressing the menu button on a paired remote control for at least 2 seconds will unpair it.

To pair the remote control again, follow the pairing procedure above.

Related links

- Remote control (Page 10)
- Activating HDMI connection/DisplayLink function/Bluetooth/USB audio (Page 23)
- Configuring the device from a TV screen (on-screen display menu) (Page 26)

Making necessary initial settings

■ Activating HDMI connection/DisplayLink function/Bluetooth/USB audio

Activate the necessary functions for using this device. Be sure to follow the procedure below before using this device.

NOTE

- Before performing the following operation, pair the device and remote control (Page 22).
- When this device is used as a webcam (Page 19), this operation is not necessary.

1. **Long-press the menu button and camera preset 2 button on the remote control for at least 3 seconds.**

Configuration is finished after the status indicator on the front panel of the device flashes in orange five times at a 0.5-second interval.

■ Installing the DisplayLink® driver onto your computer

In order to display the computer screen on a TV, it may be necessary to install the DisplayLink driver (DisplayLink Manager on a Mac). If the computer screen is not displayed on the TV, even after checking the following, install the DisplayLink driver.

- The device and TV are connected with an HDMI cable.
- The TV input is correctly set.
- The display settings of the computer are set to "duplicate" or "extend" the display.
- The operation described in "Making necessary initial settings" (Page 23) has been performed.
- DisplayLink has been activated.

Download the latest DisplayLink driver from the following website.

(The following website is not operated by Yamaha Corporation.)

▼ **DisplayLink driver download page**
https://displaylink.com/downloads

■ Selecting the device on the computer

On your computer, select "Yamaha CS-500" as both the default audio playback device and recording device. Also, in the video conferencing software, select CS-500 as both the video device and audio device.

1. Select "Yamaha CS-500" as both the default playback device and recording device.

For Windows

① Right-click the speaker icon on the taskbar, and then select "Open Sound settings".
② Select "Sound Control Panel" under "Related Settings".
③ From the list of devices on the [Playback] tab, select "Yamaha CS-500", and then right-click it.
④ Select "Set as Default Device".
⑤ From the list of devices on the [Recording] tab, select "Yamaha CS-500", and then right-click it.
⑥ Select "Set as Default Device".

For macOS

① Select the Apple menu in the menu bar.
② Select "Sound" in "System Preferences".
③ Select [Sound].
④ Select "Yamaha CS-500" on the [Output] tab.
⑤ Select "Yamaha CS-500" on the [Input] tab.

2. In the video conferencing software, select CS-500 as both the video device and audio device.

Perform the appropriate operation in the video conferencing software to select CS-500 as both the video device and audio device.

NOTE

When used only as a webcam (Page 19), specify settings as described below.

1. In the sound settings of your computer, select the speakerphone as both the default playback device and recording device.

2. In the video conferencing software, select CS-500 as the video device, and select the speakerphone as the audio device.

Using smart devices in meetings

By connecting a smart device (mobile phone or tablet) to this device via Bluetooth, you can hold a remote conference with someone on their smart device. (Audio only)

■ What can be done with a Bluetooth connection

Holding a conference call

During an in-house meeting, you can use the CS-500 to hold a conference call with a remote person (on their smart device).

From the smart device connected to this device via Bluetooth, call the smart device of the person to be included in the conference call.

Allowing someone on their smart device to remotely join a video conference

While a video conference is being held through the CS-500, a remote person can be invited through their smart device to participate in the conference by audio only. The remote person can speak with all participants of the video conference, including off-site participants.

From the smart device connected to this device via Bluetooth, call the smart device of the person to join the conference.

■ Making a Bluetooth connection

1. When connecting for the first time: Pairing

When connecting a Bluetooth-enabled smart device to this device for the first time, the devices must be paired.

① **Preparation: Activate Bluetooth on this device and the smart device.**
- Activate Bluetooth on the CS-500. ("Making necessary initial settings" on Page 23)
- Turn on Bluetooth on the smart device.

② **Pairing: Pair using any of the following methods.**
- With the remote control, use the on-screen display menu to pair.
- Use Yamaha CS Manager on the computer to pair.

* For details on using the on-screen display menu or Yamaha CS Manager, refer to the corresponding Operation Guide.

2. When connecting for the second and subsequent times: Making a Bluetooth connection

A paired smart device can be connected by using the on-screen display menu or the smart device.

NOTE

- The camera (video) of the CS-500 cannot be used in meetings.
- A computer connected via USB and a smart device connected via Bluetooth can be connected at the same time.
- Multiple smart devices cannot be used in a call at the same time.
- If Yamaha CS Manager is used to delete pairing information, or if Yamaha CS Manager is set to delete pairing information when a connection is cut, perform pairing again.
- The Bluetooth connection can be cut by using any of the following methods.
  - Disconnect by using the smart device.
  - Disconnect by using the on-screen display menu or Yamaha CS Manager.
  - Move the connected smart device out of the range of the Bluetooth signal.

