VADDIO
A brand of legrand

Complete Manual for the

ZoomSHOT 20 SE

Fixed Camera

Document 411-0068-30 Rev A
October 2023

Contents

Overview

This guide covers the ZoomSHOT 20 SE fixed camera. The camera must be used with a Quick-Connect device or with an AV Bridge MATRIX PRO.

- ZoomSHOT 20 SE QUSB – 999-69300-100 (black), 999-69300-100W (white)
- ZoomSHOT 20 SE QMini – 999-69300-400 (black), 999-69300-400W (white)
- ZoomSHOT 20 SE AVBMP – 999-69300-500 (black), 999-69300-500W (white)

The ZoomSHOT 20 SE QUSB and QMini kits are only available in North America.

What's in this guide

This guide covers:

- Physical features
- Switch settings
- Installation
- System administration, configuration, and maintenance
- Operating the camera
- Command reference
- Troubleshooting

For your convenience, the information you need to install this product is also available in the smaller, stand-alone **Installation Guide for the ZoomSHOT 20 SE Fixed Camera**, which covers physical features, switch settings, installation, and initial power-up.

Camera features

- Manual pan/tilt camera with 20x zoom and 63° field of view (wide end)
- 2.14 Megapixel effective (2.38 M total); 1/2.5 CMOS sensor
- Powered by Quick-Connect USB or Quick-Connect USB Mini device, or by an AV Bridge MATRIX PRO for flexibility in installation and connectivity
- Full HD resolution (native 1080p/60) available when connected to Quick-Connect USB or AV Bridge MATRIX PRO host device

Quick-Connect features

Quick-Connect devices provide power, control, and connectivity for the camera.

Quick-Connect USB (QUSB)

Versatile USB 2.0 device for environments using soft conferencing applications. Extends HDMI up to 100 ft. (30 m).

- Choice of USB 2.0 MJPEG or IP (H.264) streaming
- Simultaneous HDMI and HD analog component (YPbPr) outputs
- Supports resolutions up to 1080p/60 from the camera
- Up to 100 ft. (30 m) cabling distance
- Standard UVC drivers
- Web interface for network and streaming configuration
- Half-rack form factor; mounting brackets available (not included)

Quick-Connect USB Mini (QMini)

Cost-effective USB 2.0 connectivity for soft conferencing applications, designed for environments where only one camera is needed.

- USB streaming/capture only
- Standard UVC drivers
- Up to 100 ft (30 m) cabling distance
- Compact form factor

A quick look at the camera

Vaddio cameras are available in black or white.

Front of the camera

- **Camera and zoom lens:** 20x zoom
- **IR Sensor:** A sensor in the camera bezel receives signals from the remote. Because it is an infrared control system, there must be a clear sight-line from the remote to the camera.
- **Status indicator:** The multicolored light indicates the camera's current state.
- **Really Cool Logo Badge (RCLB):** Attractive and shiny, with a sophisticated elliptical shape.

Back of the camera

- **RS-232:** RJ-45 connector. Connect to the RS-232 port (if any) on the Quick-Connect device to allow an external device to manage the camera using a modified VISCA protocol.
- **EZPower Video:** RJ-45 connector. supplies power to the camera and delivers HD video back to the Quick-Connect interface using high speed differential signaling over Cat-5e cable. Connect to the EZPower Video port on the Quick-Connect device. (Color-coded orange or yellow, depending on the device.)
- **DIP switches:** Basic camera behavior settings. See Camera switch settings.
- **Resolution Select:** Rotary switch to select the video output resolution. See Camera switch settings.

Note

A label on the bottom of the camera lists the rotary switch settings.

A (quick) look at the Quick-Connect devices

The camera is not designed for stand-alone operation. These configurations are available:

- **QUSB system** – A camera with a Quick-Connect USB, a versatile solution with multiple connectivity options and choice of USB or IP streaming. This system is typically used in rooms that need conferencing capability, and may be used with a joystick camera controller.
- **QMini system** – A camera with a Quick-Connect USB Mini, a basic USB connectivity solution with a small, unobtrusive form factor. This system is typically used for soft conferencing applications.

The camera is also sold as an AVBMP camera, which connects directly to a Vaddio AV Bridge MATRIX PRO for power and connectivity. The AV Bridge MATRIX PRO can host up to three AVBMP cameras.

Quick-Connect USB interface

This is a versatile USB 2.0 device for environments using soft conferencing applications. With simultaneous HDMI and HD analog component (YPbPr) video outputs and your choice of either USB or IP streaming, plus a web interface for ease of configuration, the Quick-Connect USB is an ideal connectivity solution for many environments.

Front panel features:

- **Back-lit LCD display** – During normal operation, the display shows the MAC address and IP address for the Quick-Connect. When the Quick-Connect is booting, the display shows an initialization message.
- **Power System Reset button** – Illuminates when the Quick-Connect is connected to power. Press and hold the button to reboot the Quick-Connect.
- **USB indicator** – Illuminates when there is a USB connection to a computer. Blinks to show USB activity.
- **Network indicator** – Illuminates when there is a network connection. Blinks to shown network activity.

Back panel features:

- **24 VDC 2.0 A power connector** – Connect only the power supply shipped with the Quick-Connect.
- **5-position DIP switch** – Setting for HDMI color space; firmware update configuration; factory reset.
- **RS-232 In** – Camera control input from a Vaddio joystick controller or other controller.
- **EZ-Power Video** – Power to the camera and video from the camera.
- **RS-232 Out to Camera** – Control signals to the camera; may originate from the connected camera controller or the web interface.
- **YPbPr** – Analog component video output from the camera.
- **HDMI** – HDMI video output from the camera.
- **Network** – Connect to the network for IP streaming and camera control via web interface or Telnet, and for access to the Quick-Connect's web interface.
- **USB** – Connect to a USB 2.0 port on the computer running the soft conferencing or video capture application.

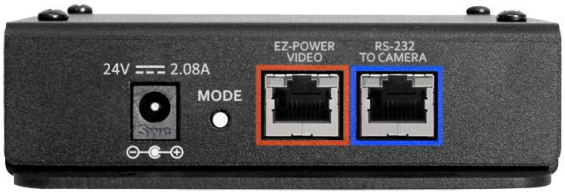
Quick-Connect USB Mini interface

This interface provides basic USB 2.0 connectivity for environments using soft conferencing applications. Available input/camera resolutions are 720p/60, 720p/59.94, and 720p/50.

The Quick-Connect USB Mini is typically mounted with the connector panel facing up.

Front panel features:

- **USB** – Connect to a USB 2.0 port on the computer running the soft conferencing or video capture application.
- **Power** – Illuminates when power is connected.



Back panel features:

- **24 VDC 2.08 A power connector** – Connect only the power supply shipped with the Quick-Connect.
- **Mode** – Press to switch between USB streaming mode and web control mode. Press and hold to reset the Quick-Connect to its factory defaults.
- **EZ-Power Video** – Power to the camera and video from the camera.
- **RS-232 to Camera** – Control signals to the camera.

Installation

- Selecting the location for the camera
- Information on cables and RS-232 communication
- Switch settings
- Connection diagram
- Pre-installation functional check
- Installing the camera mount
- Mounting the camera

Don’t void your warranty!

Caution

This product is for indoor use only. Do not install or operate this product if it has been dropped, damaged, or exposed to liquids. If any of these things happen, return it to Vaddio for safety and functional testing.

Before you start

Things to keep in mind when deciding where to install the camera:

- Consider camera viewing angles, lighting conditions, line-of-sight obstructions, and in-wall obstructions.
- If the remote will be used, ensure that nothing blocks the IR lens in the camera's bezel.

The video image may appear off-level in any of these situations:

- The mount is not level
- The mount is not installed on the centerline of the room
- The back wall of the room is not perpendicular to the centerline of the room

Prepare for a successful installation:

- Be sure you can identify all cables correctly.
- Check Cat-5 cables for continuity.
- *Talk to the network administrator.* You will need to work with the network administrator to determine how to configure the equipment.
  - If installing a ZoomSHOT 20 SE QUSB system in a non-DHCP network (one that does not automatically assign IP addresses), you may need to configure the Quick-Connect device with static IP address.
  - If installing a ZoomSHOT 20 SE QMini system, inform the network administrator that the Quick-Connect device has a non-configurable static IP address of 169.254.1.1.
  - The camera itself does not have an IP address, because it does not connect directly to the network.

Cabling notes

Use Cat-5e or better cable. In noisy RF or EMF environments, Cat-6 or Cat-7 is better. Maximum cable distance for Cat-6 or Cat-7 cable is 328 ft. (100 m), 230 ft. (70 m) for Cat-5e cable. We recommend shielded cabling if the cables will be coiled, run tightly with other cables, or routed near sources of electromagnetic interference such as power lines or fluorescent light fixtures. When in doubt, use shielded Cat-6 cable or better.

Caution

When making cables for Vaddio products, do not use pass-through RJ-45 connectors. If they are crimped incorrectly, they can damage the connectors on the product, cause intermittent connections, and degrade signal quality. Physical damage to the connectors will void your warranty.

Intact – Contact fingers will make reliable contact with the cable connector

Damaged – Some contact fingers are bent and will NOT make reliable contact with the cable connector

We recommend using high-quality connectors and a high-quality crimping tool.

Caution

Check your cables. Connecting a cable to the wrong port or using the wrong pin-out can result in equipment damage and will void the warranty.

Pro Tip

To prevent tragic mishaps, label both ends of every cable.

RS-232 serial connections

The RS-232 serial port (color-coded blue) carries control information between the host device and the camera. Quick-Connect devices and the AV Bridge MATRIX PRO use 38400 baud. This does not need to be configured.

Note

Use a network cable to make the serial connection from the host device to the camera. No special cabling is required.

Camera switch settings

The camera's DIP switches set basic camera behaviors and the rotary switch sets the video output resolution and frame rate.