Related links

- Activating HDMI connection/DisplayLink function/Bluetooth/USB audio (Page 23)
- Configuring the device from a TV screen (on-screen display menu) (Page 26)

Configuring the device from a TV screen (on-screen display menu)

The on-screen display menu is a feature that displays the device's settings menu on a TV screen. It can be operated with the remote control.

NOTE

- This function cannot be used When used as webcam (Page 19).
- In order to use this function, first follow the procedure in "Pairing the device and remote control" (page 22).
- In order to use this function, first follow the procedure in "Activating HDMI connection/DisplayLink function/Bluetooth/USB audio" (page 23).
- This function can be deactivated. To deactivate it, specify the appropriate setting in CS Manager.

What can be done with the on-screen display menu

- ✓ Meeting area settings
- ✓ Smart framing settings
- ✓ Camera preset settings

- ✓ Microphone settings
- ✓ Speaker settings
- ✓ Bluetooth settings

Displaying the device's settings menu

1. Press the menu button on the remote control.
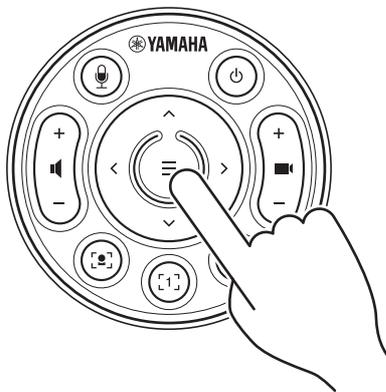
The on-screen display menu appears on the TV.

2. Navigate with the pan/tilt button on the remote control.

Use the pan/tilt button (arrow button) to move the cursor up/down/left/right.

For details, refer to the On-Screen Display Menu Operation Guide.

Using software to configure and manage devices
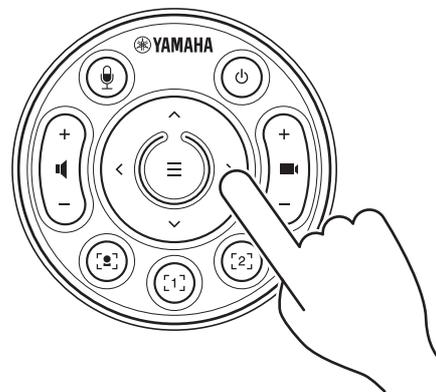
Using Yamaha CS Manager to specify detailed settings

Yamaha CS Manager is application software for specifying detailed settings for the device.

Connect a computer (installed with Yamaha CS Manager) to the device by using a USB cable.

What can be done with Yamaha CS Manager

- ✓ Admin settings
- ✓ Audio settings
- ✓ Bluetooth settings
- ✓ Camera settings
- ✓ Smart framing settings
- ✓ Display settings

- ✓ Network settings (Wi-Fi connection)
- ✓ Time settings
- ✓ Updating the firmware
- ✓ Exporting/importing configuration files
- ✓ Restoring factory default settings/restarting the device
- ✓ Downloading log information

For details, refer to the Yamaha CS Manager Operation Guide.

Using CS Remote Configurator to batch-configure devices

CS Remote Configurator is application software that batch-configures multiple devices connected via a network. Connect the computer and devices via a wireless LAN access point. All devices to be batch-configured must be connected via Wi-Fi by using Yamaha CS Manager.

What can be done with CS Remote Configurator

- ✓ Batch-updating firmware
- ✓ Batch-importing CS-800 and CS-500 configuration files (batch device configuration)
- ✓ Batch-changing standby images

For details, refer to the CS Remote Configurator Operation Guide.

	Yamaha CS Manager	**CS Remote Configurator**
Connection method	**USB**	**Wi-Fi**
Wi-Fi connection settings	✓	—
Updating the firmware	✓	✓ (batch)
Changing the standby image	✓	✓ (batch)
Exporting the configuration file	✓	—
Importing the configuration file	✓	✓ (batch) *

*The configuration files exported with Yamaha CS Manager can be batch-imported.

Returning to factory default settings (factory reset)

This device can be returned to its factory default (initial settings) using either of the following methods.

- Initializing by using the device
- Initializing by using Yamaha CS Manager

NOTE

The log information will be erased when the device is returned to its factory default settings (factory reset). We recommend downloading the log information before performing a factory reset due to a problem.