Behaviors – DIP switches:

Switch	ON (up)
1	Switches 1 and 2 set how the camera responds to the remote. 1 and 2 up: Camera 1 1 down, 2 up: Camera 2 1 up, 2 down: Camera 3
2	
3	On (up): IR sensor on Off (down): IR sensor off (ignore the remote)
4	On (up): Normal image orientation Off (down): Image flip (for inverted mounting)
5	Not used
6	On (up): Normal operation Off (down): Firmware update
All off: Restore factory defaults on next power cycle	

Resolution and frame rate – rotary switch:

Position	Video output	Position	Video output
0	720p/59.94 (USB)	8	1080p/50
1	1080i/59.94	9	(not used)
2	1080p/59.94	A	(not used)
3	720p/60	B	(not used)
4	1080i/60	C	(not used)
5	1080p/60	D	(not used)
6	720p/50	E	1080p/30
7	1080i/50	F	1080p/25

Note

The camera ships with the rotary switch set to the appropriate resolution for use with the Quick-Connect USB Mini, which cannot ingest video at resolutions higher than 720p.

If you are installing a ZoomSHOT 20 SE QMini system, leave the rotary switch in its factory default position. *If you change to a higher resolution, the Quick-Connect USB Mini will not be able to send video.*

About ceiling-mounted cameras

If you use an inverted mount, set the camera's DIP switch 4 down for inverted operation. This orients the video image correctly.

Switch settings for the Quick-Connect USB

The default position for DIP switches on the Quick-Connect USB is up, as it is on the camera.

Switch	Function	Settings
1	Not used	
2	Not used	
3	Color space	UP = YCbCr (HDMI) DOWN = sRGB (DVI)
4	Operation mode	UP = Normal operation DOWN = Firmware update
5	Not used	

Connecting the camera

This section provides connection diagrams for ZoomSHOT 20 SE cameras and kits:

- ZoomSHOT 20 SE QUSB
- ZoomSHOT 20 SE QMini
- ZoomSHOT 20 SE AVBMP

Note

If you are installing a ZoomSHOT 20 SE QUSB or QMini system, talk to the network administrator before you connect the equipment.

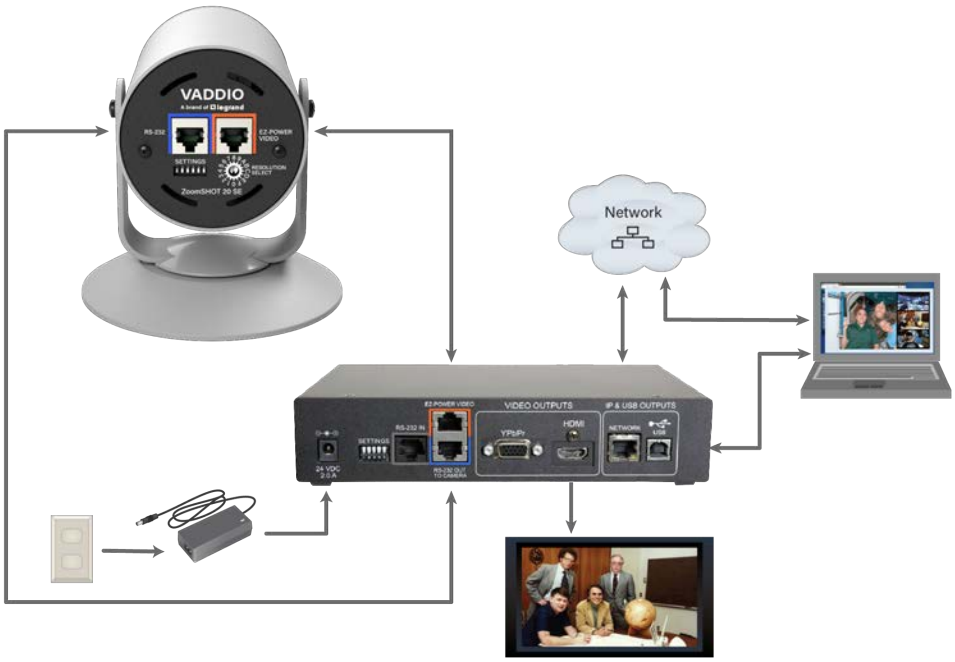
The Quick-Connect USB Mini uses the IP address 169.254.1.1.

If the network does not automatically assign IP addresses, you may need to configure the Quick-Connect USB with a static IP address. Work with the network administrator to determine how to configure the equipment.

See Setting a static IP address for the Quick-Connect USB for instructions to configure a static IP address.

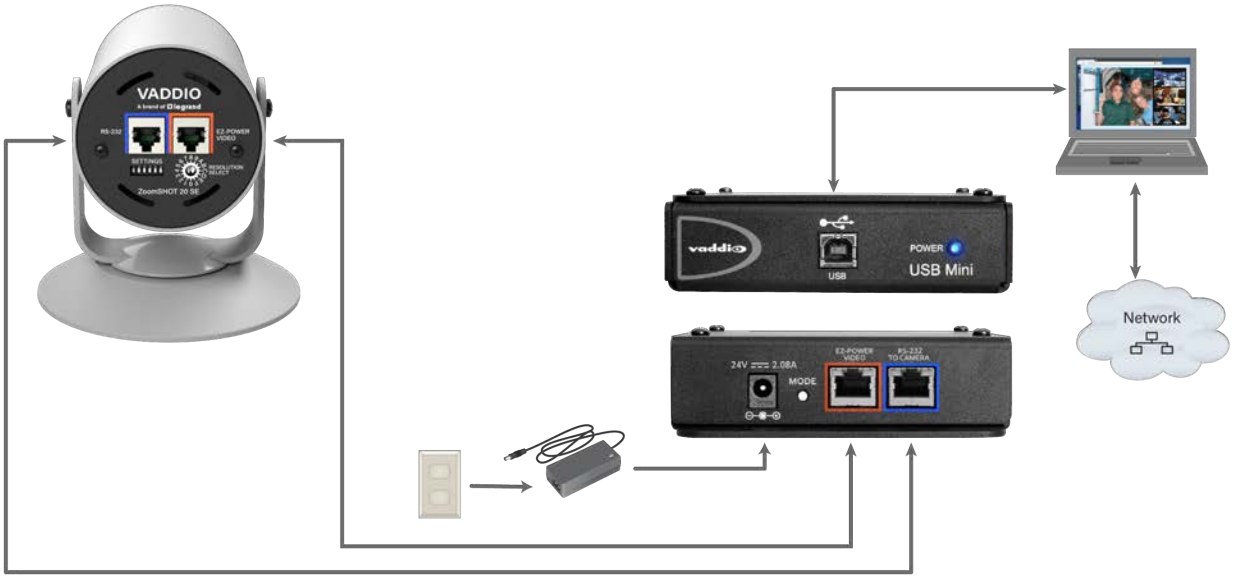
Basic connections: ZoomSHOT 20 SE QUSB system

ZoomSHOT 20 SE QUSB systems ship with a USB 2.0 cable to connect the Quick-Connect USB to a computer running a soft conferencing application. The Quick-Connect USB provides power, control, and connectivity to the camera, connections for a camera controller or other control device, and HDMI and YPbPr (analog component video) outputs to display video from the camera (near-end video).



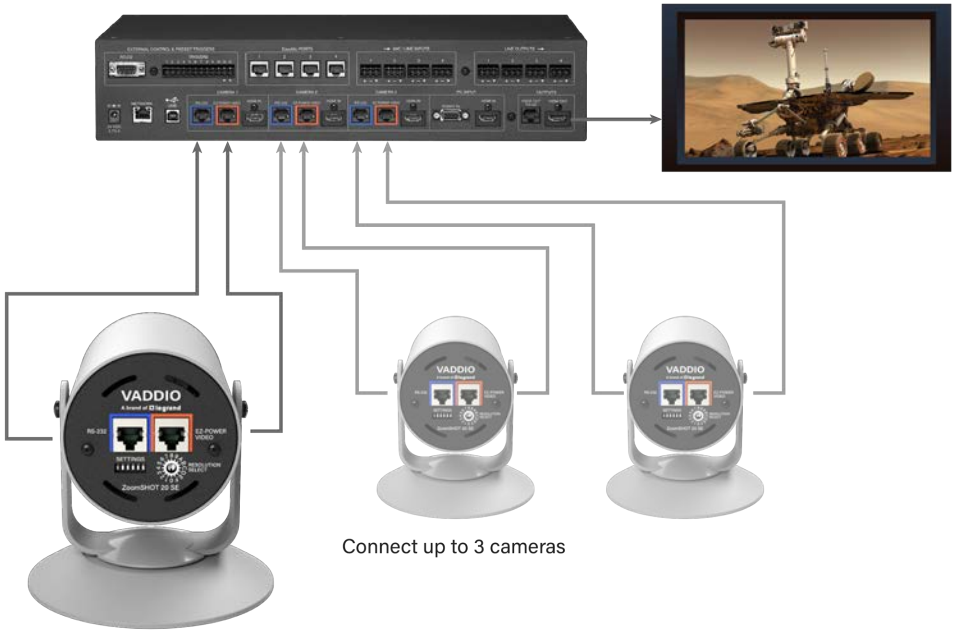
Basic connections: ZoomSHOT 20 SE QMini system

ZoomSHOT 20 SE QMini systems ship with a USB 2.0 cable to connect the Quick-Connect USB Mini to a computer running a soft conferencing application. The Quick-Connect USB Mini provides power, control, and connectivity to the camera, and brings the camera's video to the computer via USB connection.



Basic connections: ZoomSHOT 20 SE AVBMP

Connect the camera to an AV Bridge MATRIX PRO for power, control, and connectivity. Up to three cameras can be connected at once.



Connect up to 3 cameras

Functional check

Before you mount the camera, you may want to verify functionality.