Initializing by using the device

1. **Start the device by connecting the power cable while holding down the [FUNCTION] button on the rear panel of the device.**

Device (rear panel)
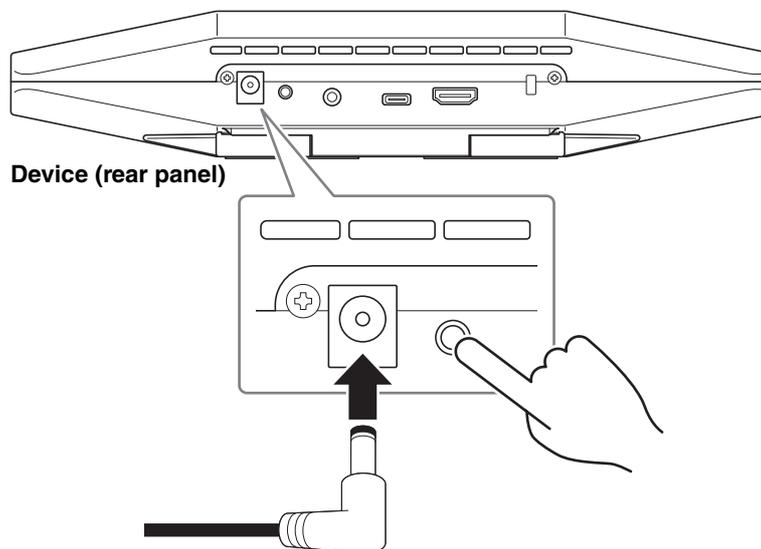
Connecting the power cable automatically turns on the device.

2. **After connecting the power cable, keep the [FUNCTION] button pressed for at least 5 seconds.**

The status indicator on the front panel of the device flashes in orange five times at a 0.5-second interval.
Initialization is finished when the status indicator lights up in white.

Initializing by using Yamaha CS Manager

Initialize from the [Configuration] screen in the [Tools] menu of Yamaha CS Manager.

Appendix

List of settings and operations

Function/operation	Remote control	On-screen display menu	Yamaha CS Manager	CS Remote Configurator
Admin settings	—	—	✓	—
Speaker settings	—	✓ *1	✓	—
Microphone settings	—	✓ *1	✓	—
Bluetooth pairing/connection	—	✓	✓	—
Detailed Bluetooth settings	—	—	✓	—
Camera settings	—	—	✓	—
Saving/recalling camera presets	2 sets	2 sets	5 sets *2	—
Meeting area settings	—	✓	✓	—
Turning on/off smart framing	✓	—	✓	—
Selecting smart framing mode	✓	✓	✓	—
Display settings	—	—	✓	—
Changing the stand-by screen image	—	—	✓	✓ (batch)
Network settings (Wi-Fi connection)	—	—	✓	—
Time settings	—	—	✓	—
Updating the firmware	—	—	✓	✓ (batch)
Exporting the configuration file	—	—	✓	—
Importing the configuration file	—	—	✓	✓ (batch)
Restoring factory default settings/restarting the device	—	—	✓	—
Downloading log information	—	—	✓	—

*1   More detailed speaker settings and microphone settings can be set by using Yamaha CS Manager.

*2   [PTZ preset 1] and [PTZ preset 2] can be saved and recalled as camera presets 1 and 2 by using the remote control and on-screen display menu.

Main specifications

General specifications

Product type	Video conference system
Dimensions	261 mm (W) × 76 mm (D) × 51 mm (H)
Weight	0.6 kg
Power supply	AC adaptor CW2002100 Input voltage: 100 V – 240 V Input frequency: 50 Hz/60 Hz Input current: 1.2 A Output voltage: 20 V DC Output current: 2.1 A ◇–C–◇
Maximum power consumption	15.0 W
Safety	CB/G, UL, CE, RCM, KC, CCC, BSMI, BIS
EMC	FCC, IC, CE, RCM, KC, CCC, BSMI
Radio interference standard	FCC, IC, CE, RCM, KC, SRRC, NCC, ANATEL
Operating environment	**Temperature**	0 °C – 40 °C
	Humidity	20% – 85% (non-condensing)
Storage environment	**Temperature**	–20 °C – 60 °C
	Humidity	20% – 85% (non-condensing)
Indicators	Status indicator
Included items	Read This First, Safety Guide, USB 2.0 cable (Type C-A, 5 m), HDMI cable (2 m), remote control (RC-RBT1), lens cap, coin battery (CR2032) × 2, AC adaptor with power cord (CW2002100), cable tie
Separately sold items	Mounting accessory BRK-WL1 Mounting accessory BRK-TV1, BRK-TV2 USB 3.2 Gen 2 cable (Type C-A, 10 m) CBL-L10AC USB 3.2 Gen 2 cable (Type C-A, 25 m) CBL-L25AC
Supported operating systems	Windows, macOS, Chrome OS * For compatible operating system versions, refer to the Yamaha website. https://www.yamaha.com/2/cs-500/
Installation	Placed on top of display (up to 50 mm thick): Device stand Mounted above display (fixed): BRK-WL1 and BRK-TV1 or BRK-TV2 (sold separately) Mounted below display: BRK-WL1 and BRK-TV1 or BRK-TV2 (sold separately) Mounted on wall: BRK-WL1 (sold separately) Mounted on tripod: Device tripod thread