1. Connect the camera in its minimum functional configuration.
2. Connect power to the host device.

   The host device and the camera each take a few seconds to initialize. You may be able to hear the zoom and focus motors as the camera initializes. The camera's status light glows blue when it is ready.
3. If the camera turns on and sends video, continue with the installation. Otherwise, double-check the connections. Contact Vaddio technical support if the issue persists.

Status light

The light in the camera's base indicates its current state.

- **Blue:** Normal operation (blinks once when the camera receives a command from the remote)
- **Red:** On-air tally (pro AV color scheme only; signal provided by external device)
- **Purple:** Booting

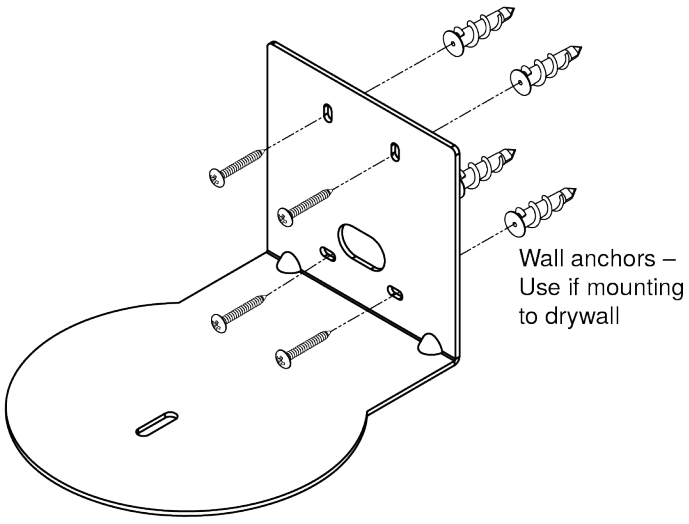
When restoring factory defaults, the status light sequence is purple - red - purple - blue.

Installing the wall mount

The camera is shipped with a Thin Profile Wall Mount. Other mounting options are available as well. Contact us if you don't have the camera mount you need.

You can install the camera wall mount to a 2-gang wall box or directly to the drywall.

- If you mount it to drywall, use the wall anchors provided with the wall mount.
- If you mount it to a wall box, use the cover plate screws supplied with the wall box.

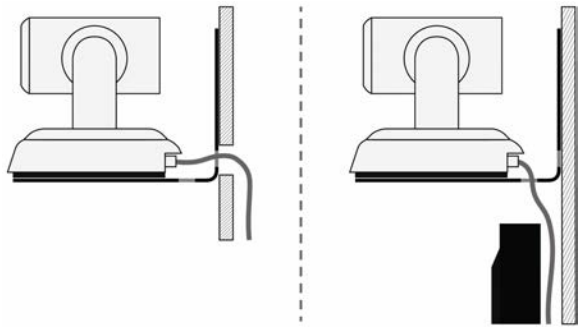


Mounting the camera

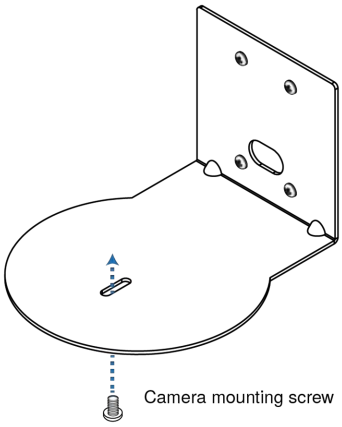
Caution

Check your cables. Connecting a cable to the wrong port or using the wrong pin-out can result in equipment damage and will void the warranty.

1. Route the cables to the camera location.
2. Route the cables through the mount, and install the mount on the wall or attach it to the wall box. Leave the screws loose enough to adjust the position of the mount.
3. Level the mount and tighten the mounting screws.
4. Connect the cables to the camera.
5. Place the camera on the mount.



6. Attach the camera to the mount using the ¼”-20 x .375 mounting screw supplied with the camera.



Images for illustration only; not to scale. Camera and mount details may differ.

Mounting the Quick-Connect device

If you are installing the camera with a Quick-Connect USB or Quick-Connect USB Mini device, mount the device appropriately. The Quick-Connect USB Mini has a built-in mounting flange. Rack mounting brackets and under-table mounting brackets are available for the Quick-Connect USB.

Contact us if you don't have the mount you need.

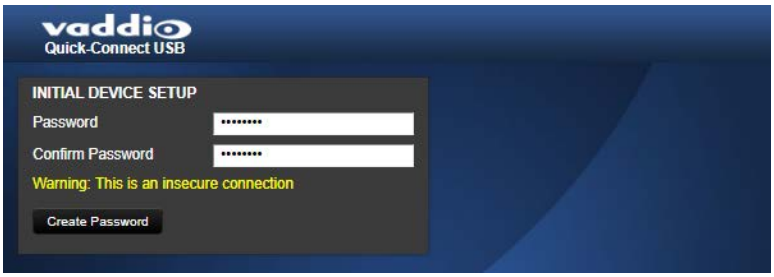
Working with the host device's web interface

The camera's host device has a web interface that includes camera controls. The ZoomSHOT 20 SE camera does not have its own web interface.

Because all the host devices for the ZoomSHOT 20 SE camera present similar camera controls, most of the screen shots in this manual are from the Quick-Connect USB.

Note

The first time you access the web interface for the camera's host device, you will need to set the admin password.



Managing AVBMP systems

If you are using a ZoomSHOT 20 SE AVBMP system, you can use the Vaddio Deployment Tool or Vaddio Device Controller to access the AV Bridge MATRIX PRO's web interface using the admin credentials. The camera controls are on the Video Inputs page.

Managing QUSB and QMini systems

If you are using the camera with a Quick-Connect device, enter the device's IP address in your browser's address bar. You may need to enter **`http://`** as a prefix to keep the browser from treating it as a search query. Quick-Connect devices use HTTP, not HTTPS. Because of this, the login dialog box presents a message that it is not a secure connection.

- The Quick-Connect USB Mini uses the IP address 169.254.1.1.
- The Quick-Connect USB displays its IP address on the front panel.

Quick-Connect devices are not discoverable by the Vaddio Deployment Tool or the Vaddio Device Controller.

Quick-Connect USB Mini: Video mode vs. control mode

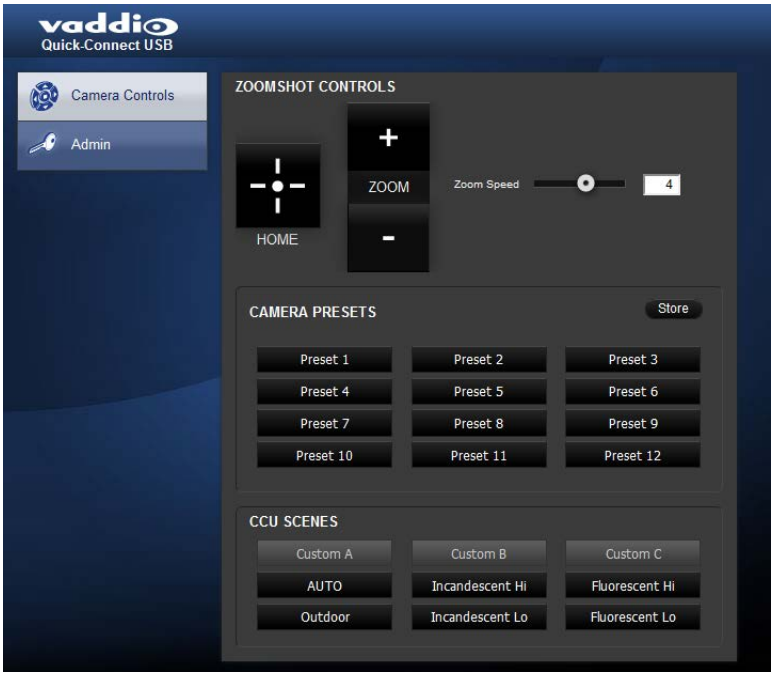
The Quick-Connect USB Mini has two operating modes:

- **Video mode** – The Quick-Connect USB Mini passes camera control and video signals. The web interface is not available.
- **Control mode** – The web interface for the Quick-Connect USB Mini is available. The device does not pass control or video signals.

When you try to access the web interface for the Quick-Connect USB Mini, your browser will present an error message if the device is in video mode. Press the Mode button to switch between video mode and control mode.

Accessing the web interface for the Quick-Connect USB or Quick-Connect USB Mini

1. **Quick-Connect USB Mini only:** If video is currently available on the connected display, press the Mode button on the Quick-Connect USB Mini.
2. Enter the IP address or hostname of the Quick-Connect device in your browser's address bar.
3. The first time you access the web interface, you will need to set the admin password.
4. Log in as admin.
5. **Quick-Connect USB Mini only:** After you have finished working with the web interface, press the Mode button again to return to video mode.



System administration for QUSB and QMini systems

All system administration is done on the host device. The camera itself acts as a peripheral device and does not connect to the network. For AVBMP systems, the only system administration is for the AV Bridge Matrix PRO itself. Refer to the manual for the AV Bridge Matrix PRO.

This chapter covers settings for managing the camera's Quick-Connect device as an element of your network:

- Network configuration – Hostname, static/DHCP, IP address, subnet mask, gateway
- Room label – Information that appears in the web interface to help locate the equipment
- Security – Admin and user passwords

See Configuring Camera Behavior for information on settings to configure the camera for your AV environment.

Setting a static IP address for the Quick-Connect USB

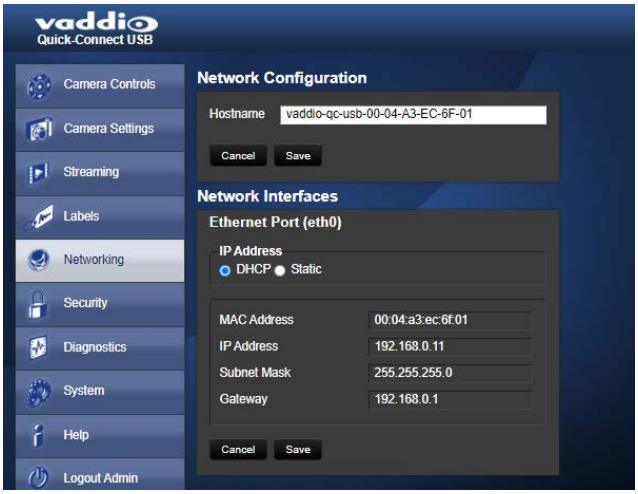
NETWORKING PAGE

To set a static address in a non-DHCP network:

If you install the camera with a Quick-Connect USB in a network that does not assign IP addresses automatically, you will need to set the IP address, gateway address, and subnet mask. *Ask the network administrator what to enter in these fields*.

To change from a DHCP address to a static address:

If you install the camera with a Quick-Connect USB in a network that assigns IP addresses automatically, the IP address may change from time to time. To keep this from happening, you can set the IP address for the Quick-Connect USB to Static. *Do not change the IP address, subnet mask, or gateway unless the network administrator instructs you to do so.*



Note

The IP address for the Quick-Connect USB Mini cannot be changed.

Adding room information to the Quick-Connect device's web interface

ROOM LABELS PAGE

Use the Room Labels information to help you identify the Quick-Connect USB or Quick-Connect USB Mini connected to a specific camera.

Changing the admin password on the Quick-Connect device

SECURITY PAGE

You can change the Quick-Connect device's admin and user passwords at any time on the Security page. The user password is not currently needed.

Configuring camera behavior

This chapter covers managing the camera as a part of the room's AV environment.

About the camera's on-screen display (OSD) menu

The camera itself has some controls available through its on-screen display (OSD). The settings that are supported are also available from the host device's web interface. Vaddio recommends using only the host device's web interface to configure and manage the camera.

Note

It is possible to change the camera's baud rate using the OSD menu. This makes the camera unable to receive commands from its host device. For this reason, Vaddio recommends configuring the camera from the host device, not the OSD menu.

Configuring streaming from the Quick-Connect device

STREAMING PAGE

The Quick-Connect USB and Quick-Connect USB Mini devices provide streaming capability for ZoomSHOT 20 SE cameras.

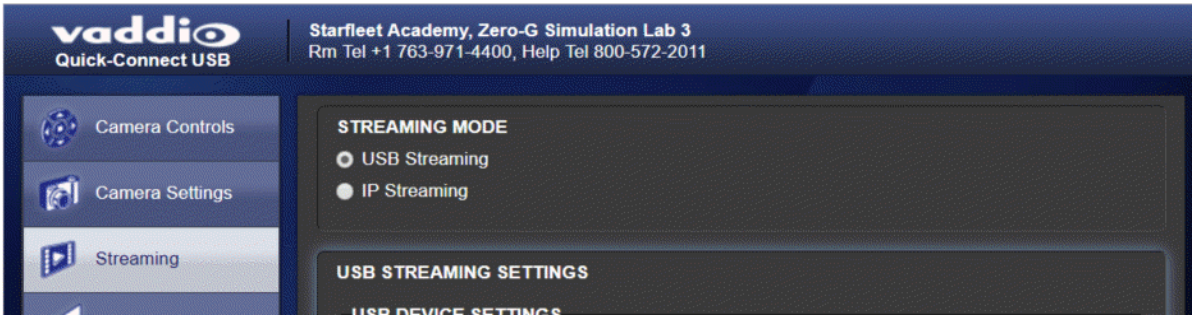
- Quick-Connect USB Mini: USB 2.0 streaming only
- Quick-Connect USB: USB 2.0 or IP (H.264) streaming; configurable

The Quick-Connect USB defaults to USB 2.0 streaming.

Most aspects of USB streaming are negotiated automatically between the Quick-Connect device and the conferencing application, and in many cases no configuration is needed for either USB or IP streaming.

To select the streaming mode (Quick-Connect USB only):

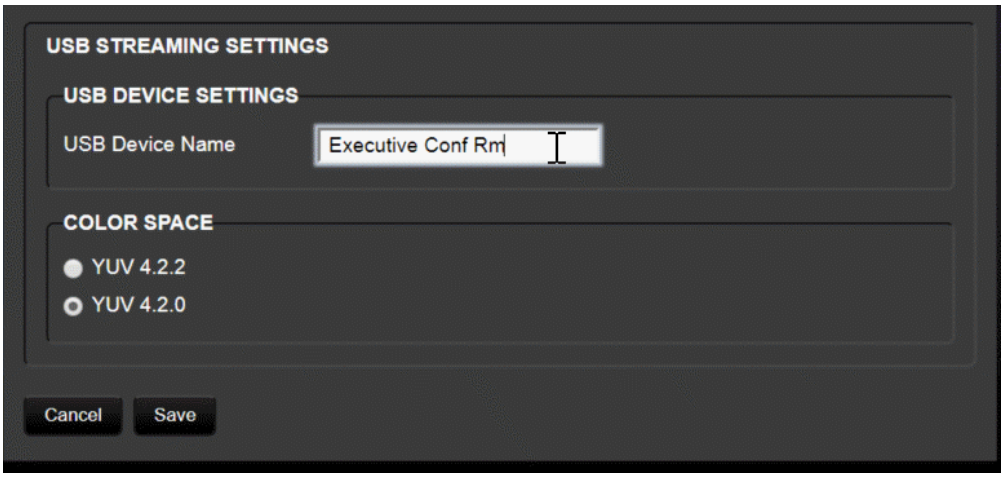
USB streaming is the default. To change from USB streaming to IP streaming or vice-versa, select the streaming mode you want.



To configure USB streaming:

If desired, give the Quick-Connect device a device name that helps people to identify and select it when setting up their laptops for conferencing.

Normally you do not need to set the color space; this is automatically negotiated with the conferencing application.

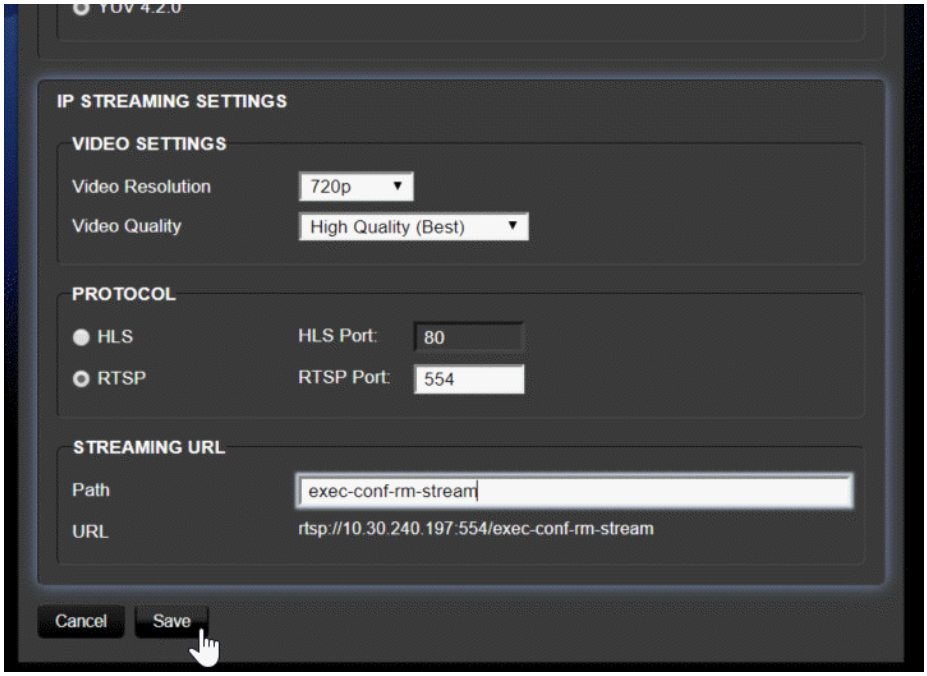


To configure IP streaming on the Quick-Connect USB:

1. Select the desired video resolution. This cannot be higher than the video resolution set on the camera. Video resolution determines the size of the media player window displaying the stream on people's computers.
2. Select the video quality. This determines how much bandwidth the stream uses.

   Pro tip

   A higher bandwidth setting provides better video if the network can support it, but can result in poor-quality video if the network has bandwidth limitations. A high video resolution setting combined with a high quality (bandwidth) setting requires the most network bandwidth. If the network cannot easily support this, video errors will be more likely and more obvious than at lower quality and/or resolution settings.
3. Select the streaming protocol if necessary. RTSP on port 554 is the default; the port number can be changed. *Do not change the port number unless your IT staff directs you to do so.* HLS is available for streaming to Apple iOS devices. HLS streaming is always on port 80.
4. Optional: Change the streaming URL path to help people identify the URL in their media player's list of recent streams.
5. Save the changes you make on this page.



Initial lighting and color settings

CAMERA SETTINGS PAGE

No two rooms are exactly alike – but a lot of rooms are a lot alike. The technical folks at Vaddio (Scott, to be specific) have already set up adjustments for common lighting scenarios (CCU scenes) – Warm White, Cool White, and Neutral. The Auto setting allows the camera to determine the appropriate adjustments.

Adjust for the lighting in use by selecting the CCU scene that best fits your environment.

Some adjustments to lighting and color may be necessary.

Note

Color adjustments are not available when the Auto scene is selected.

Lighting adjustments

CAMERA SETTINGS PAGE

The camera provides settings to compensate for common lighting problems.

- **Auto Iris** allows the camera to compensate automatically for the light level.
- **Backlight Compensation** reduces contrast to adjust for bright light behind the main subject of the shot. Use this if the subject is in front of a window, projector screen, or other bright area and appears as a silhouette.