Connectivity

USB Type-C	USB 2.0/3.2 Gen 1, UAC 2.0, UVC 1.1, DisplayLink
HDMI	Version 1.4 Resolution: 720 × 480, 1280 × 720, 1366 × 768, 1920 × 1080 Frame rate: 30 fps HDCP: Version 1.4 HDMI-CEC: Power control, Input selection

Bluetooth	**Common**	Version 5.0 Supported profiles: HFP(1.7), A2DP, AVRCP, BLE Supported codec: CVSD, SBC, mSBC Wireless output: Class 1 Maximum communication distance: 10m (32.8 ft) (no obstacles) Radio frequency (operational frequency): 2,402 to 2,480 MHz
	U.K./EU	Maximum output power (EIRP): 7.0 dBm (5.0 mW)
	USA/Canada	Maximum output power: 7.79 dBm (6.0 mW)
	Korea	Maximum output power: 0.003 W
Wi-Fi network	**Common**	Wireless LAN standards: IEEE 802.11b/g/n Radio frequency band: 2.4 GHz Available security method: OPEN, WEP, WPA/WPA2-PSK, WPA3-SAE
	U.K./EU	Radio frequency (operational frequency): 2,412 to 2,472 MHz Maximum output power (EIRP): 18.7 dBm (74.1 mW)
	USA/Canada	Radio frequency (operational frequency): 2,412 to 2,462 MHz Maximum output power: 13.81 dBm (24.0 mW)
	Korea	Radio frequency (operational frequency): 2,412 to 2,472 MHz Maximum output power: 0.01 W/MHz

Audio

Microphone	Hexa-microphone (MEMS × 6)
Microphone coverage	120° audio pickup; Max. distance: 6.0 m (19.6 ft) (face focus beamforming off) / 3.0 m (9.8 ft) (face focus beamforming on)
Microphone frequency response	100 Hz – 16 kHz
Audio signal processing	Adaptive echo canceller, Noise reduction, Automatic tracking, Automatic gain control, Automatic room EQ, Dereverberation, SoundCap Eye (Face focus beamforming, Self-silence, Self-volume balancer)

Camera/video

Sensor	CMOS 8M pixels (4K)
Diagonal angle of view	120°
Focal distance	0.5 m (1.6 ft) – ∞
Frame rate	6 fps, 7.5 fps, 10 fps, 15 fps, 30 fps
Supported video resolutions	3840 × 2160, 2560 × 1440, 1920 × 1080, 1280 × 720, 640 × 360
Supported video codecs	YUY2, MJPEG, NV12
Frame control	Smart framing (Group, Individual, Speaker tracking) or manual pan-tilt-zoom (PTZ), configurable preset × 2 Maximum zoom ratio: 5.0× People detection max distance: 4.5 m
Video signal processing	Automatic white balance, Automatic exposure control, Noise reduction

User interface

Function button	Factory default settings, Remote control pairing
Remote control	Power supply, Microphone mute × 2, Speaker volume, Camera ePTZ, Smart framing ON/OFF, Camera preset × 2, On-screen display menu control
On-screen display menu	Meeting area, Smart framing mode, Camera preset, Microphone, Speaker, Bluetooth
People presence detection	Auto wakeup
Yamaha CS Manager	Supported OS: Windows, macOS* Functions: Device status monitor, Security setting, Power setting, Audio setting, Camera setting, Smart framing setting, Bluetooth setting, HDMI screen setting, Network (Wi-Fi) setting, NTP setting, Firmware upgrading, Factory default setting, Exporting/importing configuration files, Logs retrieving
CS Remote Configurator	Supported OS: Windows* Batch-updating firmware, importing configuration files, batch-changing standby images

* For compatible operating system versions, refer to the Yamaha website.
https://www.yamaha.com/2/cs-500/

Output features

Output connector	Type	Output impedance	Compatible impedance	Output level	Connector
3.5 mm mini jack	Headphones	20 Ω	16 – 32 Ω	25 mW (16 Ω)	3.5 mm stereo (TRS)
	Line		100 Ω	0.8 dBV	