The Lighting and image quality cheat sheet may be helpful.

Fine-tuning image quality and color

CAMERA PAGE

Fine-tune the color and lighting as needed using the Color Settings controls.

- **Auto White Balance** adjusts color automatically. Red gain and blue gain controls are not available when Auto White Balance is selected.
- **Red Gain** and **Blue Gain** provide manual color adjustment.
- **Detail** adjusts the image sharpness. If the video looks grainy or “noisy,” try a lower Detail setting. (As in conversation, too much detail is bad.)
- **Chroma** adjusts the color intensity.

If you change Red Gain or Blue Gain and you don't like the results, start over by selecting and then deselecting Auto White Balance.

The Color adjustment cheat sheet may be helpful.

Lighting and image quality cheat sheet

Here are some tips for using the CCU settings for lighting and image quality. For more detailed information on each setting, see Lighting adjustments and Fine-tuning image quality and color.

What do you need to correct?	Make this adjustment:
The image is too dark	Increase Iris (lower F-stop value)
	Increase Iris Gain
The image looks washed out or faded	Decrease Iris (higher F-stop value)
	Decrease Iris Gain
	Increase Chroma
The subject is silhouetted against a bright background	Enable Backlight Compensation
The image looks grainy	Decrease Detail
	Decrease Iris Gain
"Soft focus" effect; the image looks unrealistically smooth	Increase Detail

Color adjustment cheat sheet

Here are some tips for using the color-related CCU settings. For more detailed information on each setting, see Fine-tuning image quality and color.

What do you need to correct?	Make this adjustment:
Colors look less vivid than they should	Increase Chroma
Colors look too vivid	Decrease Chroma
Colors look wrong; white objects do not appear white	Enable Auto White Balance
	One Push White Balance
	Disable Auto White Balance and ■ adjust Red Gain (decrease for less red, increase for less green) ■ adjust Blue Gain (decrease for less blue, increase for less yellow)

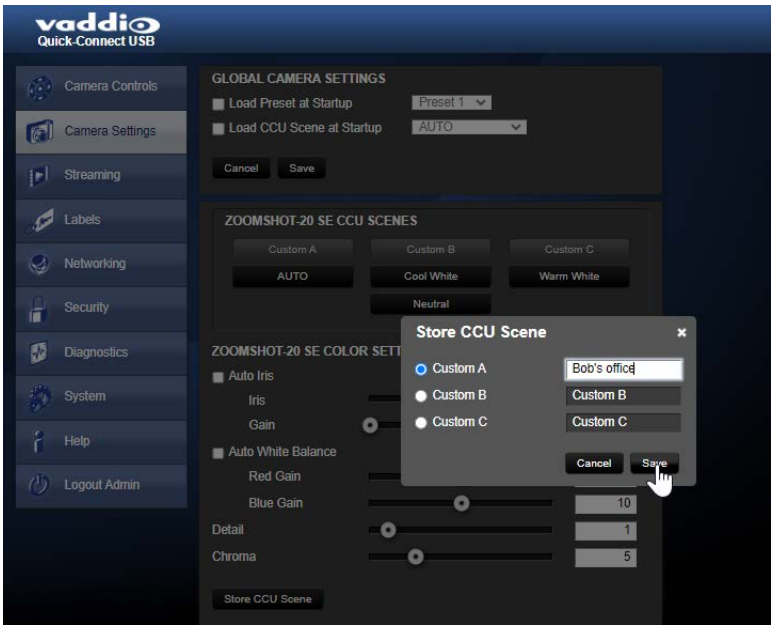
Too much red	Not enough red	Too much blue	Not enough blue	Balanced
				

Saving color and lighting settings

CAMERA PAGE

If you are adjusting for lighting conditions that are likely to recur, you can save your adjustments as a custom scene.

1. Adjust lighting, image quality, and color.
2. When the scene looks the way you want it to, select Store CCU Scene.
3. In the Store CCU Scene dialog box, select which custom scene to store (Custom A, B, or C). You have the option to rename the custom scene.
4. Select Save.



Storing and using zoom presets

CAMERA CONTROLS PAGE

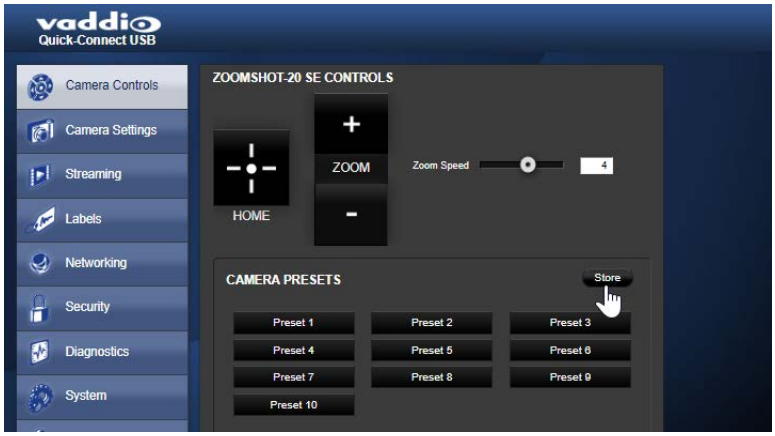
If a camera shot will be used repeatedly, you can save the zoom level as a preset. The Home position, Preset 1, and Preset 2 are available from the remote; all stored presets are available from the host device's web interface.

Things to know about storing presets using the Quick-Connect web interface:

- The buttons do not change appearance to indicate that a preset is stored.
- Storing a preset overwrites any preset already stored for that button.
- Preset 1 is always automatically highlighted in the Store Preset dialog box
- Presets cannot be renamed.

To store a zoom preset:

1. Set up the shot.
2. Select Store.



3. In the Store Preset dialog box, select the preset to store. The box closes automatically.

The preset is available immediately in both the admin and non-admin web interfaces.

Zooming in or out

In most cases it's simplest to use the remote to zoom in and out.

In the host device's web interface, use the Zoom + button to zoom in and the Zoom – button to zoom out. The Home button returns the camera to 1x zoom.

Use the Zoom Speed slider to change the camera's default zoom speed in the web interface.

System maintenance

This chapter covers maintenance tasks.

What's in this chapter:

- Updating firmware
- Rebooting

The System pages for the different products are similar to each other, but include product-specific features as well.

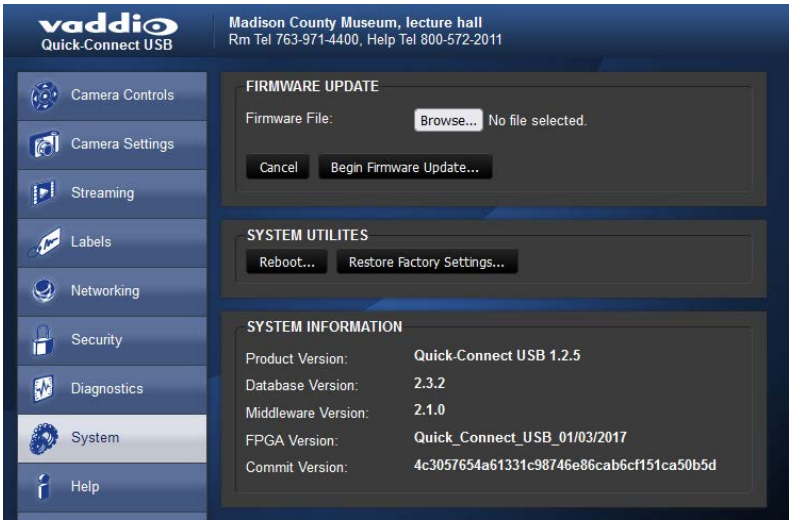
Updating the Quick-Connect firmware

System page, Quick-Connect web interface

The procedure for updating the firmware on a Quick-Connect USB or Quick-Connect USB Mini device is similar to the procedure for updating the camera's firmware.

1. Download the firmware and its release notes.
2. Select Choose File, then browse to the downloaded firmware and select it. The filename ends with `.p7m`.
3. Select Begin Firmware Update.
4. Read and understand the information in the Confirm dialog box. It's dull, but it could save you some time and aggravation.
5. Select Continue. A progress message box opens. If the update process presents warnings or error messages, read them carefully.

   The Quick-Connect device reboots when the update is complete.



Caution

The Quick-Connect device must remain connected to power and to the network during the update. Interrupting the update could make the camera unusable.

Updating the camera firmware

Because the ZoomSHOT 20 SE camera does not have its own web interface, you must use the Vaddio Loader if you need to install firmware. Refer to the Vaddio Loader Instructions document.

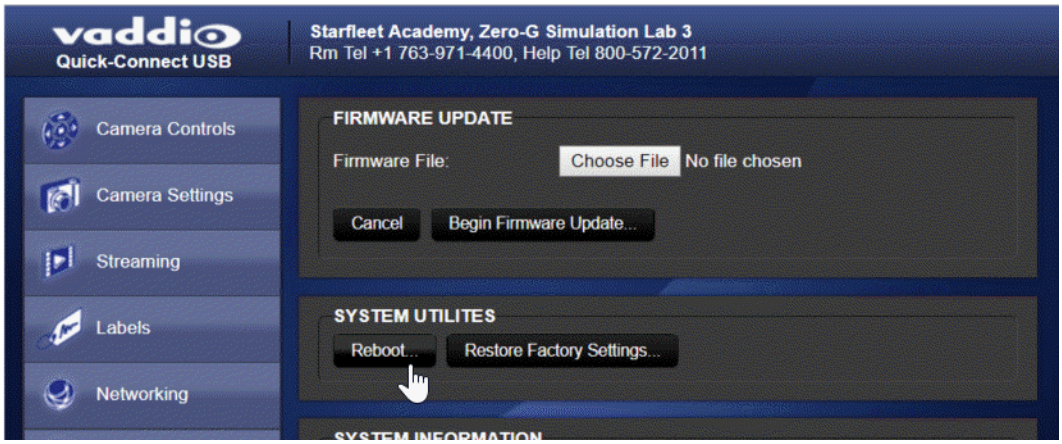
Download the latest version of the Vaddio Loader and the Vaddio Loader Instructions from https://www.legrandav.com/tools_and_training/tools/vaddio_tools.

Rebooting the Quick-Connect device

SYSTEM PAGE

This can help if the camera stops responding as you expect.

In the System Utilities section, select Reboot.



Contacting Vaddio Technical Support

HELP PAGE

If you can't resolve an issue using your troubleshooting skills (or the Troubleshooting table in this manual), we are here to help.

Please visit our website for up-to-date contact information.

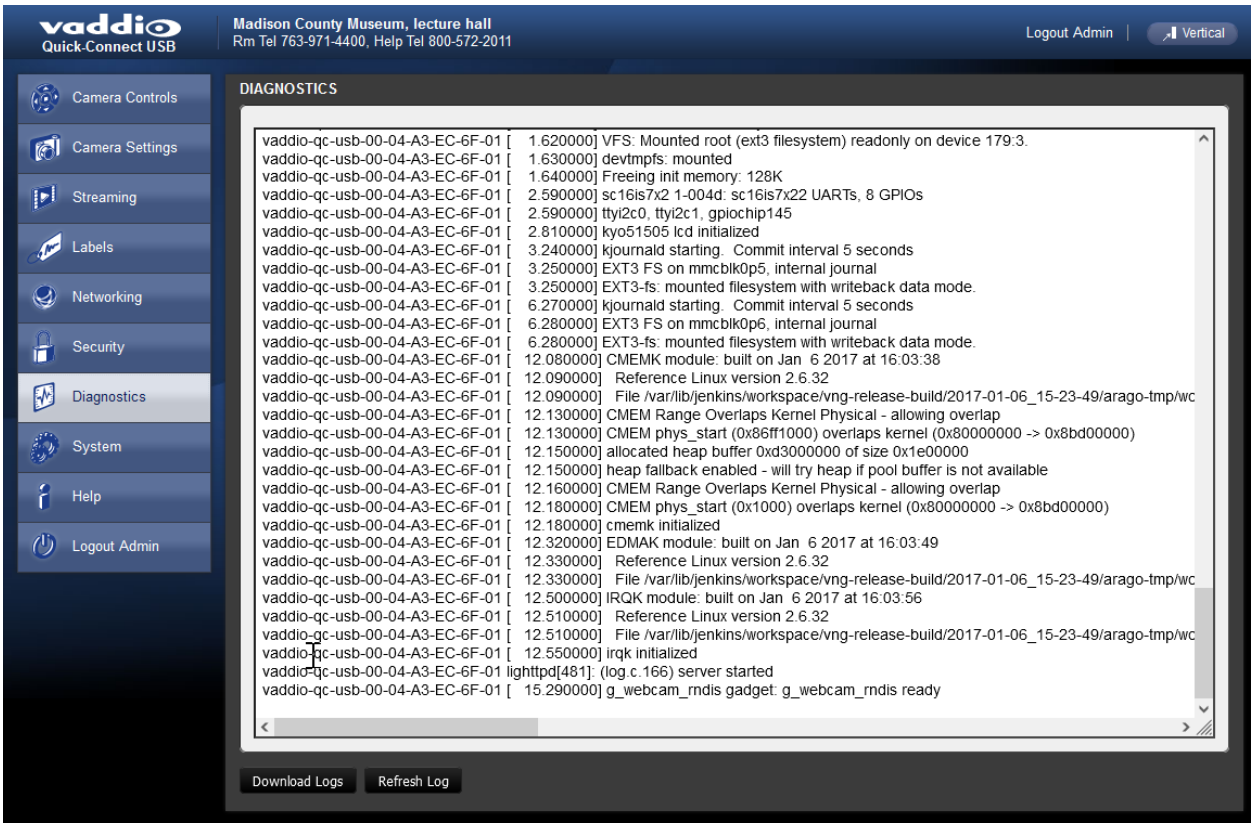
Accessing the diagnostic logs

DIAGNOSTICS PAGE

If you encounter a problem that you can't solve, your Vaddio technical support representative may ask you to download and email the Quick-Connect device's event log file available from the Diagnostics screen.

Note

The event log may include large numbers of internal events even when no errors have occurred. Rebooting generates over 100 log entries. (This is how the author created the screen shot.)



Operating the camera

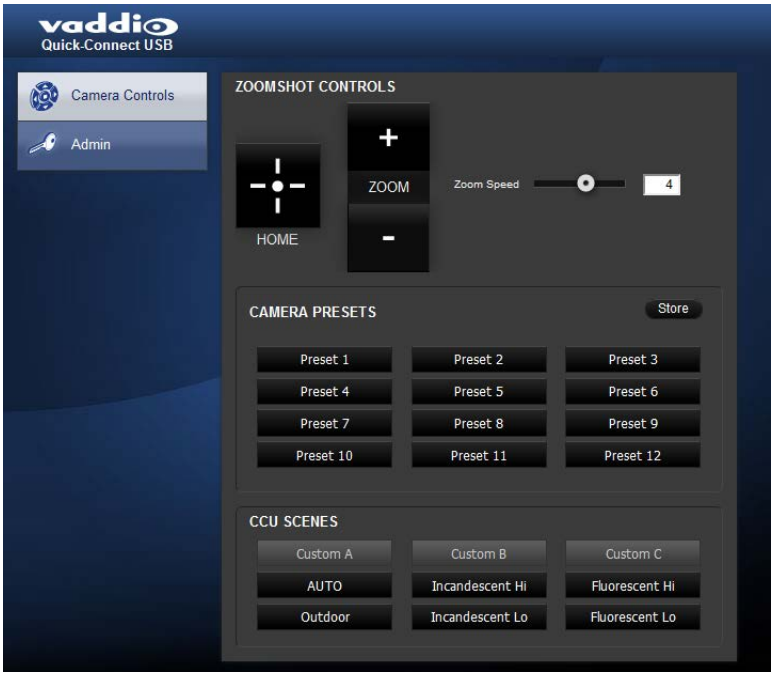
The remote provides most of the controls you need to operate the camera. Use the remote to:

Refer to the user guide for the remote, which is available on the same page of the website as this manual.

- Move to zoom presets 1 and 2, if they have been stored
- Zoom manually or return to the home zoom position
- Select the correct IR channel for the camera (default is IR channel 1)

The host device's Camera Controls or Video Inputs page provides additional controls:

- Zoom speed
- Additional zoom presets
- CCU Scenes for color adjustments



Serial command reference

The Vaddio Serial Control Protocol is similar to the Sony® VISCA command set in order to be compatible with several popular control devices. Not all VISCA commands are supported, and there are Vaddio-specific commands in the following command and inquiry lists.

Zoom and focus commands

Command Set	Command	Command Packet	Comments
CAM_Zoom	Stop	8x 01 04 07 00 FF	Variable speed: p = 0 (low) to 7 (high) Direct: pqrs = zoom position (0h-7AC0h)
	Tele (std)	8x 01 04 07 02 FF	
	Wide (std)	8x 01 04 07 03 FF	
	Tele (variable)	8x 01 04 07 2p FF	
	Wide (variable)	8x 01 04 07 3p FF	
	Direct	8x 01 04 47 0p 0q 0r 0s FF	
CAM_Focus	Stop	8x 01 04 08 00 FF	Variable speed: p = 0 (low) to 7 (high) Direct and Near Limit: pqrs = focus position (1000h – F000h)
	Far (std)	8x 01 04 08 02 FF	
	Near (std)	8x 01 04 08 03 FF	
	Far (variable)	8x 01 04 08 2p FF	
	Near (variable)	8x 01 04 08 3p FF	
	Direct	8x 01 04 48 0p 0q 0r 0s FF	
	One Push Trigger	8x 01 04 18 01 FF	
	Near Limit	8x 01 04 28 0p 0q 0r 0s FF	
CAM_Focus Mode	Auto Focus	8x 01 04 38 02 FF	
	Manual Focus	8x 01 04 38 03 FF	
	Auto/Manual	8x 01 04 08 10 FF	

Zoom and focus inquiry commands

Inquiry Command	Command	Response Packet	Comments
CAM_ZoomPosInq	8x 09 04 47 FF	y0 50 0p 0q 0r 0s FF	pqrs: Zoom position
CAM_FocusPosInq	8x 09 04 48 FF	y0 50 0p 0q 0r 0s FF	pqrs: Focus position
CAM_FocusModeInq	8x 09 04 38 FF	y0 50 02 FF	Auto focus
		y0 50 03 FF	Manual focus
CAM_MemoryInq	8x 09 04 3F FF	y0 50 pp FF	pp: Preset number recalled last (00h - 0Fh)
CAM_MemoryStatusInq	8x 09 04 3F 0p FF	y0 50 0p 0q 0r 0s FF	p: Preset number (00h - 0Fh) rs: speed (0x1-0x18) 1 - 24
CAM_MemSaveInq	8x 09 04 23 0X FF	y0 50 0p 0q 0r 0s FF	X: 00h to 0Fh (preset number) pqrs: 0000h to FFFFh (Data)

Color and light management commands

Command Set	Command	Command Packet	Comments
CAM_WB	Auto	8x 01 04 35 00 FF	Normal auto
	Manual	8x 01 04 35 05 FF	Manual control mode
CAM_RGain	Reset	8x 01 04 03 00 FF	Manual control of red gain pq = red gain (00h – FFh)
	Up	8x 01 04 03 02 FF	
	Down	8x 01 04 03 03 FF	
	Direct	8x 01 04 43 00 00 0p 0q FF	
CAM_BGain	Reset	8x 01 04 04 00 FF	Manual control of blue gain pq = blue gain (00h – FFh)
	Up	8x 01 04 04 02 FF	
	Down	8x 01 04 04 03 FF	
	Direct	8x 01 04 44 00 00 0p 0q FF	
CAM_AE	Auto	8x 01 04 39 00 FF	Auto exposure mode
	Manual	8x 01 04 39 03 FF	Manual control mode
CAM_Shutter	Reset	8x 01 04 0A 00 FF	Shutter setting pq = shutter position (00h – 15h) See Shutter Speed Values – CAM_Shutter Command
	Up	8x 01 04 0A 02 FF	
	Down	8x 01 04 0A 03FF	
	Direct	8x 01 04 4A 00 00 0p 0q FF	

Command Set	Command	Command Packet	Comments
CAM_Iris	Reset	8x 01 04 0B 00 FF	Iris setting pq = iris position (0h, 05h-11h) See Iris Values – CAM_Iris Command
	Up	8x 01 04 0B 02 FF	
	Down	8x 01 04 0B 03 FF	
	Direct	8x 01 04 4B 00 00 0p 0q FF	
CAM_Gain	Reset	8x 01 04 0C 00 FF	Iris gain setting pq = gain position (01h – 0Fh) p = gain limit (04h-0Fh) See Iris Gain and Gain Limit Values – CAM_Gain Command
	Up	8x 01 04 0C 02 FF	
	Down	8x 01 04 0C 03 FF	
	Direct	8x 01 04 4C 00 00 0p 0q FF	
	+Gain Limit	8x 01 04 2C 0p FF	
CAM_BackLight	On	8x 01 04 33 02 FF	Backlight compensation On/Off
	Off	8x 01 04 33 03 FF	
CAM_WD	On	8x 01 04 3D 02 FF	Wide Dynamic Range On
	Off	8x 01 04 3D 03 FF	Wide Dynamic Range Off
CAM_Aperture	Reset	8x 01 04 02 00 FF	Aperture setting pq = aperture position (0h-0fh)
	Up	8x 01 04 02 01 FF	
	Down	8x 01 04 02 02 FF	
	Direct	8x 01 04 42 00 00 0p 0q FF	
CAM_Chroma	Direct	8x 01 7E 55 00 00 0p 0q FF	pq: 00h – 14h

Shutter speed values (CAM_Shutter)

Value	60/59.94/30/29.97 fps	50/25 fps
0x15	1/10000	1/10000
0x14	1/6000	1/6000
0x13	1/4000	1/3500
0x12	1/3000	1/2500
0x11	1/2000	1/1750
0x10	1/1500	1/1250
0x0F	1/1000	1/1000
0x0E	1/725	1/600
0x0D	1/500	1/425
0x0C	1/350	1/300
0x0B	1/250	1/215
0x0A	1/180	1/150
0x09	1/125	1/120
0x08	1/100	1/100
0x07	1/90	1/75
0x06	1/60	1/50
0x05	1/30	1/25
0x04	1/15	1/12
0x03	1/8	1/6
0x02	1/4	1/3
0x01	1/2	1/2
0x00	1/1	1/1

Iris values (CAM_Iris)

Value	Iris
0x11	F1.6
0x10	F2
0x0F	F2.4
0x0E	F2.8
0x0D	F3.4
0x0C	F4
0x0B	F4.8
0x0A	F5.6
0x09	F6.8
0x08	F8
0x07	F9.6
0x06	F11
0x05	F14
0x00	CLOSED

Iris gain and gain limit values (CAM_Gain)

Iris Gain			Iris Gain Limit		
Value	**Steps**	**Gain in dB**	**Value**	**Steps**	**Gain in dB**
0x0F	28	77.8	0x0F	28	77.8
0x0E	26	44.4	0x0E	26	44.4
0x0D	24	41.0	0x0D	24	41.0
0x0C	22	37.5	0x0C	22	37.5
0x0B	20	34.1	0x0B	20	34.1
0x0A	18	30.7	0x0A	18	30.7
0x09	16	27.3	0x09	16	27.3
0x08	14	23.9	0x08	14	23.9
0x07	12	20.5	0x07	12	20.5
0x06	10	17.1	0x06	10	17.1
0x05	8	13.7	0x05	8	13.7
0x04	6	10.2	0x04	6	10.2
0x03	4	6.8			
0x02	2	3.4			
0x01	0	0			

Color and light management inquiry commands

Inquiry Command	Command	Response Packet	Comments
CAM_WBModeInq	8x 09 04 35 FF	y0 50 00 FF	Auto
		y0 50 05 FF	Manual
CAM_RGainInq	8x 09 04 43 FF	y0 50 00 00 0p 0q FF	pq: Red gain
CAM_BGainInq	8x 09 04 44 FF	y0 50 00 00 0p 0q FF	pq: Blue gain
CAM_AEModeInq	8x 09 04 39 FF	y0 50 00 FF	Auto
		y0 50 03 FF	Manual
CAM_ShutterPosInq	8x 09 04 4A FF	y0 50 00 00 0p 0q FF	pq: Shutter position
CAM_IrisPosInq	8x 09 04 4B FF	y0 50 00 00 0p 0q FF	pq: Iris position
CAM_GainPosInq	8x 09 04 4C FF	y0 50 00 00 0p 0q FF	pq: Gain position
CAM_WDModeInq	8x 09 04 3D FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_BackLightModeInq	8x 09 04 33 FF	y0 50 02 FF	On
		y0 50 03 FF	Off
CAM_ApertureInq	8x 09 04 42 FF	y0 50 00 00 0p 0q FF	pq: Aperture gain
CAM_ChromaInq	8x 09 7E 55 FF	y0 50 05 00 00 00 0p FF	p: 0 – Eh

Other commands

Command Set	Command	Command Packet	Comments
CommandCancel		8x 2p FF	p= socket (1 or 2)
CAM_Power	On	8x 01 04 00 02 FF	Power on
	Off	8x 01 04 00 03 FF	Power off
CAM_Tally	On	8x 01 7E 01 0A 00 02 FF	
	Off	8x 01 7E 01 0A 00 03 FF	
CAM_NR	--	8x 01 04 53 0p FF	p = noise reduction level (0: off,1 – 5)

Other inquiry commands

Inquiry Command	Command	Response Packet	Comments
CAM_TallyInq	8x 09 7E 01 0A FF	y0 50 02 FF	On
		y0 50 03 FF	Off
Vaddio_ModelInq	8x 09 08 0e FF		ZoomSHOT 20 SE

Troubleshooting

Use this information to determine whether it's time to call Vaddio Technical Support.

Check the status light first

When the camera doesn't behave as you expect, check the status light before you do anything else.

- **Blue:** Normal operation (blinks once when the camera receives a command from the remote)
- **Red:** On-air tally (signal provided by external device)
- **Purple:** Booting, restoring factory defaults, or updating firmware

Check the cables next

If the equipment behaves in a way that suggests even a remote possibility of a bad cable, please try a known good cable with the same pin-out.

Cables can be defective, whether they are purchased from a vendor or made at the installation site. Crimping tools can crimp unevenly, contacts can break internally, and individual conductors in the cable can break inside the jacketing material. Any of these can result in a cable that passes a continuity check but does not work reliably, or does not pass enough power to the connected device.

(The author would like to confess having made a certain number of almost-good cables. It happens.)

Power and control

What is it doing?	Possible causes	Check and correct
Nothing. The status light is off, there is no video, and the camera does not respond to the remote. 	The host device does not have power.	Be sure the host device is connected to the right power supply. Verify that the power supply is connected to a wall outlet that can power other items such as a phone charger.
	The camera is not connected correctly.	Check the way the camera is connected to the host device.
	A camera cable is bad.	Connect the camera with known good cables.
	The camera or Quick-Connect device is bad.	Contact Vaddio technical support.
The camera loses all its settings when power is cycled.	All the DIP switches are in the DOWN position.	Set the DIP switches to their proper positions. Default is all UP. See Camera switch settings for more information.
The camera's status light is on, but it does not respond to the remote.	The remote and the camera are not using the same IR channel.	Press the **Camera Select 1** button on the remote. Try the other Camera Select buttons if necessary.
	The remote's batteries are dead.	Put new batteries in the remote.

Video and streaming

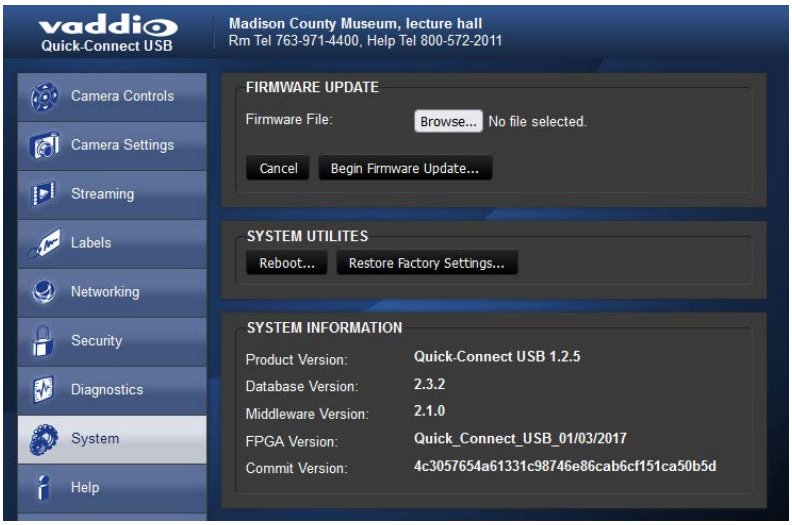
What is it doing?	Possible causes	Check and correct
No video signal or black video. The camera's status light is on.	Using a Quick-Connect USB Mini: The camera is set to a resolution above 720p.	Disconnect power, change the resolution to one that is supported on the Quick-Connect device, and reconnect power.
	Using a Quick-Connect USB Mini: The device is in control mode.	Press the white button on the QMini to switch from control mode to video mode. Video is not available when the device is in control mode.
No IP stream.	Using Quick-Connect USB: The device is set for USB streaming.	In the Quick-Connect USB device's web interface, select IP streaming mode on the Streaming page.
	Using Quick-Connect USB Mini	Quick-Connect USB Mini does not support IP streaming.

Restoring factory default settings

Sometimes it's easiest to just start over. Restoring the original factory settings will overwrite everything you have customized.

To restore factory default settings from the Quick-Connect device's web interface:

On the System page, select Restore Factory Settings. Then select Confirm.



If the camera's administrative controls are not accessible, you can restore factory defaults using the switches on the back of the camera.

This procedure is also available for the Quick-Connect USB device.

To restore the camera's factory default settings without access to the Quick-Connect web interface:

1. Disconnect the cable to the EZ Power Video port and set all DIP switches DOWN.
2. Reconnect the cable. As the camera returns to factory defaults, the status light sequence is purple - red - purple - blue.
3. Disconnect the EZ Power Video cable again and return the DIP switches to their previous positions.
4. Reconnect the cable.

Operation, storage, and care

For smears or smudges on the product, wipe with a clean, soft cloth. Use a lens cleaner on the lens. Do not use any abrasive chemicals.

Keep this device away from food and liquids.

Do not operate or store the device under any of the following conditions:

- Temperatures above 40°C (104°F) or below 0°C (32°F)
- High humidity, condensing or wet environments
- Inclement weather
- Severe vibration
- In a blender or food processor
- Dry environments with an excess of static discharge

Do not attempt to take this product apart. There are no user-serviceable components inside.

Glossary

auto white balance
: A setting that allows the camera to manage color adjustments automatically.

backlight compensation
: A setting that reduces contrast to adjust for bright light behind the main subject of the shot.

bandwidth
: Data transfer rate (bits per second) for the stream. In some cases, using a high bandwidth can slow down other network traffic. On networks with very low bandwidth, video issues may result. Streaming at a lower resolution or frame rate can reduce bandwidth usage.

CCU scene
: A stored set of color and lighting adjustments. (CCU = Camera Control Unit)

chroma
: A setting that adjusts color intensity.

default IP address
: The IP address that a device uses if it is unable to obtain one automatically. For Vaddio cameras, the default IP address is 169.254.1.1. If a device is using its default IP address, it needs to be configured for the network where it is installed.

detail
: A setting that adjusts image sharpness. If detail is set too low, the image may appear unrealistically smooth – like an episode of Moonlighting.

DHCP
: Dynamic Host Configuration Protocol. A network management protocol that assigns an IP address to a device automatically when it is connected to the network.

DIP switches
: An array of switches designed for installation on a circuit board. (DIP = Dual Inline Package; refers to the physical form.) Our engineers are never going to stop calling them that, so our web interface will keep on saying it.

DIY
: Do It Yourself. As in, "You can copy information from this document to create a DIY room guide customized for your conference room." Yes! You can do that! In fact, the "Info for DIY Room Guides" document is specifically designed for you to adapt and customize.

Field of View (FOV)
: How wide the video image is. Vaddio measures horizontal field of view. Some manufacturers use diagonal field of view, which yields a bigger number for the same actual image area. Tilt your head to one side and diagonal FOV will make sense.

flombodulator
: A technically complex item the name of which you can't recall at the moment.

frame rate
: The number of output video frames per second. For streaming, higher frame rates use more bandwidth.

frequency selection (camera and remote)
: The carrier frequency (Camera 1, Camera 2, or Camera 3) that the camera is configured to recognize from the IR Remote Commander.

gateway
: Network information automatically assigned in a DHCP network. If installing equipment on a non-DHCP network, get this information from the network administrator.

HDMI
: A video output format; also capable of carrying audio information.

home
: The settings to which the camera returns after a reboot or on exiting standby mode. Depending on the camera's capabilities, home may include zoom, color and lighting settings, and (for PTZ cameras) pan/tilt position.

HTTP
: HyperText Transfer Protocol. The magic that makes websites work.

HTTPS
: HyperText Transfer Protocol Secure. The magic that uses encryption to make websites work securely. See SSL certificate for more information.

IP address
: Where a given device is on the IP network, logically. The IP address enables the network to route data to the right device.

IP address conflict
: Two or more devices attempting to use the same IP address on a network. Results are unpredictable but never good.

LED
: Light-Emitting Diode. An indicator light.

preset
: A stored camera position. Contains pan, tilt, and zoom position; may also include color and Tri-Synchronous Motion speed settings.

RCLB
: Really Cool Logo Badge. A visual cue that the device is a genuine Vaddio product. Accept no substitutes!

resolution
: 1. The image size. For Vaddio cameras, resolution is expressed in terms of digital TV standards, with 1080p being the default in most cases. Resolution and frame rate are set together on Vaddio cameras. 2. The thing that usually flies out the window by January 10th.

Richard
: The reason there are cats (well, pictures of cats) in this manual.

RS-232
: A low-speed serial communication standard. RS-232 connections are used for out-of-band control, typically using a third-party device such as a touch panel.

RTFM
: An information delivery protocol.

RTSP
: Real-Time Streaming Protocol. Used for streaming video and audio over your network.

static IP address
: An IP address that is explicitly configured and does not expire. Required in non-DHCP networks; optional in DHCP networks.

subnet mask
: Network information automatically assigned in a DHCP network. If installing equipment on a non-DHCP network, get this information from the network administrator.

tally, tally light, on-air tally
: (broadcasting) A red light indicating that the camera is broadcasting. Vaddio cameras provide tally indications when the status light is set to the Pro A/V color scheme.

UCC, UC conferencing
: Unified Communications Conferencing; refers to soft-client conferencing using a computer with USB-connected peripherals.

Photo credits

This manual may include some or all of these photos.

European Space Agency (ESA) astronaut Samantha Cristoforetti, a Flight Engineer with Expedition 42, photographs the Earth through a window in the Cupola on the International Space Station
By NASA - https://blogs.nasa.gov/ISS_Science_Blog/2015/03/06/women-in-space-part-two-whats-gender-got-to-do-with-it/, Public Domain, https://commons.wikimedia.org/w/index.php?curid=38834990

Carl Sagan, Bruce Murray, Louis Friedman (founders) and Harry Ashmore (advisor), on the occasion of signing the papers formally incorporating The Planetary Society
By credit NASA JPL - JPL, Public Domain, https://commons.wikimedia.org/w/index.php?curid=1180927

Main Control Room / Mission Control Room of ESA at the European Space Operations Centre (ESOC) in Darmstadt, Germany
By European Space Agency - ESOC flickr, Credit: ESA - Jürgen Mai, CC BY-SA 3.0-igo, https://commons.wikimedia.org/w/index.php?curid=36743173

Expedition 42 on orbit crew portrait, International Space Station, Mar. 7, 2015 – Barry Wilmore (Commander) Top, Upside down, to the right cosmonaut Elena Serova, & ESA European Space Agency Samantha Cristoforetti. Bottom center US astronaut Terry Virts, top left cosmonauts Alexander Samokutyaev and Anton Shkaplerov.
By NASA - https://www.flickr.com/photos/nasa2explore/16166230844/, Public Domain, https://commons.wikimedia.org/w/index.php?curid=38931301

European Space Agency astronaut Luca Parmitano, Expedition 36 flight engineer, outside the International Space Station
By NASA - http://spaceflight.nasa.gov/gallery/images/station/crew-36/html/iss036e016704.html, Public Domain, https://commons.wikimedia.org/w/index.php?curid=27263573

Chris Cassidy, Luca Parmitano, and Karen Nyberg, ISS, 2013. Photo Credit: NASA

Nicolas Altobelli, Rosetta Scientist at ESA's European Space Astronomy Centre, Villanueva de la Cañada, Madrid, Spain
By European Space Agency - Nicolas Altobelli talks to the media, CC BY-SA 3.0-igo, https://commons.wikimedia.org/w/index.php?curid=36743144

Andrea Accomazzo, ESA Rosetta Spacecraft Operations Manager, providing a live update from the Main Control Room at ESA's European Space Operations Centre, Darmstadt, Germany during the Rosetta wake-up day.
By European Space Agency - Live update from the Main Control Room, CC BY-SA 3.0-igo, https://commons.wikimedia.org/w/index.php?curid=36743150

Sleeping goose
By ladypine - Own work, CC BY-SA 3.0, https://commons.wikimedia.org/w/index.php?curid=1695227

STS-123 and Expedition 16 crews on the STS-123 crew's last full day onboard the International Space Station.
By NASA - http://www.spaceflight.nasa.gov/gallery/images/shuttle/sts-123/html/iss016e033684.html, Public Domain, https://commons.wikimedia.org/w/index.php?curid=3773505

Ash Severe, U.S. Navy, Public domain, via Wikimedia Commons, https://commons.wikimedia.org/wiki/File:Sherri_Shepherd,_Elizabeth_Hasselbeck,_Whoopi_Goldberg,_and_U.S._Navy_Rear_Adm._Michelle_Howard.jpg

Live_From_Daryls_House

By Jonathan Wolfson - Jonathan Wolfson, CC BY 2.5, https://commons.wikimedia.org/w/index.php?curid=30567476

Photo AS11-40-5948, Aldrin assembles seismic experiment, by National Aeronautics and Space Administration, courtesy of the NASA History Office and the NASA JSC Media Services Center

Author's own cats, photos by author, you're welcome.

Index

Vaddio is a brand of Legrand AV Inc. · www.legrandav.com · Phone 800.572.2011 / +1.763.971.4400 · Fax +1.763.971.4464 · Email Europe, Middle East, Africa: av.emea.vaddio.support@legrand.com · All other regions: av.vaddio.techsupport@legrand.com

A brand of legrand

VADDIO®

A brand of legrand